MODEL MAGAZINE AUGUST 1989 £1.95

AERO MODELLER

SUPER NATIONALS!

Sunshine and smiles - our colour feature tells all

FULL SIZE PLANS

Heston Racer for electric control line and Dooly vintage glider

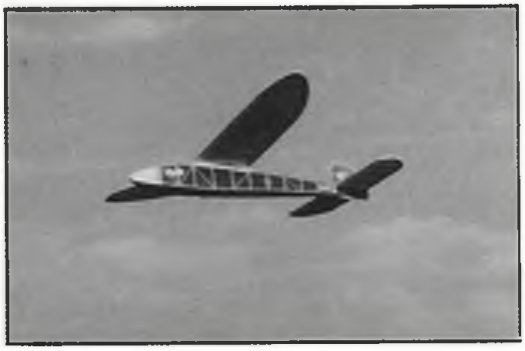
ISSN 0001-9232

08

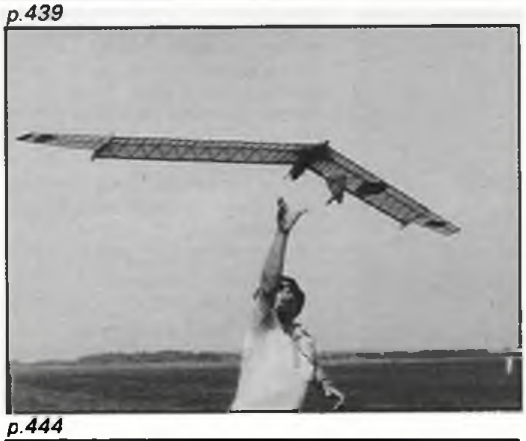
9 770001 923004

AUGUST 1989
Volume 54
Issue 643

AERO MODELLER



p.439



p.444

HANGAR DOORS	News, views - and what's what	424
WAKE UP	A sharp Wakefield from down-under	426
SCALE MATTERS	Triplane tribulations and other affairs - over to Bill Dennis	429
SPEED SCENE SPECIAL	Ian Mander focuses on F2A techniques...	432
BACK TO BREITENBACH	...and Dick McGladdery goes on a German junket	434
HESTON RACER	Go electric control line - full-size plans for John Emmett's silver streak...	437
DOOFA	and build Dave Hughes' Vintage lightweight glider for gentle flight	439
READERS' LETTERS	You have control	441
MOTOR MART	Diesel delights and tiny glows	442
THE SUNSHINE NATIONALS	Colour coverage of the splendid 1989 Free Flight Nationals at Barkston Heath	444
BALSA CUTTINGS	Cyano de Bergerac's sharp nose around	463
VINTAGE CORNER	Alex Imrie ponders the Junior question	464
CONVERT YOUR ACHILLES	Double the fun from an old favourite	469
MIND THE LINES	Round and about the old-time C/L scene with Ron Prentice	470
FREE FLIGHT SCENE	Dave Hipperson's competition round-up	472
WHAT'S ON	Diary dates for the summer	475

Editor	*Geoff Clarke*
Group Editor	*Alec Gee*
Group Publisher	*Wendy Palmer*
Art Editor	*Ron Cunnington*
Design	*Peter Kirby*
Advertisement Manager	*Alan Cole*
Advertisement Copy Control	*Marie Quilter*

Cover: The '89 Nationals at Barkston Heath was one of the best ever. Super sunshine and kind conditions generated thermals and bubbling enthusiasm. And there was room for fun flying besides the cut-and-thrust of competition. Our colour feature starts on p.444.

ASP
Argus Specialist Publications

Argus House, Boundary Way,
Hemel Hempstead, Herts HP2 7ST.

ABC

ISSN 0001-9232

UK Distribution by SM Distribution Ltd. 6 Leigham Court Road, Streatham, London SW16 2PG. Telephone: 01-677 8111; Telex: 261643; Fax: 01-677 0136.

Advertisement Offices: Argus Specialist Publications, Argus House, Boundary Way, Hemel Hempstead, Herts HP2 7ST. Tel: 0442 66551.

Postmaster: Send address changes to Aeromodeller, c/o Mercury Airfreight International Ltd Inc, 2323 Randolph Avenue, Avenel, NJ 07001, USA.

Subscriptions: Direct subscription rate including Index: Home £23.40. Europe £28.20. Middle East £28.40. Far East £30.20. Rest of the World £28.70 or US $50.00. Airmail rates upon application from Infonet Ltd., 5 Riverpark Estate, Billet Lane, Herts HP4 1HL. Tel: 0442 876661/4.

Overseas Availability: Second class postage paid at Rahway N.J. USA. Postmaster: send address corrections to Aeromodeller, c/o Mercury Airfreight International Ltd Inc, 10B Englehard Ave, Avenel, NJ 07001. Distribution to news stand sales by Eastern News Distributors Inc, 1130 Cleveland Road, Sandusky Ohio 44870. 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 NY 11357 USA Tel: 1(212) 767-6632. USA Subscription agent Joseph D Daileda, Wise Owl Worldwide Publications, 4314 West 238th Street, Torrance CA 90505.

HANGAR DOORS

F/F Champs – first report

UK Team Manager Martin Dilly reports a fine, well-run F/F Championships in Argentina. Lepp's win in F1A was very popular; top Brit in the class was Jim Baguley at 11th. Polish flier Cofalik won F1B (Wakefield) with Andrjukov second and Russell Peers highest for the UK at 13th. New Soviet flier Sergei Korban took F1C; Randy Archer (US) was second with Verbitski (USSR) third. Top Brit was Stafford Screen at 17th. Britain took seventh place out of 30 in the Challenge France (aggregate F1A + B + C). Conditions were sunny but with a chilly wind at times. Report coming soon!

Aerotech tales

Microlight builders Aerotech International have sent news of their continuing Microlight activities. How pleasant to report increasing participation in this gentle branch of aviation. Aerotech's own flying school is responsible for running the Three Counties Microlight Club which currently boasts over 80 members. Student training is very much a priority. Besides producing their own machines, the MW5 and MW6 three-axis machines, agencies are held for other types, with spares and component sales to augment the kit-building scene – another growth area. We know they'll be pleased to hear from aeromodellers with a taste for getting personally airborne. Fancy a go? Call the Flying School on 0295 811939.

Indoor Scaledate change

Brainstorm time. Doug Sheppard, Indoor Scale organiser par excellence, was quick to confess that he'd misquoted the date of the next Alumwell meeting. Note this correction: Sunday, 8th October is the appointed time. Events and experimental rule changes are as detailed in last month's Hangar Doors. What's On also carries the correction. Happens to us all, Doug. See you there, anyway!

Three Kings carnival

News of this event has yet to make its way into What's On, but here's advance news of the Three Kings 20th Anniversary Fly-in at the Old Croydon Airfield on 13th August. Control-line fun aplenty is promised, with not only general C/L flying but Carrier

Taking a break from control line, Ed Needham celebrates his first-ever F/F competition max in front of the Barkston Heath hangars at the Nationals. Both Ed and his racing team-mate Dave Clarkson tried Slow Open Power – we bet they'll be back!

Continuing interest in microlight aviation is reflected in the activities of Aerotech International who not only manufacture aircraft but run a flying school too. Get yourself aloft – trial flights start at £20...

too. Sounds a good 'un to us, so contact Wal Cordwell on 01-764 1661 for details.

Cardington cancellation

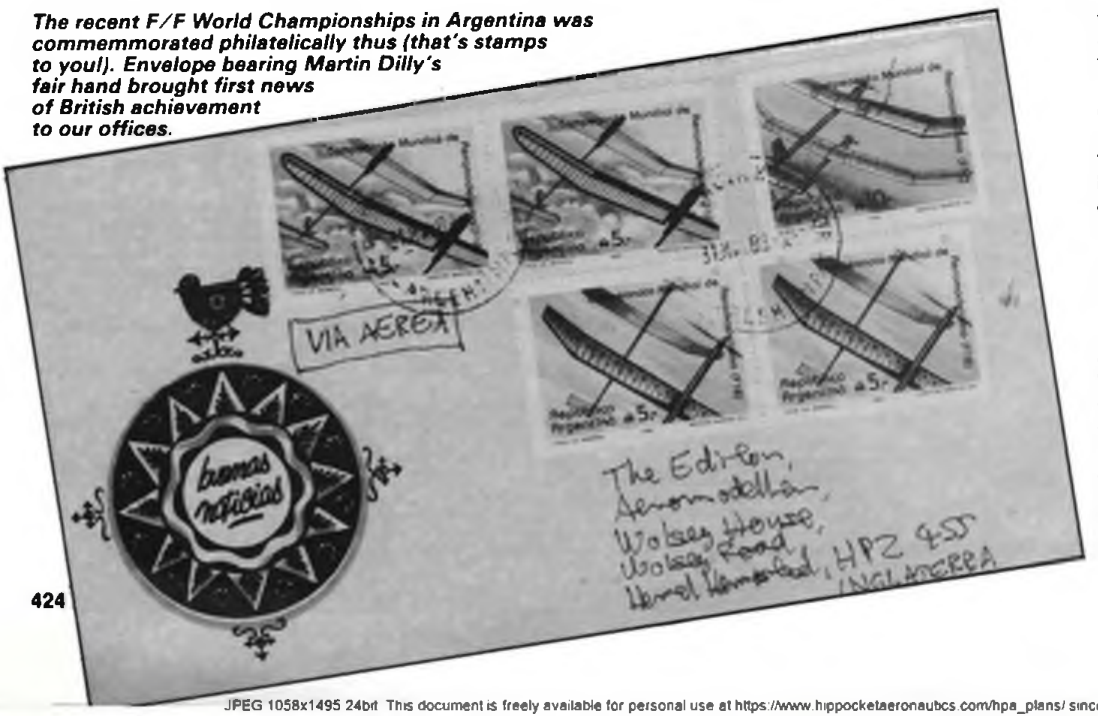
Bernard Aslett tells us that the Indoor meeting at Cardington scheduled for 16th July has been cancelled because of Airbus Industrie's commitments at the site. However, we can remind you of the P15 meeting on 6th August for which, Bernard hints, attractive prizes are being negotiated...

Thanks to Mike Colling we can now clarify the rules for this event. 'Standard' P15 models must be built from Erik Knudsen's plan. No prop modifications apart from balancing. Only covering to be tissue, clingfilm or condenser paper. Contest is for beginners only (modellers who have not placed first or second in a nationally advertised Indoor duration contest, other than P15). Max wingspan of this design is 15 inches.

In the Modified class models must employ a plastic, commercial prop and bearing. Only cropping, scraping or pitch changes are allowed. Max diameter: 5.5in; max projected span for lifting surfaces: 15 inches.

No person can enter both events. A model that does not meet Standard rules may be flown in the Modified class. Two highest flights from any number decides the winner.

The recent F/F World Championships in Argentina was commemmorated philatelically thus (that's stamps to you!). Envelope bearing Martin Dilly's fair hand brought first news of British achievement to our offices.



More Vintage Weekend fun!

Coming to Vintage Weekend on 19-20th August at Old Warden? Of course – how could you miss the pilgrimage! Plenty to see, we forecast, with a healthy mix of competitions as well as fun-flying. After the success of the Vic Smeed Commemorative Event last year we have arranged a contest es-

Above: Biggest at the F/F Nats was Colin Sharman's sixteen foot Tailless which used wings from an R/C soarer! Model stayed untested but provided a diversion when Control was moved, as seen here... Below: Our new Plans Handbook, available now for £2.00, refundable with first order.

pecially for models of Vic's aircraft. An entry table will be adjacent to a flight line; and a golfing umbrella will mark the downwind target. The entrant whose model lands nearest to the umbrella wins! It's as simple as that, so bring those Smeed designs along on Sunday. Start time is 11am; finish at 1pm. As many attempts as you like.

And remember - you're welcome at Old Warden, but only if you fly safely. Untrimmed craft really belong elsewhere...

Dear, dear

Casting our eyes through a recent Sun newspaper revealed this Agony Aunt gem, entitled 'I'm his model plane widow': *'...instead of life getting more pleasant I've realised that my husband and I have very little in common... he has taken up model aeroplanes and I don't see anything of him at all. If he isn't at the flying club he's in the conservatory glueing bits of balsa wood together! I am at the end of my tether... I could handle the situation better if he had another woman - a model aeroplane I can't compete with...'*

The problem, it was advised, was lack of communication. 'Far healthier than being constantly with each other is for you to find an engrossing hobby' was further counsel. Like timekeeping, perhaps?

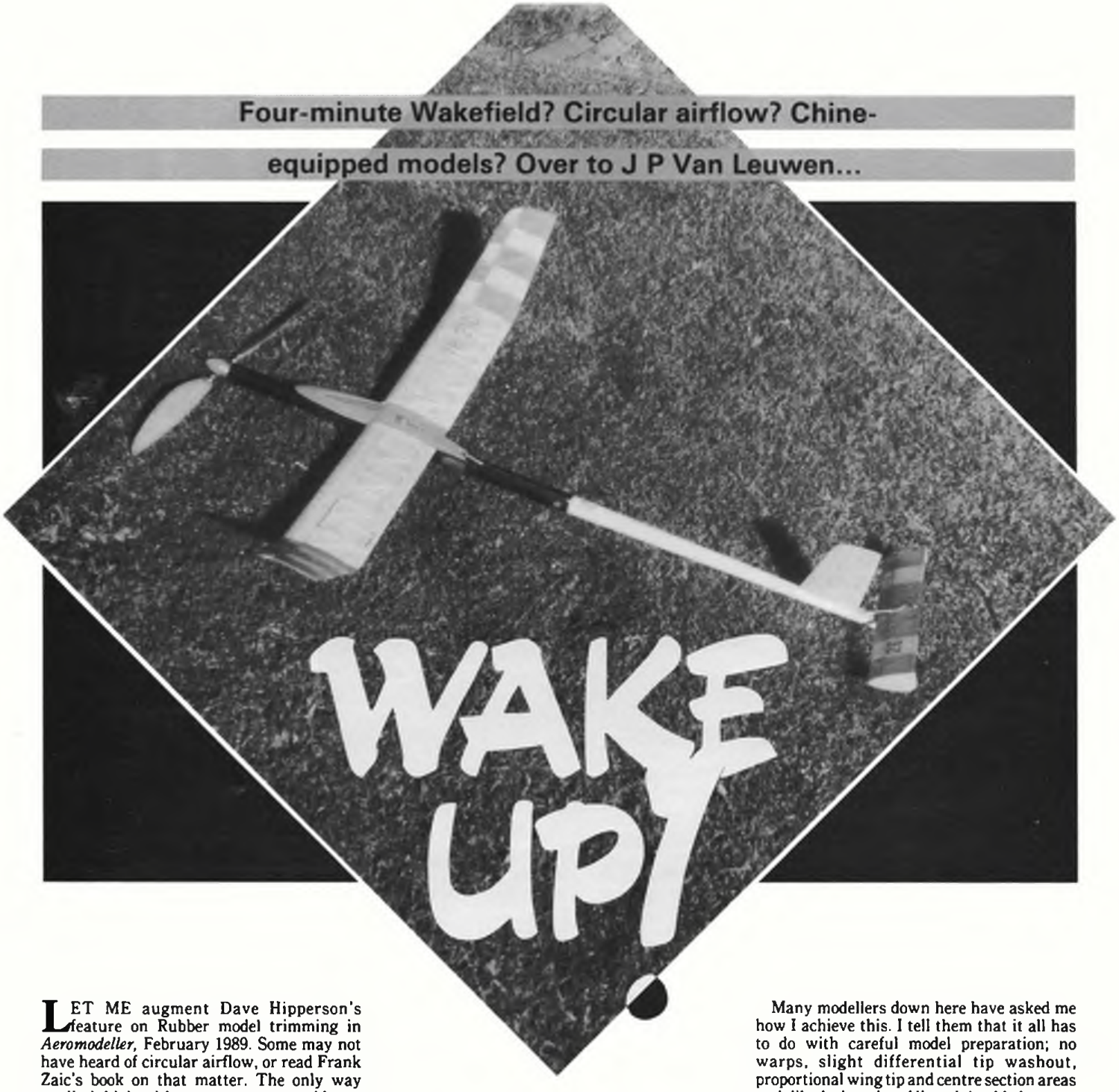
Hope you like it

This issue of Aeromodeller features colour coverage of the F/F Nationals - the first of our planned colour highlights this year. If you like the approach, do let us know! Aeromodelling is a bright, sunny activity and we intend to show just that with our new freedom of coverage. Next month we concentrate on Scale Weekend at Old Warden - a bright and breezy affair!

Coming soon

Market research (and feedback after such features as Rob Pressnall's Found Centennial is the May issue) proves substantial demand for straightforward Rubber designs for sport, competition and scale. Keep eyes peeled in the months ahead - we have plans for you!

Four-minute Wakefield? Circular airflow? Chine-equipped models? Over to J P Van Leuwen...



LET ME augment Dave Hipperson's feature on Rubber model trimming in *Aeromodeller*, February 1989. Some may not have heard of circular airflow, or read Frank Zaic's book on that matter. The only way to climb high without warps, auto-rudder or variable-incidence tail is to fly in a right/left pattern, making use of the circular airflow effect.

If the model flies untidily from the climb into the glide, then that model is not correctly trimmed, according to Frank Zaic. To fly right/right one must use AR. Warps and tail tilt are very unreliable means to stay in thermals.

With wash-in on the inner wing panel a model would fly erratically and not consistently. Tail tilt makes the model bank and turn in the glide, but doing so the tail occupies a more horizontal attitude and the tail lift is more vertical. This forces the nose down more than when the tail was not tilted, and one degree of difference would be enough not to max.

Dave seems not think much of tip washout, yet real aircraft and even birds use it, as can be seen if you are observant when looking at Nature films or TV programmes of birds in flight. The aim of moving the CG rather than altering the tail incidence is to obtain the correct tail volume and a gliding angle with the lowest decalage (difference between wing and tail setting). This provides a faster glide and creates higher lift. How to go for a right/left pattern with a small, safe circling glide which keeps the model in a thermal is explained in the second section of this article. Sidethrust is not wasteful. We are dealing with circular airflow and therefore the trajectory is into a circular pattern. A pylon model requires downthrust because of its looping tendency. I now use a shoulder-wing set up with the downthrust passing through the CG, and looping is eliminated. I have flown right/left for more than twenty years, and so has Bob White. Since 1977, I have always made the Australian World Champs team, but because of financial difficulty and work relationship, I only managed to go overseas in 1977 and 1979. I missed going to Argentina because I contracted cancer, although I am recovering now...

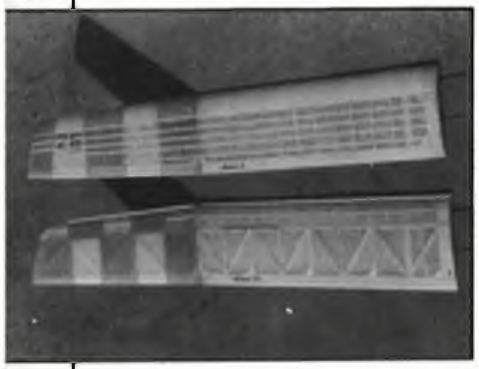
A spin-off from my careful trimming methods is that the model develops a mind of its own, so to speak. When the model is not in a thermal, it suddenly decides to fly straight to one and place itself in it to max.

Many modellers down here have asked me how I achieve this. I tell them that it all has to do with careful model preparation; no warps, slight differential tip washout, proportional wing tip and centre section areas and dihedral angles. All explained below...

The four-minute Wakefield is now a fact

This assumption is based on recent tests carried out with my CEM model design. All trimming details are now revealed for the first time in plan and diagrams. But any well designed and proportioned model, carefully trimmed, could do likewise, if one can take hints from the experience of others. Originally Maxina II had a D-box wing structure. But to my mind it never glided as well as all my previous models, until I applied the invigorators, as you can see in the photo.

Martin Simons says in his article on the 'Windtunnel Experiment at Stuttgart' (F/F W/Ch Symposium 1983) that tissue-covered wings fly better, so I built another wing for my model with the same outline, weight and aerofoil. The result was astounding. Not only was the glide much improved, due to the self-turbulating effect of ribs and spars, but the climb also improved. I suspect that the effect of tissue sag makes the mean airfoil thinner and so gives better penetration.



Maxina wing panels, tissue-covered and D-box, as described in text.

WASHOUT R.3.
L.4.

DIH. 120

DIH. 15

90

8

250

7·5% 16·5% 33% 1·5×5 SPRUCE SPAR TOP & BOTTOM, BALSA IN TIPS

2·5 SQ. 1·5 WEB 1·5 RIBS 2·5 SQ. SOFT 1·5×5 VERY HARD

Gö 361

5×6 LAM.

2·5×10 MEDIUM

0·3 RIBS C.F. TOP & BOTTOM

3×4 0·8 SPAR 2·5×8

8% WITH REFLEX T.E.

MODEL TRIMMED TO FLY R/L
CHINE MAKES IT FLY AS IF IT
WAS EQUIPPED WITH AR AND VIT.

100

65

109

PROP. 605×790
D.T. 2°
R.T. 4°

-1·4° -0·6° C.G. 67·5%

-2·7°

ADJUSTMENT SCREW

586

18

610

ø32 C.F. TUBE

1·2 BALSA ROLLED TUBE
TISSUE INSIDE & OUT

1·5 SUB TIP FIBS

A.R. 12

400

NO WING WARPS

MAXINA II[b] (C.E.M.) F1B

by Jean-Paul Van Leuven 11-10-87

AREAS	
WING	15·174
CHINE	0·825
STAB	2·940
TOTAL	18·939

WEIGHTS	
FUSELAGE	92·8
WINGS	57·2
STAB	8·3
FRONT END	44·0

ANTI-ROLL & STALL CHINE

MACHINED FRONT END

DT TIMER

75

76

387

TIMER START BUTTON

105 140 120 775 76

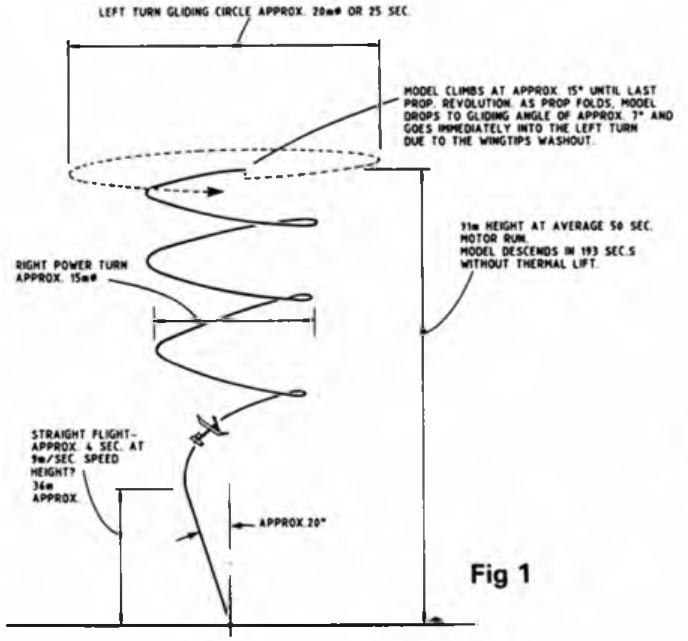


Fig 1

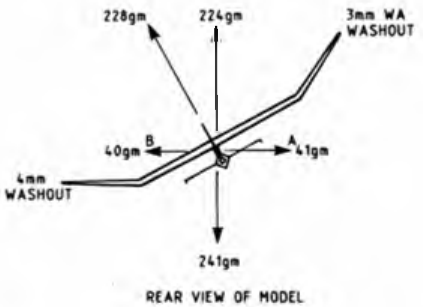


Fig 2

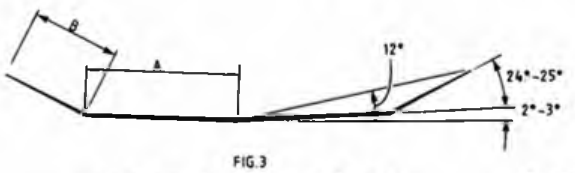


FIG.3

B=33%-35% & A=67%-65% OF ½ WING TIP DIHEDRAL SHOULD BE ABOUT 10 - 12:1

Fig 3

Those who still like to use a D-box structure should carry the top sheeting to the 60 per cent mark as was done on the HPA Daedelus shown in *Aeromodeller*, August 1988. The Re number of course would be different but the laminar flow would improve about that of a conventional D-box wing.

And if there are still sceptics among you, why don't you try it and make the evaluation for yourself before giving any comments. During my tests there was no thermal help. With the timer set at five minutes the model descended about twenty metres from where it was launched. The height (Fig 1) was calculated by taking the angle at a distance of 150 metres from launch site.

The chine, acting as a fore-plane or canard, holds the nose down in the climb and holds it up in the glide. The model becomes impossible to roll or power stall due to reduction of the sideslip force. In the glide it smooths out turbulence produced by the wake of the folded propellor. The downthrust goes through the CG and this means that the model takes off into the direction at which it was pointed, even vertically. The model climbs straight for four to five seconds, just as if fitted with a VIT system. But it does not wobble or lose speed, unlike the VIT model when the tail comes in.

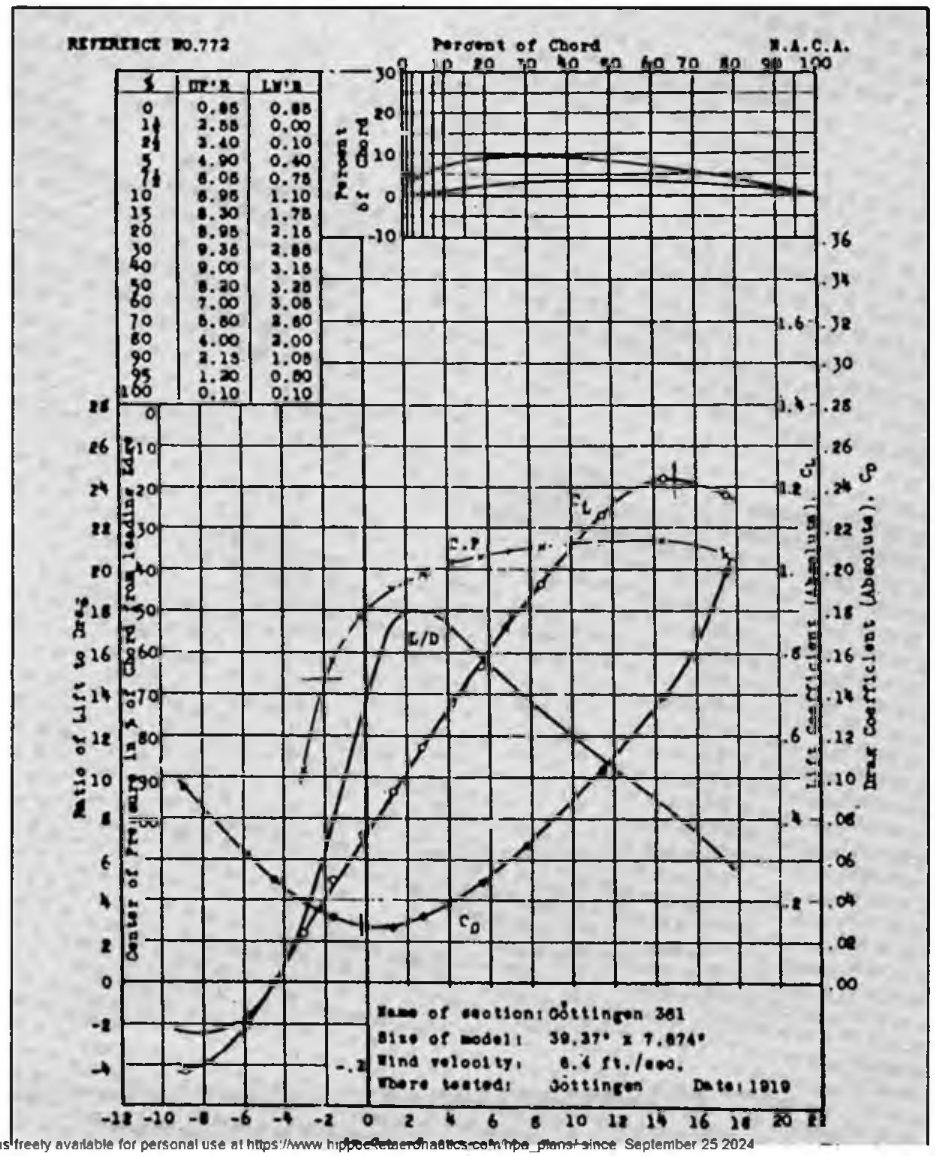
When the prop folds you can actually see the nose drop a bit so the model settles into the six-degree gliding angle. This means that the model holds its nose up and still climbs till the last prop revolution. The downwash of two degrees and circular airflow of 1.4 degrees gives a resultant of +0.6 degrees, as calculated by Frank Zaic's method. This cancels out the -0.6 degree setting of the wing, (we can forget what the chine is set at) and the decalage is still at 2.7 degrees of the tail to provide a fast glide. The proportional wing areas and dihedral setting as shown in Fig 3 and the well-balanced glide (Fig 2) are all contributary factors to the four-minute Wakefield.

In the glide the differential tip washout *into the turn* makes the model bank and go immediately into the left hand glide so it will stay in that thermal. It also produces the required bank that balances the slightly greater centrifugal force 'A' in Fig 2 which is essential for small-radius gliding turns.

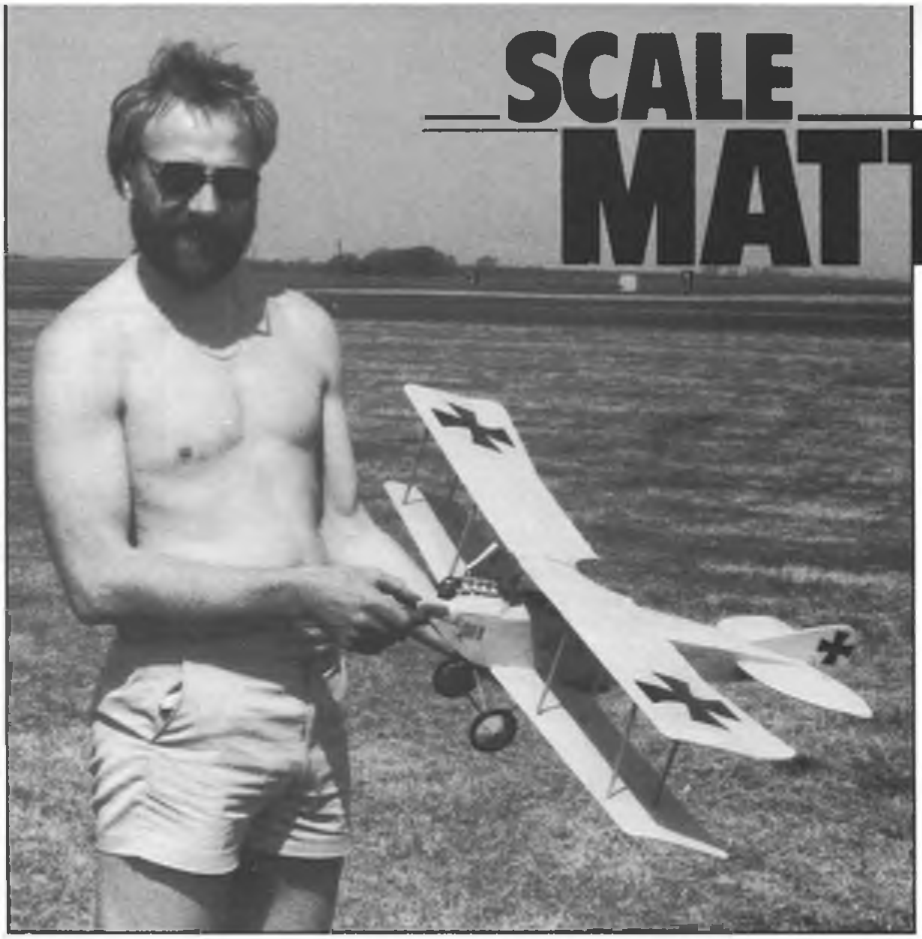
My model always has tight gliding turns. This increases the gliding speed and produces more lift; and that made me max out in 1979 at Taft.

The windtunnel tests of the Göttingen 361 section (Fig 4) shows that when the model climbs with under-elevated wing, at less than zero degrees angle of attack, the wing produces the lowest CD coefficient. In the cruise where the wing perhaps operates at approximately two degrees, the chart shows that the L/D ratio is the highest, and thus the climb is with less effort. In the glide, at approximately six degrees the L/D ratio is still high. Anyone who takes painstaking care building and trimming their models could produce equally good performances. Nothing comes easily, and it is up to yourself how well you know your own model; and this requires it to be evaluated through many test flights.

I still believe in a non-gimmick, non-mechanical device model where nothing can go wrong; and with the right/left pattern one gets more consistency. I have done much research and tests with my Chine Equipped Model (CEM) and this latest version could be equal or better to the best in the world.



SCALE MATTERS



Bill Dennis visits the Spring Scale meeting at Barkston Heath and tries a Triplane

Barkston Heath photos on this page show, top: Jerry Gibbens' Albatross CIII, and left: Mike Hetherington piling on the Leopard Moth's twin-skein turns. Non-authentic registration are - yes, you guessed it - Mike's own initials...

Right: Nifty BE2c is our columnist's own work, back at Barkston after its Nationals visit last August. Below: Scale competition newcomer Dave Jackson placed second in Rubber with this Flyline Heinkel He1000.

GLORIOUS weather greeted those attending this second meeting at Barkston. A moderate breeze all day caused no trouble at all. The quality of flying in the contests was, by and large, unremarkable, but I am very pleased to report a newcomer to the scale scene in Dave Jackson, who travelled down from Yorkshire with his first scale model - a Heinkel He100 from the Flyline kit - and placed second. This well-known design always performs well, but needs 'breathing on' here and there for improved accuracy, notably regarding wing thickness and nose and rudder profile. Incidentally, as I write this, the current issue of Air Enthusiast carries an extensive feature on the He100, including drawings and colour details.

I was also quite taken by Jerry Gibbens' Albatros CIII from the *Aeromodeller* free plan by John Watters. This was being tested for the first time and showed promise after a hefty noggin of lead was put in the nose. It may be worth pointing out here the vital importance of getting the CG position right before you start trimming, no matter how much lead it takes. You simply cannot safely trim out tail-heaviness on a scale model, except in calm conditions.

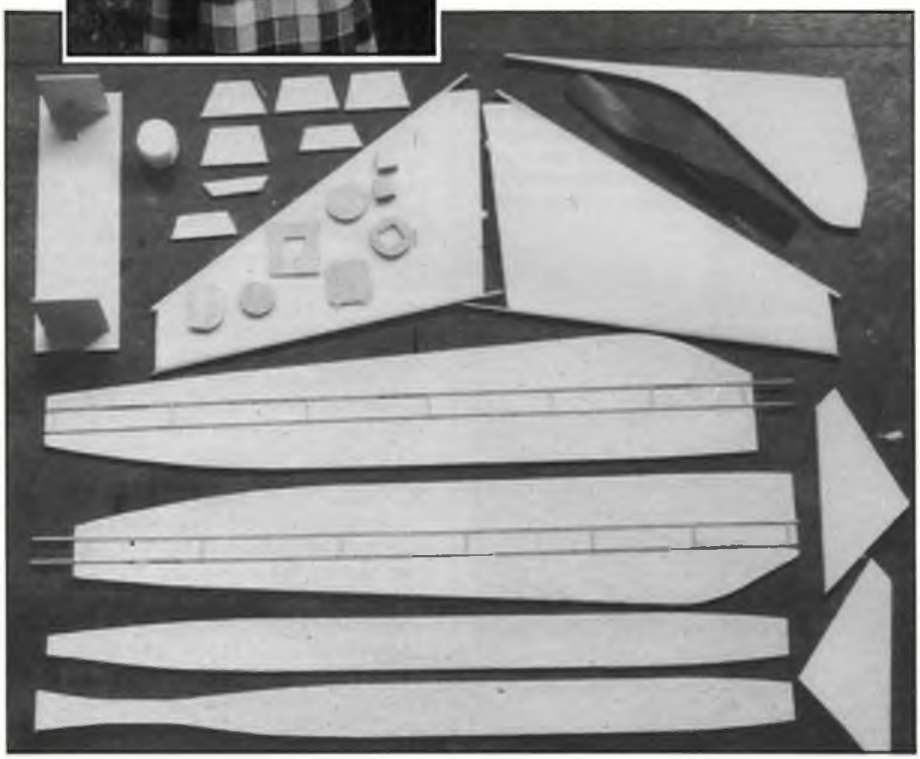
It was a pity more enthusiasts did not attend this meeting; entries in the contests were too low even for points to be scored in the Riding Trophy league. This is a perennial problem - and the contrast with the Indoor Nationals, three weeks before, was stark. Scale modellers seem keen to pack themselves like sardines into a hall to fly when told, but give them a hot sunny day, fresh air and a large grass airfield over which to fly their precious offerings - they don't want to know.

F/F Scale Meeting: RAF Barkston Heath

Power				
1 K. Wallace	Bristol M1D	885	887	1772
2 C. Newman	Avro 504N	1169	574	1743
3 R. Presnell	SE5a	907	631	1538
Rubber				
1 B. Hetherington	Stinson	720	769	1489
2 D. Jackson	He 100	496	945	1441
3 M. Hetherington	Leopard Moth	432	697	1129
CO$_2$/Electric				
1 B. Hetherington	Bellanca	897	776	1673
2 C. Strachan	Bristol Prier	727	755	1482
3 K. Wallace	Sopwith Scooter	656	779	1436

Above: A propos of nothing save admiration, we include Bernard Seale's photograph of Wal Cordwell's C/L Cierva autogiro just breaking ground at the Three Kings Scale Day on 21st May...

Below: Amy Dennis with the foam Fly-me Corsair, reviewed in text; and beneath that, Corsair components ready for assembly.



Fly-me Corsair

At Walsall I was looking for a simple model for my daughter to build, when my attention was drawn by Charlie Newman to the Fly-me models stand, and in particular to a pair of all-foam, semi-scale models of the Corsair jet and the Fournier *'moteur planeur'*. I chose the Corsair.

These are very unusual kits. A 1/32in sq. balsa frame is built up on each foam side; these are then joined on a simple jig, followed by top and bottom formers. When set, upper and lower fuselage skins are taped to the sides while the glue sets.

The whole model was assembled in approximately three hours, using PVA as the adhesive. The instructions recommend spraying the decoration with enamel or acrylic paints; I need not elaborate on what will happen if you try to use cellulose!

Flight tests have been limited to outdoors, but the Corsair shows great promise.

I would disagree with the instructions which state that this is a very easy model to build; I found the fuselage quite fiddly, and I have no doubt a young modeller would become quickly frustrated. Things could be simplified by substituting a 1/32in sheet motor tube for the 1/32in sq. box without drastically increasing the weight.

I would suggest that these kits would be suitable for a modeller to build as an introduction for a youngster to indoor flying, or as a bit of fun for himself. Contact Fly-Me models at 6 Hillston Close, Colchester, Essex for their comprehensive list.

Fokker Triplane

Avid readers may recall that I have been building a PE Norman Fokker Triplane from the APS plan; indeed, we published a photo of the bare structure about two years ago. For a long time that was as far as I got, but a second burst of enthusiasm saw me almost finish the thing - sufficiently so to enable test flights to be made. To cover the model I used a quantity of red nylon and some horrible thick dope, but in future I would use Solartex which is excellent stuff for this kind of application.

I borrowed the PAW 19 from my Slow Open Power model, and off we went to a large field with tall crops, with Vic Willson as witness. Neither of us had much idea of what to expect, so we just reversed the prop and chucked the model into the air, whereupon the Triplane flew straight ahead for a few yards, with the nose dropping to the ground when it began to turn. Obviously it needed more height for the pendulum to be effective, so with the prop the right way round we tried again. The Triplane looked really good, climbing rapidly with the wings rocking and yawing slightly. Eventually, just short of the trees it began to turn and again the nose dropped. Confidently we waited for the pendulum to kick the model up into a climbing turn, so we were somewhat disconcerted when it not only dived relentlessly but tucked under to perform a beautiful outside loop! By the time it reached the top of the bunt all the fuel had dropped out of the tank, so the engine stopped before the fun could continue. We must have made at least ten flights, various adjustments being made with little conviction and even less effect, save one - we locked the pendulum in neutral whereupon the thing made an enormous loop and

Left: Bill (with Amy again!) and his P.E. Norman Fokker Triplane before tests. The expression tells all! Below: Flight sequence. Bottom photo shows the Tripe inverted during a bunt...

hurtled to the ground vertically at tremendous speed. Virtually no damage! Clearly the pendulum was controlling excessive climb, but neither of us could rationalise the bunts. Anyway, we took it home and stared at it occasionally waiting for the penny to drop. It didn't. The following day we were up at Church Fenton judging an R/C competition, and I mentioned the project to Terry Manley. When he'd stopped laughing, he recalled that he'd seen a Triplane being flown in the early '60s at a competition. It had stuck in his mind because of its unusual flight pattern. Following a hand launch it would fly straight for about ten yards before rolling inverted, in which attitude it remained perfectly happily, climbing away to a great height. When the engine cut it then glided to earth like a plumber's tool bag. I've been building models for quite a while now, but I've never seen a F/F model that prefers flying upside down.

Latest news: I have come up with theory that may or may not be correct. Being a clever-clogs I didn't bother with the variable wing incidence shown on the plan. Rechecking my model I found that the lower and middle wings were at the same angle, with the upper wing about two or three degrees more. It could be, therefore, that the model is effectively flying on its top wing only; and as speed builds up in a diving turn the lower wings are generating negative lift. Also, the stated CG is rather far back (on the mid-wing mainspar) so again, if lift is being obtained only from the top wing, the CG is effectively almost on the TE, giving very low decalage and an unstable set-up.

As I write, the Nationals are approaching and I have to return the engine to my Slow Open model I (which is certainly slower than the Triplane). I shall reduce the upper wing incidence, and perhaps move the CG forward.

In the interim, Vic Willson has sent me copies of the original article accompanying the plan in *Aeromodeller*; it is interesting to see that PE's model had a little dihedral, also visible in the head-on shot in Ron Moulton's book Flying Scale Models. Also interesting is the description of aerobatics performed by the P.E. Norman Gamecock, a model which I may well try next.

Just in case you do not have the January 1951 issue of this magazine to hand, here are P.E's own words on Gamecock aerobatics.

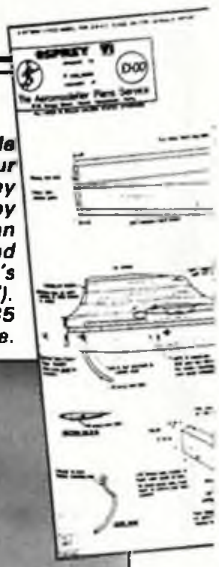
The model turns to the left, and can execute beautiful stall turns, also loops, bunts and inverted flying. The machine does a diving roll out of the inverted position in a most realistic way.

The inverted position is, I believe, brought about in the following way: The model is first of all given a little more right rudder and slightly more elevation on the adjustable tail, and it will go into loops. Quite often, when climbing up to the second or third loop, the machine loses a little forward speed, and being in a steep climbing angle, the pendulum weight falls back as far as possible; then, exerts itself and the machine reels over. The weight is then falling back, giving full down elevator, which, when the machine is upside down, becomes full 'up'. The model flies thus for perhaps 70 to 100 yards gradually carrying into a shallow dive: when at a certain point the weight suddenly falls forward, the machine dives at speed and then recovers to fly on its natural course.

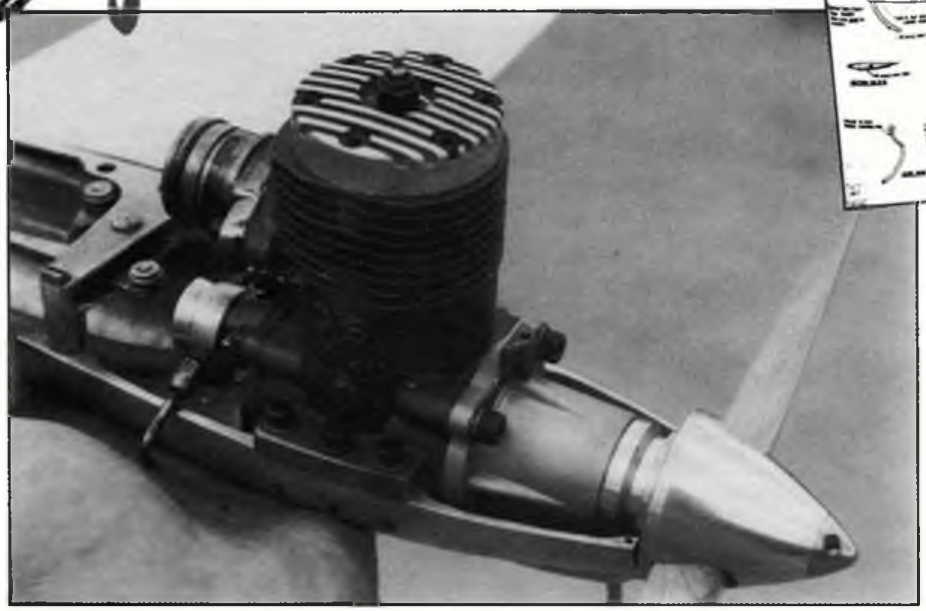
I have detailed all of this performance, as it is most interesting to watch, and I would be pleased to know if this manoeuvre has been performed by any other free flight scale enthusiast (I have had this manoeuvre performed by my large 4.1/4lb. Sopwith Camel model, too). I would not advise anyone to attempt this until they have become perfectly familiar with the model, and are prepared to take some pretty fast and heavy crashes!!

FROM THE HANDLE

Speed scene Special



Right: Two notable speed craft from our Plans Service: Osprey VI for .40 engines by Peter Halman (plan code CL1307) and Emil Rumpel's Kingfisher (CL12597). Each is £4.35 including postage.



THE modern FAI Speed craft, or F2A, is one of the purest forms of model aircraft in existence today. Its design and construction is aimed solely at producing an airframe which will allow the power plant to perform at its highest possible efficiency for ten timed laps.

The basic design revolves around the location of the fuel tank, most commonly the suction Uniflow type, which must be mounted in such a way as to isolate it from any direct contact with the structure of the model. This is to eliminate any frothing of the fuel which interrupts a constant supply to the engine. This is arguably the most important criterion of the whole system.

Ian Mander continues his Speed symposium with a look at the modern F2A machine

Strong stuff

Tank and engine are usually contained within an alloy pan which acts as the 'strong' area of the model; that is, everything else is mounted to it. The pan serves as an accurate, true face on which to mount the motor, and it acts as a datum to align all the other units. It also serves as a heat sink and radiator for the motor. More and more modellers are turning away from exotic, cast-magnesium pans in favour of machine-turned, high grade aluminium alloy. This produces a pan of similar weight, but with the advantage that strength is far more easily controlled thanks to the more uniform nature of the material. It is also possible to incorporate developments and innovations into the system much more speedily. For example, latest information indicates that a reduction in weight to around the 500gm mark can produce an increase in performance and life of the engine (a piston and liner may only be at its best for thirty or so flights) and the ringed pan has been proven to allow this to be done most easily.

The pan also serves to attach the wing sub-spar assembly accurately. This fixing not only has to take the 'G-loading' of the model, but must allow the wing to be adjusted for incidence. In some designs the spar is detachable for access to the control system, which is usually fixed to the wing sub-spar within the metal skin of the wing. All these criteria are fulfilled by the use of two high tensile bolts of about 6BA size, one operating in a hole and the other in a slot machined in the pan.

Wings and things

The wing itself consists of a thin (0.012in) aluminium alloy skin formed over a balsa spar and joined at the rear with an epoxy glue to form a wing section. The wing appears to perform more than the basic lifting function of a conventional model.

At take-off and during acceleration the wing must generate enough lift to enable the model to fly with the engine producing marginal power. This applies particularly at take-off where human assistance is almost always necessary. While speed is building up the wing must again produce adequate lift, with adequate stability to allow the fuel flow to stabilize in these conditions.

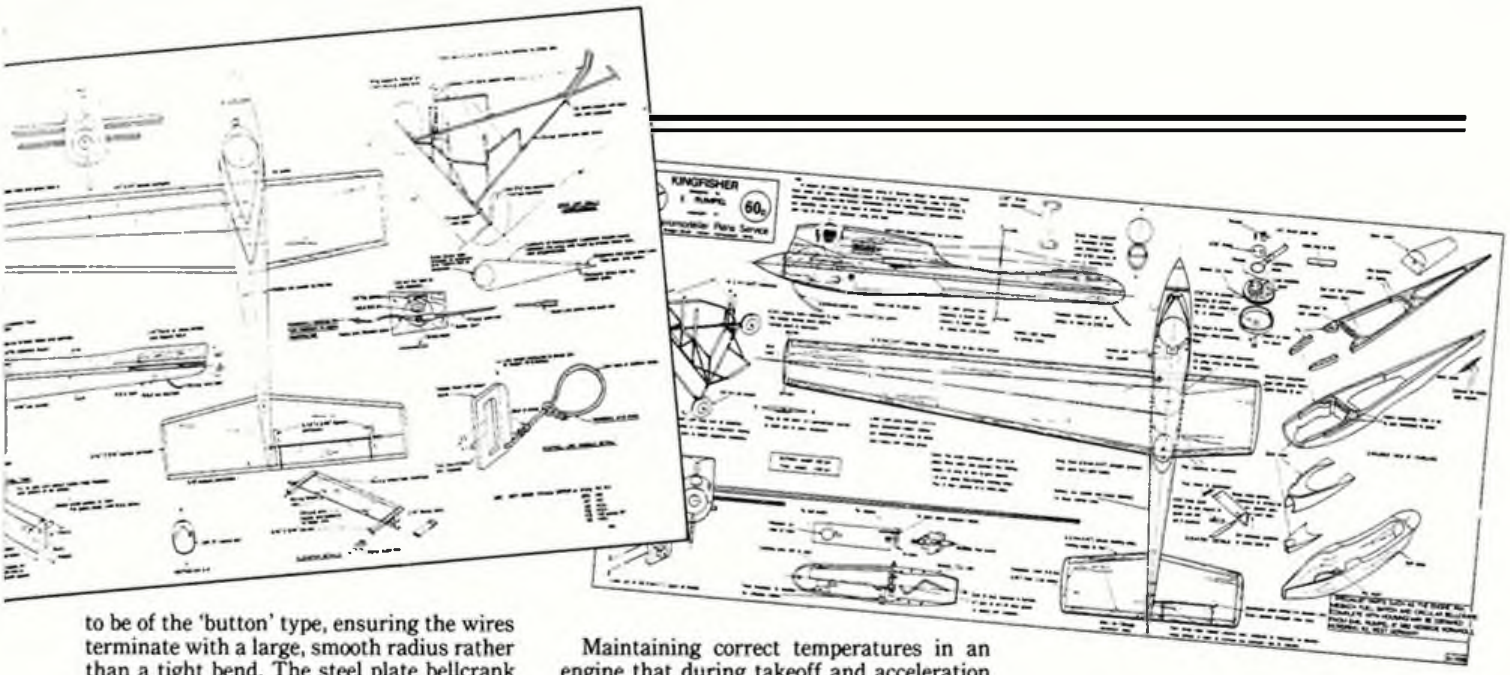
At full power it seems that the wing is not just acting as a lifting surface but partially, or totally, as a fairing for the control wires. When a model is flown, on fifteen metre wires, between the horizontal and 'minus 1.8 feet', centrifugal force is such to balance the weight of the model. Thus, if the model is flown at about one metre height it becomes weightless and no lift is needed. This optimum is not always possible so the wing is washed-out a small amount. By small changes in angle of attack incremental changes in lift may be produced. This, allied with optimum use of the wing as a line fairing, is best produced by a high aspect ratio. Based on the half-span of the current

Heading and above: Two views of the most powerful Speed motor yet; Ken Morrisey's OS Max 61V - a converted marine engine. Note sub-spar and bellcrank assembly, as detailed in text.

type of layout, aspect ratios range from 14:1 up to 35:1, or more. Higher figures dictate a torsionally very rigid wing, and thus the metal skin. During the transition stages of flight these wings are loaded into a beautiful but alarming spanwise curve!

Now take control

The F2A control system is limited by the FAI to a two-line system of two .4mm wires. While the wire is adequately strong in itself under the load conditions encountered, connections to the model are usually designed to impose minimum stress on the wires at their most vulnerable area and as such tend



to be of the 'button' type, ensuring the wires terminate with a large, smooth radius rather than a tight bend. The steel plate bellcrank is fixed to a high-tensile steel pivot.

The control system serves another purpose other than model control; to operate a fuel shut-off. This piece of equipment is no longer a luxury or a gimmick but an essential part of an F2A system. Its functions are as follows.

The shut-off allows a poor engine run to be terminated, avoiding engine damage due to component failure or incorrect engine setting. It also allows re-adjustment of the engine during the allotted contest flight period without waiting for the tank to empty. At the end of a timed run it allows the engine to be stopped, thus preserving the short lifespan of the motor and reducing pilot fatigue (175 mph demands ten laps in thirteen seconds; which is 1.3 seconds a lap!).

Tail tales

The tail and tailboom are constructed in conventional manner; the tailboom from rolled ply or hollow log of balsa, jelutong, obeche or basswood, with the tailplane made of similar material. All is covered with lightweight glass cloth or carbon fibre for maximum stiffness. The tailboom must be capable of withstanding landing stresses, torsional loads generated by a one-sided tailplane and, possibly, back pressure generated by the tuned pipe. The last effect is not inconsiderable. When Pink Lady type models were in vogue crashes were caused by expansion and back pressure of the pipe changing the tailplane incidence. This factor is not so relevant nowadays because tuned pipes are usually fixed to the engine exhaust manifold by a clip and just lightly restrained, either around the point of maximum diameter or at the tailpipe.

Cool it!

The engine cowling is another multi-function component. In the modern F2A model it is lightly stressed and its construction reflects this, although the current F2A world leaders (the Russians) use the engine cowl to retain and locate the fuel tank. Its two basic functions are to direct the correct airflow into the engine and to maintain the correct working temperatures for engine and tuned pipe.

The airflow is usually achieved by a form of ram intake sealed to the engine air intake, becoming, in effect, an extension of the carburettor. It must be firmly attached. Disturbance of the air by external influences or by movement of the ram tube can adversely affect power output.

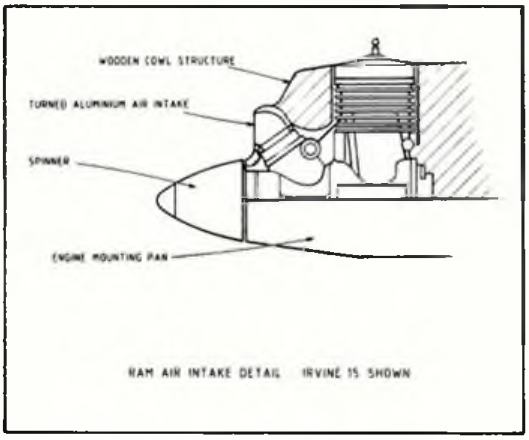
Maintaining correct temperatures in an engine that during takeoff and acceleration is not running at its optimum, but at full power generates large amounts of heat in some areas and is being cooled by large volumes of gas in others is a complex task. And remember, the tuned pipe may be close to the melting point of the aluminium alloy usually used for the pipe...

Provocative props

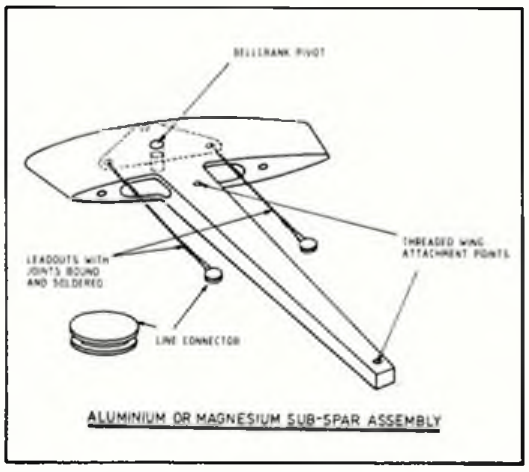
The last, thought-provoking subject is the propeller. These are universally single bladed; and the question from the non speed modeller is, 'why'. The explanation I offer is two-fold. The torque of a modern F2A engine is very low, but when the engine comes 'on-pipe' the power output is enormous for its capacity (about 1.5 BHP for 2.5cc). The diameter of a two-bladed propeller which would allow the engine to perform would probably be less than five inches, which in the 'on-pipe' situation would allow the motor to 'semi shaft run'. Secondly, the single blader allows a larger swept area of propeller disc, which means more air can be moved. These propellers tend to be hand-made, usually from carbon fibre and epoxy resin, by the individual flier; they are balanced with a metal counterweight. Measurement of blade width and thickness is very accurate indeed.

Whereas the sport modeller is content with the ability to change pitch by the odd inch or so, the propellers used for F2A may be changed by as little as 0.1in pitch on a certain part of the blade to try to increase performance. Such is the price to pay for extreme engine power output.

Obviously, I have described the function of the model as I see it, and I am sure other fliers' insights are different. Perhaps they would like to enter into further discourse on the the subject to enlighten us all, for then, an increase in knowledge will translate into even higher speeds.



Ram air intake for front-induction motors. Close-fitting cowl ducts air through, not around, cylinder fins.



Details of tough wing sub-spar and 'button' line connectors.

Another view of last month's cover subject, the Morrissey 10cc Speedster. Next target: 220 mph...

BACK TO BREIT

Dick McGladdery revisits a favourite venue with control line competition in mind

THE BREITENBACH club runs this event once every two years; this was the third I have attended. In many ways it turned out to be the best ever. It is popular with C/L fliers from all over Europe, attracting entries from as far afield as Hungary, Poland and Spain. The timing is a little early in the year, but it is usually sunny and warm, with just a small risk of spring storms. This year it was sun all the way, the only adverse feature being a very chilly (as low as five degrees centigrade) on the Sunday morning, more of which anon...

The site, known as the Schwalbennest (Swallows Nest) is in a hollow that makes a natural suntrap a few miles from the town. The single circle has a tarmac central pilots' circle and outer ring with grass between, all encircled by a permanent wire safety cage and with a recessed loudspeaker at the edge of the pilots' circle to help communications with pilots during a race. An electronic scoreboard displays warnings given and laps completed; very useful for spectators to keep track of each team's progress during a race.

The Breitenbach club is mostly R/C-orientated, but the enthusiasm they put into organising this C/L competition deserves the highest praise. Apart from providing a multitude of marshals and officials to run it in a way closely similar to a Eurochamps, they also provide a very useful refreshment marquee selling hot snacks and drinks. Included in the entry fee is accommodation for entrants and supporters in cadet bunkrooms located under a school building in the town – a bit spartan, but welcome; and there was no shortage of takers.

Team Racing (F2C)

A healthy entry of nineteen promised some good racing, and between fettling my F2As, I took the chance to watch. The Italian teams' Cippolas were very impressive, booming round at 17.5 sec/10 laps, with 34-laps-plus range and, for the most part, restarting. The rest could only hope for a clean run – and for the Italians to make some mistakes. In the heats only four teams bettered 3:40, one being the UK's Smith/Brown; and cut-off time for the semi-finals was just under 3:50 which is a bit slow. The first semi was run off on Sunday morning in very chilly conditions, despite bright sun. This threw several off their settings, and only Pennisi/Zana bettered 3:40. Voghera/Rossi were going very well, but on taking off after a pit stop, Voghera tripped over the pilot in front who was crouching down in the correct position whilst his own pitman was trying to restart (this duo was Smith/Brown, actually). Voghera had already performed this trick once before in practice, so the ensuing crash was not quite so devastating as the first time, but it still wrecked the model and got him disqualified. Smith/Brown had to retire thanks to the cockpit canopy getting broken at the second pit stop, and Roland Surugue got a DQ after getting into a tangle not of his own making.

Meyer/Metkemeijer put in a steady run of 3:41 to make second fastest, and Rodicchi/Paci were third with 3:45, but no-one expected these last two to be safe for a finals place.

The second round of semi-finals saw Voghera/Rossi make amends for their previous mistake with a smoking 3:21 time. Meyer/Metkemeijer put in yet another professional performance, recording 3:37 to gain third spot despite being visibly slower than the Italians, and not enjoying their usual one-flick restarts. Just missing the final came Delor/Surugue with 3:40; with Fisher/Straniak close behind on 3:43. Radicchi/Paci had a mishap but were sixth fastest with their first semi time of 3:45. Smith/Brown wrung 3:57 out of an obstinate Cippola for seventh, and both Magli/Pirazyini and Martini/Feger got DQs, placing eighth and ninth on the strength of their first semi times of 5:22 and 6:21.

The final was therefore between the two very quick Italians, Voghera/Rossi and Pennisi/Zana, and the Dutchmen Meyer/Metkemeijer, who were a bit slower but are renowned for picking up the seconds with fast pit stops and consistency. All got away very quickly at the start, both Italians drawing away slightly from the Dutch, a pattern which continued until the wing of Voghera/Rossi's model folded abruptly when the shut-off was fired for their second stop at the 65-lap mark. The model executed a semi-wingover and piled into the grass infield, fortunately without snaring either of the other two models, which were circulating at the time. The cause, apparently, was a fracture suffered in a previous prang, though whether at this comp or elsewhere, I couldn't establish. The remaining pair pressed on, with Pennisi/Zana pulling away with superior airspeed, but missing a couple of catches at pit stops, so that Meyer/Metkemeijer reeled them in a little each time. Pennisi/Zana had been aiming for 29 laps/6 stops, but didn't quite manage it, and had to make seven stops like Meyer/Metkemeijer. In the end, Pennisi/Zana just prevailed, edging home a mere four seconds (about two or three laps) ahead.

It had been an excellent final, and topped the whole meeting off very nicely.

Team race topics

The machinery, particularly the Cippolas of Voghera/Rossi and Pennisi/Zana, were awfully strong, fully up to the standards set by the Russians in recent years; so we can look forward to some interesting races at this year's Eurochamps at Three Sisters. Magli/Pirazzini's Cippola was similarly impressive but inconsistent, and pilot Magli's efforts to overcome a tendency for the engine to sag on take-off consisted of hoisting his handle as high as he could reach – not popular with any other pilot flying with him; and in the first semi-final, he towed the model into the grass infield and got DQ'd. Rob Metkemeijer had his familiar FMV model, with Fred Meyer standing in as pilot in place of AWOL Bert Metkemeijer. The FMV was very consistent, but lacked punch, and was not starting as well as usual – two, or even three belts needed sometimes. Delor/Surugue had their Nelson-powered model, incorporating, as usual, their moulded carbon fibre/epoxy fuselage. Patrick Constant makes the very high-quality mouldings, which he sells for the equivalent of £80 a set, with ten-year guarantees against woodworm and dry rot. The fuselage shells come complete with bosses moulded in for the six-bolt, side-exhaust Nelson

TENBACH

which gives a performance of 19-19.5 secs/10 laps for 35 laps/tank. Anyone interested should write to Patrick at 13 bis, Avenue de Saint-Ladre, 77230, Dammartin-en-Goel, Paris, France. Plastic-fuselage models are reckoned to hold their performance better than the treewood type, which suffer from oil soakage and consequent weakening of their structure.

Steve Smith flew his new-ish carbon-fibre-bodied model, but his supply of Cipolla engine parts is now getting rather dog-eared, and none of his mixtures could produce the performance (and restarts) needed. Steve uses a Bugl multifunction valve which he reckons is still the best design yet produced, but his are now becoming a bit worn with age and he suspected that the one in his model was being affected by engine heat. A scoop was added to blow cool air over it, but the effect seemed marginal; what he really needs is some new liner/pistons – and he would settle for just a few pistons.

Rumour has it that, next year, OPS will be producing a Team Race diesel along the lines of the Cipolla. This could be a boon if it's up to scratch. T/R really needs a motor that is easily obtainable and with spares available when required.

Speed (F2A)

Nine entries turned out for this event, and most prestigious was that potent Pole, Anderzej Rachwal, who placed tenth at last years' World Champs in Kiev with a 282kph flight. However, I had recently got some very good practice flights with my Irvine 15s and hoped to spring a surprise. The 600m altitude of the site is alleged, by some authorative sources, to incur a performance reduction of around five per cent, and certainly, on previous visits I had all sorts of trouble just getting a run at all.

Heading: Speed winner Dick McGladdery flanked by Andrejz Rachwal (left, second) and Dave Brewin (third). Top: Rob Metkemeijer gives the FMV a talking-to. Above right: Patrick Constant (France) in the F2C heats.

Above: Britain's Dave Brewin in the speed pylon. 269 kph was good for third place. Below: Andrezej Rachwal and son Tomasy with Rossi MkIII models.

F2C Team Racing

	Nation	1st Heat	2nd Heat	1st Semi	2nd Semi	Final
1 Pennisi/Zana	I	3:34.41	DQ	3:35.59	64 laps	7:21.65
2 Meyer/Metkemeijer	NL	3:37.76	3:39.90	3:41.26	3:36.73	7:26.47
3 Voghera/Rossi	I	3:30.45	DQ	DQ	3:21.09	67 laps
4 Magli/Pirazzini	I	36 laps	3:33.21	5:22.20	DQ	
5 Smith/Brown	GB	4:00.27	3:37.77	65 laps	3:56.87	
6 Delor/Surugue	F	3:40.96	35 laps	DQ	3:40.60	
7 Martini/Feger	I/BRD	DQ	3:42.45	6:20.55	DQ	
8 Fischer/Straniak	A	3:43.77	3:49.22	3:53.37	3:43.24	
9 Redicchi/Paci	I	5:00.34	3:44.88	3:45.26	9 laps	
10 Salisbury/Wharton	GB	3:59.77	4:00.25			
11 Nitsche/Kuhregger	A	DQ	4:03.49			
12 Ougen/Constant	F	4:14.61	4:07.16			
13 Fry/Short	GB	DQ	4:11.87			
14 Marschall/Kukkelkorn	BRD		4:14:79			
15 Mata/Pastor	E		4:22.90			
16 Christen/Saccavino	CH	42 laps	4:26.10			
17 Brendel/Vogel	BRD	71 laps	4:45.73			
18 Borer/Miller	CH	DQ	DQ			
19 Saccavino M/Saccavino V	CH	DQ	DQ			

F2A Speed

		1st Heat	2nd Heat	3rd Heat
1 R. McGladdery	GB	0.000	277.492	284.660
2 A. Rachwal	PL	266.338	259.553	280.374
3 D. Brewin	GB	0.000	267.261	269.461
4 O. Urban	CH	256.410	0.000	268.057
5 W. Christen	CH	260.807	265.487	262.057
6 S. Smith	GB	261.059	257.143	253.402
7 T. Rachwal	PL	246.970	0.000	258.993
8 A. Borer	CH	0.000	258.807	-
9 R. Metkemeijer	NL	0.000	0.000	0.000

The first round had everyone in disarray, Steve Smith getting the best run for a 261.06 flight, but still pushed into second by Rachwal who did 266.34 despite a ropey engine run. In the second round, Dave Brewin and I overcame our initial troubles, making flights of 267 and 277 respectively. On the basis of what I had seen, 277 should have been enough to win, but despite this complacency, I readied my best model for the final fling. The third round was quite a drama. I was scheduled to fly last, immediately preceded by Rachwal and Dave Brewin. Dave got his right on the first attempt, with a personal best of 269.46kph, but both Rachwal and I had problems and had to join the queue for reflights. When his turn came, Rachwal produced a sizzler of a run at 280.37kph, leap-frogging Dave and myself into first place. I thought I had had it at this point, and more in hope than anticipation went out for my second attempt with a model which I had not even test flown. However, my first-attempt problems (a self-firing cutout) had been cured with a file, and the Irvine obliged me with a run of 284.66kph, retaking the lead and winning the competition with the very last flight of the meeting! Very gratifying, but hard on the nerves...

Speed equipment

The machinery there was mostly Rossi R15 Mk.IIIs. Dave Brewin and I had Irvine 15 REs, and Rob Metkemeijer had one Irvine and one Nelson. Rob pranged his Irvine model early on and had to use his Nelson most of the time, but had no luck at all, failing to record a time. Rachwal's model is Rossi-powered, with a medium length wing (at my guess, about one-metre span) and the motor is basically a stock Rossi but (if he's still doing as he was two years ago) uses a smaller OD bock race fitted via a steel bush into the normal housing. The pipe is of his own make, of quite large maximum diameter, along the lines of the Russians' pipes. Otto Urban scrounged one of these pipes, and this, probably aided by some practical assistance from Dave Brewin in improving the balance and profile of his prop, took Otto to a personal best of 268.06kph and fourth place. His model was generally similar to Rachwal's, as was fifth-placed Walter Christen (265.49kph), both Rossi-powered. Dave Brewin's model has a one-metre wing; before coming to Breitenbach the motor had suffered from persistent hardening-up during the run, but we managed to sort that out here. For the second round, I used a new Russian-influenced model with my No.2 engine, which had recently pleased me with a practice flight of 281kph back in the UK. The wing is a full 1200mm span with a root chord of 51mm and tip of 25mm. The fuselage is in one piece, consisting of a rolled plywood boom attached permanently to the pan and a detachable cowling/tank fairing. It weighs just under 500gm (dry) and handles very nicely. For the third round, I used last year's model fitted with a new two-piece wing, similar to the one on my other model.

This model is much heavier (thanks to the old-fashioned detachable fuselage); the wing is not so good (the incidence does not wash out progressively as I think it should); but, fitted with my No. 1 motor, it had achieved a practice flight at 293kph back in the UK – a surprise in several ways, as I had convinced myself this would be a 'slow model'. It does not handle so well, and needs tweaking for more assured behaviour. My winning flight was made with 0.4mm head clearance, stock 7mm peripheral venturi and pipe tailpipe sleeve of 4.6mm bore. The prop was my own make; carbon fibre/epoxy copied from one of Peter Halman's props, with a maximum pitch of 6.3in and radius of 74.1/2mm approx. The motor was prepared by Peter Halman, so much of the credit belongs to him. Modifications included a bit of grinding on the crankshaft, cleaning up the valve port and belling the orifice at the crankweb. Peter says he has never found that these actually increase power output, but evidently they don't hurt it, either. In closing, young Tomasy, son of Anderzej Rochwal, only got a modest 258kph for seventh place, but he did much better in Kiev, placing considerably higher than I did with a flight of 272kph. He obviously gets a lot of help from his Dad, but he is a very good pilot, and can handle an F2A without undue drama despite the considerable pull that goes with today's speeds and his own light build. A few more like him would do Speed a lot of good...

Left: Steve Smith fettles his 'Flying Fing' to the F2C semis; finished fifth.

Above: The carbon fibre/epoxy moulding by Patrick Constant for Team Racers. Bosses and ribs are moulded in; note cooling and exhaust duct, top cowl and undercarriage box. Left: Business end of complete model.

Other matters

There was an aerobatics (F2B) event too but I only took in a few flights and don't know who was who or what. I did notice a rather attractive Italian pilotess getting ready for a flight, but I gather she looked better than she flew – she looked very good.

The event was won by some chap called Claus Maikis (I've heard of him somewhere – used to be a speed flier, didn't he?) who will probably give you the gen on aerobatics on another occasion in this magazine. Perhaps in 1991, when this meeting is next due to be held, we can cajole some UK Stunt persons to come, and get proper coverage of everything. After the rare pleasure of winning a Speed event, I might be accused of being biased, but I'm sure all the other competitors would agree this was a super meeting and join in heartfelt thanks to the Breitenbach club for their vast efforts in making it all possible.

Go for electric control line with John Emmett's speedster

EVERY so often, someone thinks they have invented electric-powered control line. I certainly thought, as a schoolboy in the mid sixties, that I had; but according to Vic Smeed's 'Fifty Years of Aeromodeller' a schoolboy from South Wales beat me by some fifteen years! This is a revival, but with the advantage of three new factors. Firstly, the power available these days has risen nearly ten times thanks to the cheap 540 or 550 size 'buggy motors'. The power developed by the motor in this model and its weight, is equivalent to the old Comp Special 2cc engine, although it revs more than twice as fast. This is good news for practical control line, as it allows flying on 40-foot lines in a breeze up to 10 mph. Indeed, my prototype will do a steady 30 mph on these lines.

Power is fed along the lines by rechargeable NiCad or lead acid batteries carried by the flyer. These, and their recharging methods, are a second development from the electric flight, boats and cars. The third development is thin PTFE covered, high temperature electrical flex which makes for a connoisseur's choice of control lines with a minimum of power loss.

Design for Electric Power

The advantages of electric power for control line are worth listing because they may give a few new ideas to readers:

Advantages in general

(a) Lack of noise opens up new flying sites
(b) One man operation, even of complex models.

Advantages for Scale

(a) Multi-engines are very practical
(b) The high RPM, lack of exhaust residues and no starting problems, makes ducted fans an attractive proposition.

Advantages for Stunt and Combat

(a) No fuel feed problems
(b) Bursts of overload power could be useful

How about Korean war combat then? Ducted fan MiG versus Sabre - suck in your opponent's streamer for a cut!

Let's build!

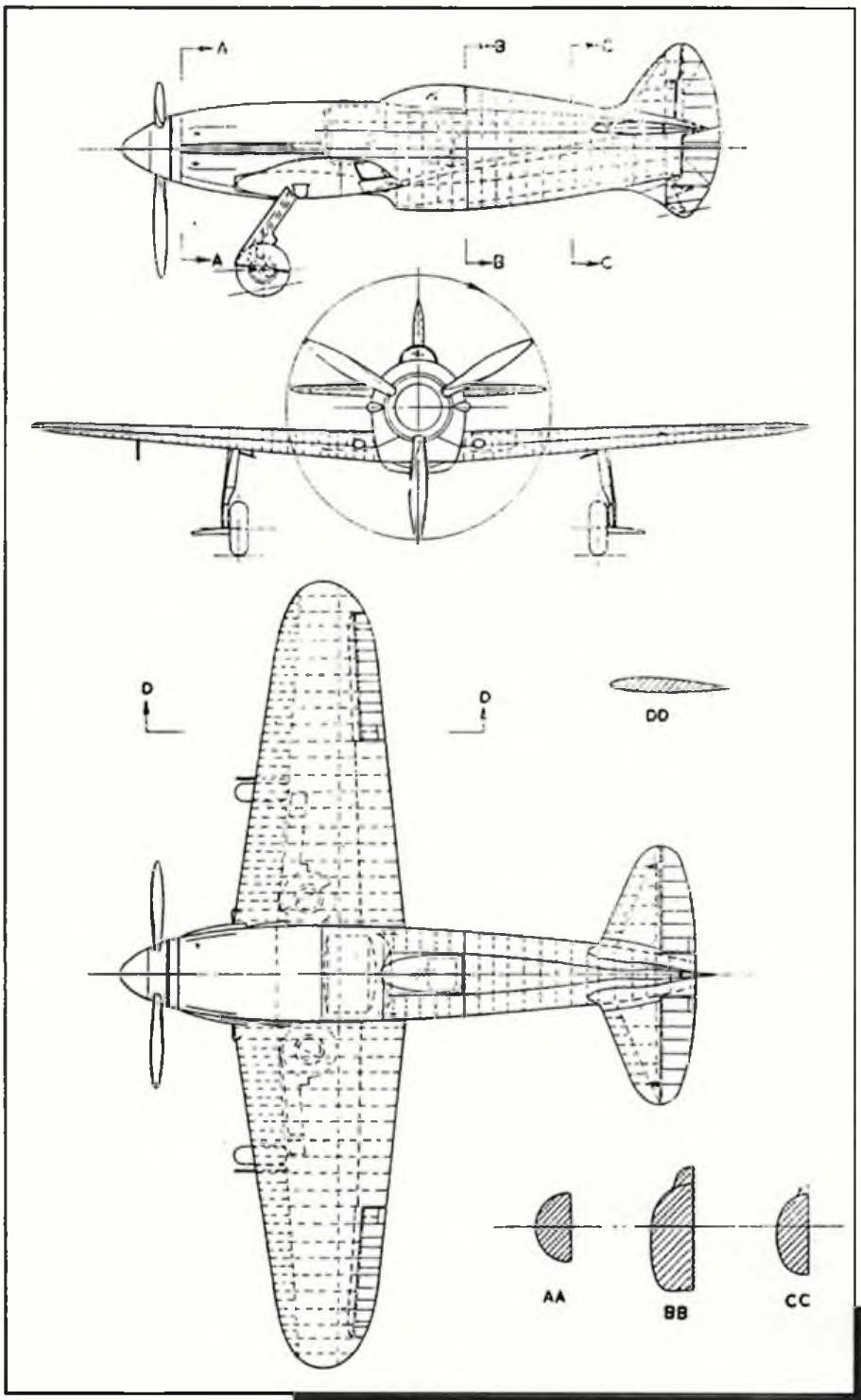
My model was actually based upon a T-shirt drawing and it was only thanks to George Whitfield of Reading that the correct details have been added. Something you may notice that I have missed in my prototype, though, are the cylinder head bulges just behind the spinner. The plan presented here has been considerably tidied up!

Cut two pairs of 1/8in fuselage sides, and locate the harder pair upside down on the plan with F2 and F3 glued into place. When dry, work along the sides adding F4, F5 and the two F6's at the tail end, as well as F1 (TEMP) at the nose, pulling in the sides with rubber bands. While waiting for the fuselage to dry, shape the wings from 1/4in sheet, and add the hardwood spars. Join the wings with a tape bandage at the centre and a tip dihedral of 3/4in. The tailplane and split elevator can also be assembled with tape or thread hinges. The fin consists of several parts, but along with the rudder it can be added last of all. The original had fabric covered rudder, elevator and ailerons, so you could hollow these out a little with a half round file or sandpaper to simulate the covering.

The second pair of fuselage sides can now be added along with the tailplane (Fig 2). When dry, remove from the plan and fit F1, checking that it is symmetrically on top of F1 TEMP. Follow that with F4A and F5A and tack the balsa block sections into place between F1 and F4A and F4A and F5. At this stage, the wings can be fitted and the lower blocks can be tacked on too. Roughly shape the fuselage with knife and razor plane, then cut the three blocks off and hollow them out with a chisel or gouge blade (Fig 3). Cut away F1 TEMP to clear the motor, and firmly cement the 1/8in ply motor mount into place, on the chin block and butting up against F2. I fitted my motor using an aluminium U-strap and self tapping screws, but other methods such as 16 swg wire loops and even plastic cable straps work well. The important thing here is to check that the prop and spinner fit neatly. Pack the motor with thin ply strip until it is central, and if you are still feeling keen, make a scale spinner and three-blade prop from three blades off 7 x 3 props, two ply discs and some balsa block, held together with an MFA prop driver and some epoxy. You can quickly shape the spinner with a sanding block under power. Don't worry if you simply cannot face this idea. A cut back 2in plastic spinner and two-blade prop will look just as good in the air. Add the remaining items - 14 swg U/C legs held in place by plastic saddle clamps, 18 swg. line guide bandaged to one wing tip, the tip weight bandaged onto the other tip, not forgetting fin and under fin, as well as headrest and other block fairings. Fix a plastic bellcrank to the bottom of the mainspar, with an 18 swg push rod running through the air scoop directly to the elevator horn. Don't worry if there are gaps between parts; the tissue covering will hide lots of problems.

Finishing

The original aircraft was finished with eighteen coats of aluminium cellulose, hand rubbed between each coat. A simpler (and lighter!) alternative for this model is to tissue cover in strips using dope, or better still, banana oil, as adhesive. Give the whole model a couple of coats of clear dope, fill any gaps, and lightly rub down with 360 wet-and-dry paper. Then another thinned coat of dope and a light spray over with silver aerosol spray paint will complete the base finish at very little weight compared with brushed-on silver dope. The wheel hubs and spinner can be finished in Humbrol 'polished aluminium'



paint with 'polished steel' on prop and undercarriage well. The little winglets on the fairings were part of the undercarriage doors. The cockpit canopy can be moulded, or you may use part of a bigger, commercial bubble canopy. Letters in dark blue can be painted on directly, or cut out of trim film and stuck on. Those on the fuselage should be 3/4in high and those on the wings are two inches tall.

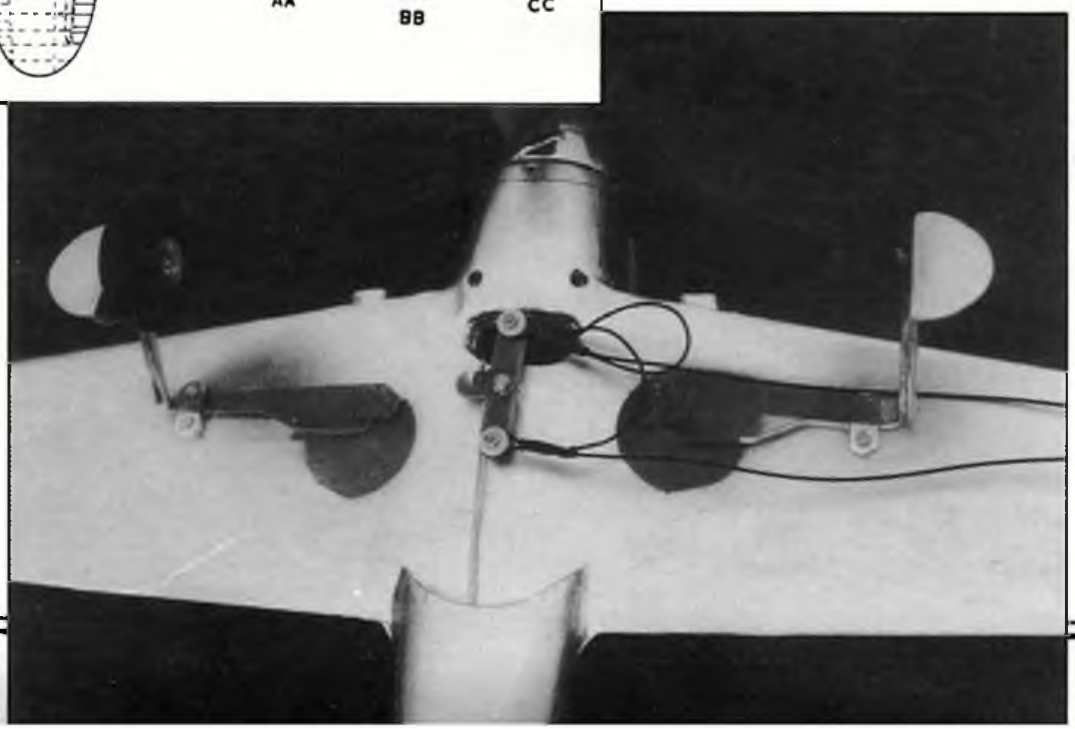
Motors, lines and batteries

So much has been written on Electric motors for free flight, cars and boats, that I will just suggest a couple of tested combinations. A Hummingbird 20 motor should turn a two-blade 6 x 3 prop at 18000 rpm+ on 12 volts and 12 amps. Now, add a volt per amp to compensate for a pair of 40ft lines, or six volts for 20ft lines, and you end up needing about 24 volts at the handle. That can be supplied from a pair of dryfit 12 volt batteries, or three seven-cell NiCad packs, or equivalent.

As an alternative, a higher voltage but otherwise similar motor intended for boats such as the Kondor will turn the same prop at the same rpm, but at a higher voltage and lower current, 20 volts and seven amps in this case. Since the lines will now lose less volts, you don't need a lot of extra cells, and you will get a longer flight time.

Control at the handle can be as simple as a 20 amp microswitch under your thumb, or in the battery line and operated by your free hand. At the model end, I used loops in the lines over 'buttons' on the bellcrank. The connection tags then just push onto the motor wires. There are lots of other possibilities that could be used here, such as conventional leadout wires with push-on tags. Any tag under line tension, needless to say, should be drilled for a safety wire pin. They should also be soldered on for safety. The recommended lines are 19 x .16 PTFE covered flex from Electronics suppliers such as: Electromail, P.O. Box 33, Corby, Northants NN17 9EL. A pair of these lines should take a 40lb pull test, and due to the stranding, they should last a lot longer that steel. Enamelled solid copper lines of 22 swg will do if you use a big storage reel, but avoid too many line twists, as they are not as 'slippery' as the PTFE wires, and will wear out or kink eventually.

Now switch on and whizz around!



Heston Racer three-view, above, appeared in the August 1943 issue of this magazine. Interesting news is that Skysport Engineering are considering the possibility of making a full-size replica for a crack at the World Piston engined Air Speed Record... Right: Simple wiring at the bellcrank is fully detailed on plan.

BUILD FROM OUR FULL SIZE PLANS!

DOOFA

This'll Doofa now! Try Dave Hughes' three-foot lightweight glider for Vintage fun

DOOFA is a lightweight tow-launch glider, of low aspect-ratio, designed primarily for those all-but-calm summer evenings which seemed to abound in the late 1940s. It weighed just 2.1/2 ounces and utilised the special LDC 2 section, produced by the LSARA (Low Speed Aerodynamics Research Association) mentioned recently in the Readers' Letters page.

Well, something like that section, anyway, as I cannot recall having used any ordinates, so it was probably 'eyeballed' – and, in 1947, no doubt distorted via the 'pin-prick through onto balsa' technique. But it certainly seemed to work well – and still does!

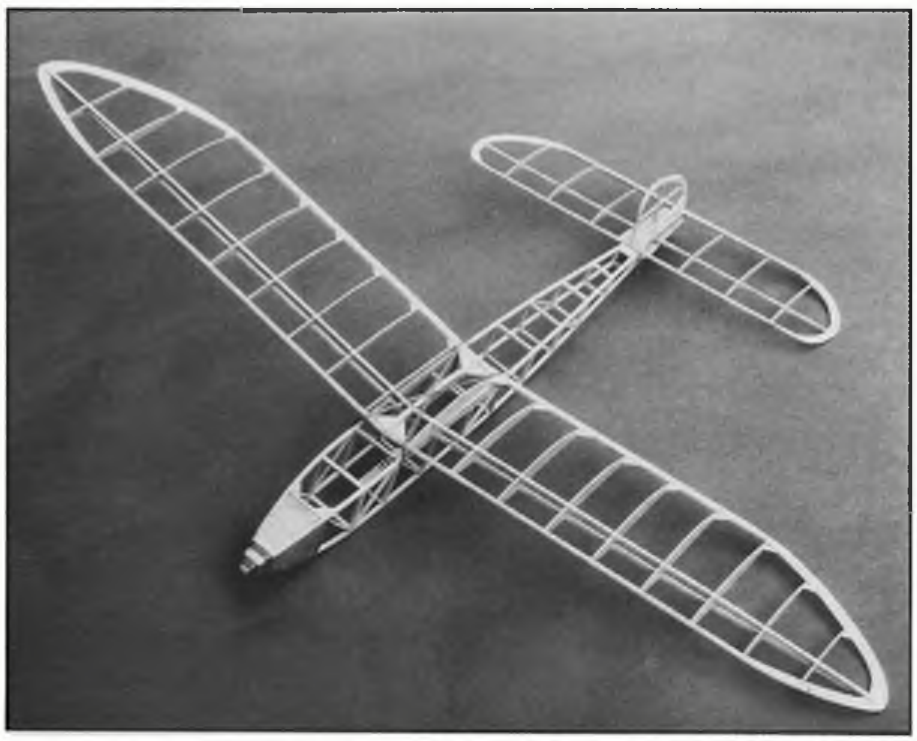
Years later I was told by some technical type that the LDC 2 section only works for streamlined fuselages. I spent the next few weekends trying to get my Doofa VII to fall out of the air, once this knowledge had been imparted. But it would not.

Drawn, built and flown one Saturday in June, the model seemed promising from the start – though admittedly, the 'flown' part that Saturday was just a hand-launch from the sand-dunes bordering the Royal Liverpool golf course at Hoylake, in the gathering dusk...

For later, tow-launched flights, we moved onto the beach at West Kirby, which afforded something like three square miles of flat firm sand, when the tide was out. The only problem for most of us was that wingtips became 'sandpapered'. Doofa had to go one better than this, however, and wandered away, to land a few inches from the incoming tide. By the time we reached it, the tissue had become very soggy, the model having been trying to emulate a surf-board.

About this time, the Merseyside club obtained the use of RAF Sealand (near Chester) and during the next couple of years I managed to lose three Doofas OOS and burn a fourth. Yes, I said burn. It sat on its own D/T fuse. In view of losing the other models I decided to fit one of these, you see. But not your conventional tip-up tail arrangement. I thought I'd try the swinging-weight type – which I suppose I must have seen in Gadget Review.

The system required a small weight to be secured beneath the fuselage, at the CG, by an elastic band, through which the fuse was fitted. From the weight, a length of cotton ran to the wingtip. When the fuse burned through the band; presto! – the weight swung from the wingtip and the model gently



Simple, traditional construction means you can't go wrong. Note TE gussets for strength.

spiralled downwards. When the weight reached the ground (am I beginning to sound Hoffnungish?) the tension in the cotton was released and the model flattened out for landing.

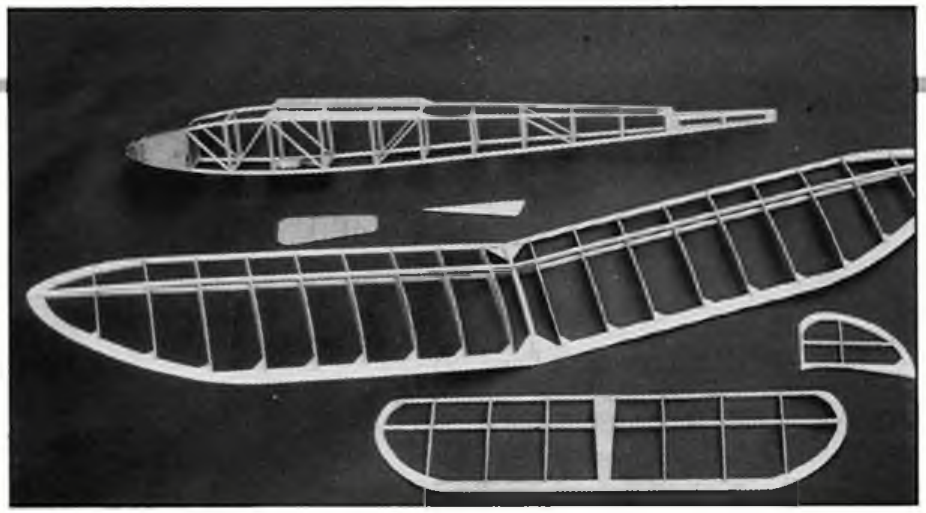
This worked quite well a number of times, though the model usually finished up inverted in the grass in a somewhat inelegant fashion. However, the time I'm telling you about, I think the fuse/band/weight assembly must have been moved back on the previous arrival, sliding beyond the piece of mica which was supposed to protect the fins from the fuse, as it were. The flight was a short one – due probably to a poor launch – and, on walking leisurely towards the grounded Doofa, smoke was observed. We broke into a run across the airfield but, by the time the crash crew had done their work, all that was left of Doofa V was the proverbial 'two wingtips and a pile of cigar ash'.

Do a Doofa!

This is an ultra-simple model structurally, and all the relevant details appear on the plan. Use light grade 'soft' balsa for all ribs and tips, but longerons should be of fairly hard stock, as should uprights and spacers.

On the wings and tailplane of my 1988 replica, I used some white Jap tissue which I bought at Sweeten's of Blackpool back in 1943. (Yes – I'm a hoarder!). I didn't know, after all this time, if it would still shrink when water and dope were applied. It did. It just went a bit patchy, some parts of the wing being less translucent than others. For the fuselage I used some lightweight Modelspan. (I ran out of coloured Jap about twenty years ago).

As the tailplane is a pretty light structure, I never used dope on it. Nor even water-shrinking. I preferred a few wrinkles to the sort of thing dope might have done. However, if you want to experiment... another tailplane is easily built.



All the bits! Plenty of time to build a Doofa for Vintage Weekend...

Flying fun

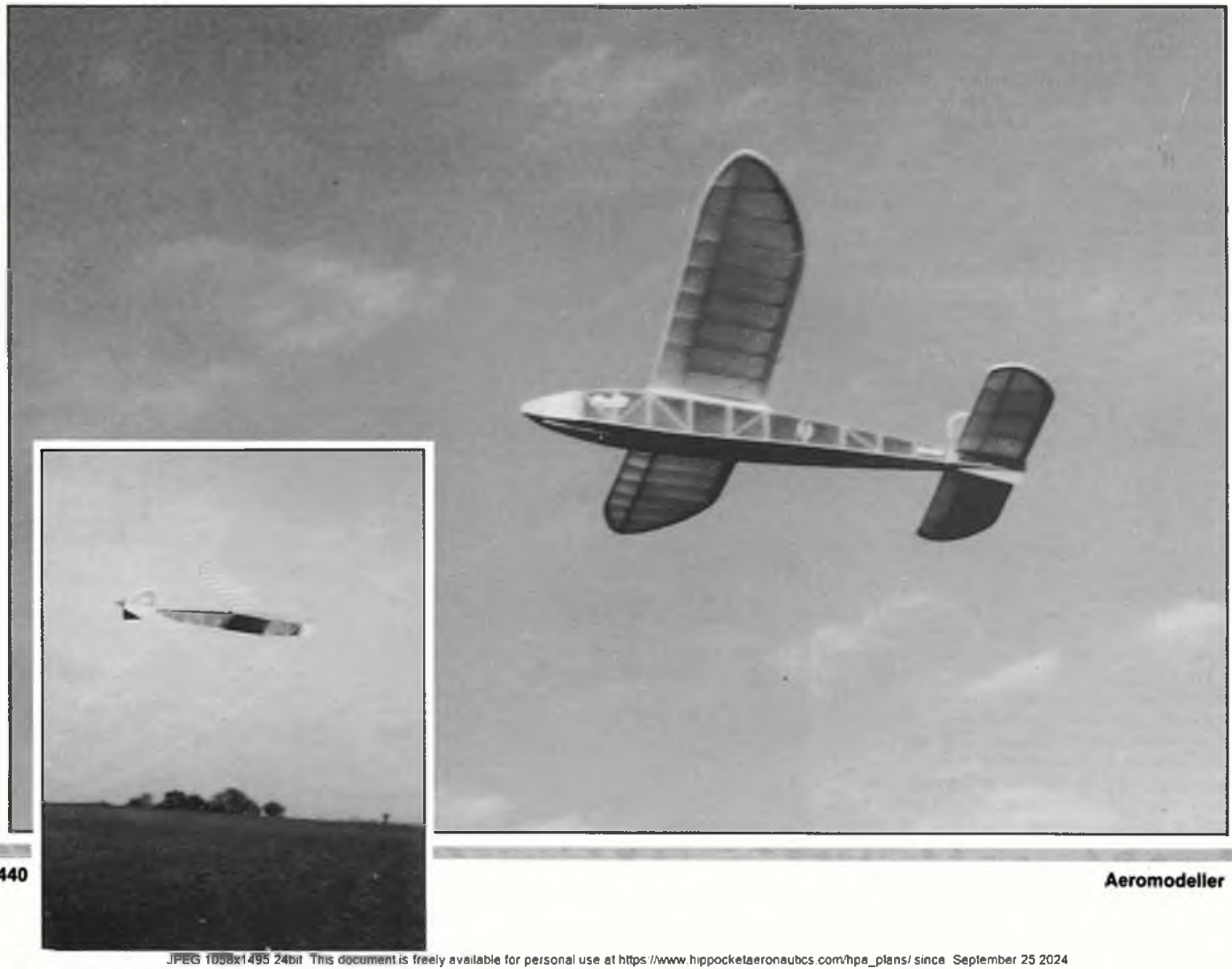
Use the lightest line available. I used to use cotton thread, before everyone started using nylon monofilament. It had the advantage of providing a 'weak link' – if you towed too enthusiastically, or tried flying Doofa in too strong a breeze, the cotton broke before anything else. Today's 'cotton' all seems to be polyester, however, and is probably just as strong as nylon – but with more drag!

Test-fly Doofa on a calm day. After a few shoulder-height hand launches, and adding or subtracting small amounts of nose weight for optimum glide angle, a towline launch can be tried. Unless there is absolutely no wind, there should be no need to run. Just a steady walk. If there is any amount of wind – be careful – it may be necessary to ease the tension by actually walking towards the model.

I used to trim my Doofas to 'wander' rather than circle (perhaps that's why I lost 'em!) but if circling flight pattern is what's required, then a wing-tab works better than offsetting the fin. (This should be angled 'up' on the wing inside the turn).

With the model balanced as shown, trimming for pitch adjustments – if necessary – can be made with 1/32in packing under leading or trailing edge of the tailplane as appropriate.

I often used to self-launch the Doofa, when there was just a whiff of wind drift, suspending the model from a foot or so of towline, and then 'kiting' it up, paying out the line from the hand-winch as I walked along. Backwards. You'll probably find you can't walk too fast backwards...



In its natural element – Doofa flies stably, and likes lift. Don't forget your name and address – or dethermaliser!

READERS' LETTERS

The rhythm method

Dear Sir,
I was delighted to read Claus Maikis's video analysis of a square loop in May's From The Handle *- not only because it's something I'd have tried myself if I had a video camera, but because I've just begun to think seriously about the whole matter of timing in C/L aerobatics. After many years of flying Stunt models for sport, practising loops and bunts and occasionally scaring myself with a shaky attempt at an hourglass, I have at last built a model with what I believe to be a contest standard of aerobatic performance, and have started to practise the FAI schedule.*

I am of course, finding it pretty difficult. It's one thing to fly a square loop that looks reasonably square, and quite another to fly two in succession with accurate superimposition and pullouts at a consistent five feet (to achieve which incidentally, I use a six-inch orange disc on a five-foot cane, stuck in the ground outside the downwind side of the circle - and I'm afraid that a true *five-foot pull-out seems very low indeed!). The main trouble is that the brain simply cannot work fast enough to enable the flier to time his pull-out by reference to the ground, or (as in my case) by reference to some other mark! I'm sure most fliers have lost their horizon at some time or another, perhaps during a Combat bout, and have seen the ground coming up just in time to slam on full handle and pull out with inches to spare. The violent over-control that seems inevitable in such a manoeuvre is, of course, quite useless in aerobatics. I am convinced that the way in which successful stunt flyers perform good 'squares' is to ignore the ground altogether, relying instead on predetermined handle movements whose rhythm has been absorbed into the mind during practice.*

When learning the square bunts, I first established the size of manoeuvre I wanted, by starting at well over 45 degrees before the first vertical dive and leaving the second corner ('Coffin Corner', as the Americans say) as late as I dared - usually about twelve feet off the ground. I flew the manoeuvre at this height until I had the rhythm of it well implanted in my brain, and then began to lower the entry height towards the correct line angle - all the time ignoring the ground and relying solely on the rhythm, remembering the way it slowed for the second bunt and noting how a corner pulled too tightly would slow the model and upset the timing of the whole bunt, so that rhythm and touch had to be made to go together in exactly the same way as with the more complicated pieces of Ragtime guitar music I sometimes attempt to learn. I'm certainly not averse to thinking of model flying as a sport, but I think there's a very good case for calling control-line aerobatics an art. Didn't I once read a comment of Gerard Billon's 'balletic' flying style? Of course, that referred to the man rather than the model, but perhaps the two are not unrelated: I do seem to find myself 'choreographing' my movements, especially for those manoeuvres that take up a lot of sky.

I think that this business of rhythm - at which the human brain is extraordinarily good, with the exception of a few jazz drummers of my acquaintance - must be the key to success in many sports. Time and time again in the literature of motor racing, one reads of drivers stating that during a race in which they did particularly well, they had 'settled into a rhythm' which seemed to shave tenths of a second off their passage through each corner and turn each lap into a smooth, flowing succession of movements - braking, cornering, gear-changing all blending effortlessly together. That is certainly what I have in mind as the ideal way to fly C/L aerobatics, the mind moving always ahead of the model and knowing, through practice, when and in precisely what manner to move the handle. Once fully experienced in the schedule, I would expect to have to use the ground as a reference only on the entry to a particular manoeuvre: it seems to me that, like the old Zen archers who could plant their arrows in the Gold even when it was too dark to see the target, a flier who pays attention to the feel of a manoeuvre, and flies by reference to that, will always do better than one who tries to use the ground as a reference and relies on his reflexes to time his pull-outs. If he does that, he is effectively flying each manoeuvre for the first time and might just as well save the cost of all that fuel he burns up in practice sessions.

I freely admit that I don't really know whether the above has any sort of truth to it. I may be off the beam, and only experience will tell me whether the approach I have outlined will deliver the goods. Still, I offer it as worthy of thought, and even if all it brings is a stern refutation from someone who really does know what he is talking about, I shall (with any luck) learn something from that...
Farnham, Surrey ***John L Park***

Buy or borrow!

Dear Sir,
Not so long ago Proxy flying was allowed in the World F/F Championships and nobody seemed to mind much that the chap flying the model might not have built it as well, or as badly, as the person who did build it. Equally, the builder might be better, or worse, at managing the model than the proxy.

I used to compete in car Trials - the sort with elaborate, mud-plugging specials. Some built their own; some were built by others. At the end of the day it didn't show in the results.

I can't really take exception to abandoning the Builder of the Model rule - and I can see a positive advantage for those who want to go to an overseas International to fly, for example, F1B and in order to get an extra day's fun on that trip, buy or borrow a couple of superannuated F1As.

However, as Dave Hipperson points out, building one-off competition models for other modellers is unlikely ever to become a viable business; and if anyone did get round to mass-producing something worthwhile, then everyone would modify it like mad to gain a complete advantage.

To change the subject slightly, I loved John White's suggestion of having the flyoff before the contest, but I can't for the moment imagine any serious competitor regarding the contest as anything other than settled once the flyoff had taken place...
Cirencester, Glos. ***Mark Croome***

'My doctor didn't want me to take up aeromodelling again!'

First-class Fireball

Dear Sir,
I have just realised that it is fifteen years since, with Ron Moulton, I dreamed up the idea of the Fireball Trophy for Vintage control line. At the time the Vintage free-flight scene was progressing well, but it seemed to me that C/L was being neglected, so I produced the Trophy and Ron suggested the very appropriate name.

As I had donated the Trophy it seemed reasonable for me to suggest how the event should be run. A very relaxed approach seemed suitable - and this is exactly what we did. For the first few years, the judges (usually Peter Wright and myself) wandered among the models awarding marks, and giving the Trophy to the model that we thought best captured the feel of Vintage control line. As the seasons passed and the number of models increased we found it necessary to select potential winners and ask them to fly for us. This worked very well - and produced some really first-class models. Competitors soon realised that, to win, a determined effort was needed; and now the Fireball Trophy is responsible for probably the most authentic models and motors at Old Warden! Of course, C/L offers a vast choice of interesting designs (with many not yet recreated) and the 'period' engines can be used safely.

Last year an unprecedented number of models was on show. In the face of deteriorating weather your editor and myself were faced with an almost impossible task; but, yet again, I have no doubt that the best model won. But what does the Vintage C/L flier want from this, the most prestigious event of its type? The limit of my own ability is strolling around with a modeller whose views I respect and sorting out marks - and here I say 'thank you' to Peter, Ron, Andy and Geoff for their help in the past.

We can drift along as we are, or get it sorted out with a group of judges who are prepared to devote a day to it. I have no strong feelings either way, although gentle canvassing has revealed that modellers seem to like it as it is. So speak up if you want to get involved...
Twickenham, Middx. ***Mike Beach***

(At this year's Vintage Weekend the Fireball Trophy will be judged under the chairmanship of an invited guest. We would love to hear from C/L enthusiasts prepared to devote time and add their weight to the enjoyment of this event. GC).

MOTOR MART

A new diesel; do-it-yourself; and smallest-ever? We investigate...

IT IS interesting to reflect on the renewed energy in the diesel market place. Not so long ago the small-diesel user was faced with a gradually dwindling selection of types, while the modeller who wished for a choice of diesels of greater than 3cc discovered that, with a few notable exceptions, the old story that large diesels were fierce, heavy and difficult to handle had stifled development. Apart from the worthy PAW 19D of 3.1cc, which has been in continuous production since 1960, availability of large diesels has been a patchy business in an increasingly glow-orientated world.

Nevertheless, thanks largely to the growth of interest in Vintage flying, there has been something of a renaissance in this type of motor, where the ability to swing a large propellor at low revs, with plenty of torque, is more appropriate than a screamingly high output. Diesel conversion kits for glow engines began to appear in the US about ten years ago, and this spurred on several enthusiasts to try their own modifications to large glows - with varying degrees of success according to the skill of the machinist! Other individuals chose to build completely from scratch, either from existing drawings (the Sparey 5cc longstroke being an obvious favourite) or by creating their own designs, often based on the Mills sideport layout. Faced with an obvious demand, it was not long before the commercial world began to respond, and in recent months we have seen the limited-production Burford 3.5 and the freely-available PAW 29 and 35. Experience with motors such as these has done much to exorcise the spectre of poor handling and bad manners, and a steady growth in new diesels, available over-the-counter is anticipated.

Thanks to the efforts of Barry Shaw we can bring news of the latest to arrive, the 3.5cc Merco 29 diesel. As the photograph shows, this is essentially the familiar Merco 29 glow, modified to diesel configuration by means of a new piston, and cylinder head, contra-piston and compression screw assembly. The Merco diesel is normally available with R/C throttle assembly, but the Stunt .61 venturi is an exact fit, which makes for easy conversion. Thanks to the relatively small venturi, fuel draw is excellent and handling of the non-R/C version remains excellent.

Merco engines have always been favoured candidates for home-workshop diesel conversions. Conceived by Dennis Allen and Ron Checksfield in the mid-fifties in response to demands for a home-produced product for C/L stunt to compete with American and Japanese 35s, the Merco 35 and its smaller brother, the 29 (both based on the same casting and with many components in common) have long enjoyed a reputation for strength and reliability, even though the fashion in stunt - or Aerobatics, as the class has become known - has steadily moved towards the larger model, .40 to .60 equipped; and both motors have enjoyed steady popularity. Much the same could be said of the larger Merco 49 and 61 glows, still popular for C/L work although their original field of work, R/C Aerobatics, has long been dominated by tuned-pipe, Schneurle-ported glows of ever-increasing output.

Nevertheless, the Merco glow provides a sturdy base for conversion. Our example has performed quite happily on initial tests, turning a 12 x 6 Tornado nylon with ease while running-in. Handling characteristics are excellent with no tendency for the engine to snap over one compression on starting (a failing of many an early diesel). Large diesels demand well-fitting internals, but there is a conflict of demands. Too loose a piston/liner fit and compression will be lacking; too tight and starting will be impaired, and the motor will run hot. Internal friction, caused by poorly-matched tolerances will have the same effect; this, of course, was the cause of the bad reputation generated by many early large diesels. The Merco does not suffer in this respect. Fits are excellent, giving a well-mannered engine which is relatively insensitive to fuel tank position - in other words, a motor which can be expected to give a long useful working life. A similar variant of the 35 will be forthcoming. Price of the 29 is to be announced. Merco engines are produced by Forest Engineering.

New Merco 29 diesel from Forest Engineering is available for R/C form but the 61 Stunt venturi fits, as shown here.

Compact, robust layout of the Merco glow engine lends itself happily to diesel conversion. 35 diesel also available.

AM 25 revived

The Allen-Mercury, or AM, series of diesels was designed by Dennis Allen in the 1950s, enjoying particular success in the C/L and sport F/F arenas. After a spell out of production, the smaller duo of green-headed '10' and blue-headed '15' (1 and 1.5cc respectively) returned to production from Forest Engineering about six years ago, and their availability is currently listed by Michaels Models and Addlestone Models in this magazine. Now the 25 rejoins the ranks. This black-headed 2.5cc diesel of conventional layout remains unchanged from its earlier form, apart from the provision of a silencer as a standard fitting.

The engine enthusiast will know that very early 25s incorporated a flanged liner screwed directly to the crankcase via four short bolts, the cylinder jacket screwing onto the liner, but this was soon replaced by the now-familiar arrangement of clamping the liner by means of four bolts through the jacket. Of course, the currently available 25 follows the later format. All AMs seem to run fairly hot, and our 25 was no exception, but handling was excellent, with no tendency for the contra-piston to stick in the bore at higher revs. The 'new' 25 is priced at £32.95.

Convert your own...

The subject of 'do-it-yourself' diesel-from-glow conversions prompts us to mention Barry Shaw's own experiments with an OS 40FP. The standard cylinder head is replaced by a substantial unit incorporating multiple fins and a chamber to accept an aluminium contra-piston which is grooved for a synthetic rubber O-ring. The compression screw is fitted with a locking bar.

This simple conversion works very well. Indeed, Barry was surprised when the engine first burst into life after just a couple of flicks! Of course, use of an O-ring to provide adequate compression seal is not a new idea. Its first commercial use was on the McCoy .049 diesel of the mid-fifties. The advantage in manufacture is that machining of the contra-piston to high tolerances is unnecessary; in return, it must be said that conventional diesel 'feel' is lacking, and the O-ring itself will need replacement at intervals. Having said that, Barry's OS 40PF seems perfectly happy with its new form of ignition, turning a 13x6 powerfully with no distress. And, of course, the motor can be converted back to glow in just a minute or two.

T Wasp — smallest in the world

Our Hangar doors mention of the T Wasp 010 (May issue) resulted in a letter from Giovanni Ceccarelli, the builder of this engine, who points out that far from being inspired by the Cox TD .010 of 0.16cc - his motor has its very own individuality, as follows:

'From the photograph you will see that my engine does not resemble the Cox TD .010 at all. The displacement is exactly 0.098cc, whereas the Cox is .010 cu in, or 0.163cc, and therefore much bigger.

'The crankcase is cast, not built from aluminium alloy as is the Cox. Also, the weight of my engine is much less at nine grams bare weight. Complete with prop, tank and screws it weighs in at thirteen grams.

'I am pleased to tell you that it has already been nominated for inclusion in the Guinness Book of Records as the smallest glow engine ever built.'

We are happy to set the record straight. At the time of writing we had not seen the engine itself; the superficial resemblence to the Cox motor was reinforced by the designation '010'; and it had escaped our notice that, in the case of the Wasp, this referrred to 'cc', not 'cu.in'. More details include the fact that the prop blank dimensions supplied with the engine indicate a diameter of just over 70mm, or 2.3/4in. Over 22,000 rpm is quoted, on a '30 per cent nitro' brew.

Michaels Models receive occasional supplies of this engine; we understand that a specimen is always on hand there for inspection. Other prototypes - and we stress that word - are of mouthwatering 0.20 in-line and horizontally-opposed twins...

Left and top: Barry Shaw's diesel home-conversion of the OS Max 40FP. Simple chamber in head accepts alloy contra-piston and O-ring. R/C throttle is fixed in fully-open position when motor runs as diesel.

Left: AM 25, back in production, is familiar to modellers from the 'fifties and 'sixties. Silencer fits particularly neatly as shown; may also be rotated through 60 and 120 degrees.

Right: Small-glow duo. Well-known Cox .010 (0.16cc) faces the even smaller T Wasp of 0.098cc.

The Sunshine

Superb weather at Barkston Heath made this a Nats to remember

Top: Wakefield winner Peter King, just prior to the flyoff. Above: All we could catch of busy Jonathan Walker, top in Hand Launch Glider. Right: John Carter was victorious in F1A.

SUPERB! That was the verdict after a F/F Nationals held in better conditions than most could remember for many a long year. What a difference a dash of sunshine makes! Instead of cowering behind caps in full wet-weather regalia, here was the chance to air those knees - the more adventurous (or youthful) baring ? torso too. Except in the Women's Cup, of course...

Drift throughout the weekend was low, and often variable in direction, necessitating occasional moves of Control to avoid models landing in the infamous missile compound. Lift was sometimes notable by its absence, especially at flyoff time, but was often very strong. Unhappily, sink could be equally powerful, and more than one model was unexpectedly spat out of an apparently promising thermal. On the whole, though, maxes were plentiful and flyoffs consequently large.

The new 'no attempt' rule - flights under ten seconds duration are now scored - meant sudden death to many a charge, and was the subject of much discussion... But let's take a closer look at the competitions.

Mini Day 27th May

As in recent years, control of the Mini events was in the hands of Gerry Le Vey and Martin Gregorie. Once more, progress was monitored (throughout the weekend) by computer print-out at varying intervals. Certainly, feeding scores into the computer is easy, and retrieval of data is quick, when required; but the traditional scoreboard carries the merit that all results are instantly on view, even if the precise order demands some calculation. However, it must be said that many contestants do prefer this.

First consideration had been the need to avoid a downwind field of rape seed, but the drift changed, bringing models down in the compound and forcing a move of Control. ????? favourite in Coupe d'Hiver was Ian Duvitt, who started with the intention of blasting straight through with his familiar 'left-handed' model. After three maxes the control change interrupted his flow and caused some rethinking. Nevertheless, he managed a full house, joining Dave Hipperson, Anthony Hall, Peter King, John Carter, George Sharp and Ray Elliot in the flyoff. Promptly away at 6:45 was Ball for a five-minutes-plus flight, but this was eclipsed by Sharp and Hipperson - the latter being the winner with a splendid effort of nearly nine minutes. Davitt, waiting downwind of the others, launched with just a couple of minutes left but was in poort air, and landed in just 91 seconds - his worst flight of the day.

There was consistent challenge in HLG, as merry an event as ever. Hectic efforts by Jonathan Walker paid off, giving him victory by just one second over Julian Tipper who arrived with a model built the previous day to replace his VIT model, which was proving difficult to trim after repairs to a damaged tail. Phil and Anthony Ball tried hard but couldn't quite match their usual consistency. Andy Crisp made his usual late-afternoon appearance and immediately set about the event as if it was a Scramble, but launching into a couple of holes curtailed his chace. This was a close competition, with a variety of flight patterns evident. But the best to win is still to choose your lift...

44 flew in **A/1 Glider**. Gordon Beal was early to show with four maxes by 2pm, but in close pursuit came John O'Donnell, Angus Tennant and Peter Tribe on three, a whole host chasing hard on two maxes. Eight eventually made the flyoff, but not without sacrifice! John Cuthbert's best model was in the trees. John Bailey was first away, circling for a while and plunging into clear lift. This immediately tempted most of the others. Steve Philpott had been at the 'model' end of the line; by the time he launched the lift had decayed and he was disappointed to be down in 94 seconds. Victory was John O'Donnell's. Throughout the contest he flew his Soft Centre foam-winged model, built in the mid-seventies; and he chose to go for broke with no D/T in the flyoff. Actually his timer set-up gave him little choice; result, aflight of nearly nine minutes and a lost model. The straight-tow craft was notably happy in the thermal, staying in lift when the others had fallen out. A fine win, but the model's loss is still mourned...

1/2A Power was a story of dropped flights, with just two exceptions. Tony Brown consistently close good air, his TD .049 powered Satellite (running on pressure and flood-off) punching its way heathily aloft with smooth transition; no VIT is fitted. Pete

Nationals

1989 BMFA Free Flight Nationals 27-29th May

Top: Wendy Dixon clinched the Women's Cup with an impressive thirteen-minute-plus flyoff. Above: Waiting for lift - Coupe winner Dave Hipperson crouches in the sunshine. Below: Tom Smith eyes the thermistor - soon the Super Nog will howl aloft on its way to Open Power Victory.

Harris offered from engine troubles but nevertheless managed a full house; but Messrs. Watson, Walker and Bryant all lost ground on one flight apiece. Pete Watson was particularly unlucky to fall just six seconds short. The flyoff duo set up camp well apart. Harris was first away, this model climbing apparently rather flat at first, but hanging on to lift very well for a time of just over four minutes. Brown's flight was an anti-climax by comparison. An unaccountably short motor run meant that he was back down in just 43 seconds, and the contest was over.

The 'on/off' CO_2 event was well appreciated, keenly contested and attracted the support of very many well-wishers. Sadly, a few of these had left their models at home thanks to the announcements that the contest would not take place. The removal of the sixth flight and the 'under 20 sec attempt' rule certainly opened up the contest and kept interact alive. Booming thermals were more of a hazard than an advantage. John O'Donnell had lost both models after only three flights and John Pool after five. Derek Richards came through the hazards with a Philpott-style model and must have been disappointed not to have his trophy presented at the official prize-giving (after having been told it would be). Peter Gibbons - again using large plastic Peck props - won one of the three bottles of wine he had donated but then promptly passed them on to Ken Attiwell and John Pool for running the event.

Open Day 28th May

Delightful weather continued on Sunday. **Open Rubber** attracted six more fliers than last year, and by the end of the day over half the sixty-three-strong field had qualified for the flyoff. Most of the craft listed were familiar; lift was plentiful and maxes reliably obtained. As on the previous day, by flyoff time conditions were relatively flat but those who flew late had the best of it. Eventual winner Mark Croome was clocked off at just over ten minutes, but late challenge came from Jonn O'Donnell who wound and launched with scarecely a pause between; the model climbed potently and looked well set, but unluckily for John it disappeared beind the hangars while still well up. Retrieval proved that it had eventually travelled further than Croome's model - but such is the name of the game...

An amazing forty-two qualified for the **Open Glider** flyoff. One who didn't make it was John Carter. One dropped flight of a minute was blamed on timer malfunction; it ran during towing and the model D/T'd far too early. John Cuthbert was first on the field to post a full house. It took him just 48 minutes. Especially noteworthy was the fact that he used a example of his Supernova glider; a fine advertisement for a worthy design (and proof of the amount of lift being generated at the airfield!). However, he reverted to his favourite flyoff model for the evening's entertainment! Steve Philpott chose his reliable tapered-tip model with which he took victory in F1A three years ago, changing to his best flyoff model and towing before everyone else well upwind. Conditions were flat, and Philpott waited until less than a minute remained before releasing for an excellent-in-the-circumstances 4:26. Just one small patch of weak lift went through. Cuthbert chose to go with this, but the model was down in 3:46 leaving Philpott with deserved victory. **Open Power** attracted a healthy three dozen participants including Tony Cordes, who is enjoying his transition from Glider activities. The father-and-sons Smith trio turned most heads on the field, their Super Nogs blaing to height most impressively; but both Tony and Geoff dropped their last flights leaving only father Tom in the flyoff. Pete Harris made a late start thanks to celebrating his 1/2A win the previous evening and quickly assembed a full house, troubles kept him ot of the flyoff... Luckiest story was probably Trevor Payne's; his D/T failed tooperate and his distinctive green-tipped model flew for over one hour 00S - but was returned. D/T failure also claimed Ian Granger's forty Satellite; after half-an-hour the model disappeared from view - and remained lost, complete with brand-new K&B 40. A baker's dozen made the flyoff. Smith's pull-out was very loopy but the model was well up. Dick King's model went over the vertical but rolled out, losing height in the process. Applause greeted Alan Jack's vertical climb and faultless bunt with his F1C craft, but the best of the air had kept Tom Smith ahead of King, Staines, Faux and Hopper, who were grouped close together over half-a-minute behind.

The eleven fliers in the **Frog Junior** event enjoyed their change to fly in such favourable conditions. Four qualified for the flyoff, including young Martin Gibbons who towed his Caprice most creditably. Regrettably, he smashed his model in the flyoff itself. It was always going to be a victory for rubber. Malcolm Dixon's poten Open Rubber model looked a good bet, as did Peter Martin's neat Harrier, a Stan Fairless design. Indeed, Dixon goit away to a very promising start, but Martin, flying away to the far side of the runway, chose the best air for a splendid time of 13:57. It was rewarding to watch Martin in action. Despite the guiding influence of his father Brian it was notable that young Peter was concentrating hard enough on the thermistor to choose his own moment to fly. A worthy win by any standards.

The **Women's Cup** attracted seven entries. Top trio for the flyoff were Ed Flynn, Jessia Nash (who was absolutely delighted to be there!) and Wendy Dixon. Flynn and Nash were away first, but the air was unhelpful and only reasonable 'still-air' times were achieved. Dixon waited profitably for marked lift, and lanuched just at the right moment. The model was clearly going places, and stayed in sight for an excellent flight of over thirteen minutes for a popular victory.

A variety of craft contested **Vintage**. Eight posted full scores, including Wiliam Beales who thus made his first-ever Nats flyoff. Rubber models have a great deal to do in order to beat Power craft, thanks to the latter's generous permitted motor run; and,

Nationals milestone for John O'Donnell – this was his 40th without a break! A proud record...

as in '88 Ewan Jones took full advantage - this time with a San de Hogan and OS.15, but the nine-minute flight took the model way beyond the airfield and it remained lost...

Vintage remains an odd mixture. Winning models, or even those with a fair chance, would still stand up well in Slow Open Power or Open Rubber, for example - thus lending a certain anachronism to the event. Vintage Gliders are a derivative not really catered for by the rules, and are certainly not favoured by participants, a trend just as notable at Vintage Rallies as National competition. But wouldn't it be superb to see a Thermalist or two...

And so to one of the most keenly contested Open days in recent memory. It had also been a time of smiles - in adversity and success alike. At times dozens of models had been airborne simultaneously, and stretches of runway became crowded. Nevertheless, accidents were few and line crosses and tangles rare.

Most fliers with full houses had accumulated their scores early in the day, so the afternoon became increasingly rally-like in the summer sun as modellers relaxed before the flyoffs, taking the opportunity to catch up on old friendships and new developments. All truly special - and inspirational. Just what competition aeromodelling needs. Refreshed palates means new projects... And participation was correspondingly healthy. The line of cars stretched along two sides of perimeter track bore witness to that. Carefully out of reach of the competition activity were small groups of sport modellers too, happy to indulge all day in Barkston's wide open spaces.

But how tense would competition be on the morrow? FAI events, run in rounds, demand an early start...

FAI Day: Monday

Report by John and June O'Donnell

Bank Holiday Monday was the third of three exceptional days at this year's Free-Flight Nationals. The programme for this final day laid heavy emphasis on the FAI events - although there were a number of other contests as well.

FAI was run to the same format as used for the past few years, with an early start, seven flights in half-hour rounds, and a comparatively early finish. As last year, Trevor Payne had the unenviable position of Contest Director - only too liable to be the most difficult job on the field! One very real difference on this occasion was the absence of a number of notable competitors otherwise engaging in representing Great Britain at the World Championships in the Argentine.

The timetable outlined above had some quite predictable consequences - the early rounds being all important for fairly obvious reasons. As it turned out, lift was sparse at first and overplentiful later - so the whole effect was somewhat exaggerated!

But this is getting ahead of the story.

Flying commenced with F1A (Glider) and started promptly at the scheduled time of 6am. The positioning of the launch line was not handled as well - as it was located too near the cars, and hence allowed insufficient room for glider towers. This problem was 'solved' by announcing that the flier should be 'on the line' - rather than the launcher. Though technically incorrect, this was probably a quicker answer than moving all the line markers.

Naturally the weather was rather cool - with a fair amount of breeze taking models well across the drome. Drift was still clear of the obstructions provided by hangar, control tower and camp site. First to tow and launch was Dave Bitchenor - although Gavin Manion produced the first max with a good zoom into weak lift at just five past six! This was not an isolated thermal (if the terms may be so used) as other fliers were able to demonstrate. All in all, there were fourteen maxes out of 55 scores in this first round.

Next in sequence was F1B (Rubber - or should we say 'Wakefield'?) and it was soon apparent that the weather was changing. Brighter conditions were offset by the wind freshening and varying in direction. First to launch was Mike Chilton who showed that the drift had swung noticably to the right - straight towards the camp site and, more importantly, the wood and crops beyond.

The flight in question was two seconds short of the three-minute max - but it was to prove a very good score in the most difficult round of the day. In fact there were only four maxes - the last being by Ron Pollard with a striking example of brinksmanship. Having wound early and waited for many minutes, he decided to run down the motor and fit another - with only minutes left to the end of the round. The model was barely in the air when the hooter sounded! Three minutes later the model was still visible as it flitted backwards and forwards across the only gap in the downwind tree-line!

Obviously a move was indicated, so a half-hour 'hold' was announced. This gave time for control and competitors to relocate themselves and their equipment. Since F1C (Power) was being allowed a late start, presumably due to noise considerations, flying resumed at 7.30 with the second Glider round. Although the wind had dropped, it was still cold - and thermal detection seemed more difficult than earlier. There was lift, but the patches were small - with odd models clearly well away, whilst others nearby were sinking fast! Protracted tows were tried with varying success. Both John Cuthbert and John Abbey towed for almost the whole round - with the former misjudging the movement for his worst flight of the weekend. In contrast John Abbey circled until literally the last minute - and then found real lift. Surprisingly the scoreboard showed that there were seventeen maxes in the round - although there were only four 'doubles'.

The following round (second Wakefield) saw the cloud cover starting to break up, and a couple of early launches showed that there was definite lift. Nevertheless it was 8.20 before a mass launch saw a majority of the 30-odd entrants record a comfortable max apiece.

Meanwhile there had been consternation at the CD's announcement that the initial power round would be from 8.30 to 8.45 - a mere fifteen minutes in duration. Whilst apparently intended to save some of the time lost by moving, the implications were not lost on the competitors! One obvious factor is the lack of time available for retaking an overrun. There were mutterings of official protests, but the CD reacted in time - and reinstated the original 30-minute round. The odd quarter-of-an-hour then came off the breakfast break.

Most F1C models have plenty of performance - but are hardly strong on consistency. This criticism was confirmed by the first round scores showing that only half of the fourteen entrants had managed to max. Much of the trouble lies in the fact that the models are far too sensitive to launch variations, with resultant off-pattern climbs and transitions. Perhaps it is part of the price of high-performance but it could certainly do with a cure! Breakfast (or, at least, the scheduled break) was followed by the second Power round. This went much better with only a couple of sub-max flights (plus two retirements).

By now, of course, the weather was becoming warm and sunny - and turning into yet another 'summer day'. Lift was to become plentiful, and easy to detect - and this is reflected in the scores. By afternoon, it was really quite a windy day - but a very pleasant one. Hence, even though maxes usually cleared the airfield, most competitors were happy enough to continue flying.

With lots of maxes being recorded, the times in the early morning rounds became all-important - as time lost could not be made up. On the other hand, it was all too easy to go wrong after a good

Keith Chamberlain releases his Performer for its winning Junior Kit flyoff.

Opposite page: Top left: Pete Harris was out of luck in Open Power but consoled himself with a tidy 1/2A win. Top right: Calum Sabey winds in the Frog Junior under Dad's watchful eye. Centre left: Neat geodetic-surfaced 1/2A by Robin Beckford gets away nicely. Centre right: Open Rubber runner-up John O'Donnell was clocked off behind the hangars in the flyoff but was actually airborne for longer than winner Mark Croome (who left before we could photograph him on Monday!). Bottom left: Martin Gibbons, joint first in Junior Kit Glider, with his Caprice. Bottom right: Super Supernova! John Cuthbert proved the worth of his new kit by clocking three Open Glider maxes with this one. Didn't use it for the flyoff, though...

Main picture: Nationals Power Champ Alan Jack sends his F1C craft skywards to an eventual third place in that event. Right: Frog Junior winner Peter Martin proudly holds his reliable model – actually a Stan Fairless design. Below left: Just back from downwind – Terry Dobson made the Open Rubber flyoff to finish 19th with a time of 5:25. Below right: Andy Crisp waits for lift in Slow Open Power. Model is a Russell Peers Woodpecker. Bottom: Chris Strachan fettles his Yankee IV in the SAM 35 Vintage 8oz Wakefield event; finished second but won 4oz with his '36 Copland.

Junior Nationals Champion Anthony Ball Rubber models again victorious in Tailless

Above: Ken Attiwell (left) and John Pool - first and second in Tailless. Note D/T flaps on the side of Ken's model.

Opposite page: Top left: Pete Watson steadies his model before launch in F1C. Dropped five seconds in last round but still did enough to win. Top right: Chris Strachan and Mike Kemp, winners of SAM 35 Vintage events. Note Mike's SAM 35 pullover! Centre left: Nats Power Champ Alan Jack fine tunes the Rossi. Centre right: Vintage winner Ewan Jones displays his trusty Mallard the day after the competition - his San de Hogan was lost in the flyoff... Bottom left: That man O'Donnell again, ably assisted by wife June, won A/1 with foam-wing Soft Centre design. Bottom centre: Glider Champ Steve Philpott dwarfed by his Open flyoff model. Bottom right: Anthony Ball, once again Junior Champ, waits to launch in Coupe d'Hiver.

start - and hence throw away ones chances. There were many 'tales of woe' to be heard as the day progressed and a few are worth recounting.

The wind had changed direction yet again - so the launch area was moved to compensate prior to the fourth glider round. This brought us back to where we had flown-off the evening before. Those with perfect scores in glider dwindled from four before breakfast to half that by the end of the day. Phil Owen was still towing in the fourth round when the hooter went, and he was unable to release before the sound ceased. The end of the hooter noise is taken as the finish of the round, and I gather that Phil was at the wrong part of a circle at the crucial moment. Gavin Manion came to grief the next (fifth) round with a very mediocre score that dropped him to an eventual and appropriate 13th place. There were others in trouble of course and scores that stopped with a max presumably indicate loss or damage. Pete Stewart and Dave Oldfield came into this category. The latter certainly put a model on top of a downwind hangar, where it resided until retrieved by the fire brigade! The close of the seventh round saw only two qualified to fly off - Steve Philpott and John Carter. The next four all had a 'short' first flight followed by six straight maxes. In order they were John Abbey, Chris Edge, Joe Flynn and John Bailey. Wakefield had been a thermal riding affair after the initial round with some mass launches precipitated by the brave (or foolish). Nevertheless only two out of the four who first maxed survived unscathed to the end. Brian Martin dropped his fifth flight badly enough to end up at fifth place; whilst his clubmate Ron Pollard fared even worse, and retired before the finish. This left Peter King and Mike Woodhouse with the only 'full houses'. Third spot went to Mike Chilton despite his doing worse in the fifth round than in the first. Last place on the list - fourth and hence just out of the prize list - was filled by Dave Greaves. Trouble of a different sort came to Dave Hipperson when he fell off his retrieving bicycle. His injuries were minor - but his next flight did not go well!

Power had seen Pete Watson, Ken Faux and Alan Jack all start with three maxes apiece, but only the Birmingham flier managed another in the fourth round. Amazingly, in the final round all the top fliers failed to max, for once due to poor air pure and simple. It did not change the outcome in the least, but it rather spoilt the look of the score sheet!

Indeed, the only max of the final round was managed by Fred Chilton, but it could not make up for earlier troubles. So those who started well finished up as one, two, three in the order already given. Ray King and Ray Moore occupied the next two positions, the latter effectively losing a flight when his engine cut on launch. Last year this would have been an 'attempt'; this time it put him out of contention.

The flyoffs were scheduled to be progressive, with those involved starting off with a flight to a four-minute max. Despite the sequence of the contest rounds, the rubber flyoff was held first with Peter King and Mike Woodhouse setting up their winding rigs just a few yards apart. Peter had suffered from his Woodhouse prop assembly unscrewing and 'complained' that 'service' was unavailable during the contest!!

Both participants were fully mechanised down to torque meters. Mike wound first, and could have launched into a tempting lull that occured just as he finished. When he did go, both the launch and the air were a little 'off', and his performance suffered in consequence. Peter had the benefits of Croydon club helpers (including Jack North to interpret the electronics) and waited that bit longer. He made an impressive launch and climb into equally impressive lift - and the result was never in doubt.

Both flew off 1/8in FAI rubber, although Woodhouse had used old Pirelli for the early morning rounds. For all but one flight he used the same model as flown during his recent 'Holiday on Ice'. The very obvious invigorators are positioned exactly as per Martyn Pressnell's advice.

The Glider flyoff followed after suitable short interval, and saw Steve Philpott and John Carter lined up remarkably close together. Risk of line tangles should have kept them further apart! Steve was first to tow, only to have his model veer to one side (against the glide turn) and refuse to pull round. The resultant tow-in crumpled a wing tip, and compelled Steve to resort to another model. This was still in his car, unassembled and unflown for 'years'. (He had already lost his 'thermal model' during the day).

Meanwhile Carter had towed up and released for a promising start. Steve wasted little time in following, and certainly found good air - only to discover that his model really was a little off-trim. It looked as if it was trying to dive all the time. The score was a disappointing 2:16. Steve and helpers all thought that John had found lift, and that the event was all over. Dejection went from disbelief to elation when it transpired that Carters' model had 'fallen out' and only recorded 2:12. Four seconds makes a world of difference. To be fair, John had his piece of luck with a flight of 180.08 seconds in the first round - a max but far too close for comfort.

The FAI events provided the last stage in determining the three Individual National Champions (in Rubber, Glider and Power). These are based on the results of the Mini, Open and FAI competitions in each category. The actual system for calculating the outcome is not specified in the SMAE rulebooks, but the Technical committee have traditionally used Plugge points (really percentage placing) to derive the winners.

This year's winners all did well in at least one event, with Steve Philpott excelling himself to make all three Glider flyoffs, and then going on to win two of them. The power title went to Alan Jack despite some low scores in 1/2A power. His FAI models netted him third place in F1C and seventh in open. The Rubber champion is Dave Hipperson with a win in Coupe d'Hiver and very modest placings in the other two events. The Junior National Champion (who could be up to 18 1/2 years old) provided a predictable winner with Anthony Ball well ahead. There had been other events progressing in the midst of all the FAI activity. Slow Power and Tailless were part of the official programme, and flown between 10am and 4pm without rounds or flight lines.

Slow Power was very well supported with over forty actual scores, six of which were trebles. Another eight managed two maxes out of three flights. Perhaps the relatively generous motor runs

1/2A: Hales Trophy (28 flew)

									Total
1	P. R. Harris	120	120	120	120	120	+	247	847
2	T. Brown	120	120	120	120	120	+	45	645
3	P. Watson	120	120	120	114	120			594
4	M. R. Walker	120	120	120	120	77			557
5	G. J. Bryant	120	60	120	120	120			540
6	M. C. Gregorie	84	120	95	120	120			539
7	G. Turnbull	120	120	120	92	81			533
8	P. Gibbons	120	120	120	99	72			531
9	A. Chilton	120	62	81	120	120			503
10	D. Cash	120	170	35	120	120			502

Coupe d'Hiver: HJN Trophy (46 flew)

									Total
1	D. Hipperson	120	120	120	120	120	+	538	1138
2	F. G. Sharp	120	120	120	120	120	+	385	985
3	A. Ball	120	120	120	120	120	+	339	939
4	R. L. Elliott	120	120	120	120	120	+	251	851
5	J. Carter	120	120	120	120	120	+	214	814
6	P. King	120	120	120	120	120	+	170	770
7	I. M. Davitt	120	120	120	120	120	+	91	691
8	T. Gray	120	120	120	120	111			591
9	D. Davitt	120	120	120	110	120			590
10	M. Chilton	108	120	120	120	120			588

A/1: British Airways Trophy (44 flew)

									Total
1	J. O'Donnell	120	120	120	120	120	+	531	1131
2	P. Tribe	120	120	120	120	120	+	375	975
3	G. Beal	120	120	120	120	120	+	354	954
4	J. Bailey	120	120	120	120	120	+	350	950
5	J. McCormick	120	120	120	120	120	+	235	835
6	J. Cuthbert	120	120	120	120	120	+	171	771
7	S. Philpott	120	120	120	120	120	+	94	694
8	G. Manion	120	120	120	120	120	+	57	657
9	C. Edge	120	120	120	108	120			588
10	D. Thomson	120	120	120	107	120			587

HLG: HLG Trophy (21 flew)

											Total
1	J. Walker	60	37	48	60	60	60	60	60	60	505
2	J. K. Tipper	60	55	60	53	60	60	60	36	60	504
3	J. Buskell	60	41	60	60	60	60	53	35	60	489
4	A. Ball	45	60	60	60	60	60	60	41	39	485
5	P. Ball	45	60	52	59	38	50	49	37	53	443
6	I. Gardner	34	48	60	46	41	31	60	60	60	440
7	E. Burge	28	30	34	46	60	41	60	60	60	419
9	A. Crisp	40	36	59	60	33	60	55	41	29	413
9	J. Oulds	60	57	60	60	32	29	23	34	47	402
10	I. Clark	46	60	51	48	60	39	24	33	40	401

CO_2: Sparklets Trophy (15 flew)

									Total
1	D. Richards	Walsall	2:00	2:00	2:00	2:00	2:00		10:00
2	P. Gibbons	Peterborough	0:57	2:00	2:00	2:00	1:33		8:30
3	J. Pool	NYFFG	2:00	1:00	0:04	2:00	2:00		8:04
4	D. Gibbons	Peterborough	2:00	1:40	0:21	2:00	0:08		6:09
5	B. Lever	Peterborough	0:38	2:00	0:10	2:00	1:16		6:04
6	J. O'Donnell	CM	2:00	2:00	2:00				6:00
7	J. Down	Bristol	2:00	1:33	2:00	0:13	0:06		5:52
8	T. Rushby	Cleemac	0:48	0:32	1:01	0:57	2:00		5:18
9	K. Bates	Cleemac	0:21	2:00	1:04	0:04	0:45		4:50
9	B. Waterland	Peterborough	0:06	2:00	2:00	0:33	0:11		4:50
11	S. Rose	Peterborough	2:00	1:29	0:12	0:09	0:42		4:32
12	P. Townsin Jnr	Peterborough	1:39	0:54	0:14	1:38	0:06		4:31
13	N. Townsin	Peterborough	2:00	0:06	0:07	0:06	2:00		4:19
14	Mrs. M. Clift		0:08	0:05	0:40	0:15	0:08		1:16
15	J. Noble	Whitefield	0:05	0:04	0:03	0:11	0:10		0:33

Open Rubber: Model Aircraft Trophy (63 flew)

							Total
1	M. Croome	3:00	3:00	3:00	+	10:04	19:04
2	J. O'Donnell	3:00	3:00	3:00	+	8:25	17:25
3	J. Walker	3:00	3:00	3:00	+	7:58	16:58
4	L. Auckland	3:00	3:00	3:00	+	7:13	16:13
5	F. G. Sharp	3:00	3:00	3:00	+	7:01	16:01
6	D. Davitt	3:00	3:00	3:00	+	6:50	15:50
7	W. Beales	3:00	3:00	3:00	+	6:33	15:33
8	A. Cliff	3:00	3:00	3:00	+	6:25	15:25
9	P. Ball	3:00	3:00	3:00	+	6:24	15:24
10	G. Ferer	3:00	3:00	3:00	+	6:20	15:20
11	D. J. Wain	3:00	3:00	3:00	+	6:19	15:19
12	M. A. Howick	3:00	3:00	3:00	+	6:16	15:16
13	D. Hipperson	3:00	3:00	3:00	+	6:10	15:10
14	D. A. Neil	3:00	3:00	3:00	+	6:02	10:02
15	N. S. C. Cox	3:00	3:00	3:00	+	5:55	14:55
16	D. Greaves	3:00	3:00	3:00	+	5:41	14:41
17	J. Carter	3:00	3:00	3:00	+	5:29	14:29
18	B. Horsley	3:00	3:00	3:00	+	5:27	14:27
19	T. Dobson	3:00	3:00	3:00	+	5:25	14:25
20	J. Anderson	3:00	3:00	3:00	+	4:55	13:55
21	A. Ball	3:00	3:00	3:00	+	4:36	13:36
22	N. G. Marcus	3:00	3:00	3:00	+	4:03	13:03
23	B. J. Jukes	3:00	3:00	3:00	+	4:00	13:00
24	R. Chilton	3:00	3:00	3:00	+	3:44	12:44
25	A. A. Parker	3:00	3:00	3:00	+	3:25	12:25
26	S. J. Dixon	3:00	3:00	3:00	+	3:20	12:20
27	I. R. Mcdonald	3:00	3:00	3:00	+	3:16	12:16
28	B. Platt	3:00	3:00	3:00	+	3:06	12:06
29	W. Dennis	3:00	3:00	3:00	+	2:59	11:59
30	B. Kenny	3:00	3:00	3:00	+	2:37	11:37
31	K. Cooper	3:00	3:00	3:00	+	2:25	11:25
32	J. Bailey	3:00	3:00	3:00	+	0:10	9:10
33	P. Carter	3:00	3:00	3:00	+	0.00	9:00

Sport models were also seen, like this Vintage-style craft for Mills 2.4 power.

Open Power: Sir John Shelley Trophy (37 flew)

							Total
1	T. W. Smith	3:00	3:00	3:00	+	5:54	14:54
2	R. King	3:00	3:00	3:00	+	5:18	14:18
3	R. Staines	3:00	3:00	3:00	+	5:09	14:09
4	K. Faux	3:00	3:00	3:00	+	5:06	14:06
5	J. Hopper	3:00	3:00	3:00	+	5:05	14:05
6	M. Lester	3:00	3:00	3:00	+	4:36	13:36
7	A. Jack	3:00	3:00	3:00	+	4:23	13:23
8	T. F. Payne	3:00	3:00	3:00	+	3:42	12:42
9	J. Sizer	3:00	3:00	3:00	+	3:04	12:04
10	L. A. King	3:00	3:00	3:00	+	3:00	12:00
11	E. Baxter Jones	3:00	3:00	3:00	+	2:29	11:29
12	A. S. Cordes	3:00	3:00	3:00	+	1:28	10:28
13	P. R. Harris	3:00	3:00	3:00	+	0.00	9:00
14	F. Chilton	3:00	3:00	2:55			8:55
15	A. T. Smith	3:00	3:00	2:34			8:34
16	P. Chapman	3:00	2:31	3:00			8:31
17	J. K. Smith	3:00	3:00	2:27			8:27
18	A. Chilton	3:00	2:21	3:00			8:21
19	G. J. Bryant	2:19	3:00	3:00			8:19
20	T. Brown	2:10	3:00	3:00			8:10
21	B. Scott	3:00	3:00	2:09			8:09
22	D. J. Wain	3:00	3:00	1:42			7:42
23	M. Parker	1:28	3:00	3:00			7:28
24	L. A. Rogers	1:11	3:00	3:00			7:11
25	D. Cash	3:00	3:00	0:46			6:46
26	A. Crisp	1:30	2:02	3:00			6:32
27	E. Needham	0:56	3:00	1:37			5:33
28	J. Ward	3:00	2:20				5:20
29	G. Blair	3:00					3:00
29	I. Granger	3:00					3:00
29	A. A. Parker	3:00					3:00

Open Glider: Thurston Cup (74 flew)

							Total
1	S. R. Philpott	3:00	3:00	3:00	+	4:26	13.26
2	J. Cuthbert	3:00	3:00	3:00	+	3:46	12:46
3	D. J. Oldfield	3:00	3:00	3:00	+	3:35	12:35
4	M. J. Woodhouse	3:00	3:00	3:00	+	3:10	12:10
5	M. Cook	3:00	3:00	3:00	+	2:53	11:53
6	P. Stewart	3:00	3:00	3:00	+	2:52	11:52
7	D. K. Bartle	3:00	3:00	3:00	+	2:50	11:50
8	J. Bailey	3:00	3:00	3:00	+	2:45	11:45
8	G. Manion	3:00	3:00	3:00	+	2:45	11:45
10	J. B. Abbey	3:00	3:00	3:00	+	2:38	11:38
10	W. Colledge	3:00	3:00	3:00	+	2:38	11:38
12	J. H. Foster	3:00	3:00	3:00	+	2:35	11:35
13	P. A. Owens	3:00	3:00	3:00	+	2:30	11:30
14	A. C. Gibbs	3:00	3:00	3:00	+	2:26	11:26
15	M. Scott	3:00	3:00	3:00	+	2:23	11:23
16	P. Chamberlain	3:00	3:00	3:00	+	2:20	11:21
17	P. Tribe	3:00	3:00	3:00	+	2:20	11:20
18	D. Allman	3:00	3:00	3:00	+	2:17	11:17
18	B. Nicholson	3:00	3:00	3:00	+	2:17	11:17
20	G. V. Lewis	3:00	3:00	3:00	+	2:15	11:16
21	M. J. Page	3:00	3:00	3:00	+	2:14	11:14
22	B. Parkinson	3:00	3:00	3:00	+	2:08	11:08
23	G. F. Archer	3:00	3:00	3:00	+	2:07	11:07
24	A. Ball	3:00	3:00	3:00	+	2:02	11:02
25	D. Campbell	3:00	3:00	3:00	+	2:00	11:00
26	K. Bates	3:00	3:00	3:00	+	1:59	10:59
26	A. Williams	3:00	3:00	3:00	+	1:59	10:59
28	I. M. Davitt	3:00	3:00	3:00	+	1:55	10:55
29	K. C. Reith	3:00	3:00	3:00	+	1:53	10:53
30	A. J. Tipper	3:00	3:00	3:00	+	1:45	10:45
31	D. Hearn	3:00	3:00	3:00	+	1:44	10:44
32	M. J. Brown	3:00	3:00	3:00	+	1:41	10:41
33	J. Williams	3:00	3:00	3:00	+	1:39	10:39
34	E. Drew	3:00	3:00	3:00	+	1:37	10:37
35	J. Green	3:00	3:00	3:00	+	1:30	10:30
36	K. Burt	3:00	3:00	3:00	+	1:26	10:26
37	S. Coy	3:00	3:00	3:00	+	1:20	10:20
38	R. Cherry	3:00	3:00	3:00	+	1:05	10:05
39	F/L J. McCormick	3:00	3:00	3:00	+	0:51	9:51
40	D. H. Thomson	3:00	3:00	3:00	+	0:49	9:49
41	D. Bird	3:00	3:00	3:00	+	0:44	9:44
42	A. Dean	3:00	3:00	3:00	+	0:00	9:00

Vintage: Jubilee Trophy (35 flew)

							Total
1	E. Baxter Jones	3:00	3:00	3:00		9:09	18:09
2	W. Beales	3:00	3:00	3:00		5:25	14:25
3	C. D. J. Strachan	3:00	3:00	3:00		5:20	14:20
4	D. Davitt	3:00	3:00	3:00		4:13	13:13
5	G. Blair	3:00	3:00	3:00		3:26	12:26
6	J. Carter	3:00	3:00	3:00		3:00	12:00
7	M. R. Kemp	3:00	3:00	3:00		2:44	11:44
8	M. Dixon	3:00	3:00	3:00		2:20	11:20
9	J. K. Tipper	3:00	3:00	2:24			8:24
10	K. Harrison	2:17	3:00	3:00			8:17
11	S. R. Philpott	3:00	2:07	3:00			8:07
12	R. J. Alban	3:00	2:05	3:00			8:05
13	A. Crisp	3:00	1:47	3:00			7:47
14	T. Rushby	3:00	1:46	3:00			7:46
15	P. McMahon	3:00	1:33	3:00			7:33
16	R. K. M. Gedge	3:00	2:35	1:49			7:24
17	T. Hall	2:05	2:16	3:00			7:21
18	S. Fielding	3:00	1:33	2:47			7:20
18	B. Horsley	3:00	1:54	2:26			7:20
20	J. A. Leitch	3:00	3:00	0:50			6:50

Nationals Champions
Power: Alan Jack
Glider: Steve Philpott
Rubber: Dave Hipperson

Frog Junior Trophy (11 flew)

							Total
1	P. Martin	3:00	3:00	3:00	+	13:57	22:57
2	M. Dixon	3:00	3:00	3:00	+	5:16	14:16
3	R. G. Dyer	3:00	3:00	3:00	+	0:40	9:40
4	M. Gibbons	3:00	3:00	3:00	+	0:00	9:00
5	P. Chamberlain	1:30	3:00	3:00			7:30
6	M. Francis	3:00	1:28	3:00			7:28
7	C. Sabey	1:01	3:00	3:00			7:01
8	A. Lever	3:00	3:00	0:37			6:37
9	G. D. L. Morgan	1:17	3:00	0:27			4:44
10	A. Ball	2:52					2:52
11	S. Freebrey	0:58	0:14	0:11			1:23

Women's Cup (7 flew)

							Total
1	W. Dixon	3:00	3:00	3:00	+	13:06	22:06
2	E. Flynn	3:00	3:00	3:00	+	3:43	12:43
3	J. Nash	3:00	3:00	3:00	+	2:46	11:46
4	Mrs. M. Clift	3:00	3:00	1:36			7:36
5	S. Coy	3:00	1:31	3:00			7:31
6	S. Freebrey	3:00	3:00	1:18			7:18
7	J. A. Francis	2:01	1:50	3:00			6:51

Tailless: Tailless Trophy

					Total
1	K. Attiwell	3:00	3:00	2:53	8:53
2	J.B. Pool	3:00	3:00	2:30	8:30
3	A Brocklehurst	3:00	3:00		6:00
4	T.I. Fairgrieve	1:03	1:09	0:47	2:59
5	A. Crisp	0:36	0:59	1:15	2:50
6	I.W. Kaynes	2:00	0:45		2:45
7	L. Auckland	0:38	0:57	0:38	2:13
8	M. Clift	0:33	0:30	1:00	2:03
9	C.D.J. Strachan	0:02	0:37	1:13	1:52
10	J.H. White	0:10	0:08	0:11	0:29

Slow Open Power: Falcons Trophy (41 flew)

							Total
1	J. H. Foster	3:00	3:00	3:00	+	6:39	15:39
2	A. I. Moorhouse	3:00	3:00	3:00	+	5:08	14:08
3	S. Fielding	3:00	3:00	3:00	+	3:34	12:34
4	T. Brown	3:00	3:00	3:00	+	2:38	11:38
5	P. R. Harris	3:00	3:00	3:00	+	2:28	11:28
6	F. A. Rushby	3:00	3:00	3:00			9:00
7	M. Lester	2:57	3:00	2:29			8:26
8	G. Blair	3:00	2:33	2:26			7:59
9	A. A. Parker	3:00	1:55	3:00			7:55
10	J. Burke	1:47	3:00	3:00			7:47
11	E. Redfern	1:48	3:00	2:48			7:36
12	W. Beales	1:50	3:00	2:39			7:29
13	D. J. Wain	3:00	1:09	3:00			7:09
14	I. Granger	1:50	2:10	3:00			7:00
14	B. L. Halford	2:35	2:16	2:09			7:00
16	G. J. Bryant	0:57	3:00	3:00			6:57
17	L. A. Rogers	1:35	3:00	2:15			6:50
18	E. Needham	3:00	1:49	2:00			6:49
18	P. Whitworth	2:09	1:40	3:00			6:49
20	R. Barley	2:32	3:00	1:11			6:43
20	D. Gibbons	1:09	2:34	3:00			6:43

F1A Glider: Ronytube Trophy (55 flew)

									Total
1	J. Carter	180	180	180	180	180	180	180	1260 + 136
1	S. R. Philpott	180	180	180	180	180	180	180	1260 + 132
3	J. B. Abbey	173	180	180	180	180	180	180	1253
4	C. Edge	157	180	180	180	180	180	180	1237
5	J. Flynn	153	180	180	180	180	180	180	1233
6	J. Bailey	142	180	180	180	180	180	180	1222
7	D. Allman	146	180	180	180	180	180	154	1200
8	J. Williams	155	157	180	162	180	180	180	1194
9	B. Parkinson	166	180	179	180	180	180	125	1190
9	R. Turford	180	134	180	180	180	180	156	1190
11	A. Ball	180	90	180	180	178	180	180	1168
11	J. Cuthbert	169	99	180	180	180	180	180	1168
13	G. Manion	180	180	180	180	81	180	180	1161
14	P. Chamberlain	177	100	158	180	180	180	180	1155
15	A. J. Tipper	127	180	180	94	107	180	180	1134
16	D. Hearn	138	180	180	180	180	180	180	1132
17	M. J. Brown	180	135	180	180	93	180	134	1128
18	J. Arnott	180	88	180	180	180	180	65	1122
19	A. C. Gibbs	152	147	180	180	180	180	180	1084
20	W. Colledge	120	180	180	180	53	180		1073

John Edlin's beautifully-finished soarer will be featured in detail soon.

F1B Wakefield: Boxall Memorial Trophy (33 flew)

									Total
1	P. King	180	180	180	180	180	180	180	1260 + 240
1	M. J. Woodhouse	180	180	180	180	180	180	180	1260 + 138
3	M. Chilton	178	180	180	180	143	180	180	1221
4	D. Greages	135	180	180	165	180	180	180	1200
5	B. G. Martin	180	180	180	180	104	180	180	1184
6	I. M. Davitt	137	180	180	180	175	180	144	1176
7	D. A. Neil	110	180	180	180	180	160	180	1170
8	B. W. C. Aslett	101	180	159	180	180	177	180	1157
9	D. Hipperson	172	180	180	180	180	69	180	1141
10	R. J. Cheesley	141	180	180	180	180	94	180	1135
11	G. Turnbull	124	180	158	180	118	180	180	1120
12	M. A. C. Evatt	134	180	86	149	180	180	180	1089
13	N. Lee	120	172	180	180	99	119	180	1050
14	D. Davitt	131	180	180	127	180	64	180	1042
15	P. McMahon	147	150	165	180	180	180		1002

F1C: FAI Power (14 flew)

									Total
1	P. Watson	180	180	180	180	180	180	175	1255
2	K. Faux	180	180	180	147	180	180	171	1218
3	A. Jack	180	180	180	100	180	180	150	1150
4	R. King	147	180	168	106	180	125	158	1064
5	L. R. Moore	180	180	180	4	180	180	116	1020
6	F. Chilton	139	180	124	112	79	180	180	994
7	J. F. Allen	136	180	180	82	166	23	60	827
8	P. Chapman	137	162	180	120	180	0	0	779
9	A. Cordes	180	131	147	180	90			728
10	J. Buskell	180	180	155	86				601
11	P. R. Harris	161	180						341
12	A. S. Cordes	114	180						294
13	G. Fuller	180	0						180
14	R. Monks	161							161

Statistical Analysis FAI Events

Rounds	1	2	3	4	5	6	7	Fly off
F1A (Glider)								
Scores	55	54	54	48	40	32	28	2
Maxes	14	17	33	39	28	26	17	0
Percentage	26	32	61	81	70	81	61	0
F1B (Rubber)								
Scores	32	31	30	29	24	19	16	2
Maxes	4	21	17	18	10	9	14	1
Percentage	13	68	57	62	42	72	88	50
F1C (Power)								
Scores	14	12	10	10	9	7	7	
Maxes	7	10	6	2	6	5	1	
Percentage	50	83	60	20	67	71	14	

SAM 35 Wakefield Contest

4oz Class (5 entries)

1	C. Strachan	7:30	1936 Copland
2	R. Alban	6:25	Northern Arrow
3	P. Dancer	6:11	1936 Copland

8oz Class (12 entries)

1	M. Kemp	7:30	Hereward
2	C. Strachan	6:38	Yankee 4
3	P. Michel	6:36	GB3

Glider

1	Martin Gibbons	8	Peterborough	Caprice	1:30	1:30	1:30	4:30	+	0
2	Adam Stringer	12	Streatham	Caprice	1:30	1:30	1:30	4:30	+	0
3	Calum Sabey	13	Dumfries	Caprice	1:12	1:30	1:30	4:12		
4	Peter Martin	13	Tynemouth	Caprice	1:30	0:57	1:30	3:57		
5	Keith Chamberlain	14	Grantham	Caprice	1:30	0:54	1:30	3:54		
6	Susan Freebrey	13	Northwood	Supa Nova	0:40	1:05	1:10	2:55		
7	Gareth Morgan	13	Vulcans	Vultur	0:38	1:30	0:31	2:39		
8	Robert Carter	9	Falcons	Supa Nova	0:37	0:50	0:46	2:13		
9	Richard Dyer	13	Vulcans	Mistral	0:17	0:56	0:19	1:32		
10	Diana York	14	Cranwell	Caprice	0:42			0:42		

Junior Kit

Rubber

		Age							
1	Keith Chamberlain	14	Grantham	Performer	1:30	1:30	1:30	4:30	+ 6:26
2	Malcolm Dixon	15	Birmingham	Performer	1:30	1:30	1:30	4:30	+ 2:09
3	Peter Martin	13	Tynemouth	Performer	1:30	1:30	1:30	4:30	+ 0:32
4	Calum Sabey	13	Dumphries	Performer	1:30	1:21	1:30	4:21	

Right: It wouldn't be a Nationals without John White, up from the Isle of Wight, here shown releasing his distinctive Wakefield after assistance from a number of other contestants! Below: John Foster prepares his distinctive tip-dihedral Slow Open Power winner. Bottom: Co-winner Adam Stringer with smart Caprice.

allowed (ten seconds for glow or twelve for diesel) explains the event's popularity - even if the general level of performance still seems below that of a good TD.15 powered Dixielander from the early 1960s.

Noteworthy was the appearance of two very well-known names part way down the results list - Dave Clarkson and Ed Needham of control-line racing fame! This is a most interesting development especially as they cannot be expected to remain content at this unaccustomed level. The all important flyoff was not held until 5.15, which seems a long time after the 4pm deadline for contest flights. Not surprisingly the flyoff was very much a thermal affair. Most of the participants flew together, with erratic power patterns handicapping some of the flights; Andrew Moorhouse being the only one of the group to contact lift. John Foster waited until the upwind F1B fliers marked lift for him, and made no mistakes with a good climb, good air, and the right length of D/T fuse. Even so, he had to return later in the week to find his winning Enya .09 powered model. Its only unusual aerodynamic feature is that of having tip dihedral instead of poly. Meanwhile, Steve Fielding (always a threat in this event) had gone off on his own - but could not find enough thermal help to catch the leaders.

In contrast, the **Tailless** event was settled without the need of an extra flight. This time John Pool was pipped at the post by his friend and accomplice Ken Attiwell. Both started with two maxes but couldn't quite manage a third. Need I say that all three were flying rubber models?

John Pool's designs have been well publicised, and the others show obvious influence, even to similar drag flaps alongside the fuselage for D/T purposes.

The rest of the field provided a mixture of glider and power models, the latter presumably being motivated by thoughts of the cash jackpot offered for winning with such a model. Regrettably there still seems a very long way to go! Of the gliders, Colin Sharman had by far the largest example (and indeed of the whole Nationals) - a swept wing of some 18 1/2 feet span. For various reasons it did not feature in the results list.

Other events were Junior Kit, run and reported by Jeff Anderson, and the **SAM 35 Vintage Wakefield** contest. Despite the number of Vintage fliers in attendance, actual participations in the contest was uninspiring, with only a dozen in the 8oz category and under half that in 4oz. Although not flown in rounds, first flights were to a two minute max, with 2.1/2 thereafter. All flights were ROG of course.

Both the winners maxed out, Mike Kemp in 8oz with a Hereward and Chris Strachan in the lighter class with his usual 1936 Copland. Everyone else dropped score. The best excuse came from Doug Tennant who lost his Isis on its second flight. He was surprised to find on his return from a long search that the contest was over, prizes awarded, and most devotees on their way home. He had missed the announcement of the 3pm shutdown! SAM events are obviously a law into themselves. Even though the launch area was looking pretty empty by the conclusion of the FAI fly offs, not eveyone had the chance of an early getaway. There were models to find, or rescue from trees or worse! At least two of the prize winners spent the Tuesday morning searching for flyaways - all part of the joys of free flight.

All in all there is no doubt it was a good Nationals - and, if I may end on a personal note, a rather special one for me. This was my fortieth consecutive Nationals - yes, 40th!!

Junior Kit Contests

Report by Jeff Anderson

The shortage of suitable kits in the Rubber class was again evident. Some high-quality flying compensated for the small entry and Malcolm Dixon and Peter Martin reeled off a string of maxes for perfect scores quite early in the day. Calum Sabey dropped nine seconds on his second flight to put him out of contention and Keith Chamerblain lost his aircraft downwind, but a search produced the model in time for a third max so we ended the day with three in the fly-off. All competitors flew Performers and dropped only nine seconds between.

This year we had the highest ever entry in Glider with twelve entries, ten of whom recorded scores. By far the most successful aircraft is the Caprice but John Cuthbert's Supa Nova, new on the scene, was also entered. We can expect to see more in future. The standard of flying was high and no fewer than six competitors recorded maxes. Susan Freebrey and Diana York flew in the strongest wind but Susan battled on and completed her flights.

Damage to her Caprice on its first flight put Diana out of contention. Several competitors dropped time on just one flight but we ended with two perfect sores - Martin Gibbons and Adam Stringer, both flying Caprices. These two had flown close to control throughout and their towing skills were excellent.

Flyoffs toom place at 4.30pm. Regrettably, conditions were extremely difficult at that time. Neither glider flyer was able to achieve a score in the conditions and we were left with a very honourable tie. In Rubber, Peter Martin and Malcolm Dixon launched almost together. Peter's model looked very tight on the climb and he scored just 32 seconds. Malcolm looked well set for a big score but the lift decayed quickly and the flight was only 2:09. Keith Chamberlain launched last and at first the flight looked quite ordinary. The Performer worked its way into very good air for an outstanding time of 6:26 OOS.

We are most grateful for the generous support of many people in the model trade which enabled us to give prizes to every competitor with a score.

BALSA CUTTINGS

More matters of aviation moment monitored by Cyano de Bergerac

Why turn up at all?

How we 20th Century people do progress! Why, there was old Uncle Seccotine de Bergerac carrying a hearing-aid the size of a lady's handbag slung from a shoulder-strap, whilst today, his nephew's is no bigger than a packet of fags and slips easily into the pocket of his gaberdine raincoat. And of course, with the New Mono-Headphone, if a suitable hat is worn then from one side the wearer's secret is impenetrable!

It's just the same with the model aeroplanes. Bus drivers tell you the job would be alright if it wasn't for the passengers. You could say that contest flying would be alright if it wasn't for the rules. You all know about this creeping idea, already established at International level, where you can compete with a model you didn't build yourself. Has the change in the Rubber rules also sunk in; that except in fly-offs, timekeepers can follow models *on foot*? Well, it had been the idea to award to the chap who sent in the rudest limerick about it enough Chocolate Bath Olivers for him to able to hand them around the Club during Ritual Coffee and thereby achieve Considerable Acclaim, but it seems that in practice, these innovations are really very good indeed. Yes! The Don't Bother To Build It Regulations, and The Wandering Timekeeper Act, 1989 from the trendy bishops of aeromodelling are both working well. They were incorporated in last month's running of that prestigious event in British unrestricted Rubber, the Sir William Parsonidge Rose Bowl and Salver, always known as Billy Snidge's Cup & Saucer, and proved a great success.

The Rose Bowl went to Dave Hipperson (who wasn't there) for his guess (May 89) that Cyano de Bergerac is less contest-orientated. He didn't say than what or whom, but the judges rightly agreed that C de B is a bit of a stone-throwing nerd and so he didn't have to. The award of the Salver concerned a model called E1 Plastico, designed Barcelona 1988 by Juan Noncluedo, marketed in up-dated form by Foamalotto of Milan, distributed in GB by Thoroughly Nasty Kits Ltd., and sold by Uncle Ted's Models of Dungeness (in a large, attractive box which cost more to produce than its contents) to well-known ARTF assembler Dudleigh Salterton, who spent all of one tea-time clicking it together, although he later admitted his auntie had done the transfers. When on the eve of the contest he realised he had his anniversary driving lesson the next day, he conned his housekeeper into flying proxy for him, but the unit, with its pre-tensioned rubber motor slapping about in the hi-impact-moulded Tevlon fuselage with the ready-to-land u/c and pre-formed polystyrene flying surfaces, was something which that well-brought-up lady simply couldn't hack, and in the event it was a total stranger who wound and launched for her. A warmth developed between them, but that is another story.

The model flew from Peckham Rye towards Hounslow, and it was agreed that the timekeeper could follow it on a number 37 bus (which goes that way) if in the spirit of things he undertook to keep pacing up and down on the top deck, just to preserve the 'on foot' aspect. That he did this, and did it conscientiously *to boot* there can be little doubt, for ten minutes later he was slung off at the Dulwich Hospital stop and the model (or the joke about boot) hasn't been seen since. The Salver was therefore presented to Mrs. Harriet Shacklady from Weston-super-Mare, who was visiting her mother in Formby at the time, on the grounds that she seemed to have as much right to it as anybody. Mrs. Shacklady, 56, a retired bun-tester for Joe Lyons, told our correspondent it was ever so nice because her family had always been interested in that sort of thing ever since Ada (that's Colin's Mum) was on Munitions and their Nan used to wear a little Spitfire brooch made out of an old penny what that airman who never took his cap off gave her in Wolverhampton that time the sireens kept on going and she couldn't stop laughing. The third prize of £500 was withheld as all the other entrants appeared to be the authors of their own models.

You're not asked often

Whilst as part of your War Effort you were breaking your back lifting taters in the blazing sun, silver gnats danced overhead five miles up, and their spent cartridge cases tinkled off the tiles. The insides of Jerry aircraft had an indescribably *technical* smell, and their engine nacelles were stuffed with wodges of snowy spun-glass insulation which malevolently bestowed instant dermatitis upon all who interfered with it. You wore a ring filed out of perspex from the sidescreen of a 110, and your sister wore knickers made out of parachute silk, ('British, of course, I couldn't wear German next to my skin.') The Battle of Britain was an unreal, unique, magical episode, and next year we celebrate the fact that somehow, it is already half a century away.

Mind you, not everybody came out of it with something to celebrate. This is remembered with generosity by individuals, firms, organisations and institutions far less closely identified with aeroplanes than is the aeromodelling movement. It might be appropriate if next year, those of us who do something for charity - and just for a change, some of those who don't as well - were to go along with them.

The motto of the RAF Benevolent Fund is *The Debt we Owe*, its address is 67, Portland Place, London W1N 4AR, and its need is twenty million quid.

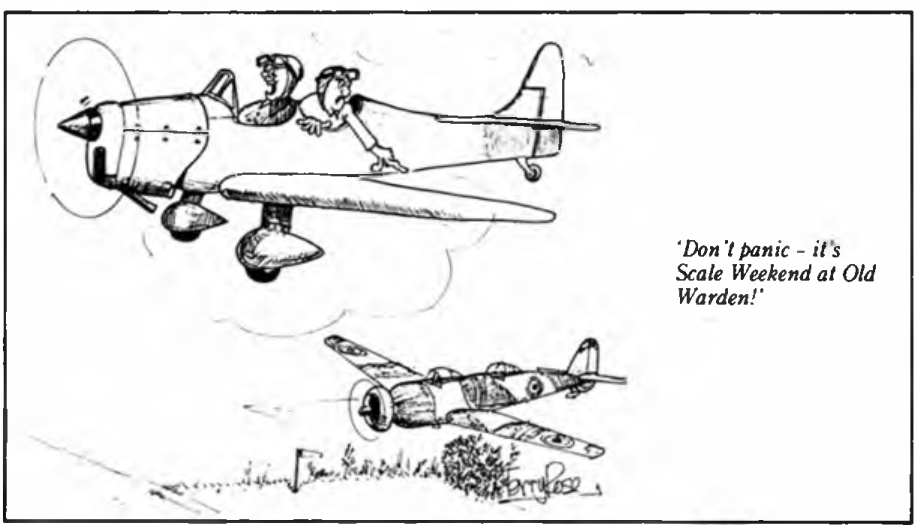
Cause for alarm

Readers' Letters, May, carried one from John White from the Isle of Wight (or maybe the other way round at this time of night) whose concern over the poor conditions which sometimes reign (rain?) by the time the fly-offs are reached in the evening of contest days led him to suggest that provisional, optional flights might be made, *early in the morning!* He does not claim that the idea is his own. Quite right. It belongs to one of the gentlemen with whom your columnist is soft enough to go on holiday. At seven-thirty there's this tap on the window: 'Come on, *move*! The wind's coming straight from America and we've got an hour and a half before breakfast.'

You can go off people, you know.

You mean, like *crucial* crucial?

The Free Flight Technical Committee appealed through the pages of New Model Flyer for suitably qualified assistance in operating the more sophisticated computer equipment used at this year's Free Flight Nats. Generous expenses were offered as the facility was stated to be crucial to the effective running of the events.



'Don't panic - it's Scale Weekend at Old Warden!'

VINTAGE CORNER

Alex Imrie looks at Junior motivation via Vintage in this monthly miscellany

Right: Vintage survival relies on getting the Youth of the country involved at an impressionable age. The German Nationwide competition sponsored by the UHU adhesive company introduced large numbers of under-14-year-olds to the hobby. The simple glider, designed by Werner Thies, has been updated since this photo was taken thirty-four years ago.

DESPITE recruitment to the ranks of Vintage enthusiasts, we are an ever-diminishing group, even allowing for the return of one-time modellers to our branch of the hobby, and one hopes that some way can be found to prevent this, or traditional aeromodelling will merely fade away. The simple fact is that the youth of today is not being attracted to the form of modelling where simple models first teach the basics; thus youngsters do not acquire the skills needed for Vintage-type building, nor are they provided with a firm foundation upon which to base progression. When one tries to interest young people in model aeroplanes in this day and age, it is said to be 'expecting a bit much' to expect them to sit down with strips of balsa and assemble a fragile creation covered with tissue paper which is then powered by twisted rubber. Yet if only we could succeed in bringing this about we would hand on the permanent enthusiasm for the hobby that most of us possess, because that old-fashioned appeal (call it magic if you will) of making a successful model that actually flies can work, even in today's fast computorised world. Neither should the reader think that the youth of the mid-1930s formed an easy catchment area, despite the spread of airmindedness at the time. I well remember my father taking some of his models to lecture our local Boy Scout troop. The apparent interest of his audience disappeared when it started to snow heavily, and all the scouts rushed outside to play snowballs, leaving him talking to an empty scoutroom!

The problem is how to get the message across to a sufficient number of youngsters. Most young people currently in modelling get involved because of modelling activity in the family, so if Dad or an elder brother engages in modelling, natural curiosity can cause the young ones to have a go, hopefully, on a simple model under Senior's beady eye: and some of them get hooked. Alas, other youngsters start aeromodelling with an unsuitable model for beginners, such as the prefabricated radio controlled variety, and many lose interest when either the completed model fails to fly or they are unable to make it do so. Writing-off an expensive investment is the quickest way to cause interest to be abandoned, and the movement has lost another would-be modeller for ever. However, mere introduction is not enough and success must accompany early efforts. There must also be readily available guidance for these *ab-initio* modellers in order to keep them pointed in the right direction during first stages. Over 55 years ago the Germans appreciated and understood this problem well via a basic psychology that seems to evade us today. When aeromodelling was introduced into schools in that country, a strict programme of progression was adhered to and youngsters were required to prove their competence via folded paper, stick/profile and then built-up fuselage gliders before progressing to rubber-powered models. The different organisations involved also updated their designs between 1933 and 1941, keeping pace with model development; and this ensured that well-built and trimmed models really performed, automatically encouraging the young builders to even greater effort. Nothing succeeds like success. Naturally, some pupils treated the business as just another school subject and doubtless were glad when their association with plywood, glue and wire came to an end, but the keener types went on from strength to strength and were instilled with an enthusiasm for the hobby that they never lost.

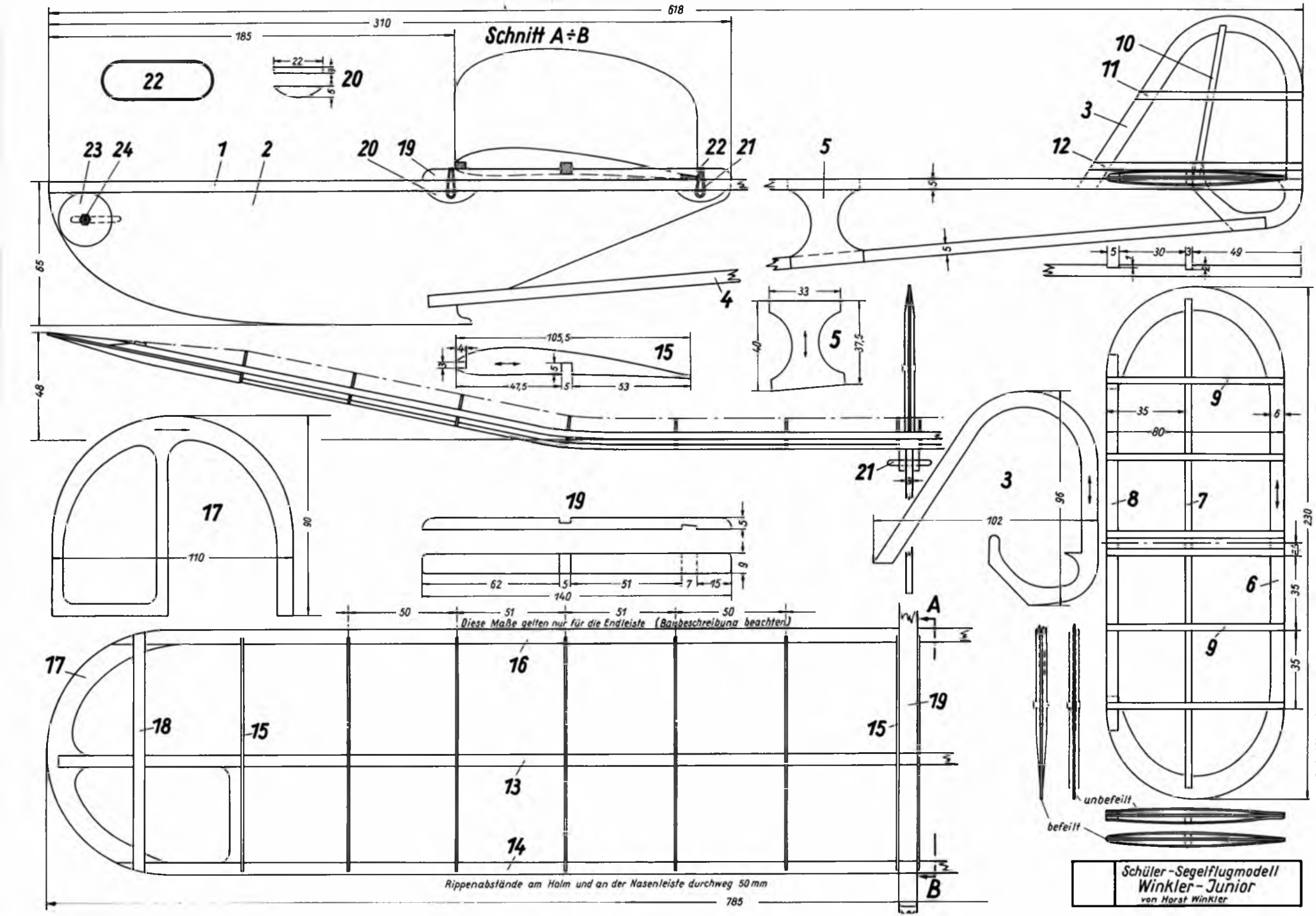
Above: Mike Patience of New Zealand, who built the engine of my Miss San Diego (see March Vintage Corner) sent this shot of another 2.3cc Elf Corncob from his production line.

In a recent edition of Model Aviation, the official publication of the AMA, John Vorhees recounts that over the last few years he has helped some 200 youngsters to build simple rubber powered models, but apparently none of them continued with the hobby afterwards. John finds that any one person can only do so much and that the whole business is '...frustrating - a losing proposition, mostly because there is no follow-up, nobody else to help keep it going.... it takes a national organisation to create a continuing programme in the schools.'

Arts and Crafts classes are still a feature of school routine. As well as drawing, painting and kindred subjects, model aeroplane building could be included. The creativity fostered in this way would be an advantage in later life. It would certainly solve our problem by increasing the numbers of our kind, and more importantly, help reduce the deviations into less-favourable areas that present day youth are liable to succumb. Maybe our education authorities would be convinced if they gave it a try and observed the gusto with which pupils tackled the new subject; it would certainly knock basket making and pottery into a cocked hat! How about it, BMFA?

Winkler Junior

Following the success of his 1.7 metre span sailplane in 1930, Horst Winkler introduced a small glider of 76 centimetres span,



specially designed for beginners, named Winkler-Junior. This was constructed by tens of thousands of youngsters in their school modelling programmes. The design was continually improved upon over the years in the light of experience and the fin and tailplane, which were originally from 1mm plywood, were replaced by built-up structures in 1934 to minimise warping. The plan here is from the ninth printing in 1937. A translation of the materials list is also given to which the large numbers on the plan relate, all dimensions being given in millimetres. You can build one of hardwood and ply 'as per' or use balsa (not available generally in Germany at the time). Construction is straightforward so building instructions are not given here; however, the original plan contained detailed instructions with illustrations of the awkward parts for those eleven-year-olds who saw the Winkler-Junior as a mere rung in the ladder to greater things.

Parts List

The stripwood is quoted as Kiefer, which is correctly Scots Pine or Fir, but I have translated this as Spruce. Incidentally, Spruce (Fichte or Rottanne) is not plentiful in Germany, hence the common use of Kiefer.

Fangs for the memory

Forester Lindsley was prompted to write us an interesting letter from Australia after seeing an operative landing gear scheme detailed in the March 1987 *Aeromodeller*. This was similar to that on his 30in low-wing semi-scale model Fang, described in the May 1937 issue of Model Aeroplane Constructor, and which is reproduced here.

Forester writes:

'The model was actually built in the summer of 1934 when, as a nineteen year-old aviation and model enthusiast, I was working at Portsmouth on the construction of the special long-range Airspeed Envoy for an attempted trans-Pacific flight by the Australian aviator Charles Ulm... It was not the sort of model to win any duration competitions but it flew well enough and did what it was intended to do. Of course, like any other scale model (the tricycle landing gear was virtually unknown in those days) it just tipped on its nose in any grass longer than a bowling green but it was OK on hard sand. It could be dismantled and put in a specially made cardboard box which could be tied to the crossbar of a pushbike... The tail-trim, which involved putting bits of 1/8 x 1/32 balsa in a slot and then pushing the two tailplane halves on the fuselage was not one of my better ideas, and those rubber bands round the fuselage while Roman in their day maybe ought to be modified. It would make an interesting example of vintage flying scale (Vintage semi-scale. GC). *The prototype was, of course, one of my dreamships, a cabin single seater with a Gipsy Major engine. The model even had the scale cooling inlet in the engine nosecowl. The finish was white tissue with green scallops on the sides and bottom of the engine cowl'.*

Forester goes on to say that he could assemble a set of drawings from memory but might have to exercise some licence on exact locations of such components as stringers; and adds that he maintains his aviation interest, being honorary Technical Cordinator for the Sport Aircraft Association of Australia (similar to the PFA in this country) dealing with amateur-built aircraft. He was a long time friend of the late Eddie Riding, enjoys reading *Aeromodeller* and considers that our hobby is '...still the most technically challenging of all recreational activities.'

One seldom sees operative retractable *and*

Winkler Junior Parts

Number of parts	Description	Part Number	Material	Dimensions
	Nut and Bolt	24		
	Ballast	23	Lead Disc	
2	Attachments	22	Rubber Band	
2	Rods	21	Spruce	2.5 x 19
4	Reinforcements	20	Spruce or ply	3 x 5 x 22
1	Wing seat	19	Spruce	5 x 9 x 140
2	Rib capstrips	18	Veneer or ply	1 x 5 x 111
2	Wingtips	17	Plywood	1 x 90 x 110
1	Trailing Edge	16	Plywood	2 x 7 x 726
14	Wing Ribs	15	Plywood	1 x 13 x 105.5
1	Leading Edge	14	Spruce	3 x 5 x 734
1	Main Spar	13	Spruce	5 x 5 x 783
2	Rib Capstrips	12	Veneer or ply	1 x 3 x 98
2	Rib Capstrips	11	Veneer or ply	1 x 3 x 77
1	Fin Spar	10	Spruce	3 x 5 x 70
12	Capstrips	9	Veneer or ply	1 x 3 x 82
1	Leading Edge	8	Spruce	3 x 5 x 170
1	Tailplane Spar	7	Spruce	3 x 5 x 220
1	Tailplane Tips and Trailing edge	6	Plywood	1 x 80 x 230
2	Longeron Spacers	5	Plywood	1 x 33 x 40
1	Longeron	4	Spruce	3 x 5 x 430
1	Fin/Rudder Outline	3	Plywood	1 x 96 x 102
1	Forward Fuselage	2	Plywood	3 x 65 x 310
2	Longerons	1	Spruce	3 x 3 x 618

Above: All you need to build your own Winkler Junior! Below: Forester Lindsley's original article describing his low-wing model with its operating retractable undercarriage. Working for Airspeed (1934) Limited at the time he presumably got the idea from that company's Courier, which was the first British aircraft to be fitted with a practical retractile (as it was then called) undercarriage.

MAY, 1937 THE MODEL AEROPLANE CONSTRUCTOR Vol. II, No. 1

"FANG" A Flying Retractor Model

And It Works!

By Forester Lindsley

"FANG" was built in the summer of 1934, as an experiment and proved quite good. After a little revamping, to the prop. and fin area it flew very nicely and its maximum duration was 31 seconds. The undercarriage would work perfectly every time on a smooth surface.

To see it take off, tuck up its wheels when a foot high (improving the climb incidentally), and then lower them just before touching down was a novel sight.

Span 30 inches, length 20.5 inches weight 1.7 ozs. (including about ½-oz. of candle-grease in the nose cowl). Propeller 8 inches diameter, and 12-inch pitch but 11-inch pitch would be better for take-off.

Construction was of balsa and is fairly clear from the photos; motor was single skein and strength varied to suit propeller.

The fuselage was of 1/8in. by 1/8in., balsa except for the stringers which were 1/8in. by 1/16in.

The wing was detachable and contained all the undercarriage gear. Wing section at foot was RAF 30 (streamline), changing to Gottingen 532 at Rib III, then modifying back to RAF 30 at the up; this proved a stable wing giving good climb.

Rudder was hinged on stiff wire and tailplane (also detachable) was in two halves and adjustable through + 3°.

Now for the undercarriage: it swings upwards and backwards a la Airspeed Envoy.

The sketch may make it fairly clear. The operating rod was about 9 inches long; when the model took off, the rubber band (a very light one, because the air pressure on the wheels helped them up into place), swung up the wheels through the small gears and brought the operating rod down. When the kite came in for a landing the operating rod was pushed back by the ground and swing the wheels down, timed nicely.

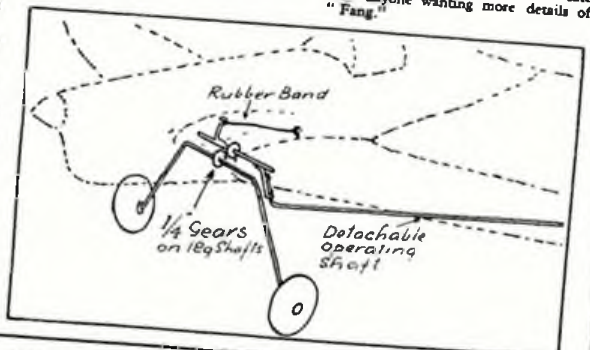
Suggestions for anyone caring to incorporate the idea are appended.

(1) Increase the fin area as such a fat fuselage blankets the tail unit.

(2) Fit flaps; I'm serious! A model lands different to a full size kite as there's no one to hold off and collect a 3-pointer.

So what we want is something which will suddenly increase the lift on the wing, move the C.P. forward and bring the nose up, then breakdown the lift completely and let the model drop 3 inches with the nose up. This should work in practice and give a fairly life-like landing; and flaps will do it if they are the right type and coupled up to the undercarriage. Turning up the elevators won't do as the effect is different, and the model would "balloon" like a light plane on a gusty day.

I should be pleased to communicate with anyone wanting more details of "Fang."



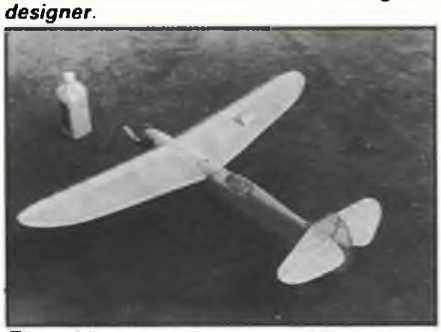
Colouring and Finishing Flying Models—*Continued from Page 4.*

otherwise, all the "body" tends to collect at the bottom. Use a one-inch flat camel-hair brush for large surfaces and always finish by brushing in one direction only. When working in two or more colours, keep the various brushes separate; do not use the same brush for two different colours and always clean a brush well with thinners after using. Coloured dopes should not be relied upon for tightening the paper. This must be done in the first instance with water and when dry, if not free from wrinkles, it is better to strip and re-cover. It is useless to try and cover up bad construction with coloured paint—the result is usually a worse job. Either cut out the bad part and rebuild, or leave the job clear doped.

One last word of advice—don't colour the first covering on a new plane unless you are certain how it will perform. Always keep the first covering plain until you have got your correct turns properly weighed up and any minor alterations made. Otherwise, you may have wasted hours of work by breaking a motor or having to make some structural alteration necessitating re-covering.

Page 5

Geoff Stubbs of Peterborough built this Veron Martinet, a 36in. reduced Stentorian for engines up to 1cc capacity that was advertised in 1948 as a 2-in-1 kit for control line or free flight. Plans are still available from Phil Smith, the original designer.



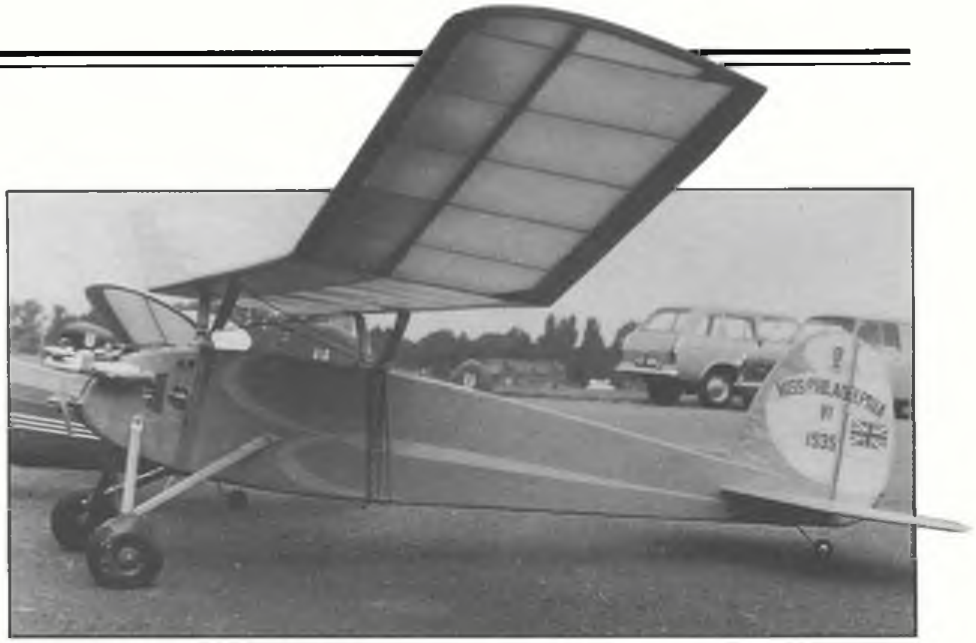
The seldom modelled Lancer 49; this one, built by Eut Tileston of Sacrament, is powered by an Elfin diesel and produces a true contest performance.

Tom Henderson's Bob Long Cabin takes off on its maiden flight in the 11th John Pond Commerative Contest held in Southern California three years ago (Vintage photos don't age, they only get better with the passage of time!).

lowering landing gear on any rubber model. The only other, similar system that comes to mind was that fitted to the late Rupert Moore's Typhoon which also used a wire whisker to lower the wheels for landing. Both the weight of the whisker and the sight of it hanging down in flight like a trailing wireless aerial might debar this system from present day flying scale use, although it would be ideal for a Fairey Battle which used such an aerial and landing gear geometry. However, it would prove an interesting vintage exercise and if readers express sufficient interest in Fang we will take Forester's kind offer up and galvanise him into action!

Building light

We mentioned the importance of building light in our look at compressed-air models



Noel Barker's replica of pioneer Maxwell Bassett's eight-foot parasol Miss Philadelphia. Because of present-day materials and building techniques, replicas are often heavier than the original models. Bassett's covered with bamboo paper tipped the scales at 4lb. ready to fly. The writer's version (nylon covered) is one pound heavier.

recently, and those of you embarking on this exercise where every gram counts might be interested in the comments and table given here. They come from Jim Alaback (my man in San Diego) and are reproduced with the courtesy of Aero News, the newsletter of the San Diego Aeroneers of which Jim is both Secretary and newsletter editor. Over to Jim: *'...the chart gives the balsa density (in pounds per cubic foot) for standard sheet sizes of various weights (in grams). The chart can also be used to select balsa of a desired density by taking a weighing scale to the hobby shop and selecting sheets as near as possible to the desired weight/density. One thing which I have found helpful is to mark the density near the end of each new sheet I buy before I put it into my stock. Then I can go through my wood supply at any later time and easily select the density that I want for a certain part. I start using the sheet from the un-marked end, so if any of the wood is left for my scrap box, it is the end which still has the density marking on it. Other advantages of stripping your own balsa include the fact that non-standard sizes can be cut if desired. Also, adjacent strips from the same sheet tend to be well-matched in weight and stiffness, which helps to get equal curvature in fuselage sides and equal weight in right and left wing panels, and so on; but balsa can vary within a single sheet, so it still takes some care. And – it is cheaper to cut your own strips! I use the Master Airscrew or the similar Kavan balsa stripper for most stripping over 1/8in. For strips of 1/8in or less I prefer the Jim Jones stripper. It is very precise and consistent. The strippers are easily set for width and have calibration scales. However, I prefer to set them with a trial cut to get exactly the width I want. If I am cutting a square strip, I set my Kavan-type stripper by using the sheet as a gauge. Then my strips are exactly square even if a particular*

Jim Alaback's Balsa table which will help you towards lighter, better flying models.

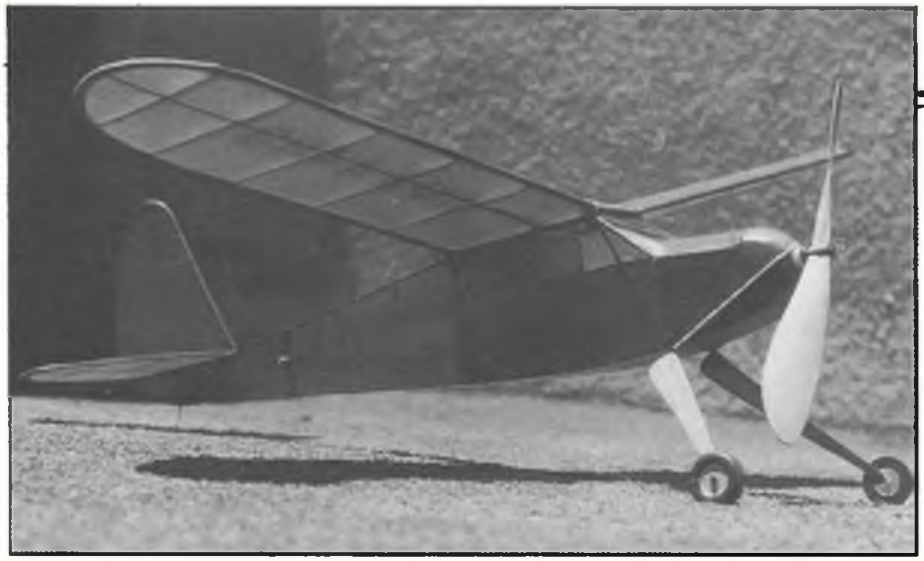
Balsa Sheet Weight (grams) VS. Density (lb./cu. ft.)

	Density (lb./cu. ft.)										
36in lengths	4	5	6	7	8	9	10	11	12	13	14
1/64 x 2	1.2	1.5	1.8	2.1	2.4	2.7	3.0	3.3	3.6	3.9	4.2
x 3	1.8	2.2	2.7	3.1	3.6	4.0	4.4	4.9	5.3	5.7	6.2
1/32 x 2	2.4	3.0	3.6	4.1	4.7	5.3	5.9	6.5	7.1	7.7	8.3
x 3	3.5	4.4	5.4	6.2	7.1	8.0	8.9	9.8	10.6	11.5	12.4
3/64 x 2	3.5	4.4	5.4	6.2	7.1	8.0	8.9	9.8	10.6	11.5	12.4
x 3	5.3	6.6	8.0	9.4	11	12	13	15	16	17	19
1/16 x 2	4.7	5.9	7.1	8.3	9.4	11	12	13	14	15	17
x 3	7.1	8.9	11	13	14	16	18	20	21	23	25
3/32 x 2	7.1	8.9	11	13	14	16	18	20	21	23	25
x 3	11	13	16	19	21	24	27	29	32	35	37
1/8 x 2	9.4	12	14	17	19	21	24	26	28	31	33
x 3	14	18	21	25	28	32	35	39	43	46	50
5/32 x 2	12	15	18	21	24	27	30	33	36	39	42
x 3	18	22	27	31	35	40	44	49	53	58	62
3/16 x 2	14	18	21	25	29	32	36	39	43	46	50
x 3	21	27	32	37	43	48	53	59	63	69	74
1/ 4 x 2	19	24	29	33	38	43	47	52	57	62	67
x 3	28	35	43	50	57	64	71	78	85	92	99

Notes: For 4in wide sheets, double the weight given for 2in sheets.
For 18in lengths, use half the weight given for 36in lengths.
For 48in lengths, multiply the 36in length weight by 1.33.
Convert grams to ounces by multiplying by .0353.

Density Equivalents for use in estimating structure weights

lb./cu. ft.:	4	5	6	7	8	9	10	11	12	13	14
gm./cu. in.:	1.05	1.31	1.58	1.84	2.10	2.36	2.63	1.89	3.15	3.41	3.68
oz./cu. in.:	.037	.046	.056	.065	.074	.083	.093	.102	.111	.120	.130



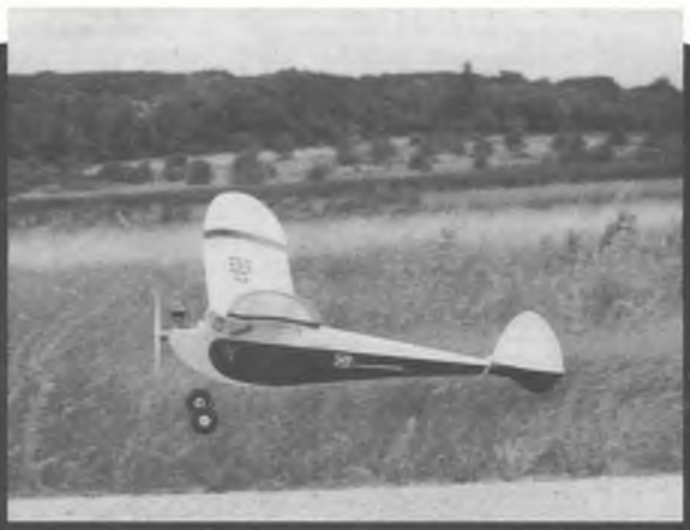
Jim Alaback's 25in. version of the Modelcraft Pacific Ace, a suitable model for beginners in the same class as our Ajax and Achilles. Jim's models are all top performers because of their lightweight construction (see text).

sheet is a few thousandths of an inch over or under the nominal thickness. One notable feature of the chart is the table of density equivalents. From this you can get the density in grams or ounces per cubic inch which corresponds to the density in pounds per cubic foot. This is handy for estimating the weight of a structure to be built. Just calculate the approximate volume of the structural members, in cubic inches, and multiply that by the factor given in the table (for grams or ounces) for the density of the wood that you select.'

Help wanted

I am currently researching the history of the Baby Cyclone, an important historical model aeroplane engine of 6cc capacity that first emerged late in 1935 to challenge the near monopoly held at that time by the Brown Junior. In an attempt to determine the total production run I would be grateful if any reader owning such engines would advise me of their serial numbers, these are stamped on the crankcase backplate and are prefixed by the Model letter; for example, D5156, F13609. Numbers appear to be consecutive and the total number produced has been variously reported as 15,000 and 18,000. A survey of serials might help to confirm this; but, more importantly, the Model type and its serial will allow an estimate to be made of the number of each type produced. The early Models were fixed ignition; however, when the Model D came out in 1937 the manufacturers offered to convert the early engines to take the Model D type movable contact breaker for the sum of $5.00; thus some of the Models A to C may incorporate this modification. Many enterprising modellers modified their own engines, so a variety of ignition points may be seen on these engines. I recently had an interesting experience in this regard. For a number of years I have owned a fixed ignition Model C that had previously belonged to Dr JFP Forster (of Petrol Topics fame) who had filed away the attachment bump for the moving point in his experiments. Having read of the metal-bonding powers of Loctite 415 in our companion paper Model Engineer I undertook to restore the engine to fixed ignition and cut a suitable piece of pot-metal from an old crankcase, securing it in the appropriate place on the engine with Zap. Since this part already contained the threaded hole for the cylinder holding down screw I utilised this to hold the moving point and did not need to work the piece other than to file it to shape. The trouble came when I tried to run the engine. The timing was obviously out and the spark was weak and intermittent, although the points were in good shape and operating properly. It was some time before the penny dropped. The Zap had effectively insulated the moving point whose only electrical contact was via the contact breaker cam. A temporary bridge of locking wire soon cured that and after a few runs at 4000 rpm the Zap still holds.....thank goodness for modern adhesives!

Another look back Stateside. Right: This Stouffer shot at SAM Champs at Bong in 1984 shows Bob Edelstein's Forster 29 ignition powered So Long getting away after a nice ROG. Below: We miss a lot of fun by hand launching. Here, at the same venue, Dick Stouffer captures the Maestro, Sal Taibi showing how it is done with his Brooklyn Dodger.



Below: Joe Konefes at the transmitter (he drew the Phantom Flash stick ROG model plan featured in the June issue) about to take off his Buzzard Bombshell powered by a Super Cyclone ignition engine, also at Bong and again by Dick Stouffer - and once more the flyer is handling a design of his own from 45 years previously!

Double your fun–

CONVERT YOUR ACHILLES

Just two hours' work was enough for John Toyer to transform an old favourite...

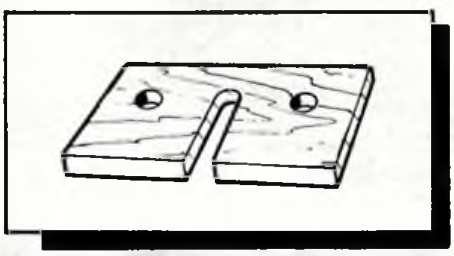
HERE'S a super idea – to convert the Keil Kraft Achilles into a dual purpose, CO_2 and rubber craft. This brainwave came about after seeing a CO_2 Achilles at Old Warden, and as a result of helping my son David to build an Achilles for the SAM 35 junior event for this design. Although David placed second, his model flying well on four strands of 3/16 in rubber, the Achilles was showing several battle scars. David enjoys flying my CO_2 Scram – so I thought a conversion on his Achilles would give me time to fly my own model!

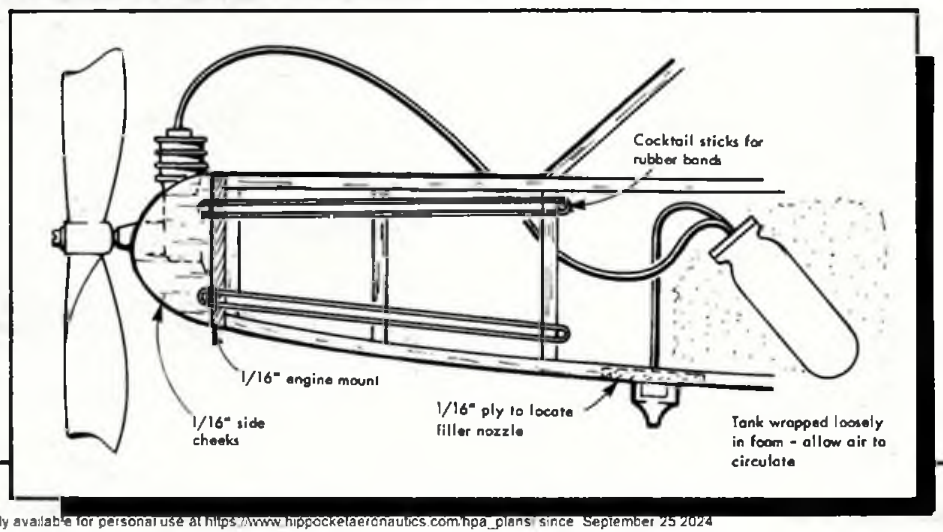
Surgery

All is simple, and based on the knock-off engine mount principle. The motor – I used a Telco – is mounted on a plate of 1/16in. ply with two cut-down cocktail sticks glued where shown, allowing rubber-band fixing via another pair of fuselage-mounted cocktail sticks. Two 1/16in. balsa side cheeks add a modicum of streamlining. Filler nozzle and tank were inserted through a small tissue cut just ahead of the windscreen. The nozzle was attached to via 1/16in ply mounting plate to the bottom of the fuselage. Correct CG position is obtained by fore or aft movement of the foam-encased tank (the foam stops the tank from vibrating about within the fuselage). All this took about two hours. Well worth it, for the converted Achilles flies happily in left-hand circuits – and needs to be watched in lift!

Have fun.....

Above: David Toyer watches closely as the Telco motor runs off a charge. Left: Conversion close-up. Below: General view of revised structure, with (below left) detail of 1/16in. ply filler plate. Couldn't be simpler – and technique easily adapts to any design of up to 30in span. Telco CO_2 motor kit is distributed by Chart Micromold; available from model shops at £13.95. The KK Achilles, distributed by Amerang Ltd, costs £4.99.





MIND THE LINES

Ron Prentice rounds up Old Time control line affairs at Rubery Hill

WHILE driving home in pouring rain after a Jazz gig on the 15th April I was cursing the vagaries of the British weather because early the next morning I was due to set off for Rubery Hill, Birmingham and the first Vintage control line meeting of the season.

A few days before I had not only completed a deBolt All American Senior, powered by a Fox 35, but had managed to get in three trial flights to make sure all was well. A fortunate decision, because it showed up a weakness in the design where the leading edge of the wing is glued into the fuselage sides. This joint failed, leaving the whole nose section very precariously hanging on to the rest of the fuselage. A quick glue-up job, followed by glasscloth tape and resin soon cured the problem. I would certainly recommend strengthening this area during construction. The Fox 35 had not been used since I last flew my Veco Chief at Old Warden some years ago. Nevertheless it started almost immediately and has given faultless runs on each flight with the new model.

By the time I reached Bristol next day the rain had stopped and not a drop was to be seen all day in Birmingham, although it was very cold and there was a strong, gusty wind all day.

Attendance was not quite up to previous occasions, but considering the weather forecast, a reasonably-sized crowd of enthusiasts all enjoyed themselves.

There was soon a number of models taking to the air, both fun flying and in practice for the competitions which were due to start at 12.30. I noticed three nicely-finished Yoicks biplanes being tried out, presumably for the all-Yoicks event later in the year. Two were powered by Fox 45s and the other by a K&B 40.

There were seven entries in Old Time Stunt, a disappointing number; but many were deterred by the strong wind. At the end of the first round, top scorer was Dave Day flying his usual Elfin 2.49 powered Ambassador, with Lionel Haines in second place flying an OS 40 powered Foxstunter and Terry Taylor third with yet another Foxstunter, this time Fox 35 powered. During this round Alan Walker lost tension on his AM35 powered Stunt King and it crashed. Thanks to the soft, muddy ground, it received no damage and the judge, Dick Downs, allowed Alan to restart and carry on his flight.

After a half-hour lunch break the second round started with the wind as strong as before, a situation which caused the retirement of two competitors. The remaining five entrants gamely fought through the gusts and cold. Final placings were as follows:

1 D. Day	Ambassador	Elfin 249	558 points
2 R. Prentice	All American Snr.	Fox 35	465
3 T. Taylor	Foxstunter	Fox 35	424

This competition was the first of two rounds, the second to be flown at the next Rubery Hill Rally on 22nd October. Once again the event will be organised by Peter Martin who can be contacted on 021-459 5520 for further details.

In addition to the OTS event, Eric Hawthorne was busy organising a further event for that most popular of Vintage models; Midge Speed. I am sure that Andy Brough little thought when he first suggested a Midge competition some years ago that it would prove to be one of the main attractions of the Vintage control line scene. A number of competitors came to grief in the high wind and several models looped on handlaunch with the inevitable result, but everyone seemed to be enjoying themselves, which is what it's all about, after all!

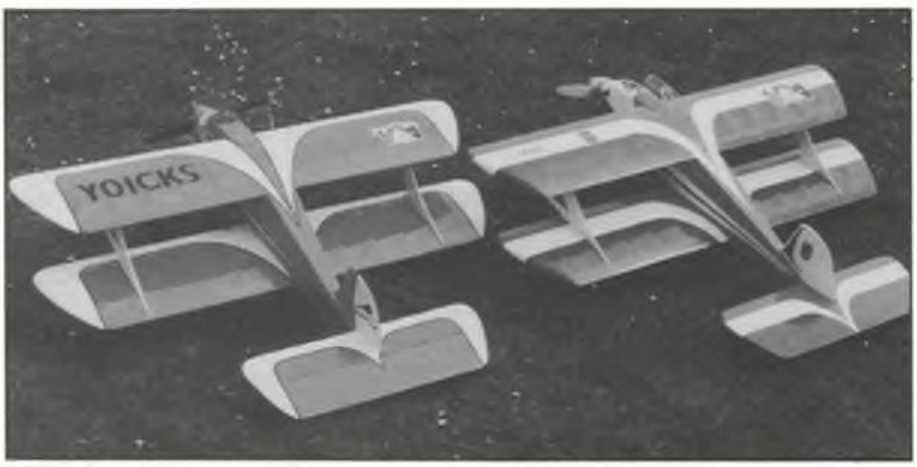
Vintage class winner Terry MacDonald commented, 'I was really thrilled to win the Midge; it's the first comp that I've won in aeromodelling'.

Midge Speed: Vintage	
1 T. MacDonald	Frog 150
2 R. Bench	Frog 150
3 B. Lister	AM15
4 J. Hemmings	Elfin 149
Classic	
1 R. Bough	PAW 149
2 R. Young	PAW 149

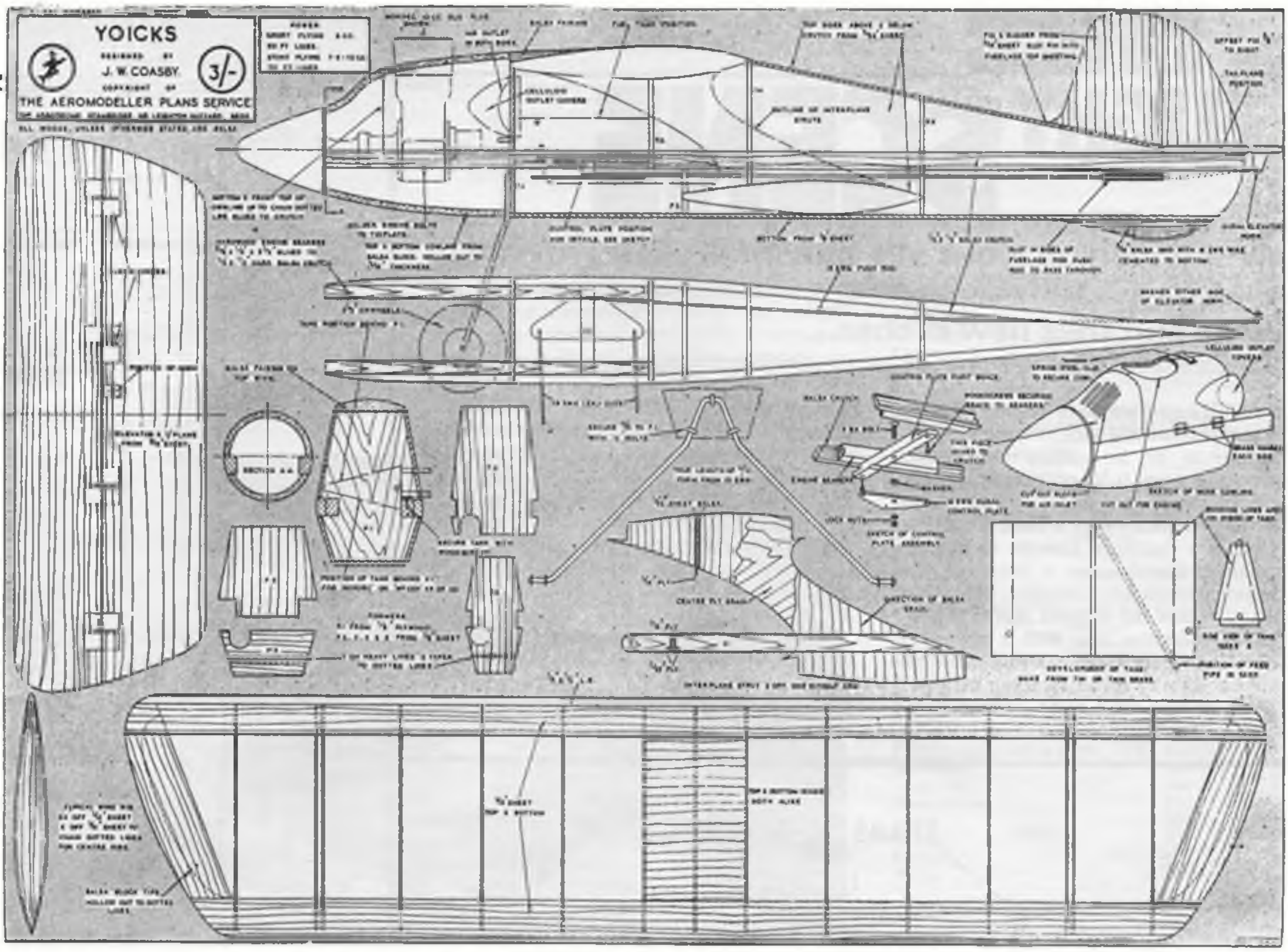
Before I left Rubery, Peter Martin and Dick Downs told me some news of the next meeting... Did you know that it is the 40th anniversary of the design and flight of Brian Hewitt's Stunt King? Peter and Dick think that this is an anniversary which cannot be missed, so they are to run an 'all Stunt King event' in October for a special prize. Any motor can be used in the model, but if you have a Yulon 30, like the original, so much the better. Plans for the model can be obtained from Peter Martin.

While at Rubery, Terry McDonald handed me a poster advertising the Rolls Royce MAC Vintage control-line Fly-in at the Rolls Royce Airfield, Hucknall on 16th July. As well as the inevitable Midge and Old Time Stunt events, Vintage Team Race, classes A and B, and a Concours event will be held, and general fun flying for all is permitted on grass

Father-and-son team Lionel and Stephen Haines built this pair of Foxstunters - OS40 and Merco 29 powered.



Yoicks - tally-ho! Two beautiful Yoicks biplanes at Rubery. Dave Nelson's, left, is red and white, Fox 45 powered; Alan Walker's is red, white and green for a K&B 40.



or tarmac. Sounds a great day out. For more details ring Terry on 0332 511273.

John Coasby's Yoicks is available from ASP Plans Service as ref: CL 334, price £3.75 plus 60p postage.

Aldrich arrival

You will, I am sure, be aware of George Aldrich's visit in August and the All Nobler competition which he will be attending at the Nats. The Mk.1 Nobler is a superbly flying model which could equally be at home taking part in Old Time Stunt, FAI and the all-Nobler event. As far as OTS is concerned, it has one drawback. Being a late-designed model with flaps, it would not gain any of the bonus points available for other aircraft. However, its superb handling qualities would more than compensate for that. Perhaps all the OTS events will be dominated by Noblers, with no other design standing a chance. We shall see!

The other day a copy of PAMPA Stunt News dropped on to my door mat, courtesy of Tom Dixon. Amongst the announcements was the fact that Top Flite are to re-release their Gieseke Nobler kit. It sounds expensive at $79.95, but should be on the shop shelves by the time you read this.

Other items of interest are that custom-made kits of the Veco Chief (the 51in Pollywog airfoil version) are available from Doc Passen at $55. His address is P.O. Box 111, Jasonville, IN 47438. USA. To celebrate the 50th Anniversary of control line in 1990 (U-Control was first advertized nationally in September 1940 issue of Model Airplane News), the American Junior Aircraft Co. is planning to organise an old time demo at which Jim Walker's spectacular 'three Fireballs' and Sabre Dance routines will be re-enacted. They also plan to manufacture a limited edition of the Fireball kit to coincide with the event.

Our worthy columnist with his latest – this Fox 35 powered de Bolt All American Senior.

Too stiff?

Finally, a request. Can I ask if anyone has experienced problems of stiffening of controls when using the currently-available Laystrate lines? You may recall that in the April *Aeromodeller* I mentioned the demise of my Excitation, apparently caused by a tightening-up of the controls until they finally seized totally. While talking to Dave Day at Rubery Hill, he mentioned similar problems when using the new Laystrate. Having rebuilt the remains of the Excitation into a profile stunter similar to Ted Fancher's Imitation I again experienced the same problem on first test flights, using the same, almost-new lines I had used on the previous occasion. This time I was ready for it and ceased aerobatics, and although it was impossible to keep the aircraft flying straight and level, I managed to land it safely. I immediately changed to some five-year-old lines and flew again, this time with no problem at all.

On comparing the two sets of lines with the aid of a magnifying glass, I noticed that the old lines had eight and a half twists per inch and the new (and suspect) ones only four twists per inch. Could this have anything to do with it? If you have any experience or comments, drop me a line at The Mill, Ash Priors, Taunton, TA4 3NQ, Somerset.

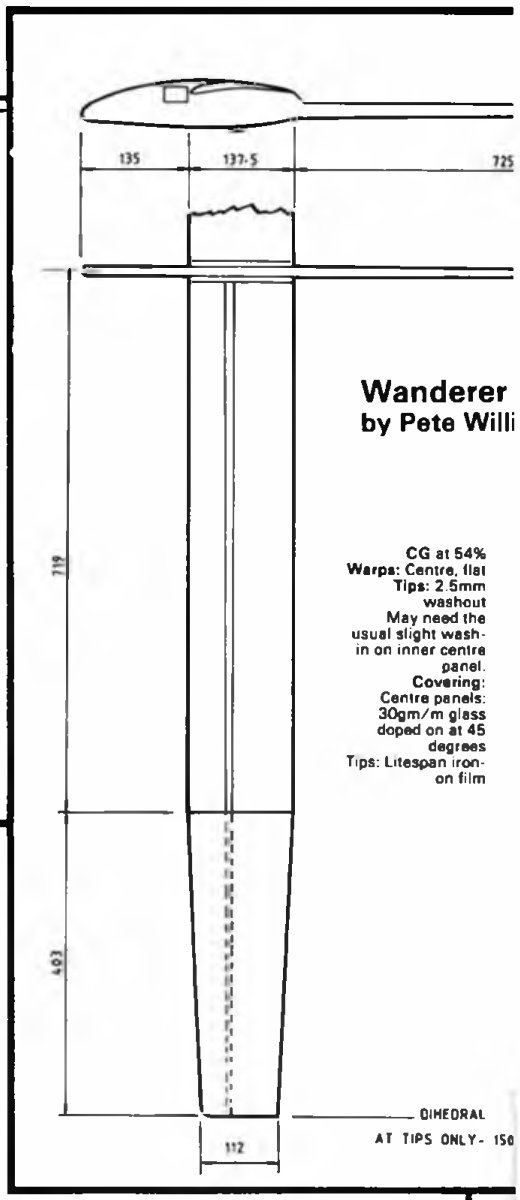
FREE FLIGHT SCENE

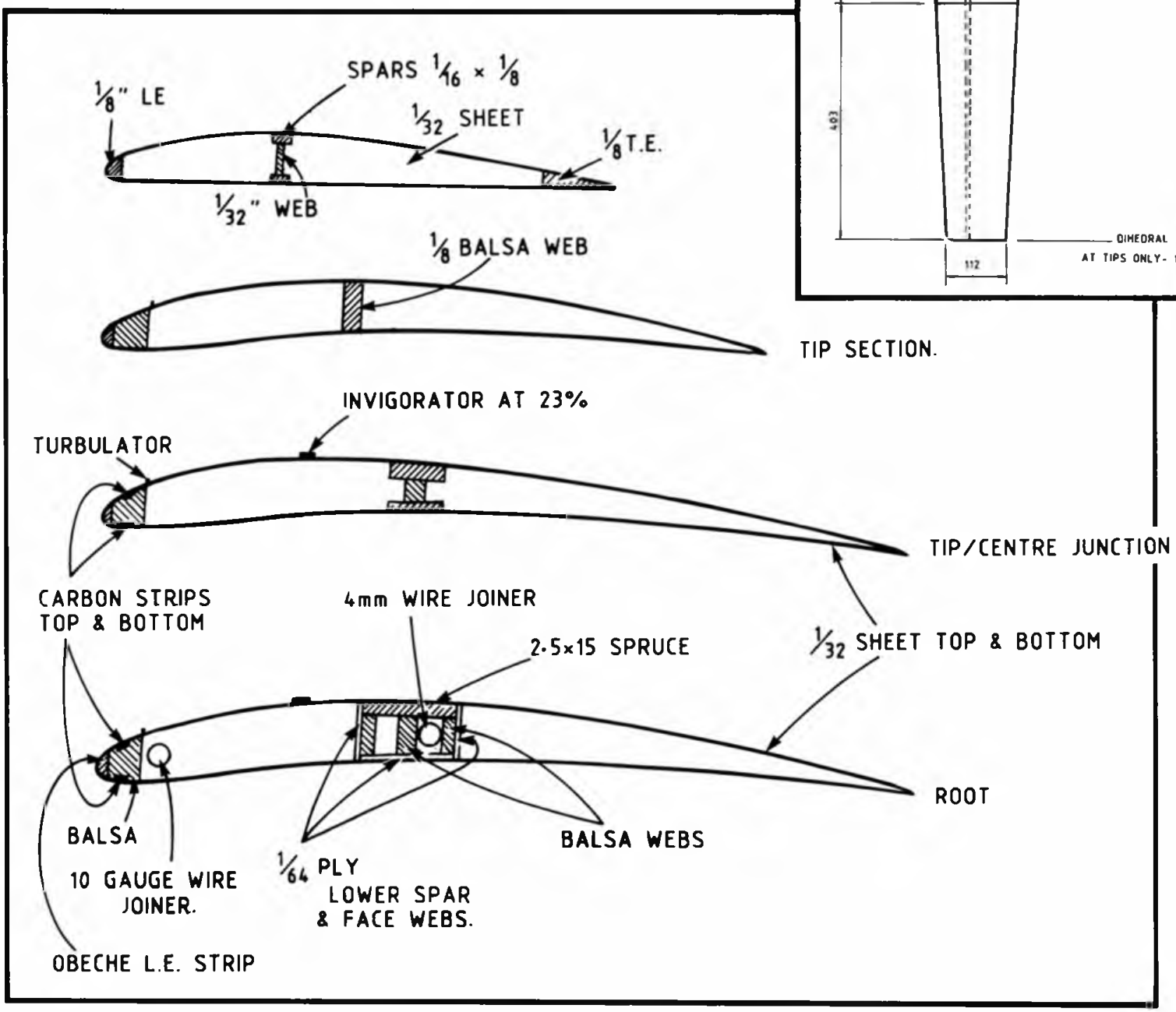
Dave Hipperson looks at a new F1A glider, reviews events and tries new rubber...

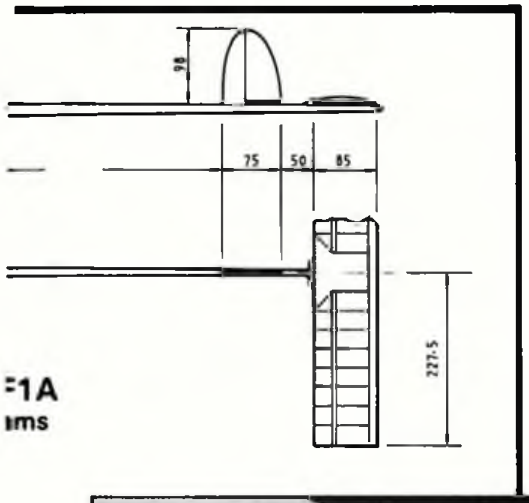
AFTER a good season in '88 Pete Williams is experimenting with this model, named Wanderer in '89. He admits it represents numerous changes to his previously tried and tested Ice series – and he rarely makes more than one modification at a time. The many changes – a combined attempt to improve flyoff performance – are: a longer wing of different construction; a smaller, flat-bottom tail; and greater tail moment arm. The wing section is slimmer, too, with a lower top camber than Pete has previously used. His sections are his own; modifications are based on what he feels looks right – and is worth trying – rather than any theoretical research.

Wing stiffness is, of course, paramount, bearing in mind the launching techniques employed in today's contests. All models have thickened wing roots. The all-sheet covering also assists strength. Peter doesn't believe that open structures produce better performance than sheeted ones, although he admits that sheet-top surfaces certainly require positive turbulation. He spends some time getting this correct.

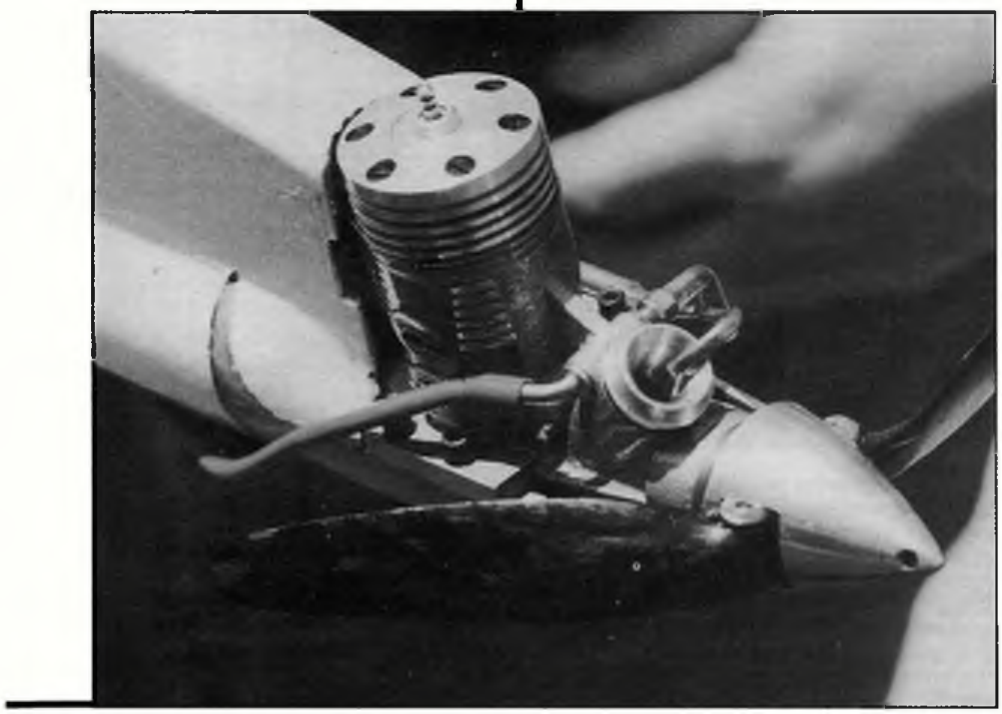
Construction of the wing is from the bottom surface up, built over a former shaped to the undercamber. The complex spruce, balsa and ply spar is the next item on the agenda for improvement. It is hoped that a







F1A
ims



CS engines are now appearing on the Power scene. This .15 is mounted in George Fuller's F1C, seen at the Nationals. Note flood-off and folding prop.

composite carbon unit will save weight on future models without compromising stiffness. At present carbon is only used to reinforce the top and bottom of the balsa leading edge. The tow hook is also Pete's own, and is the result of continual alteration and development. All adjustments are at the hook by means of screws.

SMAE 3rd Area Centralised Event: 7th May

At last – warm and sunny weather! And it coincided with the third of the SMAE Area events. The Northern venues found it rather breezy compared to the south, where at Beaulieu and Ashdown a light drift dropped away even further at flyoff time. Merryfield had an odd problem with the very light wind all day increasing considerably by early evening.

A spread of high Glider flyoff times came from all over the country. One notable newcomer, showing great promise at Ashdown Forest, was twelve-year-old Adam Stringer flying a Caprice to three maxes, then a superb seven-and-a-half minute flyoff for fourth place nationally. Pete Stewart made his winning flight in the near dead calm at Beaulieu after a hot day; and Phil Owens, flying at Rufford, must have been disappointed that a nearly eight-minute flight only placed him third. Barkston accounted for practically half the total entry – numbers having been swelled by the attendance of the East Anglian Area flyers – but produced winners only in the other two classes, as Dave Oldfield's excellent Glider flight was good enough only for second place.

Drift dropped appreciably for the flyoffs, then increased again after the lift had passed! Oldfield's flight only just left the drome and half-a-dozen others made five minutes or better. In Power, Ray Monks came back on form flying his new model with Superjacker-style wing. With the Nats imminent, and the model going so well, his tactics were to D/T down at around seven minutes! This looked hopelessly early as the model was well up and on the field, but it proved enough to hold off both Bryant and Peers, who were not in such helpful air.

Despite the sometimes tricky lift six maxed out in F1B at Barkston, holding off Gerry Pink at Merryfield and Dennis at Driffield, who both had disappointing flights.

At Barkston, Peers and Cliff flew early into indifferent air whereas Mike Chilton led the rest into positive lift that held for him – but less well for the others. All credit to John Cooper who once again made it through with his aged model, and still managed a respectable flyoff. Chilton's flight well exceeded the confines of the drome and his true duration was considerably in excess of what he was credited with. However, the six minutes was still comfortably enough to win the Weston Cup.

Things changed around a little in the Plugge Cup. Bristol and West pulled up a place; and Biggles added enormously to their total, being the only club with three members in the Wakefield flyoff. However, Birmingham increased their commanding lead with points from Chilton and Dixon in particular.

SMAE 3rd Area Centralised

Open Glider No trophy (58 flew: 20 in fly off)

1 P. Stewart	Beaulieu	7:30 + 10:49
2 D. Oldfield	Barkston	7:30 + 8:47
3 P. Owens	Rufford	7:30 + 7:55
4 A. Stringer	Ashdown	7:30 + 7:31
5 J. Carter	Barkston	7:30 + 7:27
6 D. May	Rufford	7:30 + 7:17

F1B Weston Cup and Plugge Points

(58 flew: 8 in flyoff)

1 M. Chilton	Barkston	12:30 + 6:14
2 S. Dixon	Barkston	12:30 + 4:33
3 J. Bailey	Barkston	12:30 + 3:19
4 J. Cooper	Barkston	12:30 + 3:00
5 N. Cliff	Barkston	12:30 + 2:56
6 R. Peers	Barkston	12:30 + 2:49

Open Power White Cup (29 flew: 9 in flyoff)

1 R. Monks	Barkston	7:30 + 7:01
2 G. Bryant	Barkston	7:30 + 5:15
3 R. Peers	Barkston	7:30 + 3:40
4 K. Faux	Barkston	7:30 + 3:24
5 D. Cox	Beaulieu	7:30 + 2:36
6 D. Scott	Driffield	7:30 + 2:28

Plugge positions after three events

Birmingham	784
Crookham	705
Bristol & West	632
Anglia	573
Vikings	559
Biggles	478
Morley	320

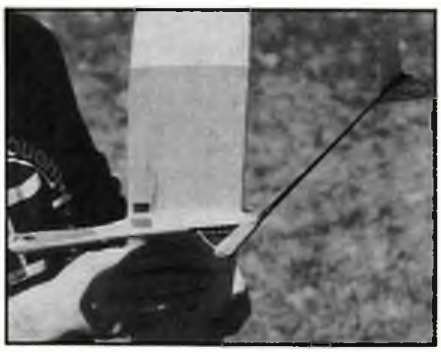
Grantham Grand Prix: 14th May

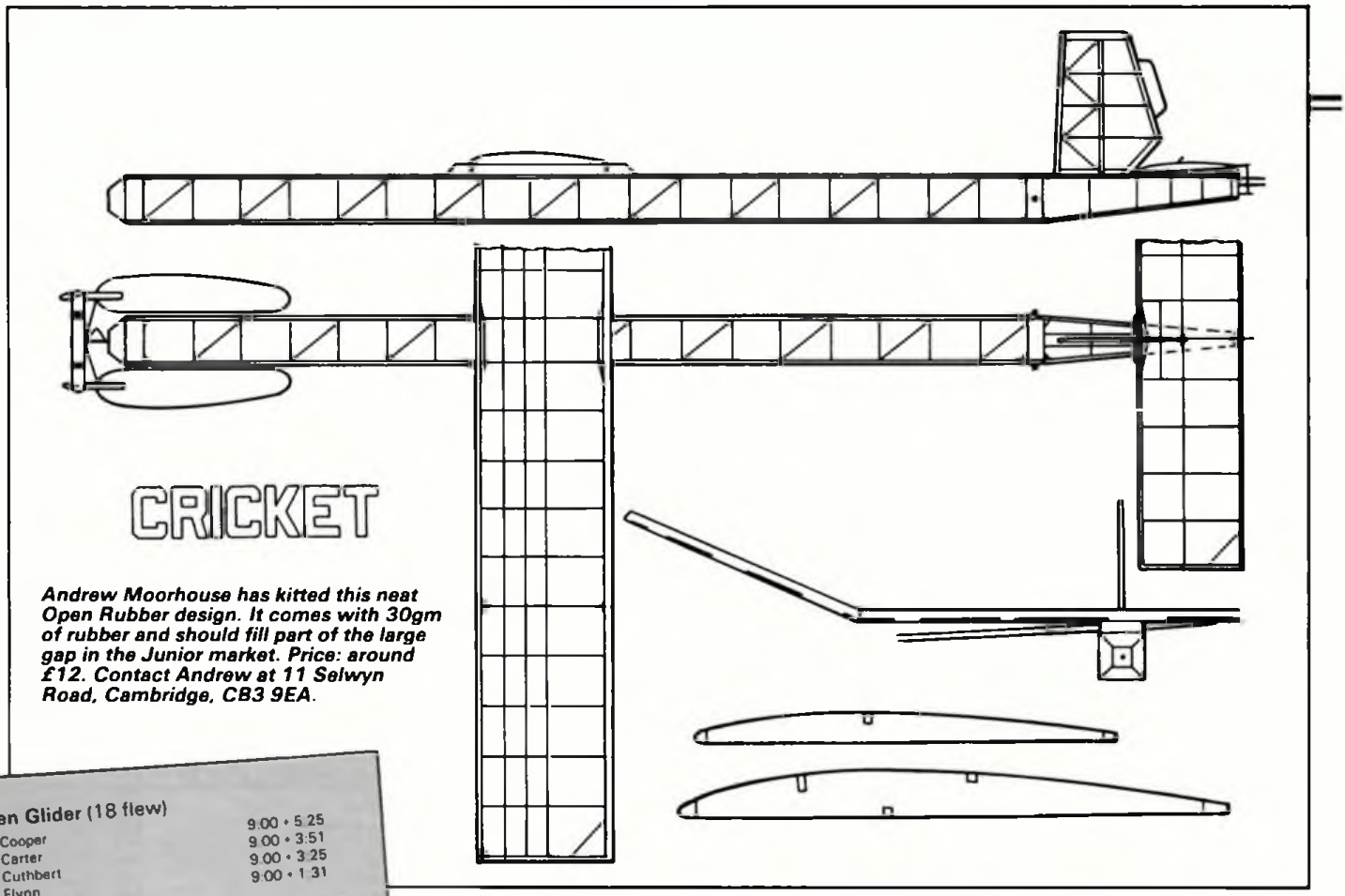
It wasn't so long ago that this event was a Winter fixture. However, it has suffered from such discouraging weather that recent policy has been to shift it further into late Spring. It paid off this year, the very warm pleasant conditions attracting large entries in all events.

Lift actually became a problem around early afternoon with many flights refusing to come down, even after D/T. This is a comparative rarity at Barkston, where – as on most aerodromes – lift rarely gets out of control. Despite the greater number of timer operated, and hence more accurate D/T's, many models – Open Rubber in particular – were set for flights of ten minutes or so.

As is so often the case, combined FAI was a glider-dominated event, Power models hardly making a showing. Gordon Beal, who is having another good season, ousted John Cooper in the two-way flyoff. However, John had his win in the Open Event. Power gave a clear win to Russell Peers from the top of

Tip-boom HLG D/T displayed by Mick Page recently. Reliable and effective.





CRICKET

Andrew Moorhouse has kitted this neat Open Rubber design. It comes with 30gm of rubber and should fill part of the large gap in the Junior market. Price: around £12. Contact Andrew at 11 Selwyn Road, Cambridge, CB3 9EA.

Open Glider (18 flew)

1 J. Cooper	9:00 • 5:25
2 J. Carter	9:00 • 3:51
3 J. Cuthbert	9:00 • 3:25
4 J. Flynn	9:00 • 1:31

Open Rubber (13 flew)

1 J. O'Donnell	9:00 • 6:16
2 D. Hipperson	9:00 • 5:59
3 G. Sharp	9:00 • 5:54
4 J. Baguley	9:00 • 4:06
5 G. Ferer	9:00 • 3:45

Open Power (11 flew)

1 R. Peers	9:00 • 4:09
2 P. Watson	9:00 • 2:44
3 J. Sizer	9:00 • O/R

Combined FAI (19 flew)

1 G. Beal	15:00 • 3:17
2 J. Cooper	15:00 • 1:57
3 M. Chilton	14:20
4 R. Chilton	13:30

HLG (6 flew)

1 M. Page	7:48
2 P. Ball	7:41
3 I. Clark	7:16

Pannet Trophy Meeting: Driffield, 16th April

Open Glider for Kay Shield (5 flew)

1 John Carter	7:43
2 Gordon Beal	6:45
3 Jim Baguley	4:50

Vintage for Topcliffe Vintage Trophy (3 flew)

1 Dennis Davitt	8:50	Lanzo Stick
2 Gerry Ferer	8:04	Lanzo Stick
3 Phil Ball	6:58	Challenger

Open Power for Pannet Trophy (7 flew)

1 Stafford Screen	8:53
2 Russell Peers	8:42
3 Pete Watson	8:39

Falcons League Points (up to and including Grantham GP)

1 Russell Peers	32
2 John Carter	22
3 John O'Donnell	16
4 Stafford Screen	16
5 Dennis Davitt	14
6 Gordon Beal	14

a near-perfect seven-second power pattern. John Sizer, who is appearing more and more, and often with very fast aeroplanes now, was unlucky to have an over-run.

The largest and longest flyoff was for Open Rubber. The eventual three placers all released quite close together, looking very well set for extended flights until they left the northern end of the drome. Here the steady air deteriorated fast and dumped the models quite quickly and close together in and around the same wood at very similar times. John O'Donnell's new large model was the winner by some quarter-of-a-minute, but it was damaged by violent recovery from two extraordinarily high trees into which it had lodged.

Generally this was a good day; but one got the impression that although many attended, some didn't fly in the breeze because of the closeness of the Nats.

Pity.

Tan FAI Rubber

Understandably there is some scepticism about the new, light brown FAI rubber strip now available from America via various sources. Not surprising, because the excellence of the Chinese rubber was all but nullified by its impractical fragility.

I have had time only to test a few samples of this new 'Tan FAI' – and only the 1/8 strip – but it appears most promising. To summarise, it is slightly less 'peaky' than conventional FAI, very robust (inasmuch as it doesn't fray or break any more easily than 'Grey FAI') but, perhaps most interestingly, it suffers less permanent stretch than any rubber I have previously tested. This is usually a sign of high quality.

Let me explain what I mean. Take as an example, a ten-gram sample made up to Coupe d'Hiver length. This works out as twelve strands. The motor came out a fraction over ten inches long, unused. I would expect that such a motor, when given the full series of tests working up gradually to max turns, would finish up 11.1/4 or even 11.1/2 inches long. Not the 'Tan FAI'! When thrashed it had stretched only half an inch – and that after one test where I actually managed to apply 385 turns to the motor. Incidentally, this sample then returned more energy than any rubber I have tested since the days of good Pirelli, and it did this with a much flatter output torque curve than is usual for FAI. This seems to be rubber worth purchasing; my tests show that it is consistent from box to box, and it appears to be the same stuff that is available from all sources who have provided samples.

What's Happening

SMAE Free Flight

30th July Club Champs. Open Glider/Rubber/Power. For Club Teams and individuals. Contact: Gerry Le Vey. Tel: 0904 705647. Venue to be decided

Tony Brown releases his TD.049 McCann-designed Tailless at the Nats. Note Ronytube boom – and supplier Ron Pollard looking on as timer!

WHAT'S ON

16th July
ROLLS-ROYCE MAC VINTAGE C/L MEETING
Venue: RR Airfield, Hucknall, Notts. Events: Olt Time Stunt, Classic and Open Midge, Vintage A and B Team Race. Contact: Terry McDonald. Telephone: 0332 511273

16th July
ASP GOLDEN ERA DAY RC, CL, FF
Venue: Old Warden Airfield. All the fun of the twenties and thirties! Scale and vintage models all welcome. Lympne Scale 89 competition. Period costume desirable. Do come! Contact: Aeromodeller. Telephone: 0442 66551.

16th July
KNAVESMIRE FREE FLIGHT ANCIENT AND MODERN MINI EVENT FF
Venue: York Racecourse. Contact: John Pool. Tel: 0757 703060.

16th July
BMFA S.E. AREA OPEN FREE FLIGHT EVENT FF
Venue: Ashdown Forest. Contact: Mick Howick.
Harriers, Hare Lane, Blindley heath, Lingfield, Surrey RH7 6JB.

23rd July
3RD NORTHWEST VINTAGE SWAP-MEET
Venue: Memorial Hall, Chester Road, Northwich, Cheshire. New venue with bar and restaurant. Bring anything to do with model aircraft. £1.00 entry. 10:30 to 4.30. Signposted from M6. Free car park. Contact: David Lloyd-Jones. Tel: 056589 3170.

23rd July
BRUMFLY 89
Venue: RAF North Luffenham. Contact: Stafford Screen. Tel: 0384 396535.

25-30th July
1989 CONTROL LINE EUROCHAMPS CL
Venue: 3 Sisters. Contact: BMFA.

30th July
BMFA CLUB CHAMPS FF
Venue: Driffield, O/G, O/R, O/P for Club Champs. Contact: BMFA.

30th July
OXFORD MFC DREAMING SPIRES GALA FF
Venue: Port Meadow. Silent Vintage, Vintage HLG, Open Tailless (not power), Scale (motors under 1.5cc). Contact Charlie Newman. Tel: 086 77 3020.

30th July
SHUTTLEWORTH MODEL GROUP OPEN DAY FF,CL
Venue: Old Warden Airfield, Biggleswade, Beds. 9am - 6pm. General model flying of all types. Contact: Mick Staples. Tel: 0223 241978.

5-6th August
WOODVALE INTERNATIONAL RALLY
Venue: RAF Woodvale. International R/C events.
Trade stands. Vintage Car Rally. Competition and Camping. Contact: John Armstrong. Tel: 051 5266857

6th August
CARDINGTON INDOOR MEETING FF
Venue: Cardington Airship Shed. All-in Index and fun-flying. Contact Bob Bailey. Tel: 0438 723642.

19-20th August
ASP VINTAGE WEEKEND RC, CL, FF
Venue: Old Warden Airfield. The annual pilgrimage. Two days packed vintage fun. Informal awards, ASP and SAM 35 competitions. More news to come. Don't miss it! Contact; Aeromodeller. Telephone: 0442 66551

19-20 August
PLUMPTON MODEL SHOW
Venue: Plumpton Racecourse. 10am - 6pm both days.
Everything from Chuck Gliders to jet R/C models.
Many more attractions including full-size Cri-Cri demonstration. Cars, boats and planes; trade stands, bar and fair ground. Live band of Saturday evening. Return coach trips to brighton. £20 family ticket (after 6pm, Friday until Monday morning) or £2.50 per day (adults); £1.50 per day for children and senior citizens. Contact; Dave Bishop. Tel: 095 977550.

27-29th August
BMFA RADIO CONTROL, CONTROL LINE AND SCALE NATIONALS
Venue: Barkston Heath. Details to follow. Contact: BMFA.

26-27th August
BMFA INDOOR NATIONALS
Venue: Cardington Airship Shed.
Saturday: (a) EZB for Houlberg Silver Trophy - best 2 from 6 flights
(b) Index for Manhattan Cabin, Flyrod (Novice only), HLG, Pennyplane, Novice Pennyplane, CO_2 Duration and PND. Best single score from 6 flights.
(c) CO_2 Duration for Sparklets Trophy. Best 2 from 6.
(d) CO_2 Duration for Sparklets Longest Flight. Best flight from 6.
(e) Fun flying.
(f) Sweepette Trophy for Indoor HLG - now an Index event for (i) Special rules models: 18in min span, 22in max span, 10gm max weight; and (ii) 12in max HLG
(iii) Open HLG
Sunday: (a) F1D for Aeromodeller Trophy. Best 2 from 6.
(b) 1990 F1D W/Champs Trials - first three flights; best 3 from nine to count.
(c) Fun flying.
Contact: Bob Bailey. Tel: 0438 723642.

17th September
WALSALL MAC F/F SCALE DAY
Venue: Essington. Contact: Geoff Spencer. Tel: 021 556 3376.

17th September
INDOORS AT CARDINGTON FF
Venue: Cardington Airship Shed. F1D W/Champs Trials - second three flights, best 3 from 9. Fun flying too. Contact Bob Bailey. Tel: 0438 723642.

17th September
BMFA C/L SCALE WORLD CHAMPS TEAM TRIALS
Venue: RAF Hullavington. Entry fee: £10. Contact: Eric Coates, Arosa, Liberty Road, Newtown, Fareham, Hants.

1st October
EAST COAST MODEL AND LEISURE EXHIBITION
Venue: Richmond Hotel, Richmond Drive, Skegness. All types of modelling on display. Contact: C. Firth, 7 Laythorpe Avenue, Skegness, Lincs.

1st October
THREE KINGS C/L SCALE DAY CL
Venue: Old Croydon Aerodrome, Purley Way, Croydon, Surrey. FAI Scale and Profile classes: Best WWII. Silencers and proof of insurance essential. Contact: Wal Cordwell. Tel: 01-764 1661.

8th October
BMFA INDOOR SCALE MEETING
Venue: Alumwell Centre, Walsall. 8.30 to 5.00 Peanut, Open Rubber, CO_2/Electric and Air Racing. Experimental rules revision - see Hangar Doors. Contact: Doug Sheppard. Tel: 0272 697595.

15th October
BMFA MIDLAND AREA FLY FOR FUN RALLY
RC, CL, FF
Venue: Barkston heath. Informal flying for R/C, C/L, F/F. Trophies and prizes for best model (Hemswell Trophy), best flight, top Junior.
Comps for A/1, (PAMAG Trophy), CDH (PAMAG Trophy), SOP (GD Shield), Vintage (Butlins Cup). Contact: Brian Perks. Tel: 0858 63829.
Essential to ring to confirm R/C frequencies.

22nd October
MORLEY & DMAC ANNIVERSARY MEETING FF
Venue: Driffield Vintage Power Duration, Vintage Plus 10 Duration for 1950s power models. Other events too. Free entry. Prizes. BMFA members only. Contact: Stan Horne. Tel: 0532 610429.

22nd October
MORLEY AND DMAC TWENTIETH ANNIVERSARY EVENT
Venue: Driffield
This is a Fun-Day, hence no entry fees, but there are prizes!
F/F Duration:
Vintage (Power models only);
"Vintage plus Ten" (Power models only);
"One-Flight" competition for Open Rubber, Open Glider, Slow Open Power.
These will be held at three different, fixed times.
"One Model" competition: The model is provided.
Novelty Event: Beat the clock to start an engine.
Other novelty events may happen.
Contact: Stan Horne. Tel: 0532 610429.

22nd October
SOUTH BIRMINGHAM MFC VINTAGE CONTROL LINE RALLY
Venue: Rubery Hill Hospital, near Birmingham.
10am start. General flying for all SAM 35 and BMFA members. Speed and Stunt comps to SAM 35 rules. Contact: Peter Martin. Telephone: 021-459 5520.

29th October
SAMS INDOOR FUN FLY
Venue: Watford Leisure Centre. Fly Indoor all day!
Contact: George Wallbridge. Tel: 076 388 384

AUGUST BANK HOLIDAY

1989

RADIO CONTROL & CONTROL LINE MODEL FLYING CHAMPIONSHIPS

BRITISH NATIONALS

26, 27, 28 AUGUST 1989

•THE BIGGEST MODEL FLYING EVENT IN EUROPE•AT RAF BARKSTON HEATH AND RAF CRANWELL•
(BY KIND PERMISSION OF THE COMMANDING OFFICER)

*** SILENT FLIGHT, ELECTRIC FLIGHT ***
*** COMBAT ***
*** PYLON ***
*** SCALE ***
*** AEROBATIC ***
*** HELICOPTERS ***
*** TRADE STANDS, REFRESHMENTS ***
*** AND MUCH, MUCH MORE!!! ***

AN EVENT NO AEROMODELLER CAN AFFORD TO MISS!!!

ADULTS—£3, CHILD UNDER 16—£2, CHILD UNDER 10—FREE IF ACCOMPANIED.
CAMPING PRE-BOOKED—£9 (3 DAYS), CAMPING NOT PRE-BOOKED £12 (3 DAYS)
(INCLUDES ON SITE CAMPING AND ADMISSION TO ALL 3 DAYS OF THE EVENT, CHILDREN UNDER 16 FREE IF ACCOMPANIED)
BMFA MEMBERS 3 DAY ENTRY PASSES £6
FREE PARKING

FOR FURTHER INFORMATION CONTACT:
Nationals Entry,
BMFA,
3rd Floor,
Kimberley House,
47 Vaughan Way,
Leicester LE1 4SG
Tel: 0533 518500

ORGANISED BY THE SOCIETY OF MODEL AERONAUTICAL ENGINEERS

GUERNSEY

look! low prices

Futaba Bionic Gold £36.00
Sanwa Das 2 .....£45.00
JR Beat 202 .....£45.00
JR Max 202, 40Mhz £60.69
JR Laser 4 (40 Mhz) £102.00
PAW 80 .....£16.93
PAW 1.49 .....£19.00
PAW 2.49 .....£21.02
PAW 19 DS £23.02
PAW 29 R/C £34.00
Blue Bird 25 R/C £35.88
Saito 45 FS £87.10
OS 40FP R/C £48.44
Irvine 30 R/C £42.27
Irvine 61 R/C £72.61

KK Conquest £3.78
Mercury T. Moth £13.00
Chris Foss WOT 4 £37.33
Prince 20S AFR ...£52.14
Flair Magnattila ...£31.37
Flair Baronette ...£42.00
Eagle 40L £39.12
Low Boy £30.41
Hi-Boy £28.56
Phase 2 .....£30.66
Irvine Fauvette 905 £32.15
Kyosho Melody ...£65.17
Futaba Challenger 4 .....£121.69
Futaba Attack 0 Mhz £62.00
Sanwa Conquest 6 £112.86
JR Laser 4 .....£115.00
PAW 100 .....£16.93
PAW 1.49 Contest £19.98
PAW 2.49 R/C £26.00
PAW 29 .....£35.88
PAW 35 R/C £39.88
OS 40 FS Surpass £109.52
OS 35 FP R/C £40.44
Irvine 20 R/C £38.50
Irvine 40 R/C £52.13
K&B 20R/C £34.73

THE MODEL SHOP (Guernsey) 18 Fountain Street Gurensey, C.I.

Many more Aero and Marine. New Zealand orders welcome. Send 50p P.O. for lists. Duty free-Export only. VAT Liable UK customers.

IDEAL FOR SPORT FLYING AND COMPETITION

PRO-GRIP

Control Line Handle

- Hi-Tech Design
- Comfortable–Compact
- Engineered for Long Life
- Multiple Line Spacing For Sensitivity Control

PRICE £12.70

SIG

STAINLESS STEEL LINES - ALL PACKS INCLUDE TWO LINES, A PLASTIC REEL, & A PAIR OF LINE CONNECTORS

SH-451 8 thou x 52ft	£4.95	SH-460 18 thou x 60ft	£8.75
SH-454 12 thou x 52ft	£4.95	SH-461 18 thou x 70ft	£8.95
SH-456 15 thou x 52ft	£4.95	SH-463 21 thou x 70ft	£7.95
SH-457 15 thou x 60ft	£5.45	SH-447 27 thou Lead-out wire in 6ft length	£1.10
SH-458 15 thou x 70ft	£5.95	SH-441 Plastic Reel	£1.20
SH-459 18 thou x 52ft	£5.45		

SIG KITS

MAGNUM C/L stunter, 60" span	£67.50	**MODELHOB C/L KITS**	
SUPER CHIPMUNK C/L 53" span	£47.95	Northrop F5 53" semi-scale	£19.95
RYAN STAR R/C "precision" scale, 72" span	£119.95	Baron 39" span .19 motors	£19.95
SMITH MINIPLANE R/C 44" span	£76.50	Smousen 36" span .19 motors	£42.95
CLIPPED WING CUB R/C scale aerobatic convertable to C/L 1/6th scale	£61.20	Mustang 38" span .19 motors	£29.95
		ENGINES	
		O.S. 25 FP Stunt	£38.80
		O.S. 35 FP Stunt	£44.95
		O.S. 40 FP Stunt	£47.25

Sullivan Line Connectors Lg or Sml.	90p pair
Sullivan Line Reels	£1.20
Sullivan Handle with Line spacing & length adj	£4.25
Sullivan Handle with Line length adj (all plastic)	£3.75
Laystrate L/W 70'	£2.00
Laystrate L/W 100'	£2.60
Graupner Glow Plug Clip, strong reliable croc type	£1.90
Mirahamm super light sponge wheels per pair 45mm	£1.50
50mm	£1.70
55mm	£1.85
Model Magic Superflight Filler, rapid drying, sands beautifully over soft balsa, 8 fl.oz.	£3.95
NEW O.S. SF 46 Stunt (A.B.C.) latest engine available for C/L, with silencers	£84.35
Last orders please for one of the most popular C/L motors, one final delivery promised by Super Tigre for Aug/Sept ST 60 Stunt	£75.12

The Model Shop

230 Wellingborough Road Northampton NN1 4EJ Telephone: (0604) 31223

*All orders post/packing **FREE** Export deduct 13% P&P at cost*
Access Visa Diners Amex

Have

AERO MODELLER

*delivered to your door FREE !**

That's right, if you take out a year's subscription to Aeromodeller we will make sure that it is delivered to your door each month at no extra charge*. Just fill in the coupon below and send it to the address given with a cheque, money order or credit card instructions to cover the cost of the subscription. We'll do the rest.

*** Overseas subscription rates include postage.**

UK: £23.40; EUROPE: £28.20; MIDDLE EAST: £28.40; FAR EAST: £30.20; REST OF THE WORLD: £28.70 or USA: $50.00
Airmail Rates on Request.

Send this form with your remittance to:
INFONET LTD., 5 River Park Estate, Billet Lane, BERKHAMSTED, Herts. HP4 1HL, United Kingdom

Please commence my subscription to Aeromodeller with the ..... issue. I enclose my cheque/money order for £..... made payable to ARGUS SPECIALIST PUBLICATIONS
Or Debit my Access/Visa number ☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐
Valid from ..... to ..... Signature .....
Name ..... Address .....
..... Postcode .....
☐ New subscriber ☐ Subscription renewal/extension (delete as applicable)

RADIO CONTROL HANDBOOKS
from
ARGUS BOOKS

BASIC RADIO CONTROL FLYING – DAVID BODDINGTON
The master of the art, David Boddington, takes the novice pilot through the theories of flight, selection of the model, preparation for flight, a training course of flying exercises and the magic solo stage. The book is a must for all beginners and a valuable reference for all R/C model flyers.
ISBN 0 85242 980 0
248x185mm 64pp
£4.95 Illustrated.

BUILDING FROM PLANS – DAVID BODDINGTON
David Boddington explains, in practical and easily understood terms, the process of translating a two-dimensional drawing into a three-dimensional model, from the moment of receiving the drawings to having the airframe ready for covering and radio installation.
ISBN 0 85242 976 2
248x185mm 64pp
£4.95 Illustrated.

COVERING MODEL AIRCRAFT – IAN PEACOCK
Ian Peacock, well-known to model aeroplane enthusiasts, here offers a wide range of hints and tips enabling you to achieve a high standard of finishing and covering with the minimum of effort. Written for free-flight, control-line and radio control modellers alike.
ISBN 0 85242 979 7
248x185mm 64pp
£4.95 Illustrated.

FLYING SCALE GLIDERS – CHAS GARDINER
Chas Gardiner covers all aspects of the history from choosing the subject through research, design and construction methods to finishing the model. He concludes with useful tips on launching (slope, winch and aerotow) and flying, and trimming and landing.
ISBN 0 85242 982 7
248x185mm 64pp
£4.95 Illustrated.

INSTALLING RADIO CONTROL AIRCRAFT EQUIPMENT – PETER SMOOTHY
Installation of the radio control system in a model has a direct bearing on the accuracy of flight, the reliability of the equipment and its useful life. Peter Smoothy describes the correct methods of installing and checking this vital equipment.
ISBN 0 85242 978 9
248x185mm 64pp
£4.95 Illustrated.

MOULDING & GLASS FIBRE TECHNIQUES – PETER HOLLAND
The use of composites in model aircraft structures enhances appearance, strength and durability and this book covers many practical tips for home construction. Detailed guidance is given on wing skins, composite spars, silicone rubber tyres, vacuum forms, cowlings, fillets and fairings.
ISBN 0 85242 981 9
248x185mm 64pp
£4.95 Illustrated.

OPERATING RADIO CONTROL ENGINES – BRIAN WINCH & DAVID BODDINGTON
This practical guide explains how various internal combustion engines work, the different types available, what to select, how to prepare them for starting and running and concludes with the all-important question of maintenance.
ISBN 0 85242 986 X
248x185mm 64pp
£4.95 Illustrated.

SETTING UP RADIO CONTROL HELICOPTERS – DAVE DAY
Even the most experienced helicopter modeller will find it extremely difficult to fly a badly-adjusted model. Dave Day describes how to prepare an R/C helicopter for flying and this handbook will assist the newcomer and 'struggling' would-be helicopter flyers.
ISBN 0 85242 975 4
248x185mm 64pp
£4.95 Illustrated.

HOW TO ORDER BY POST

- ☐ 04173 BASIC R/C FLYING £4.95
- ☐ 04159 BUILDING FROM PLANS £4.95
- ☐ 04172 COVERING MODEL AIRCRAFT £4.95
- ☐ 04175 FLYING SCALE GLIDERS £4.95
- ☐ 04160 INSTALLING R/C AIRCRAFT EQUIPMENT £4.95
- ☐ 04174 MOULDING & GLASSFIBRE TECHNIQUES £4.95
- ☐ 04176 OPERATING R/C ENGINES £4.95
- ☐ 04167 SETTING UP R/C HELICOPTERS £4.95

I enclose my remittance of £ .....
(Please add 10% for postage and packing) min. 50p
Please charge my access/mastercard/barclaycard/visa

No. ☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐

Expiry Date ☐☐/☐☐

HOW TO ORDER BY PHONE

TELEPHONE (0442) 66551 EXT 204
Quote access/mastercard/barclaycard/visa
Allow up to 28 days for delivery

Signature .....

Name .....

Address .....

.....

..... AM0889.

Complete details and return form to:
Argus Books, PO Box 901, Sudbury, Suffolk CO10 6FR

CLASSIFIED advertisements

We accept Access/Barclaycard

Private and trade 49p + VAT, minimum 15 words. Display box rate £10.00 per single column centimetre (minimum size 2.5cm). All advertisements are inserted in the first available issue, unless specified otherwise.

Write your advert in **BLOCK CAPITALS** indicating the section you wish it to appear in, **INCLUDING YOUR NAME AND ADDRESS** and send it to: **AEROMODELLER, CLASSIFIED ADVERTISEMENT DEPARTMENT, ARGUS HOUSE, BOUNDARY WAY, HEMEL HEMPSTEAD, HP2 7ST. Nick Peters Tel: 0442 66650.**

FOR SALE

THE PEATOL LATHE

£120 including 3 or 4 jaw chuck. Milling attachment and other accessories available. Centre height 2½" distance between centres 9".

Please send S.A.E. for full details

Peatol Machine Tools, A.M. 19 Knighton Road, Harborne, Birmingham B17 8PS. Price exc. VAT

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

FRANKENSTEIN PLUS TEN - A 10% INCREASE IN A CLASSIC DESIGN OF THE 50's

£27.50 P&P £1.50 plan only £4.40 post paid

57" span .090.25 motors 1-3 Function R/C or F/F. Pre-cut components detailed plan & instructions

Just for a laugh! **REVOLUTION** 36" dia 049 Powered F/F Rotary Wing Flying Machine - Pre-Cut components, detailed instructions £4.85 P&P £1.50

B.E. PARK (MODELS) 10 Northam Road, Percy Main, Northshields, Tyne & Wear Phone 091-257 0753

MULTI PLEX

in IRELAND

MULTIPLEX FM Module R/C Systems SPORT - COMBI - PROFI - the top WEST GERMAN 35MHz Equipment

O.S. ENGINES

IRELAND'S LARGEST SELECTION OF KITS & ACCESSORIES by: Kavan, M.F.A., Ripmax, Veron, Zinger, Multiplex, Irvine, Humbrol, Micro-Mold, Keil-Kraft, SOLARFILM, etc.

FUTABA R/C SYSTEMS

W.J. OWENS 41 Main Street, Bray, Co. Wicklow. Tel: Dublin 863664. Wed. - Closed 1pm

DO YOU HAVE SOMETHING TO SELL TO OUR READERS?

CHINESE RACING MOTORS

Glows - D49, 061, 09, 15, 21, 60. T/R Diesel 2.5 + Carb. Rubber strip.

Brochure and prices from

PETER CARTER
27 Alexandra Rd., South Woodford, London, E18 1P2
(01) 530 5360

SITS VAC

How would you like to extend your modelling to the real thing? Southern Sailplanes are looking for enthusiasts to service, rebuild and repair aircraft and gliders from Tiger Moth to Nimbus 4.

Write to:

Southern Sailplanes, Membury Airfield, Lambourn, Berks.

SERVICES

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

AEROMODELLER CAN SATISFY YOUR BUSINESS NEEDS

TO ADVERTISE YOUR PRODUCTS IN AEROMODELLER MAGAZINE

0442 66650

or write to

CLASSIFIED DEPT
ARGUS HOUSE
BOUNDARY WAY
HEMEL HEMPSTEAD
HP2 7ST

GLIDING HOLIDAYS

GLIDING HOLIDAYS!

At Britain's most famous and best equipped club!
Friendly, professional instructors!
Scenic Dunstable Downs location!
No experience necessary!
Free colour brochure:

LONDON GLIDING CLUB
Tring Road, Dunstable, Beds. LU6 2JP. (0582) 663419

GLIDING HOLIDAYS

SLOPE SOARING - TRY YOURSELF! Five-day holiday course for beginners and early solo pilots. May to September. Beautiful Peak District. Tuition and full board £206 - £227 incl. No hidden extras.

Apply:

Course Secretary (AM) Derby & Lancs. Gliding Club, 116 Chorley Road, Sheffield S10 3RL. Tel: 0742 301831 (7pm - 10pm)

KITES

DISCOVER A NEW WORLD OF KITES

- EASY TO FLY
- BRILLIANT COLOURS
- TOUGH SAILCLOTH FABRIC
- FAST MAIL ORDER

(credit cards welcome)

Please send stamp for free illustrated catalogue

MALVERN KITES, Unicorn Yard, Malvern, WR14 4PZ. Tel. 06845 65504
MAIL ORDER HOTLINE 06845 60100
Ideal gifts for all ages

WANTED

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

MODEL AIRCRAFT Engines? Private collector of British diesels will pay fair market prices if you have any engines (or old books) for sale. Please phone Chris E. Escritt on 0234-712648 (evenings) to discuss.

PULSE JETS and Jetex any condition for cash or swap for vintage spark and diesels. Phone 01-237-1036.

WANTED, good "Kalper" Diesel Your price paid. Clarke, 53 Gravesend Rd., Sunderland SR4 9RB.

Now you've built a model

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

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

AIRBORN Hang-gliding and Paragliding Centre (Pennines). Weekly holiday beginners courses. For brochure telephone 0442 834989 0836 270242

IF YOU HAVE GLIDING COURSES TO OFFER OUR READERS CALL 0442 66650

GLIDING COURSES

BOOKER GLIDING CLUB.

Our toys are fractionally bigger than yours. Why not give them a go?

1, 2, 5 and 7 day courses are available all year, from **£80** to **£350.**

Whether you're a total beginner, or have had a go before, our full-time professional instructors can teach you something new.

Booker Gliding Club is just 35 minutes from Central London, at

Wycombe Air Park, near Marlow, Bucks, SL7 3DR. Tel. (0494) 29263.

P.S. Booker is the busiest light aircraft and vintage airfield in Britain.

SERVICES

CAN YOU OFFER A SERVICE TO OUR READERS?

DON'T MISS OUT ON THIS COMPETITIVE MARKET — FORMULATE YOUR SUMMER ADVERTISING PLAN — PHONE NICK PETERS ON 0442 66650

CLASSIFIED COUPON

AERO MODELLER, CLASSIFIED ADVERTISEMENT DEPT, ARGUS HOUSE, BOUNDARY WAY, HEMEL HEMPSTEAD HP2 7ST.

PLEASE DEBIT MY ACCESS/BARCLAYCARD NO

EXPIRY DATE – .....

Signature ..... Date .....

Rates: Lineage 49p + VAT per word min 15 words.
Display Box Rate £10.00 per single column cm (minimum size 2.5cm). No reimbursements for cancellations. All ads must be pre-paid.

Name .....

Address .....

..... Daytime Tel. No: .....

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

ASP PLANS SERVICE

1989 PLANS HANDBOOK

NOW ON SALE £2.00

MONEY BACK OFFER £2.00 OFF YOUR FIRST PLANS ORDER OF £5.00 OR OVER

USE THE ORDER FORM INCLUDED IN THE HANDBOOK TO CLAIM YOUR REBATE.

MANY NEW DESIGNS FROM RCM&E RADIO MODELLER, AEROMODELLER PLUS NEW !!! BOB HOLMAN "MAMMOTH SCALE" PLANS, AEROMODELLER/ MODEL AIRCRAFT "X-LIST" HUNDREDS OF PLANS TO CHOOSE FROM.

ASP Plans Service, Argus House, Boundary Way, Hemel Hempstead, Herts. Tel. 0442-66551
Please supply .....copies of Plans Handbook No.1 at £2.00 £.....
Plus Postage 35p per order
I enclose my cheque or Postal Order payable to ASP for £ .....
Please debit my Access/Barclaycard A/C

Name .....

Address .....

.....

.....

Model Shop Directory

THE COMPREHENSIVE MODEL MAKERS GUIDE

Rates:- £11.85 for 12 series
£13.00 for 6 series (exclusive VAT)

Classified Advertising Tel. no. 0442 66650

COUNTIES

BUCKINGHAMSHIRE

AYLESBURY Tel: 0296 83529
MID-BUCKS MODELS ★
34 LOWER FRIARS SQUARE
BUCKS HP20 2TH
Open Mon - Sat 9 - 5.30pm
Thurs 9 - 1.00pm

CAMBRIDGESHIRE

CAMBRIDGE Tel: (0223) 845477
CAMBRIDGE MODEL CENTRE
40 HIGH STREET ★
TRUMPINGTON
Open: Mon.-Fri. 9.30am-5.30pm
Saturday 9.30am-6.00pm

HUNTINGDON Tel: 0480 55379
HUNTINGDON MODEL CENTRE
35 CHEQUERS COURT ★
CAMBS. PE18 6LY
Open Mon - Sat 9 - 5pm
Barclaycard - Access - American Express - Diners Club

CORNWALL

FALMOUTH Tel: 0326 317475
HARRY BROOKS
MARKET ON THE MOOR
THE MOOR
FALMOUTH, CORNWALL
Open every day except Sunday

DEVON

PLYMOUTH Tel. (0572) 263133
RUNWAY SOUTHWEST ★
22 FRANKFORT GATE
CITY CENTRE
Mon. - Sat. 9 a.m. - 6 p.m.

ESSEX

HAINAULT Tel: 500 3891
MODELAND
219 NEW NORTHE ROAD,
IG6 3AG
Open: Mon, Tues, Wed, Sat, 9-6pm
Thurs - 9-1pm, Fri - 9-7.30pm
24 hour mail order specialists

CHELMSFORD Tel: (0245) 442164
RADIO ACTIVE (MODELS)
100 MAIN ROAD
BROOMFIELD
Mon, Tue, Wed, Thur, Sat 9-6
Barclaycard & Access

UPMINSTER Tel: (040 22) 50272
RADIO ACTIVE (MODEL & LEISURE CENTRE),
54 ST MARY'S LANE,
UPMINSTER, ESSEX
Open Mon, Tue, Wed, Thur, Sat 9am-6pm
Fri 9am-7pm

HAMPSHIRE

PORTSMOUTH Tel: 0705 827117/ 750774
FRATTON BARGAIN SHOP
171-173 FRATTON ROAD, FRATTON
Open 9-6pm 6 days a week
Access, Visa, American Express, Diners Card

HERTFORDSHIRE

MODEL CITY Tel (0727) 64654
129 HATFIELD ROAD,
ST. ALBANS
HERTS
9-5.30pm Mon - Sat
VISA ACCESS

KENT

MODEL AERODROME
UNIT 223 Tel 0622 691184
STONEBOROUGH CENTRE ★
MAIDSTONE, KENT
Open Mon - sat 9am - 6pm
American Express Barclaycard Access

SWANSCOMBE Tel: 0322 843182
SWANSCOMBE MODELS
2 THE PARADE
Open: Mon, Tues, Fri, Sat 9.30am-6pm
Wed 9.30am-1pm Thurs 9.30am-8pm
Access - Barclaycard

CANTERBURY Tel: (0227) 453896
CANTERBURY MODEL SHOP
4 BUTCHERY LANE ★
Open: Mon - Sat 9am - 5.30pm

0442 66650

LANCASHIRE

NELSON Tel: 0282 64818
PENDLE MODELS ★
319 LEEDS ROAD
Mon-Wed-Fri, Sat. 10am-6pm
Tues. half day Thurs 10am-8pm
Phone anytime!

LONDON

LONDON Tel: 01-228 6319
E. F. RUSS
BATTERSEA RISE SW11
Open 9 am-6 pm
Early closing Wednesday 1 pm.

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

LONDON Tel: 01-205 0817
AEROMODELMART ★
165 CHURCH LANE
LONDON NW9
Open 7 days a week. Mon-Thur 9-5
Fri-Sat 9-6 We are now closed on Sundays
Instant Credit - American Express

LONDON

LONDON Tel: 01-703 4562
MODEL AIRCRAFT SUPPLIES LTD
207 CAMBERWELL ROAD SE5 ★
Open: Mon.-Sat. 10 am-6 pm.
Fri. 10 am-7.30 pm.
Closed all day Thursday.

DISCUSS YOUR ADVERTISING WITH NICK PETERS ON 0442 66650

LONDON

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

MIDDLESEX

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

WEST MIDLANDS

WOLVERHAMPTON 0902 26709
WOLVERHAMPTON MODELS + HOBBIES 1 MEADOW ST
CHAPEL ASH
Open Mon-Sat 9 - 5.30
Mail Order Welcome

SURREY

MODEL AERODROME
UNIT 30 Tel: 0483 578682
THE FRIARY CENTRE ★
GUILDFORD
Open Mon-sat 9am-6pm
American Express Visa Access
NEW SHOP

EWELL Tel: 01-393-3232
MICK CHARLES MODELS
192-194 KINGSTON ROAD
Mon., Tues., Thurs., Sat., 9.30-5.30
Friday 9.30-7.00
Access Barclaycard Mail Order

GODALMING Tel: (048 68) 21425
GODALMING RADIO CONTROL MODELS
3 & 3A BRIDGE STREET
10.30-5.30 Mon-Sat incl. lunchtime
Evenings & Sunday by appointment

SUSSEX

BRIGHTON Tel: 0273 430751
HARRY BROOKS (3 lines)
15 VICTORIA ROAD ★
PORTSLADE
Monday - Saturday 9am - 6pm

MODEL AERODROME LTD
68 SEASIDE RD Tel: (0323) 644001
EASTBOURNE
BN21 3P9 1 3HA (0323) 411736
Barclaycard, Amex, Access
NEW SHOP

SUSSEX

BRIGHTON Tel: 0273 26790
MODEL AERODROME
37 WEST STREET, BN1 2RE ★
Open Mon-Fri 9am-5.30pm
Sat 9am-6pm
We Accept Am. Ex., Access, Barclaycard

REPRESENT YOUR COUNTY

E. SUSSEX

CRAWLEY Tel. 0293 540331
MODEL AERODROME ★
68 SEASIDE RD., (0323) 411736
EASTBOURNE BN21 3PG
Open Mon - Sat 9.00 - 6.00pm
American Express
NEW SHOP

SOMERSET

SOMERSET Tel: 0963 50433
SOMERSET MODELS
THE TRIANGLE
CASTLE CARY
SOMERSET
Open Monday - Saturday 9 - 5.30
(Lunch 1 - 2)
NEW SHOP

SHROPSHIRE

MODEL WORLD Tel: 0691 655560
103, BEATRICE STREET
OSWESTRY ★
SHROPSHIRE SY11 1HL
Open: Mon-Sat 9.30-5.30
Fri 9.30-8pm

TYNE AND WEAR

THE MODEL SHOP
BRITAIN'S FIRST EST 1924.
18 BLENHEIM STREET
NEWCASTLE UPON TYNE
NE14AZ Tel: 091 232 2016
Open Monday-Saturday 9.30-5.30

WILTSHIRE

MELKSHAM MODELS Tel (0225) 703311
19 BATH ROAD
MELKSHAM
WILTS SN12 6LL
Open 9 - 5pm (Mon - sat)
Early closing Wednesday 1pm

YORKSHIRE

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

BRADFORD Tel. (0274) 726186
MODELDROME
217 MANNINGHAM LANE
BRADFORD, BD8 7HH
Open 9.30am - 5.45pm
Closed all day Wednesday.

SCOTLAND

GLASGOW Tel: (041 221) 0484
DUNNS MODELS ★
3 WEST NILE STREET
Open: Mon.-Sat. 9.00 am-5.15 pm.

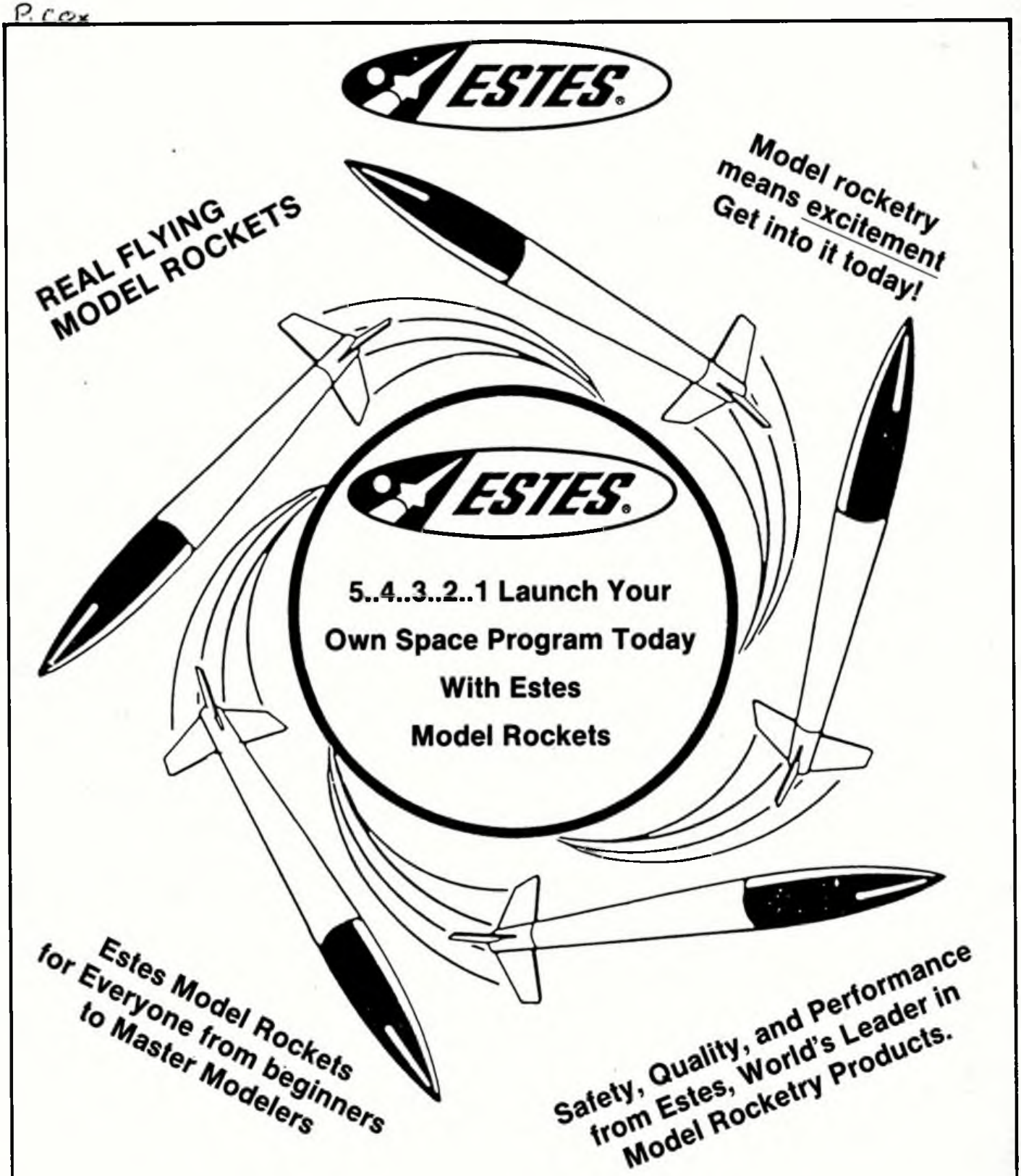
ALL SHOPS MARKED WITH AN ASTERIX PROVIDE MAIL ORDER SERVICE

HONG KONG

HONG KONG
RADAR CO. LTD. SHOP No 245 ★
OCEAN GALLERIES, HARBOUR CITY, CANTON ROAD,
TSIMSHATSUI Tel: 3-680507
Open 10am-6pm Closed Sundays

SHOP GUIDE THE INEXPENSIVE WAY TO ADVERTISE

P. Cox



FOR DETAILS OF YOUR LOCAL STOCKIST CONTACT:

C P A/FREEWHEELER

THE U.K.'s No 1 TRADE DISTRIBUTOR

"CPA/FREEWHEELER *ARE DISTRIBUTORS ONLY. WE DO NOT OPERATE RETAIL OUTLETS OR COMPETE WITH OUR CUSTOMERS."*

St Stephens Trading Estate St Stephens Road Canterbury Kent CT27JB Tel: (0227) 450756 Fax: (0227) 450133

Links to the plans

The issue comes with two free plans (Heston Racer, Doofa) printed front/back on a pull out banner of four sheets. The banner is not included in tis document.

WAKE UP by J.P. Van Leuwen
FF Wakefield
Document Page: 6

Heston Racer by John Emmitt
CL Electric. The plan presented in Outerzone is a manipulation of the original "pull out". The same manipulatd plan is also available in HipPocket
https://outerzone.co.uk/plan_details.asp?ID=4331 ...
https://www.hippocketaeronautics.com/hpa_plans/det ...
Document Page: 17

Doofa by Dave Hughes
FF Lightweight Sailplane
https://outerzone.co.uk/plan_details.asp?ID=3253 ...
Document Page: 19

Junior Glider by Horst Winkler
Junior Glider (for the vintage German competion sponsored by UHU). In VINTAGE CORNER
Document Page: 37

Yoicks by J.W. Coasby
CL Stunt revisted from October 1949. Presented in MIND THE LINES
https://outerzone.co.uk/plan_details.asp?ID=1581 ...
Document Page: 43

Cricket by Andrew Moorhouse
Presented in FREE FLIGHT SCENE. A FF rubber open model kitted.
Document Page: 46