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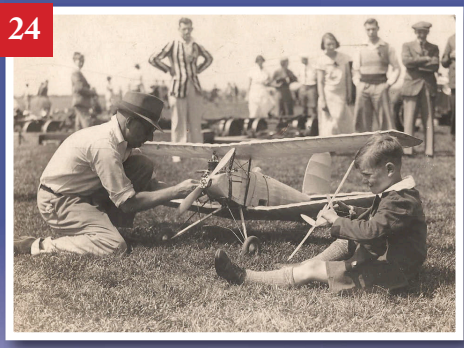
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AERO MODELLER

Doolittle Mill, Doolittle Lane, Totternhoe, Bedfordshire LU6 1QX, England

Issue 942. November 2015
(Issue ADH024 since published by ADH)

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Tel: 01525 222573 Fax: 01525 222574
E-mail: enquiries@adhpublishing.com

Distribution:
Seymour Distribution, 2 East Poultry Avenue, London, EC1A 9PT
Tel: 020 7429 4000

Newstrade:
Select Publisher Services, 3 East Avenue, Bournemouth, BH3 7BW
Tel: 01202 586848 E-mail: tim@selectps.com

Subscriptions:
ADH Publishing, Doolittle Mill, Doolittle Lane, Totternhoe, Bedfordshire, LU6 1QX.
Tel: 01525 222573 Fax: 01525 222574
Subscribe: 12 issues - UK £55, Europe £73, Worldwide £82

Website: www.aeromodeller.com

AeroModeller is published monthly by ADH Publishing Ltd, Doolittle Mill, Doolittle Lane, Totternhoe, Bedfordshire, LU6 1QX.

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Richard Granger's big rubber powered Lacey cruises past at the Nats.

Heard at the Hangar Doors

AeroModeller at 80

80 years is a long time by anyone's reckoning – I had difficulty finding out whether there was any precious metal or stone associated with such a milestone, like silver is for 25 years. Eventually I found that this is the more prosaic 'Oak' anniversary, hence the glimpses of wood you will see on the cover. Oak isn't a common aeromodelling material, although I bet we all have the odd piece of hard balsa which could be mistaken for oak!

I also celebrate 2 years as editor of AeroModeller with this issue, which is just a fleeting moment in its existence. The fact that AeroModeller continues is partly down to the work of previous editors such as D. A. Russell, C. S. Rushbrooke, Ron Moulton, P.S. Richardson and Martyn Cowley – it is a wonderful heritage for me to build on. As Isaac Newton said 'Standing on the Shoulders of Giants.'

As part of our 80th anniversary, you will find in this issue an appreciation by Peter Scott of C. E. Bowden who wrote on petrol spark ignition models in our first ever issue back in November 1935. There will be other items looking back at the earlier days of AeroModeller in coming issues, including Tony Dowdeswell remembering working alongside Ron Moulton in the 1960s, and memories of that great cover artist and aeromodeller in the 1940s, C. Rupert Moore.

One final thought. Producing AeroModeller, in fact any publication, is a bit like free flight modelling -you work as hard as you can on the preparation, trying to get every part correctly set, but once it has left your hands it takes on a life of its own. Here's to the next 80 years!

Regards, Andrew Boddington
editor@aeromodeller.com

Nationals Fun Flying

The Nationals at Barkston over the August bank holiday weekend is officially a series of serious competitions which are reported elsewhere in AeroModeller. But for the fun that is at the core of aeromodelling for many of us, it is the evening's 'Chuck and Duck' that is a highlight! The organisation this year was excellent with the sports FF being kept at a good distance of separation from the FF scale competition – thanks go to the BMFA marshalls and of course all the fliers for ensuring both happened in harmony.

On Saturday night the sky was spectacular dark moody clouds with tinges of red, and I managed to get these evocative photos with a powerful flash – it was not as dark as the flash makes the background appear!

Andy Gedney was having fun flying this Mills powered Bowden Kangette. See elsewhere in this issue for the CEB story.

Gildings Auction of Model Engines

Dick and Toby will again be on hand to ensure the smooth running of the Gildings Engine Auction on 7th November.

The annual auction sale of Vintage, Classic & Modern model engines plus associated plans, tools, models and kits will take place on Saturday 7th November 2015, at Gildings premises in Market Harborough. They have over 500 lots with many engines including four Wankel rotaries, a host of Jetex stuff, a good selection of kits (including some very early by Aeromodels) and some workshop items such as a Myford ML10 lathe and accessories.

The sale will commence at 10.30am as in previous years, viewing on Friday 6th November in the afternoon.
Gildings, The Mill, Great Bowden Road, Market Harborough, LE16 7DE
Tel: 01858 410414 www.gildings.co.uk

Airfields under threat from Developers

In 2003 an 'administrative oversight' led to the deletion of planning protection from UK airfields with them being classified as brownfield sites. As a result airfields are being closed by developers, thus stopping the many users including aeromodellers, and threatening some unique natural habitats.

Please sign this petition on the government website. We need to get to 100,000 signatures for this to be debated in parliament. Please share as far and wide as possible. www.petition.parliament.uk/petitions/106779

European CL Speed Golds for Great Britain

At the recent European Championships for control line models in Pazardijk, Bulgaria, Paul Eisner of Great Britain became the 2015 European Champion in F2A Speed beating 27 other top-level competitors to take the gold medal with an individual flight of 302.1 kph. Fellow team members Ken Morrissey and

The victorious F2A Speed team of Ken Morrisey, Paul Eisner, and Pete Halman. (Photo by Glen Alison.)

Peter Halman also did well placing 4th and 7th respectively, and their combined speed was enough to beat their nearest rival (Hungary) by 5.20 kph to take the Team gold medal with a combined best speed of 900.4 kph. The F2A team have taken team gold in every consecutive FAI Championship since 1997.

Congratulations to the British team for this golden success from all at AeroModeller. I'm pleased to say that there will be an article from Paul Eisner about the European Championships in the next issue of AeroModeller.

Interscale 2015

On the weekend of 14-15 November 14-15 the famous Interscale event for indoor FF scale flying will be held again in Nijmegen in the Netherlands. If you are interested in competing look at the website and contact the contest director Roel Lucassen.
www.iifi.nl/interscale.html

SAM 1066 Champs at Middle Wallop

While many of us were at the Power Nats, other free flight and RC assist enthusiasts were attending the SAM 1066 Championships on 30-31 August at Middle Wallop. The weather also had an impact here with Monday being wet and windy, but on Sunday although the light was dull it was dry after about 11am. Thanks to Peter Scott and John Ralph for supplying photos and information.

The event still attracts a significant number of vintage model fliers but attendance was lower than earlier years. John Ralph flew an interesting model - it was sent to him by Dick Twomey (famed for his Leprechaun glider design) who now lives in Mauritius, aboard a Mauritius Airlines aircraft last year. It is a replica of his 1949 8oz. Wakefield which he built a couple of years ago. It is called 'Kittiwake' and was one of the few Dick designed that didn't get published.

Despite the weather, the many competitions were run with a healthy turn out on the Sunday for events such as 4oz Wakefield won by Nick Peppiatt with a Northern Arrow and BMAS Club Classic won by Peter Jackson with a Tropstick. Full results will be on www.aeromodeller.com.

Colin McKenzie with his elegant AV46 'over 50in glider' entry, a Czech design from 1946.

Above left: Dave Powis setting the DT on his "Hep Cat" in Mini Vintage on Monday.

Above right: Brian Martin with two of his Maxwell Basset-eligible eligible models. Brian formulated the rules for the competition.

Right: Dick Twomey built this sturdy box to air freight his model.

John Ralph flew this Kittiwake built by designer Dick Twomey.

Free Flight Forum

The thirty-first BMFA Free-Flight Forum will start at 10 a.m. on November 22rd, the day after the AGM, at the Hinckley Island Hotel, A5 Watling Street, Hinckley, LE10 3JA. They have a variety of speakers to make it an interesting day, so you can catch up on the developments, techniques and aerodynamics of today's free-flight.

Among the topics and speakers will be: Andy Sephton on Indoor Scale Free Flight Gliders, Mick Lester on New Ideas for Carbon F1C Wing Structures, Stuart Darmon on Making Textreme Wing Skins, Mark Gibbs on Juniors in Free Flight and also on Weather Forecasts, Alan Brocklehurst on Computations at Low Reynolds Number and a New Aerofoil for F1G (Coupe d'Hiver) Models, Peter Brown on The Making and Testing of F1B Rubber Motors and Phil Ball on Simple Tooling for Moulded Propellers.

The cost for the session will be just £9, with proceeds going towards the expenses of the teams that represent us at World and European FF Championships. Pre-booking will ensure that you get a seat, so send your cheque, payable to 'BMFA F/F Team Support', to the BMFA office at 31, St. Andrews Road, Leicester LE2 8RE.

Up & Coming

AeroModeller Calendar of Events

Please note that the events listed are compiled weeks in advance of publication, so please check in case of change - specifically MOD venues such as Middle Wallop and Barkston Heath can be cancelled at short notice. For inclusion of your event, please send an email with date and details in a format similar to those shown below to editor@aeromodeller.com

OCTOBER

14 October
F1D Team Trial 1, Brabazon Hangar, Filton, Bristol. Indoor FF team selection, also general lightweight duration flying.
indoorduration-gbr.co.uk
Tony Hebb 07513 588 908
tony_hebb@hotmail.com

17 October
Delyn MFC Swapmeet, St. Winefride's RC Primary School, Holywell CH8 7NJ. 09.00 to 13.00. Mike Parry 01352 710167

17 October
Salisbury MFC Swapmeet, Alderbury Village Hall SP5 3AD. 09:30 to 12:00.
Kevin Easter 01725552873
www.salisburymodelflyingclub.co.uk

18 October
Vintage Combat, Darley Moor. Contact Mick Lewis
mick@combatflyers.co.uk
01453 542367
www.combatflyers.co.uk

18 October
Selby Trophy FF Scale Contest, MOD North Luffenham. FF Scale (will postpone until 24th October if weather poor.)
www.scalebmfa.co.uk

18 October
Rochdale indoor fly-in, Springhill Sports Center, Turf Hill Rd OL16 4XQ Fixed wing, slots for fast RC, Scale/slow RC & FF.
www.bmfa-nw.org

24 October
BMFA Midland Gala, MOD North Luffenham. Saturday F1H, F1G, F1J, BMFA1/2A, E36, P30, SLOP, Mini Vintage, HLG-CLG.
P.Ball 01322 665361
phil.ball@ntlworld.com

24 October
Shropshire Indoor Modellers, RAF Shawbury Sports Hangar, SY4 4PF. Monthly club meet for RC & FF, with separate area for FF and slow RC. John Minchell
j.minchell@btinternet.com

25 October
Vintage Team Race (VTRSIG), Barton, Manchester. John Mealing 0117 9478758
www.controlline.org.uk

25 October
OFMAC Indoor FF, Abbey Sports Centre, Green Furlong, Berinsfield OX10 7NR. 08:30 to 16:00. FF Rubber, CO2 & Electric. Flitehook in attendance, please bring your own table.
Dave Dobson 01491 837789
ofmac1@talktalk.net

25 October
BMFA SW Area Indoor Flying, Saints Centre, St Austell PL26 7AG. 12:00 to 16:00. FF & micro RC. David Powis 01579 362951
dave_powis@hotmail.com,
Roger Bellamy 01752 257826

25 October
Scale Indoor RC Nationals & FF, RAF Shawbury Sports Hangar, SY4 4PF. RC Scale and Flying only FF classes. John Minchell
j.minchell@btinternet.com

25 October
Indoor Flying, Evesham Leisure Centre, WR11 4SU. 17:00 to 20:00. RC & FF, £6 a session.
Mark Ashworth 07710 005705
markashworth@iee.org

NOVEMBER

1 November
IVCMAC Indoor Meeting, Impington Village College, Nr Cambridge. 09:00 to 17:00 Large hall for FF, and separate hall for RTP and small RC. Competitions for Ray Malmstr^mís Viking and Bostonians. Talk by Clive King on preparation of his Indigo indoor duration design to be published in AeroModeller before that date. Also rubber powered car race.
Chris Strachan 01223 860498
chris.strachan@btinternet.com

1 November
Barton CL Racing Day (Barton B & Classic 15), Barton, Manchester.
John Broadhead 01524251592
www.controlline.org.uk

3 November
Waltham Chase Indoor FF, Wickham Community Centre, Hants PO17 5AL. 18:30 to 22:00. FF only of all types.
Ken Brown 023 8057 8866
info@wcaff.info

7 November
Gildings Model Engine Auction, The Mill, Great Bowden Rd, Market Harborough LE16 7DE. Viewing Friday 6th afternoon. Sale starts Saturday 10:30.
01858 410414
www.gildings.co.uk

7 November
Indoor Fun Flying, Stalham High School, Norfolk NR12 9DG. 19:00 to 22:00. FF only, plenty of help for newcomers.
Richard Crossley 01692 407936
richardcrossley@btconnect.com

8 November
Goodyear 1000 lap Marathon, Barton, Manchester.
Ed Needham 01614 855193
www.controlline.org.uk

8 November
Flitehook Indoor FF Meeting, West Totton Centre, Hazel Farm Rd, Totton SO40 8WU. 10:00 to 16:00. Flyers £6, Spectators £2.
flitehook@talktalk.net
02380 861541

8 November
Experimental Free Flight Event, North Luffenham. Aim is to keep models on the field and be sociable - Free Buffet! Comb Glider 1/2 towline, comb Power 1/2 run, comb Rubber max 30g, HLG/Cat, E36.
Phil Ball 01332 665361
phil.ball@ntlworld.com

14 November
North London MFC Indoor RC, Furzefield Sports Centre, Potters Bar, EN6 3BW. Fixed Wing to 225g, Heli to 400g RC.
Peter Elliott 01707 336982

14-15 November
Interscale 2015 Nijmegen, Netherlands. Indoor FF Scale.
www.iifi.nl/interscale.html

15 November
SAM 1066 FF Weekend, Middle Wallop, SO20 8DY. FF Competition, Vintage, Sports flying, then SAM1066 AGM. BMFA required, £6 per person.
Roger Newman
secretary@sam1066.org or
0239 2550809 www.sam1066.org

15 November
Rochdale indoor fly-in, Springhill Sports Center, Turf Hill Rd OL16 4XQ Fixed wing, slots for fast RC, Scale/slow RC & FF.
www.bmfa-nw.org

21 November
BMFA AGM, Hinckley Island Hotel LE10 3JA. www.bmfa.org

22 November
Free Flight Forum, Hinckley Island Hotel LE10 3JA. Various speakers on FF topics from 10:00.
www.bmfa.org

22 November
OFMAC Indoor FF, Abbey Sports Centre, Green Furlong, Berinsfield OX10 7NR. 08:30 to 16:00. FF Rubber, CO2 & Electric. Flitehook in attendance.
Dave Dobson 01491 837789
ofmac1@talktalk.net

22 November
BMFA SW Area Indoor Flying, Saints Centre, St Austell PL26 7AG. 12:00 to 16:00. FF & micro RC. David Powis 01579 362951
dave_powis@hotmail.com,
Roger Bellamy 01752 257826

28 November
Peterborough MFC Indoor, Bushfield Leisure Centre, PE2 5RQ. 10:00 to 13:00. FF & micro RC (no rotors/shockie).
www.peterboroughmfc.org

Full details of BMFA events can be found at: www.bmfa.org

Off The Shelf

Vic Smeed Designs from Belair

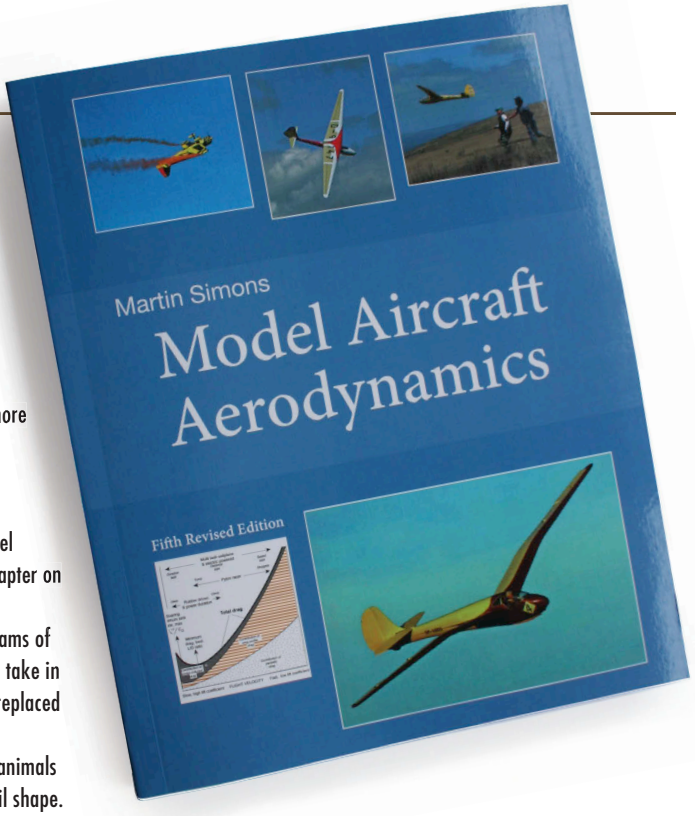
Left, the Popsie - Vic's design were always full of character. Below, the Pushycat.

Belair Vintage Kits have an ever increasing range of Parts Sets for Vic Smeed designs. Vic was for many years a contributor to AeroModeller and designed some of the most iconic sports FF models, such as the Tomboy. A Parts Set from Belair includes laser cut shaped balsa and plywood parts, such as wing ribs, formers, bulkheads, fuselage sides, wing, tail and fin tip shapes, tail ribs, dihedral braces. Imagine no transfer of parts to wood or tedious cutting out, just a box of accurately cut parts. Start building as soon as you roll your plan out!

All the Vic Smeed designs from Belair use the original AeroModeller plan and are faithful to the original. Designs include - Pushycat, Popsie, Madcap, Ballerina, Mademoiselle, Coquette, Debutante, Majorette, Ethereal Lady, Lofty Lady, Victoria Parker, and of course the Tomboy. Vic was also an active model boater and Belair can provide parts for the Starlet yacht, Vosper and RTTL boat designs.

You can check out these designs at *www.belairkits.com* or call 01362 668658 for your free catalogue.

Model Aircraft Aerodynamics

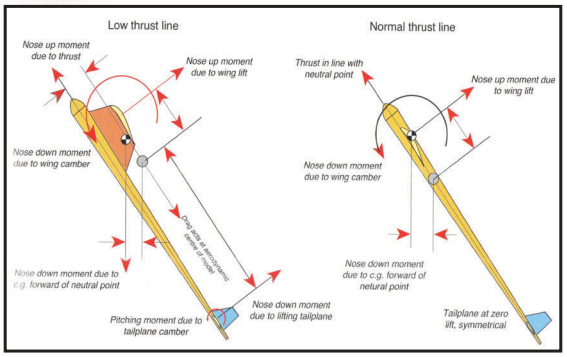


The success of this comprehensive guide by Martin Simons to how and why models fly is immediately indicated by the fact that this is the 5th edition – surely a record number for an aeromodelling reference? Whereas there are other publications on full size aircraft aerodynamics, this book specifically focuses on model aircraft flight and addresses explanations, problems and solutions of use to aeromodellers whether they are FF, CL or RC. I'm guessing that the average modeller is not going to sit down and read this straight through, so it is important to note that the book is well laid out and will let you find a particular topic and then read in to it as far as you want. It is possible to get a lot out of the book without any maths, but a secondary school level of understanding will allow you to get the most from the more advanced parts.

At 342 pages the aspects of model aerodynamics covered is huge, and I could see no glaring omissions. Starting with the fundamentals of lift, drag, thrust and weight, the chapters move on to cover boundary layers, Reynolds numbers and beyond, and practical aspects such as model performance problems. Much of the content is around fixed wing models, but there is also a chapter on the helicopter rotors, and another on propellers covering both fast and slow rotating blades.

This new 5th edition is revised and has the black and white photos and explanatory diagrams of previous editions replaced with colour versions. The chapter on airfoils has been rewritten to take in to account recent work by the University of Illinois, and wind tunnel test reports have been replaced with the latest trials and measurements.

A quirky new chapter is one on the 'Birds and the Bees'! No not that, but it looks at how animals and insects fly using the complex motion of flapping and changes to aspect ratio and aerofoil shape. I have no hesitation recommending this book to flyers of all types of model who want to understand the basics of model flight, but also to those who need a reference to take them further when designing or modifying a model. It will also provide help to trim or sort out a model which is not performing as required. I have had a previous edition of this book on my shelf for some years; this updated version is a worthy replacement and will be kept within easy reach.



www.specialinterestmodelbooks.co.uk
Model Aircraft Aerodynamics, 5th Revised Edition by Martin Simons
ISBN 978-185486 270 9
Paperback £19.95

PAL Model Products - Pesky .44 Diesel

Bob Langelius and PAL Model Products of the USA prove that a passion for diesel engines is not confined to Europe and 'Down Under'! Hot on the heels of their successful little LOLA 020 front induction diesel (reviewed in May AM 936) is the Pesky, a lovely looking Side Port engine with classic retro lines of the early 1950s.

With a capacity of 0.44cc (0.026 ci) it has been designed to be easy to operate with conservative porting making it simple to start for such a small engine. It is manufactured by TechnoHobby (formerly FORA) of the Ukraine who also manufactured the LOLA - the quality of their manufacturing with the latest CNC machinery makes this a better and more useable engine than many of the old small diesels produced in the 50s. The spacing between the two mounting holes is 22.36mm making it similar to the Kalper 0.32 from days of yore, although the Pesky will probably be more powerful.

The LOLA 020 (0.3cc) is still available and is now at the reduced price of $172.

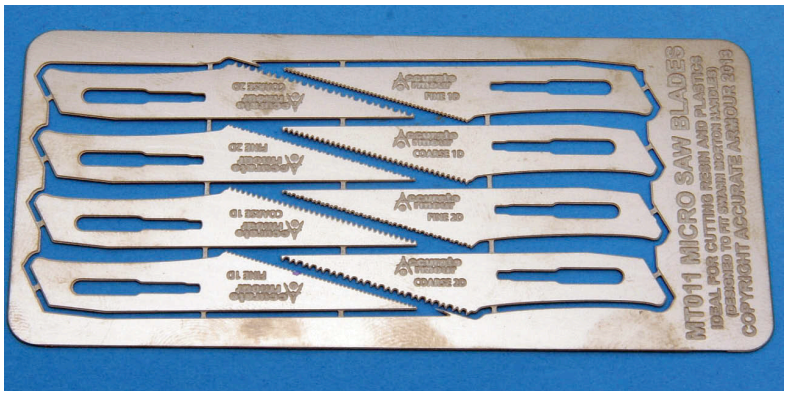
The Pesky is available for US $141 plus P&P from PAL Model Products, 32 Clinton St. White Plains NY 10603, USA. Also it is not too late to buy a LOLA diesel, the last few are currently available at a reduced price of US $172 plus P&P.
Telephone USA (914)949-6083
Email bobbylang@earthlink.net, website *www.palmodelproducts.com*

The Pesky is another jewel of an engine from PAL Model Products.

Micro Saw Blades from Free Flight Supplies

These Micro Saw Blades clip into the No. 3 scalpel handle. The very fine blades are ideal for the precision cutting of plastics, wood, kit part detail and precise hole cutting.
MT011 Standard pack of 8 blades £8.00
MT012 Thin blades pack of 6 blades £6.00

Available from Free Flight Supplies plus postage costs.
mike@freeflightsupplies.co.uk
www.freeflightsupplies.co.uk



Standard 8 pack of blades MT011

The 6 pack of thin blades MT012

Ian Russell's OS 4-Stroke powered weatherman showed promise for the forming of this new class.

MODERN HANDICAP SPEED

Dave Smith reports from the pylon.

Dick Hart left & Ken Morrissey with jet models.

The weather gods played ball for Saturday, Sunday started off OK with light rain arriving by late afternoon, but unfortunately the forecast for torrential rain on Monday was correct. The abysmal weather on Monday created many problems for the CD's across all the events. Hopefully the final rounds of combat etc. can be arranged at other venues to decide the final placings and champions for this prestigious event.

Normally Jo & Peter Halman run the speed events, but they were involved with the European Championships so the responsibilities fell on the shoulders of Dick Hart (of jet speed fame) ably assisted by Alex Phin & fellow aerobods.

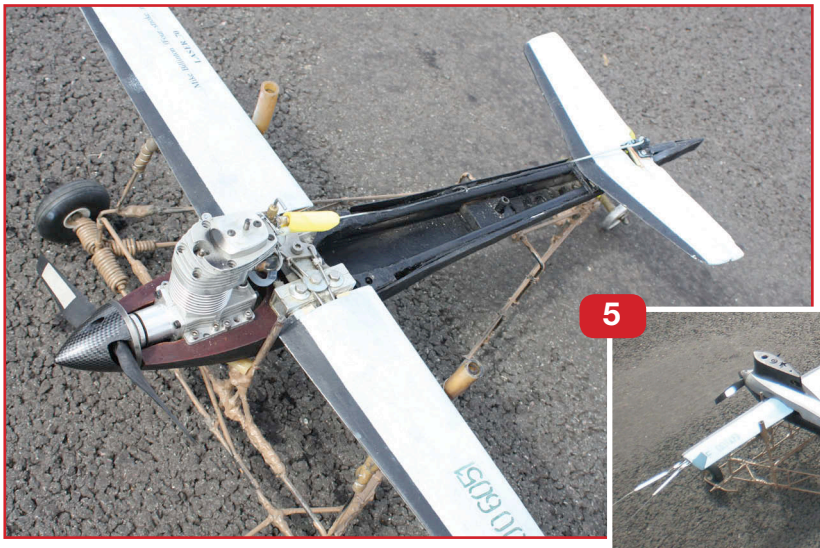
In Modern Handicap speed, contestants fly in numerous classes against the current British record, the three highest scores across all classes go forward to determine the podium placing. Most contestants managed to post official flights during the first two days including our most successful F2A Speed Team who arrived home from the European Champs in Bulgaria in time for Sunday to put on a faultless show posting world class flights of around 300kph – the team had just won the Gold team prize for the umpteenth time, Paul Eisner the individual 1st place, with Ken Morrissey and Peter Halman right behind, the famous Halman special engines made by Peter performed immaculately, a testament to much hard work and dedication.

This year 1st place Gold in Modern Handicap Speed went to Dave Smith flying his Formula 21 asymmetric model powered by a NovaRossi 3.5cc engine achieving 179.42 mph which set a new British record for this class. 20% Nitromethane was used to turn the home made carbon single blade propeller rotating at 33,000 rpm.

2nd place Silver went to stalwart Ken Morrissey who produced a stunning 304.6 kph with his Halman Special powered F2A model running on straight 80/20 oil & methanol, a super flight which would have won the European Champs only three days previous.

3rd place Bronze position was grabbed by Pat Rose who has been working hard for

1. *Handicap Speed Winner Dave Smith holding record breaking F21 model flanked by pit crew Roger Feazey & Pat Rose.*
2. *Roger & Pat Rose with his Nelson 29 machine.*
3. *Dick McGladdery with electric F2G model.*
4. *Mick Tribe with new 049 model.*
5. *Mike Billinton's Laser 4-stroke powered model was proving hard work to get sorted.*
6. *Dave Brewin with F2A model.*



many years on his all carbon Formula 40 asymmetric models, the power comes from a Metkemeijer 40 pylon race engine running on 80/20 fuel achieving 175.2 mph.

Out of the placings were Dick Hart and Ken Morrissey who made some noise by flying their Fast & Sport jets - very impressive to say the least. Dick also persuaded Alex Phin (Redfin diesel engines) to fly one of his Sport jets - the look on his face as he ran round the pylon hanging on for life was quite amusing.

It was nice to see Mick Tribe making a return to speed flying in the 049 class, his small asymmetric models looked the part (I believe they were made in Russia), and will be competitive once they are sorted.

Dick McGladdery has been developing his F2G models, equivalent to F2A but powered by an electric motor. It was interesting witnessing the maiden flight of his new model; regaining his breath Dick was muttering it flies a dream- watch this space.

There were numerous attempts & demonstration flights in the new proposed 4-stroke class, veteran speed flyer Mike Billinton beavered all weekend to sort out his machinery. Ian Russell made the only successful demonstration 4-stroke flight of the Nat's, his approach was to build a 60 size Weatherman powered by a OS 56 Alpha engine turning an APC 11x14 cut to 8x14, flying on two 60 foot x 0.45mm lines and made around 100mph. It will be interesting to see if this class catches on, this event is wide open at the moment and could prove to be popular.

Robin Kane flew an older 40 class two line model (built by the late Johnny Hall) powered by a MVVS 40 culminating in 162.48mph. He also competed in the F21and 29 classes so was kept busy. Dave Brewin turned up for his annual F2A fix; lack of flying opportunities hampered his efforts and he was thwarted by the weather as he hoped to post an official on the Monday.

Tony Goodger posted a .12 class flight with a USA 1964 Blue bonnet design - he informs me that he needs to brush up on his pylon flying and hopes to compete in the .12 class using a NovaRossi engine.

The RAF kindly allowed us the use of a hangar to hold a prize giving at 12.30pm on the Monday, distributing certificates on the podium by the CDs and BMFA Chairman Chris Moynihan. Unfortunately only approx. one third of the usual attendances were evident as most people had left the airfield for the anticipated long drive home. ●

Vintage & Weatherman Speed ||

Tony Goodger as both CD and competitor was well placed to cover the Vintage Speed action.

With poor weather forecast, Saturday was an abnormally busy day with the majority of flights being by Weatherman models. There were some 29 class entries in the Weatherman handicap event but only 13 results were posted mainly due to the worsening weather. Dave Finch came out on top despite his engine going off in the last 2 laps with a speed of 124.65 mph in class 5 representing 112% of the existing record. He used a West 30 which had been developed by Weston UK for this class. They also offer special 15, 28 and 52 size engines.

Our good friend Salvi Angeloni from Italy, also known as Mr 'Whippy', came second in class 0 using an A.D. 1cc free flight motor made in 1989, with a speed of 87.00 mph (107.4%). These engines were made at home by Alberto Dalloglio and have a 'traditional' steel sleeve, 3 ports and use special plugs. The replica Barbini used by Dave Smith to break the vintage 2.5 speed record was also made by Alberto. This goes to show that you don't need the latest state of art engine to win in this class, just a well sorted setup.

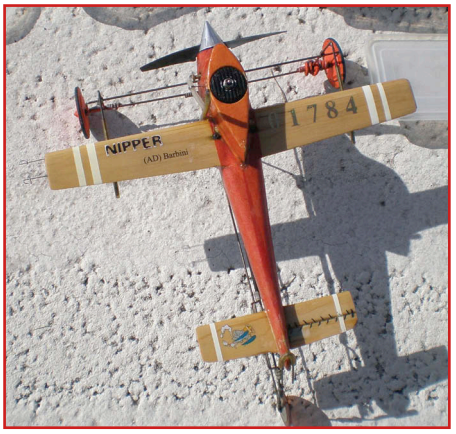
Tony Goodger came third in class 4 with his ageing MVVS powered model which has proved to be very reliable over the years.

Dick Hart, CD for the modern handicap speed classes, made the comment that many of the speed flights on the Saturday were Weatherman and these kept the circle active all day. It is unfortunate that some choose to openly criticise this class which has proved to be so popular, particularly for those who don't have the expertise and cannot afford to compete in the faster classes.

Peter Rabjohn holding McCoy 49 - 3rd place Vintage Handicap Speed.

As many know, SAM 35 now have a profile Weatherman class (see April 935 AeroModeller). Entries this year have been below expectations, but there is a lot of interest and new models being built for next year's season. Peter Fox has put up a splendid cup for the year's winner, so let's see a few more entries next year. For those without a model, the organisers usually have a spare on hand for anybody eligible to have a go with.

Italian Salvi Angeloni with one of his class 0 models; came 2nd in Vintage Handicap Speed.



Dave Smith's record breaking Vintage Handicap winning Nipper powered by AD Barbini 2.5cc.

The winners of Weatherman Speed - centre, Dave Finch was first having smashed the Class 5 record, second (left) was Salvi Angeloni, and third Tony Goodger. (Photo by Peter Jephcott)

Vintage Speed

Although there were ten class entries in vintage speed only five sets of times were posted, again mainly due to the rain. Dave Smith just managed to come out top with a new record in class 3 (2.5cc) at 123.8 mph flying his Nipper.

Second was Salvi Angeloni with his Cox .049 powered entry with a speed of 83.85 mph, again a new record. Maybe having one of the world experts on Cox engines, Paul Gibeault from Canada, setting the needle helped!

Third was Peter Rabjohn, last year's winner and record holder, with his McCoy 49 powered entry in class 6.

SAM 35 also ran Phantom and Classic speed to their own rules and Tony Goodger came out on top in both classes.

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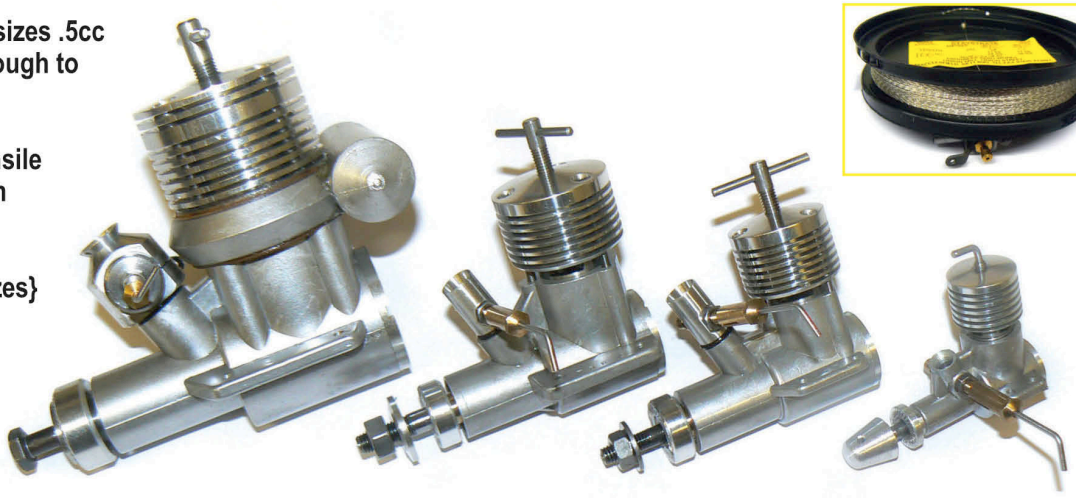

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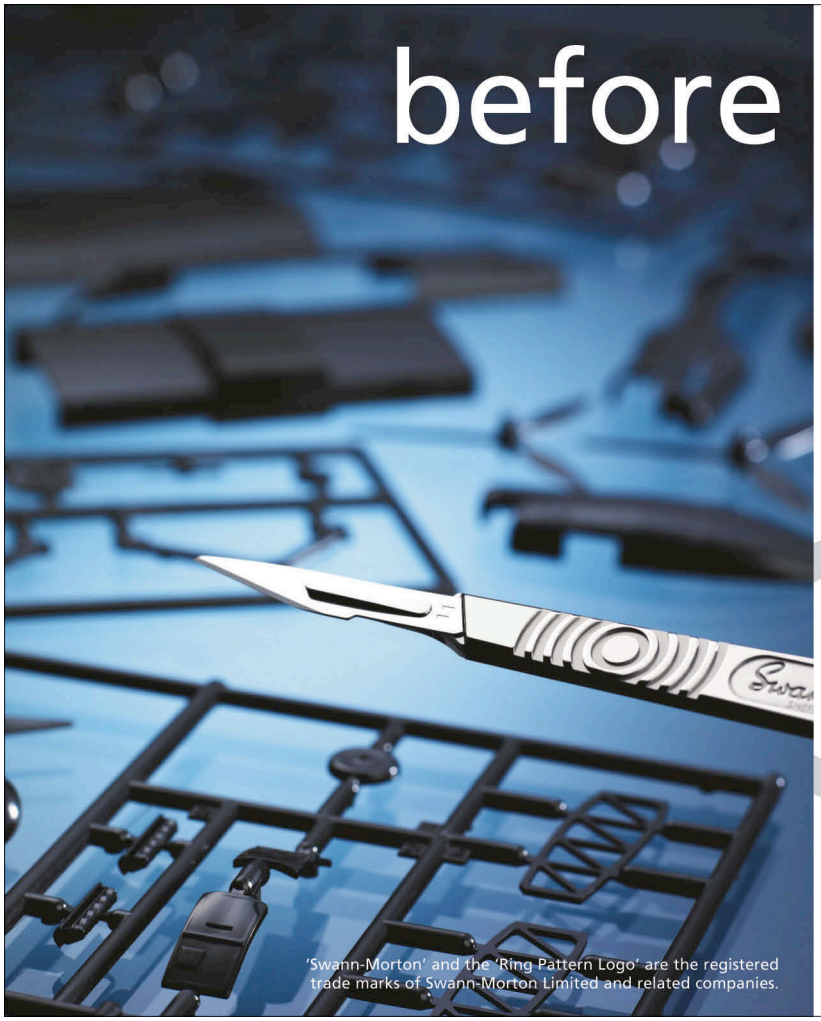

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Team Race

In the thick of the racing for AeroModeller was Malcolm Ross.

Second and Third place 'Barton B Racers' from (left) Ross/Court/Bradley and Hill/Rodgers/Bradford.

This major aeromodelling treasure seems to come around much quicker than it ever did in the past! However, whenever you think of recent British National Model Flying Championships, it is synonymous with the August bank holiday weekend, and out of three days you may get one or two decent ones plus a really naff one. Well this year it proved the point - Monday was a complete write off!

Consequently, many of the control line racing events were shoehorned into a hasty two-day schedule, which kept organisers and competitors on their toes (throughout the Sunday in particular.) Add to that, the fact of having the 'F2' British team returning from the European CL champs on the Saturday, meant that some could not manage to compete in their premier disciplines at all. F2C racing was restricted to one day's competition for them, and as it happened, was not completed to a final result. This invariably created a knock on situation for other racing classes as well, because people fly various events during the weekend. All the above meant greatly reduced entries across the board.

One of the few pluses this year was that for the first time the racing group did not have to either erect or dismantle any of the safety circle cages set up for the contest. This was all done by the hire contractors, contest CD's only having to determine circle centres for safe flying distances. Having said that, the site is not ideal for a National racing championships. There is just enough physical space, but the whole area is on a slope which means that in every race the CD was forever calling pilots to 'return to the centre circle'; in one heat, all three were disqualified for walking outside the edge - very dangerous.

Tank Capacity Challenge

Those arriving on Saturday found the weather fine, a little breeze and bright, so flying began on time in circle 2 with Class A of the Vintage racing scene. Not so circle 1, as I was meet by an upset CD Mike Crossman to say that a protest had been handed in regarding fuel tank sizes in F2CN, and the proceedings were held up while this was partially resolved. This has been handed back to the CL Tech group to debate as it puts into question all records so far set in this class of flying. The complainant did say to me that he did not want people to be disqualified from this Nationals, but that he wants the protest on the agenda at a future date in committee. Unfortunately this did dampen the spirits of competitors, manufacturers, and officials for the day's racing.

The Racing

Racing began in circle 1 with British Goodyear. Only 11 teams entered so heats were run accordingly. In the end it turned out to be an Oliver versus PAW battle when the final was flown on Sunday. A really great race was flown and well conducted in the late afternoon, when

The 'Needhams' (Ed and Sue) show off their reserve Goodyear model after putting the no 1 away for the final.

the new PAW of Tony Eifflander/Martin Daglish triumphed over the Olivers of Ross/Court and Eyre/Needham.

Open Goodyear had 5 teams make the starting grid, with various degrees of success. In the end the final result had to go on two rounds flown, because of the weather. This left in first place Malcolm Ross/Mark Greenwood, followed by Eyre/Needham and Daglish/Eifflander.

It was F2CN that caused the surprises and controversy throughout the meeting. Eleven

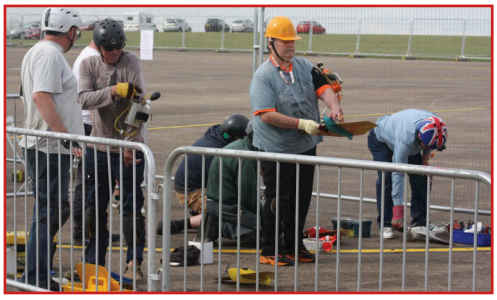
Dave Finch pulled together this event for early Pre-Vintage Team Racers. The idea was to fly them on one evening to show how it all began over 60 years ago.

F2CN action in the middle of a heat.

Hard working circle 2 officials are John Mealing (CD) and Oliver producer Tom Ridley pull testing.

Open Goodyear class 'winner' was that of Ross/Greenwood. This was one of the finals settled by just two rounds because of atrocious weather on the Monday.

Three models ready for the a Vintage Class B heat at Barkston.



Returned to racing this Nationals is Martin Wogan (yellow headgear). Seen with other competitors in the F2CN pit area prior to a heat. Now flying with Jim Holland.

teams mustered at the start when all the dust had settled over the already mentioned protest. This class is now quite quick, with lap times generally down in the 19-20secs for 10 range. This makes it akin to F2C and some pilots find this a little too fast! Flying three up is challenging for them and the jury, so tempers became a bit frayed at the edges throughout. This again ran to a final on Sunday pm, and it was reported to be a tense affair. Suffice to say that one team retired themselves after 12 laps, and let the other two fight it out! I was not present for the actual race, but have since been requested to watch it on the dreaded social media channels to express opinions… Nuff said!

Circle 1 was also the home of 1/2A and F2C team race, under the eyes of our CD helped by Colin Brown. Again very unfortunate weather and timings meant that out of 4 entries in 1/2A only 2 times were recorded and no final. Pity, as this would have been at least 3; as our team could not get down from circle 2 in time to fly a heat this year. On going to press I do not know if the trophy will be awarded on these times.

F2C had 7 entries including the teams back from Bulgaria, but only one day to fly the contest. Two rounds of heats saw Fitzgerald / Thomason, Heaton/Broadhead, Barker/Tricker, Ross/Toogood finish in that order. Rumour has it that a final will be flown later, but not a satisfactory end to the event this time.

Over in circle 2 everything ran very well under the eyes of CD John Mealing running the Vintage Cup for original models of the early TR period, with Oliver man Tom Ridley in the pits (line testing and pulling) and Dave Finch (tank check and scrutineering). This new departure is Dave's idea to revive the 'concours' style of sedate racing.

Class A had 12 teams on the line and went off very well to a full 200 lap swift final, where Heaton/Eifflander repeated their win from last year with another victory. All the vintage finals were squeezed into the late Sunday PM slot coinciding with the start of the wet weather.

Vintage 1/2A ran very sweetly with top team Martin and Mark Haywood coming out on number one slot from the 200 lap race. I believe that this may be a new vintage 1/2A final record, being a three team race and set at the Nationals. (Records can now only be claimed from this one event!) Anyway, it was a great race to watch with the little Oliver Cub 1.5cc engines pulling the racers around some times faster than the pilots. At the end, my friend Tony Toogood could be seen wobbling to the floor for a rest!

Another really great race was the Class B final. A classic double distance run with all teams there at the finish. Real racing this when it all goes right for each team.

The same can be said of Barton B racing. This year unfortunately, the entries suffered a drop for reasons already stated, but there was no lack of enthusiasm for the event. Fastest of the pack at the moment is the team of Alan Hill/Mathew Rodgers/Dave Bradford. They flew two fast heats to lead the field into the final in the wet. The two teams joining them were not far behind so the scene was set for a fast race. Unfortunately this was not to be as a line snag pulled the undercarriage out of the Ross/Court/Bradley model at the first stop and resulted in a disqualification for Alan Hill. A rerun was ordered for the remaining teams of Langworth/Broadhead and Ross/Court/Bradley, which gave victory to Bernie and John, as our reserve model was not on song at all during the whole 150 lap final.

Future Organisation

Perhaps we need to look at a revised timetable for the National Champs race organisation, to counter the abnormalities of the English weather systems? Not only does it affect the contests for Champions, but also the massive trade stands and infrastructure on the airfield. Without modification those modellers, officials, and visitors who look forward to this event every year, will no doubt feel short-changed again. ●

1. *Winner of Junior Mini Goodyear Tom Smith (pilot) and Peter Jephcott (pitman) receive their certificates from Chris Moynihan of the BMFA.*

2. *Waters v Clarke, two father and son teams racing in the Saturday heats.*

3. *Junior finals Tom Smith v Aaron Schmitz v Connor Newis before re-fly.*

4. *Junior finalists - centre 1st Smith/Jephcott, left 2nd Schmitz/Schmitz, 3rd Newis/Hanks.*

5. *Senior finalists – (centre) 1st Cannon/Cannon, (right) 2nd Waterland/Lever, 3rd Lea/Turner.*

Mini Goodyear Team Race

Ben, Jane and Tim Andrews report.

This year's event was dominated by junior teams, as although 9 senior teams entered only 4 managed to put in a heat time. Of the 7 junior teams who entered all achieved one or two heat times. The heats were 2-ups consisting of both junior and senior teams, depending on who was available to fly. On the Saturday, 10 heats were arranged, but only 7 recorded a time. There were a few tangles, but the pilots sorted themselves out and most races continued.

Our novice junior teams were daughter and father, Anaïs and Jan Huning (who achieved 2 heat times racing against Lea/Turner and Harris/Harris), and son and father, Barry and Charles Waters (who recorded 2 heat times against Lea/Turner and Clark/Clark). There was plenty of encouragement and help for the novices. Father and son, Willi and Aaron Schmitz from Germany returned after a year's gap, and Aaron's flying technique is much improved.

On the Saturday evening the message was that most events would be running their finals on the Sunday due to the poor forecast for Monday. So at this stage there was some concern in the camp about the number of outstanding heat times to be recorded on the Sunday, plus the need to fit in the finals. However, only one additional senior team turned up on Sunday and all the others heats were the juniors, including Smith/Jephcott who recorded one heat time on the Sunday, fast enough not to need another attempt. Again Tom Smith's flying techniques get better and better, and he has mastered the art of landing at his pitman's feet. So, in all, 5 heats were run on Sunday which gave sufficient time to fit in the 2 finals.

Junior Final

It encompassed everything you would want and expect from a junior final; excitement, incidents and a talking point. The 3 young flyers had all set times of less than 6 mins for 100 laps. So it was set to be the quickest and most competitive to date. But along with the excitement they bring to the circle a degree of inexperience as they are still learning their trade. Sadly, the inexperience got the better of the pilots, including one who had come into the final with the fastest heat time, but struggled to adjust to over-taking in a 3-up final; it was the first time he had been in this situation. After 3 restarts it was decided to run the final as a 2-up between Tom Smith and Aaron Schmitz.

The lack of experience flying 3-up was not helped by the format of the event - all heats were run as 2-ups, leaving no time for the young flyers to adapt to the demands of a 3-up - something that the organisers will be looking into for next year's event.

The 2-up race got underway with Tom and Aaron focusing on the task in hand. As the race progressed, Tom's engine settings improved, whereas Aaron's deteriorated, the latter having been in fine form prior to the restarts. The race continued without any incidents, apart from Aaron giving his Dad, Willi, an 180° run around the circle to retrieve the model on more than one occasion. Whilst Tom was very kind to Grandad Pete, landing at his feet each time.

1st Smith/Jephcott	-	11.04.83
2nd Schmitz/Schmitz	-	13:37.88
3rd Newis/Hanks	-	DNF

The Seniors

Junior flyer Connor Newis returned to the circle on the Sunday to help organisers run a qualifying heat for Cannon/Cannon. Connor won the heat, setting his fastest time of the weekend (05.00.00), underlining the potential he has as a pilot.

The eventual senior finalists were all experienced pilots who tested the CD's rule book knowledge to a small degree. A few warnings were given for the usual; high flying and whipping, though on the whole it was a clean race with Derek Cannon delivering perfect pit-stops and a good flicking finger from brother, Peter. This team were a match for the reigning 'Brians' (Waterland/Lever), who, perhaps, were not quite as slick as normal. Stephen Turner was plagued with engine setting issues and their race came to an end when they reached the 15 min cut-off for final races. However, Brian Lea should be commended for achieving 184 laps, as he didn't think he would be able to continue for that long. Eventually the worthy winners were Cannon/Cannon, having beaten Waterland/Lever by 16 seconds.

1st Cannon/Cannon	-	10.29.38
2nd Waterland/Lever	-	10.45.18
3rd Lea/Turner	-	184 laps @ 15 mins

What a sight - Andrew Hewitt´s Halberstadt flies overhead. It is a very difficult subject but Andrew is probably the best ´trimmer´around.

Free Flight Scale

Report by Bill Dennis who competed in the early evenings' serenity at Barkston. Photos by Andrew Boddington.

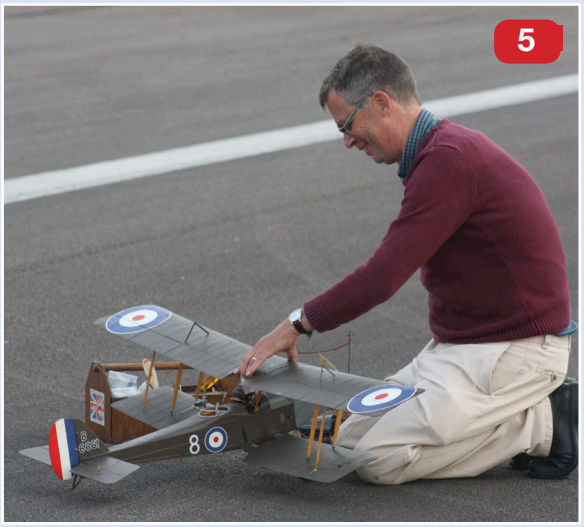
Once again we had two evening oases of calm in the middle of a long period of windy and rainy weather. Perfect conditions for free flight scale. Entries were significantly and disappointingly lower (as they were across the Nationals) but any misgivings about the effect on the competition were forgotten as we were treated to some excellent flying from a wide range of models. Remarkably, all but one qualified; I have never been able to say that before.

As ever, I am not going to subject you to a blow-by-blow account but will leave more room for photos. In rubber, the story was about Ivan Taylor's Supermarine S5 floatplane. Last year, Ivan appeared at his first Nationals with a big SE5 which proceeded to score 10s with its flying but had a poor static score. This time, he has got to grips with the static requirement and placed a close second to Andrew Hewitt. I was walking back from a retrieval when the S5 came cruising past to make a beautiful landing on the wet grass. To wrap up a good weekend, Ivan also won the painting awarded for highest-placed new model, and the Eric Coates trophy for the model that best-epitomised the spirit of scale modelling. Eric would certainly have enjoyed the Supermarine. The only blot was when Ivan´s stooge gave way on his next flight while he was giving it the full F1B treatment, leaving him with a two-piece fuselage. A full day´s work on the Sunday saw it back together.

CO2/Electric was an all-electric affair, with Steve Glass' Saab Tunnan flying high

1 & 2. *One of the most impressive performers was Steve Glass´ SAAB Tunnan. We await the first jet to ROG without rocket assistance!*

3. *This is Ian Lever´s Miles Magister flying in the rubber event*



and impressively. We still wait for another jet to take off with retractable undercarriage. The only one we have seen is Derek Knight's Barroudeur, which was a 'I was there' moment. The other entries were good, stable subjects, including the DH60s of Gareth Tilston and Derek Knight, and Bernie Nicholls´ Grasshopper.

Lowest entry of all was in Power, with just four. This could have led to cancellation, which would have been very disappointing after 65 years of competition for the Superscale trophy but again, we hardly seemed to notice. With eight rounds, quick engine starting and good performances, there was plenty for the appreciative crowd to watch, and with so many scale modellers standing in the crowd watching, they knew what to look for. Andrew Hewitt eventually squeezed two good flights out of his beautiful Halberstadt. What a difficult subject this is; short-coupled and low on dihedral, it is always on a knife- edge but when it goes, it is stately and very impressive.

The one new model was Terry Aydon's Sopwith Triplane, enlarged and modified from the Aeromodeller plan for a Frog 150. It is early days for this model but it did manage one excellent flight to put it in touch with the leaders. However, the familiar RE8 won the cup for Bill Dennis, with one of the eight flights being a full house.

Thanks go to Andrew Hewitt for the organisation and to the extensive team of judges.

4. *A close up of the engine installation in the Sopwith Triplane.*
5. *Bill Dennis fires up the RE8. Unusually it was the only Mills-powered model, and Bill reckons he flew the whole eight rounds with just twelve flicks of the prop!*
6. *Ivan ponders the result of using 'kindling' quality wood to adapt an expensive F1B winding stooge for his Supermarine! It was rebuilt by the second evening.*
7. *Another successful electric Moth was this one by Gareth Tilston, converted from a rubber design.*
8 & 9. *A happy Ivan Taylor returns with his Supermarine after that flight. Some lovely detail on Ivan's model including this characterful pilot.*

RESULTS

POWER		BEST FLIGHT	STATIC	TOTAL
1. Bill Dennis	RE8	2000	1599	3599
2. Mike Smith	Sopwith Cuckoo	1755	1399	3154
3. Andrew Hewitt	Halberstadt CI IV	1540	1401	2941
4. Terry Aydon	Sopwith Triplane	1630	1198	2828
CO2/ELECTRIC				
1. Derek Knight	DH60	1560	1668	3228
2. Gareth Tilston	DH60	1740	1402	3142
3. Bernie Nicholls	Piper L4 Grasshopper	1490	842	2332
4. Steve Glass	SAAB Tunnan	1440	866	2306
RUBBER				
1. Andrew Hewitt	Morane N	1565	1748	3313
2. Ivan Taylor	Supermarine S5	1802	1402	3204
3. Ian Lever	Mile Magister	1752	1160	2912
4. Rich Moore	Fokker DR1	1420	1470	2890
5. Derek Knight	Avro 560	1482	1380	2862
6. Richard Granger	Lacey	1617	242	2859
7. Pete Fardell	Bristol M1C	1505	822	2327

Terry Aydon´s Triplane looks set fair on take-off but whichever way you look at it, it needs a pilot!

Free of the restraints of indoors, Derek Knight´s electric Moth flew far and high.

Andrew's Halberstadt is powered by an Oliver Tiger Cub, but no Team Race first-flick starts though! There is a lot of complex washout built into those lower wings.

Mike Smith´s Cuckoo climbs away. A lot of weight has been taken out and the AM15 replaced with a 10, resulting in slower, better flight.

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Graham Leatherland's F2B/Gold Trophy winning 'G Max'.

Aerobatics

John Copsey reports on the CL stunt Classes.

Driving up that rather hilly stretch of the B6403 towards RAF Barkston Heath with the eager anticipation starting to build. Then suddenly, there it is, that marvellous sea of tents and caravans that tells you it's yet another 'Nat's'. You can see it but you can't yet hear the scream of the CL engines that is so invocative of this event, but you soon will, won't you?

Arriving at the section of black stuff No. 28 allocated to CL Aerobatics, all seems in order but a little quieter than usual. I check my watch and 'no' it was not too early, it's just that with the FAI CL European Championships only just finishing, plus a rather unhelpful weather forecast, we are somewhat down on entrants. There were only 14 for F2B, 5 for Class ll and 4 for Vintage, but the Classic event suffered the embarrassment of only a single entrant and was therefore cancelled.

The Euros were affecting other CL disciplines as well, so there was a general feel of inaction and a lack of the usual atmosphere of a Nats Saturday. Hopefully this would improve on the Sunday as the errant flyers arrived back in the mother country. Weather wise, a high and steadily thinning cloud base and no sign of rain (hooray!). There was however a steady SW wind of about 12 mph which whilst not ideal, was perfectly flyable. The forecast for the Sunday was less wind but, with a higher risk of rain, so best to get at least 2 rounds out of the 3 completed on the Saturday.

F2B Rounds One and Two (Saturday)

After the pilot's safety briefing from CD Dave Hough and the Judges Proving flight by the venerable Brian Turner, we were away. The wind was helping to keep scores to modest levels and was also causing some difficulty for the less experienced competitors. There were also a couple of Balsa splintering events due to mechanical or engine malfunctions, but things mostly proceeded in an orderly fashion.

It was also interesting to note that there was a fairly even split of power choice, with electric at 6, versus those sticking doggedly to IC managing 8.

At the end of round 1, Steve Smith was trailing Graham Leatherland by a mere 1.9 points, with Brian Turner a close third with the two judges awarding him 1713.1 combined points. The main looser at this stage was Pete Tindal who had an early motor cut due to an unusual mid air battery disconnection.

After lunch, round 2 was initiated and this proceeded in a similarly tense fashion to the first round. The main exception now being that Pete T. came storming back with an incredible round winning score of 1,776.7 at the expense of Graham's 1,753.3. Brian Turner improved his score to move up to second place by leapfrogging Steve Smith who had a poorer round (by his standards) and only scored 1706.0. Things were hotting up!

F2B Round 3 (Sunday)

Sunday presented a different kettle of fish, in that there was less sun, but more importantly, less wind. This added spice to an already enthralling situation as several flyers were able to show dramatic improvements. Amongst these were Kevin Morgan with 1,732.4 and Paul Winter with 1,753.7. A valiant effort by Pete Tindal, aided by some sneaky adjustments to his electric Shark, involving a special boot lid closing technique, were in the end to no avail. This was because Graham posted a fantastic 1,841.0 points to head the leader board at the end of the 3 qualifying rounds with a best 2 out of 3 score of 3,594.3.

Gold Trophy Fly Offs (Monday)

The importance of the earlier intense squabbling for positions in the qualifying rounds came into sharp focus on the Monday, as it quickly became clear that the day would be a soggy wash out. No further flying took place, except for possibly a couple of local very brave ducks.

Under the rules, this meant that Graham

Steve Smith's 3rd place model - nameless as far as I am aware.

From the left, Steve Smith, Graham Leatherland, Paul Winter plus helper debate the finer points of Graham's 'G Max'.

Jim Hatch's electric powered model, called 'Intrepid.'

Far left: From the left, Class II Debutante Nick Zotov, plus the Vintage Stunt competitors Dave Underwood, Mick Taylor and Ian Hewitt.

Centre: Pete Tindal makes hasty repairs to his rather expensive 'Shark' RTF having managed to close the car-boot lid on the wing! (Photo by Andrew Boddington)

Left: John Ash with his faithful own design model called the 'Cruiser' - this is the 6th version in the development cycle. The SC52 power plant is an unusual choice for CL aerobatics but seems to perform admirably.

Far left and left: Steve Foster flew his aptly chosen Fosters Beer colour schemed 'Under Pressure 2'.

Leatherland would be declared the highly deserving recipient of the Gold trophy to keep for the next 12 months.

Class ll Aerobatics (Junior Stunt)

Class ll is definitely perceived as the Cinderella event, but this is cruelly unfair as it is also the gene pool and breeding ground for our future F2B flyers.

This year there were an intrepid band of 5 entrants for Class ll, including long standing competitors as well as 'improvers' and a quivering but brave first timer in Nick Zotov. These 5 gentlemen faced the same wind, the same unforgiving tarmac and the same scoring system (just less manoeuvres), but with vastly less practice and, more often than not, grossly inferior (well, less competitive) equipment.

After Round 1, Ian Hewitt was probably starting to think this was his year with a 30 point lead over Dave Cowburn. However long standing Class ll stalwart Ron Greenwood had other ideas.

Interestingly, all the Class ll competitors improved their scores significantly during round 2, but the big winner at this stage was Ron Greenwood who put in a thumping 513.6 points. Things continued in this vein during round 3 with, yet more improving scores all round. Only Dave Cowburn lost out slightly by virtue of a near identical score to that achieved in Round 2 of a praiseworthy, 419.8 points.

In the final analysis, Ron Greenwood triumphed with a best 2 from 3 score of 1,092.2. Hearty congratulations to Ron and to all those who entered.

Vintage to SAM 35 Rules (Old Time Stunt)

This event no longer gets the level of entries that it once used to see, and this is a great shame. It affords a welcome change from the ever marching progress of modern innovation and is a reminder of a time before plastic ARTFs and electric wizardry.

Almost immediately, the original 4 entrants were reduced to an even more disappointing 3 with the news that our honoured German visitor Willie Schmitz would not be flying this year. The traditional battle between Mick Taylor and Glen Alison would also not happen this year, with Glen away at the Euro's.

Nevertheless, 3 battling rounds were fought out under the critical eye of Judge Ian Russell. With 21st Century reincarnations of such classics as 1950 era Ringmasters and Jameson Specials, all lovingly crafted to the original designs of those early days of Control Line flying.

There was little doubt that Mick Taylor would romp away with this event with his fourstroke engined Barnstormer and so it transpired. Mick easily led all 3 rounds and came out victorious with a score of 661. Thus ended another Control Line British National Championships. Not a classic year, but a highly enjoyable one all the same.
A sincere thank you to all the Judges and organisers who put so much into this event.

CDs - Dave Hough & Alan Watson.
Judges. F2B - John Bonner and Peter Catlow.
Class ll - Jeff Smith. Vintage - Ian Russell. ●

Results. All scores were on a 'best 2 from 3 rounds'

F2B (Gold Trophy)

1st	G. Leatherland	3,594.3	IC
2nd	P. Tindal	3,541.3	E
3rd	S. Smith	3,493.9	E

Class II

1st	R. Greenwood	1092.2	IC
2nd	I. Hewitt	961.8	IC
3rd	D. Underwood	951.0	IC

Vintage

1st	M. Taylor	661.0
2nd	D. Underwood	547.0
3rd	I. Hewitt	477.0

AeroModeller 80th Anniversary Quiz

Established 80 YEARS 1935

Are you a regular reader of AeroModeller? Pit yourself against the following questions for the chance to win one of three prizes. Although some of the questions look back over the many years of AeroModeller magazine, with some diligent reading of more recent issues you should be able to answer all of them! Answers will be accepted by post or email and the first three correct sets of answers randomly selected after the closing date will be allocated the prizes. The competition is open to readers around the world (as long as you are reachable by the postal system!)

The prizes are:

Fonthill Media Aviation Books

Thanks to Fonthill Media (www.fonthillmedia.com) for providing the following aviation books:

- The Boulton Paul Balliol – The Last Merlin-Powered Aircraft
- The Little Blitz – the Luftwaffe's Last Attack on London
- Zero to Hero – From a Boy's Home to RAF Hero
- Silent Invaders – Combat Gliders of WWII
- The RNAS and the Birth of the Aircraft Carrier 1914-18
- Northern 'Q' – The History of RAF Leuchars
- Rapid Rundown – RAF Ops in the Middle East 1945-48

CS Boddo Mills Replica 1.3

Your editor has delved in to his cupboards and found this New in Box Mills 1.3 Replica that his father David 'Boddo' Boddington had manufactured by CS. A classic 1.3cc diesel engine perfect for vintage style FF or RC assist.

1 Year Subscription to AeroModeller

What more could you want than the certainty that the latest issue of AeroModeller will drop on your doormat every month? The next 12 issues could potentially be yours if you correctly answer all 10 questions. If you are already a subscriber the extra 12 issues would extend your present subscription. ●

Quiz Questions

1 In the late 1940s AeroModeller was published from a site which was also used for model flying, not far from today's office of ADH Publishing the present publishers of AeroModeller.

Q1. Where was AeroModeller based in the late 1940s?

2 He was a well-known past editor of AeroModeller and designer of the Voetsak CL model.

Q2. What was his name?

3 **4** Gig, Tony, Paul and Chris are the first names of a family who have produced model diesel engines in Britain for many years.

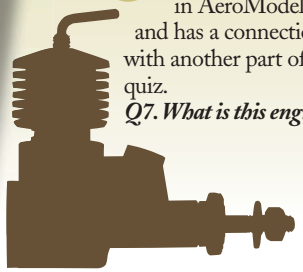
Q3. What is their family surname? (Correct spelling please!)

Q4. What is the three letter name of their engine range?

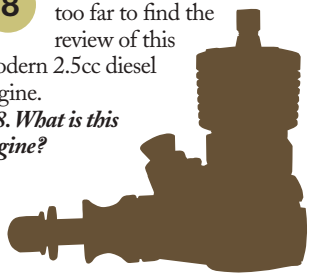
5 The 1970s were different times with this topless photo on the cover of AeroModeller! He is still a regular contributor.
Q5. Who is it holding the flying scale LVG at Old Warden?

6 Another current contributor was on the front cover of Model Aircraft magazine in November 1963 (Model Aircraft was *incorporated in to AeroModeller in January 1966).*
Q6. Who is it holding the model at the FF World Champs?

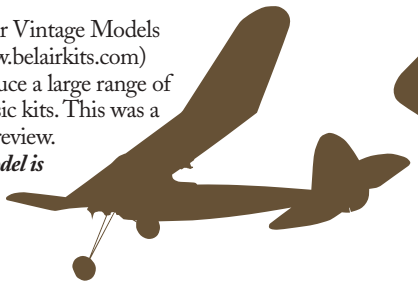
7 This smaller diesel was recently tested in AeroModeller and has a connection with another part of this quiz.
Q7. What is this engine?



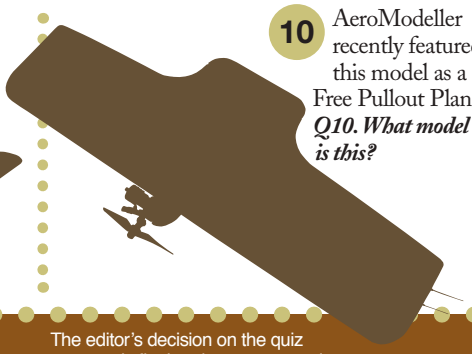
8 You won't have to look too far to find the review of this modern 2.5cc diesel engine.
Q8. What is this engine?



9 Belair Vintage Models (www.belairkits.com) produce a large range of laser cut classic kits. This was a recent build review.
Q9. What model is this?



10 AeroModeller recently featured this model as a Free Pullout Plan.
Q10. What model is this?



Terms of the AeroModeller Quiz
Your 10 answers must be received by post or email by 16th November 2015 to be included in the draw for one of the three prizes. Please also include your name and a postal address in case you are lucky enough to win a prize. Only one entry per person.

Email answers – should be sent to editor@aeromodeller.com with Subject as 'Quiz'.
Postal answers – should be sent in an envelope or on a postcard with 'Quiz' in the top left corner to AeroModeller, ADH Publishing
Doolittle Mill, Doolittle Lane
LU6 1QX United Kingdom

The editor's decision on the quiz answers is final and no correspondence will be entered in to about the quiz. The quiz is not open to employees of ADH Publishing. Answers and a list of winner will be printed in a future issue of AeroModeller. Good Luck!

Yellow
Dk Yellow
Orange
Lt Orang
Red
Dk Red
Lt Green
Dk Green
Silver
Medium Blue
Tropic Blue
Ocean Blue
Dk Blue
Lux Blue
Antique
Black
Heather

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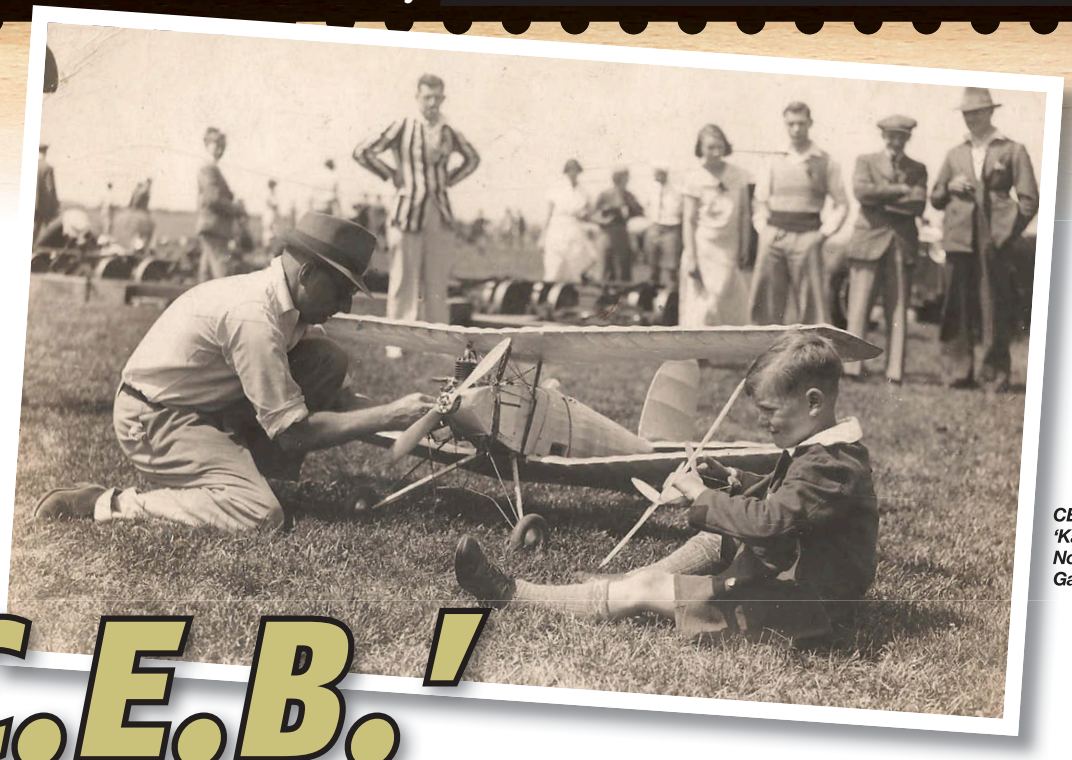
Flu Yellow



CEB with modified 'Kanga' at the Northern Heights Gala in 1933.

'C.E.B.'

A tribute to Lieutenant-Colonel Claude Evelyn Bowden

There is no better time than our 80th Anniversary issue for Peter Scott to look back at the life of C. E. Bowden, a regular contributor to AeroModeller for many years from the first issue in November 1935.

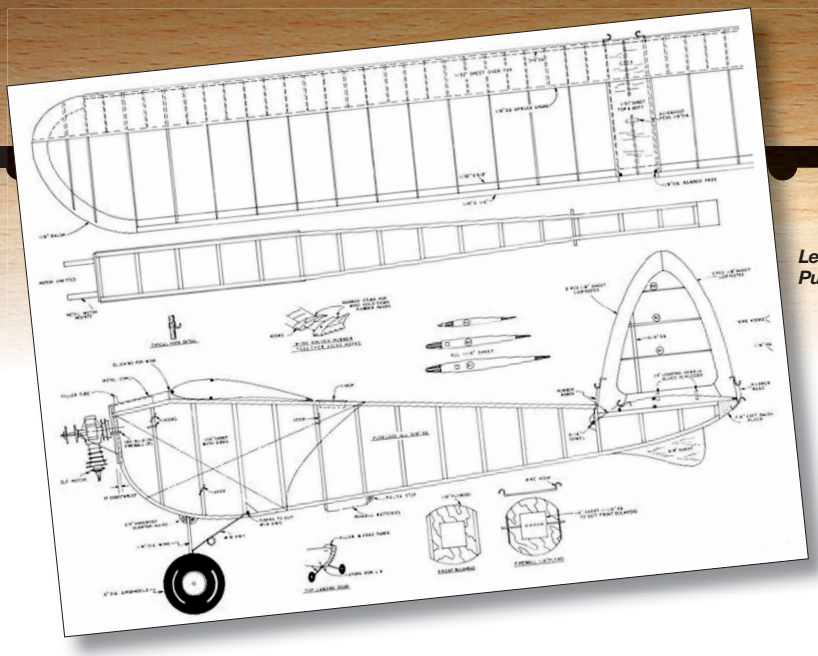
Someone once said that if you steal from one author it's plagiarism; if you steal from many it's research. Past issues of 'AeroModeller' have contained detailed profiles of individual Bowden designs and concepts, many penned in the 1990s by the late Alex Imrie. So in this tribute I will not seek to reference every extant piece of literature by or about CEB, but rather to reflect on the man and his achievements dating back to the 1930s/40s, and add a dash of personal reminiscences.

The South West Connection

Much of CEB's experimental work on model aircraft was conducted when he was on leave from the army in and around the South West of England, in particular in Dorset and Somerset. His favourite locations included Poole and Bournemouth, which are close to where I live; and he also spent a lot of time in Porlock in North Somerset, where at the end of WW1 he first met his future wife Grace, and later his collaborator Dr. John Forster of 'Mermaid' flying boat fame and also a regular AeroModeller contributor. The town lent its name to CEB's 'Porlock Puffin' which appeared in AeroModeller in May 1939, and CEB also used Porlock Weir as well as Poole Harbour for his model flying boat and float plane trials. When I was speaking in recent times to the family and friends of Dr. Forster, they recalled that in the early 1940s CEB would occasionally be seen driving through Porlock in his open Lagonda in pursuit of models that had escaped from their local flying field -- evidently the wartime ban on power model flying may have gone unnoticed in North Somerset!

In retirement in the 1960s, CEB returned to live in Dorset and was President of the Bournemouth Model Aircraft Society.

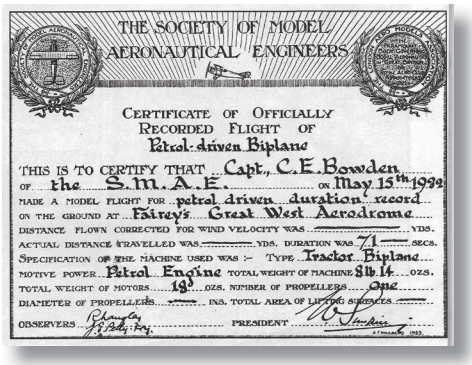
Peter Scott's replica 'Bowden Low Wing Monoplane' in 1995.



Left: 'Porlock Puffin' plan.

As a lad I had the great good fortune to glean many a helpful tip from him, and we subsequently stayed in touch. Among my fondest memories of CEB during the time that I was privileged to know him, was when in 1978 my wife and I were invited to tea at the Bowden's home in the village of Corfe Castle to the West of Poole. Grace (then almost eighty) charmingly served us tea and cake on proper china, and CEB kindly autographed all my 'Bowden books', which I treasure to this day and which provide a fascinating source of reference.

During our discussion (which was nominally about aspects of the Bowden 'Mouse' biplane I was constructing at that time), I remarked that, with respect, I had never quite figured-out how he had managed to combine his model building and writing activities with his military service and raising a young family. He recounted the history of how, after serving in the light infantry in the Somme at the end of the First World War, he had elected for a career in the Royal Army Service Corps specialising in mechanical transport (where he developed his love of motor bikes). In January 1918 he had been promoted to Lieutenant, and subsequently to Captain, then to Major in 1938, and those ranks appear in the bylines for his early articles.



THE SOCIETY OF MODEL AERONAUTICAL ENGINEERS

CERTIFICATE OF OFFICIALLY RECORDED FLIGHT OF Petrol-driven Biplane

THIS IS TO CERTIFY THAT Capt. C.E.Bowden OF the S.M.A.E. ON May 15th 1932 MADE A MODEL FLIGHT FOR petrol driven duration record ON THE GROUND AT Fairey's Great West Aerodrome DISTANCE FLOWN CORRECTED FOR WIND VELOCITY WAS ..... YDS. ACTUAL DISTANCE TRAVELLED WAS ..... YDS. DURATION WAS 71 SECS. SPECIFICATION OF THE MACHINE USED WAS :- TYPE Tractor Biplane MOTIVE POWER Petrol Engine TOTAL WEIGHT OF MACHINE 8lb 14 OZS. TOTAL WEIGHT OF MOTORS 19 OZS. NUMBER OF PROPELLERS One DIAMETER OF PROPELLERS ..... INS. TOTAL AREA OF LIFTING SURFACES .....

OBSERVERS ..... PRESIDENT .....

The certificate issued by the SMAE in 1932 recording 'Kanga's' record flight.

CEB told me that he had learned to fly in Egypt during WW1 in an Avro 504K, and had flown a Sopwith Pup and SE5a. He had been stationed in India at the end of that war; in York in 1929-30; in Feltham, Middlesex until 1932; in Glasgow from 1933-35; in Birmingham from 1936-37; and from 1938-39 in Gibraltar where he was promoted to Major. He had been made an Associate Member of the Institution of Mechanical Engineers, and had served in Germany at the end of WW2. He was promoted to Lieutenant-Colonel in 1941 (thereafter to be addressed in correspondence and in person as Colonel, as Debrett's will tell you); and he had completed his military career in the Bournemouth area in the late 1940s.

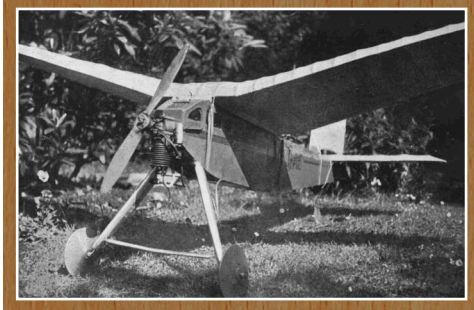
Avid Model Aircraft Enthusiast, Experimenter, and Record Breaker

CEB started flying models aged fourteen in 1912 at Radley College in Oxfordshire, where he established a model aeroplane club. After considerable success with compressed-air models, by the early 1930s his rubber-powered biplanes were performing extremely well, and in 1932 he reflected that '… it would be interesting to see what could be done with one of the small 30cc petrol engines that were being developed for model speed boats'. Consequently CEB built his famous 'Kanga' biplane, which weighed-in at close to 10 lbs. CEB's extensive network of pals included Sir Richard Fairey, who '… kindly allowed the use of his beautiful flat aerodrome just outside London' (the Great West Aerodrome, which is Heathrow today) for his record attempts. Accordingly, there on Whit Sunday, 15th May 1932, CEB managed a flight of seventy one seconds with 'Kanga' setting a new record for a power-driven model aeroplane. Sadly there is no blue plaque at Heathrow to commemorate the event!

The sight and sounds of that model in flight at Hounslow Heath a week later are captured in the British Pathé film entitled 'The Power Plane', and which can be viewed at www.youtube.com by searching on 'Power Plane 1932'. Although it is clearly a composite of more than one flight, that short video is worth watching over and again, to spot CEB casually hand-starting the engine with its 24" diameter prop (rotating clockwise), the deeply under-cambered tailplane, the amazingly wrinkled covering of the fin and wing tips, the near-miss with a horse rider, and the wonderful pronunciation of 'garter earlarstic' (which was used to attach the wings).

The late Mike Beach's replica 'Kanga' at Middle Wallop in 1997.

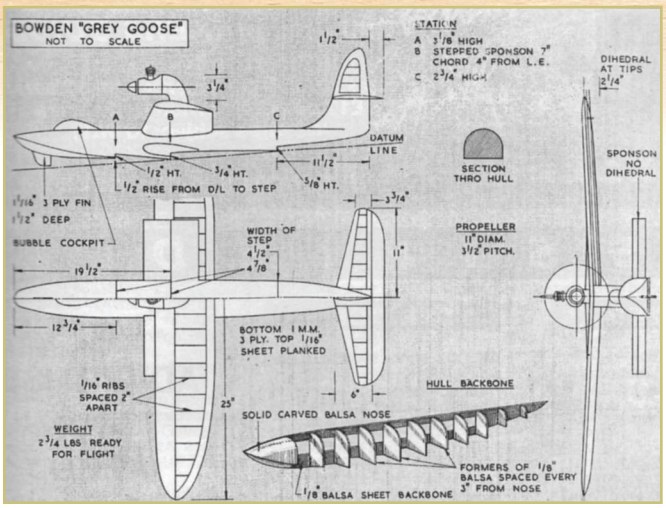
Still from the Pathé film showing CEB and Grace preparing Kanga on Hounslow Heath.



Detail of the 'Blue Dragon' from 'History of Model Aircraft' by CEB.

The late Phil Smith's Bowden 'Bee' at Middle Wallop in 1993.

In the following year, the then Captain Bowden set another new record with his 'Bee' monoplane. And then in the 1934 Sir John Shelley power competition, CEB's Atom Minor powered 'Blue Dragon' set a further record, flying out-of-sight into a bank of



Above: Kanga Aero Models logo, as used in the shop and on letterheadings.

Left: 'Grey Goose' 3-view drawing from 1945 AeroModeller.

Right: A very much younger Peter Scott with his 'Mouse' in a 1978 AeroModeller feature.

clouds after 12 minutes. Intriguingly, that model was later located by CEB eight miles away, after searching from a full-sized autogyro piloted by Reginald Brie, chief test pilot for another of his friends, Juan de la Cierva!

By the late 1930s, CEB had become deeply involved with model boats, 'reverse-engineering' his knowledge of aircraft principles to designs such as his 'Jildi Junior' hydroplane. He combined this interest with the development of floatplanes and flying boats, and on 9th September 1937 at Poole harbour he established a new record of just over 30 seconds for a rise-off-water flight: his 'Little Audrey' would also have won a prize for one of his least elegant creations! Above all it was precise, repeatable flying that CEB aimed for, and which he encouraged others to emulate with the eponymous Bowden Trophy contests for precision flying which he established in 1937.

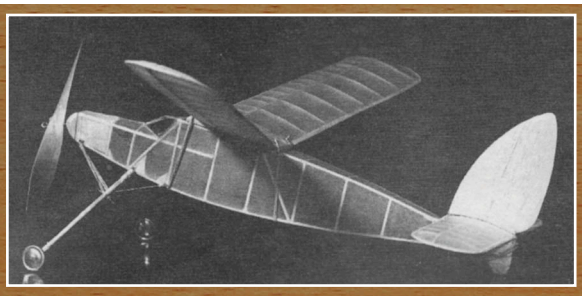
which he used in his models. Old copies of AeroModeller, Model Engineer, Practical Mechanics, and Model Aviation show that most of CEB's articles were 'autobiographical', in the sense that they inevitably related his own first-hand experiences of what was pretty much uncharted territory in Britain. Consequently there was a lot of opinion, a lot of really useful contemporary ideas, and also a lot of what some might call 'voodoo aerodynamics'.

To understand CEB's design philosophy, his often comparatively heavily-loaded models (which fly well even in the most unfriendly British weather) evolved through trial-and-error with their characteristic elliptical wings and tails, often with wing slots, and long springy shock-absorbing undercarriages. Many of his models featured rectangular fuselages, faired into a circular nose section (with the help of copious quantities of the plastic wood

have survived, and thanks to a few dedicated aficionados so have the detailed plans of the models, a number of which I have built myself.

During the massive task of sorting (and sadly disposing of) his models after the Colonel's death, Phil Smith (of Veron) recorded that there were dozens of wings and tails that could not be matched to fuselages, and many incomplete models. There was a reason for that: in current parlance, CEB was a great believer in 'upcycling'. As he developed new designs, he salvaged components that could be reused – a wing here, a tailplane there, a fuselage to which floats could be added, or a high wing that became a low wing.

In the late 1970s, the original wing of the



The rubber powered Kanga 'Kitten'.

Chris Brainwood's Frog 100 powered 'Meteorite' shelters from the rain at Middle Wallop, August '15.

BM Models Advert from October 1948 AeroModeller.

Author, Designer and Builder

For many enthusiasts in Britain and around the world, it was CEB's writing that brought him to their attention, through his regular column for AeroModeller in the mid-1930s entitled Petrol Model Aeroplane Topics, and after WW2 as Petrol Vapour. Foremost among Britain's 'petrol pioneers', CEB was designing his early petrol models at around the same time as Maxwell Bassett in the U.S., although as that was long before even telexes, much of his designing was carried out oblivious of others' work. However his resources enabled CEB to acquire early American spark ignition engines such as the Brown Junior and Elf,

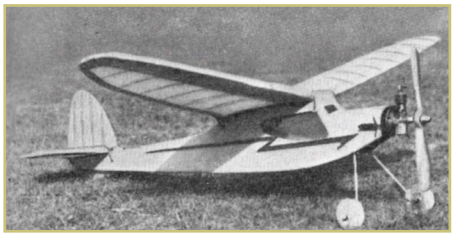
he favoured) to accommodate the engine mounts he had developed, and the short noses of many of his designs necessitate a lot of side-thrust. CEB's knowledge of aerodynamics told him that his models should also '… have plenty of dihedral angle, and balance this dihedral with a correct fin area at the back'. Look no further than the 'Blue Dragon'.

Many of CEB's earliest designs (which he produced on the back of rolls of wallpaper) were not published, and the 3-view line-drawings of those that were reproduced in magazines often bore only a passing resemblance to the finished product. Fortunately, CEB's many books and articles

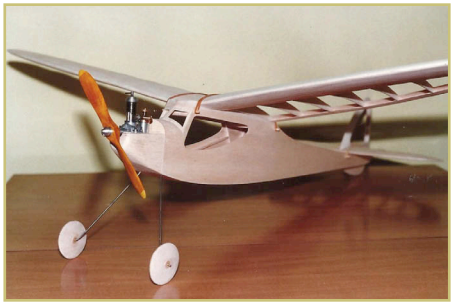
Bowden 'Meteorite' hung on display in Austin's model shop in Southbourne (to the east of Bournemouth). I could not help observing that it was lightweight, extremely rigid, and the finish bore a passing resemblance to the surface of a plaster cast. CEB was a firm believer in functionality rather than achieving what we would now regard as a 'concours' finish. In common with all of his power models, CEB had used a single coat of full-strength glider dope for rigidity, followed by white dope which he adopted after he had admired the all-white Mercedes racing cars that he believed showed-up to the best advantage when in action.

The Retailer

In parallel with CEB's military career, in 1936 the Bowdens set-up a model shop in Birmingham: Kanga Aero Models, located at number 1 Colonnade Passage (strategically right opposite the old entrance to New Street Station), which was run by Grace. The shop stocked the then current range of kits and plans of Bowden designs, including his 1927 Tractor Monoplane, his 1930 'Bumble Bee',



CEB's little 'Humming Bird' with Majesco Mite diesel from 'Diesel Model Engines' by CEB.



'Humming Bird' built by the late Alwyn Greenhalgh. (Photo by Alwyn Greenhalgh)

his 1934 Moffett Trophy entry with the very petite wheel spats, the pretty little 1937/38 'Kanga Kitten' and 'Kanga Dragonfly' biplane, and the petrol engined 'Kanga Kub' and 'Mouse' biplane.

The shop stocked otherwise hard-to-find petrol engines. CEB had developed a form of mounting his engines that was the precursor of today's glass-filled-nylon items, and the Birmingham Aluminium Casting Company produced cast metal engine mounts and propellers for him. I recall that when I was living abroad in the early 1970s, many by then obsolete Bowden items were still to be found in 'antique' (aka junk) shops, and my father sent me one such find -- a Brown Junior complete with a Bowden cast Elektron propeller. He said he had considered cutting the ends off the propeller, so that it would fit better into a box to put in the post…..

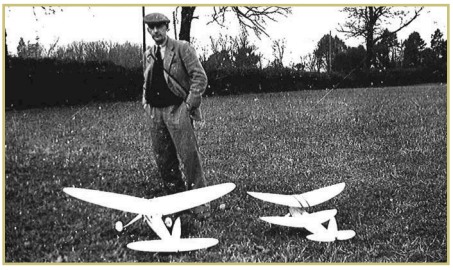
At the end of WW2, the Bowdens opened BM Models at 43 Westover Road in Bournemouth, next to the Westover cinema which attracted the 'passing trade', and once again was run by Grace. In the middle of the window display was a Bowden 'Meteorite' – the very model of which the wing had survived and eventually found its way to Austin's. A number of early model engines were being produced in the Bournemouth area: spark ignition engines by Hallam Bros in Poole; by Bijou Mechanical Productions (BMP) also in Bournemouth; and by Jack Colyer's Majesco Motors in Parkstone -- with whom CEB developed a close friendship and for whom he became an 'official tester' for their spark ignition, and later diesel engines.

If you fancy your chances of unearthing a few Elektron engine mounts and propellers, lurking somewhere in dusty boxes hiding in dark corners…..don't go to Birmingham in your quest, looking for Colonnade Passage, it was knocked-down sixty years ago.

Austin's model shop is now a nail and beauty parlour. And in Bournemouth, the cinemas and the shops at street level are still there, but Westover Road is soon to be part of a regeneration zone.

Change of Direction

By 1947, the plethora of model diesel engines on the market had rendered spark ignition engines obsolete. CEB became heavily involved with diesels, and his two books on the subject remain about the most comprehensive source of information of early British (and indeed European) diesels. The move away from the heavier spark ignition engines to these lighter (and eventually smaller) engines enabled CEB to produce



CEB in his garden at home in the mid 40's with 'Bowden Contest' and 'Kangette' biplane.

'PLW-6' from 1937, being used later as a control-line 'Goat' (i.e. tethered!)

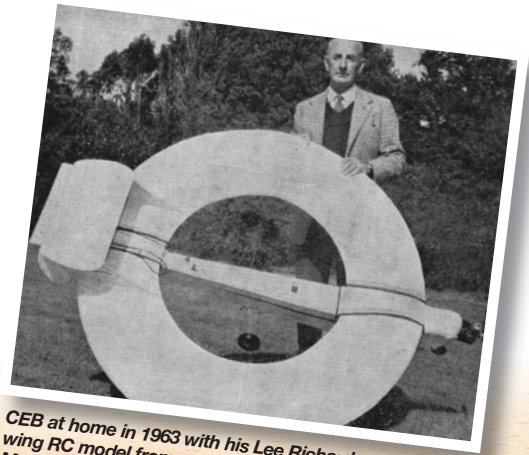
more easily-transportable designs such as the 'Bowden Midget', and later the 'Humming Bird' which appeared in 'Model Aircraft' and was one of his last published designs. As far as I can determine, there is no 'master list' of all of CEB's designs, but noteworthy inclusions would be the PLW series of Low-Wing Petrol models (hence the name !), his 1941 'Big Stuff' ultra-large rubber-powered model, his much-loved 'Bowden Contest' published in AeroModeller in 1945, and the little 'Kangette' biplane.

In later years, CEB reverted to his passion for model boats, and he authored 'Model Yacht Construction and Sailing'. By the 1960s, his expertise in this sphere had gained him wider recognition, and he was at the forefront of full-size racing yacht design in Britain and Australia. In the following years, CEB had time for more experiments with just about every imaginable type of model aircraft including so-called 'Goats' (tethered conversions of his Free-Flight models), autogiros, tailless models, annular wings, deltas, model jets, and pioneer Radio Control, as he recounted in one of his last features in AeroModeller. Although his health eventually declined to the point where he had to give up his (full-size) sailing and model flying, from the late 1960s to the early 1980s CEB became closely involved with David Parker and his 'Comet' steam-powered model, was appointed president of the Large Model Association, and in 1982 he wrote to me on his experiments with electric power.

Colonel C.E. Bowden died on 9th October 1984 at the age of 86; his beloved and hugely supportive wife Grace died on 21st July 1993 aged 93. Innovative designer and prolific author, CEB will I trust be recorded by future generations as one of the greatest of all model aircraft experimenters. Beauty may lay in the eye of the beholder, but to me his

Peter Scott's 'Kangette' with Atom sparkie in 2014.

designs capture one man's passion for model aircraft and making them fly. Thankfully the surviving Pathé film, and the sight of Bowden designs airborne at wonderful venues such as Old Warden and Middle Wallop, attest to his determination and achievements.



CEB at home in 1963 with his Lee Richards annular-wing RC model from an old AeroModeller feature. More CEB related items will be in Bonus Content at www.aeromodeller.com

Parra T3 Racing Engine

Maris Dislers puts the production Parra racing diesel through its paces. It now has the mettle to take on the best in its class.

We reported in AeroModeller No. 927 May/June 2014 on the initial Parra T3 and T4 Vintage style engines from a small pre-production test batch. Our impressions were positive and flight testing showed the T4 engine of 3.2cc displacement to have performance right up to the allowed speed limit for BMFA Vintage Combat. The smaller 2.5cc T3 engine was also a fine performer, but fell a bit short of Alberto Parra's high expectations, as it was intended to be a top contender for Vintage A Team Race honours. That means matching up against Steve Rothwell's R250's which, while no longer made, continue to dominate the winners' podium.

Rather than release these engines in quantity, Alberto held back until further experiments and modifications to the design could be undertaken. Norm Kirton, as part of this program, conducted valuable flight testing at a 'secret facility' in Western Australia and loaned his new off the shelf production T3 engine for our evaluation.

Design developments

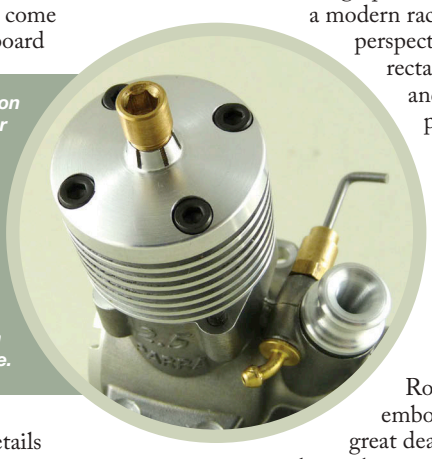
The Parra Tiger is of course based on the Oliver Tiger Mk 3, THE engine for Team Racing and Combat in the Vintage era – genuine Olivers are still being produced by Tom Ridley. Current competition rules also allow for certain more modern engines, including replicas of the Tiger. The Parra Tiger falls into that category by adopting the Oliver Tiger's principal design elements, but differing in detail. We listed

This racing version of the T3 has a shortened venturi insert for unobstructed airflow to the cylinder cooling fins, when shrouded in a Team Race model cowling.

Looking every part a thoroughbred, the Parra T3 is primarily intended for competition work, but would be a fine performer where high torque and good power output are needed.

T3 has Parra's usual four-slot back plate. Crankcase is intricately relieved between the two high quality ball races, providing a very limber bottom end assembly.

the main construction aspects in our earlier report, so this time we'll concentrate on the changes incorporated in the current version. Champion engines rarely come straight off the drawing board and it can be the small details that make a real difference.



Racing T3's compression screw takes Allen key for adjustment. Is easier to install in a model and operate than the traditional tommy-bar type supplied with the Combat version. Neatly angled nipple for fuel line is another example of thoughtful consideration from a user's perspective.

Historically, Oliver Engineering found it necessary to modify standard engines for customers demanding the very best performance. These modifications to Oliver Tiger engines aimed at extracting more horsepower at higher revs. That meant opening up the transfer passages to ease gas flow, extending intake duration and lightening the piston. There was also an idiosyncratic groove ground into the rear crankweb face, extending from the gas passage to the edge opposite the crankpin. Various theories have been proposed for how this groove might help performance, but it seems that no other manufacturer of similar engines (including Parra) has found the need for it.

The initial Parra Tiger T3 followed a similar design philosophy, but more from a modern racing or combat engine perspective. It had generous, rectangular ports in crankcase and crankshaft for precisely timed and quite unobstructed induction. The tapered outside of the lower cylinder liner and two side channels in the crank chamber provided ample room for gas flow to the four upper transfer passages.

No doubt the Rothwell R250 embodies a great deal of know-how gained from experience. By comparison with the MOD Oliver and initial Parra T3, the R250 has quite conservative port durations and a fairly 'cosy' crankcase interior. Parra developments appear to have arrived at a similar point. The crankcase intake window is now significantly smaller, reducing intake duration. Cylinder port timing is also slightly less. The crankcase interior now hugs the cylinder liner, significantly reducing crankcase inner volume. Notches in the cylinder's lower edge correspond with revised transfer channels.

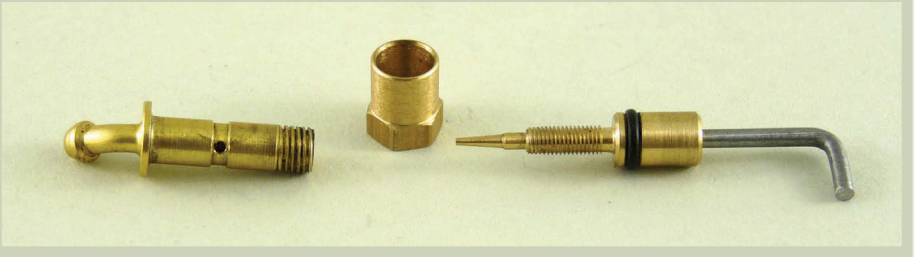
Pistons are now made from a harder grade of cast iron with a flat crown and shorter skirt, giving significant sub-piston induction over top dead centre. The longer gudgeon (wrist) pin is pressed in, rather than being a floating fit, doing away with the need for wire retaining clips and the possibility of 'pounding out'. A new carburettor design focuses flow towards the smaller crankcase intake window and has a significantly shallower groove feeding the three peripheral jet holes.

Current T3's come in Racing and Combat specifications. This one is a Racing type with compression screw better suited for installation in a cowling. It takes a 4mm Allen key for adjustment. Similarly, the venturi insert is shorter than before and a new style needle valve assembly has its fuel feed nipple oriented for a racing model (close in and to the outboard side when mounted inverted). It

Parra T3 (right) shares principal dimensions and design elements with the Oliver Tiger Mk 3 engine (left). Note the T3's prop diver, which cups over the crankcase nose to protect front bearing from dirt.

Specification

Displacement	2.44 cc (0.148 cu. in.)
Bore	13.99 mm
Stroke	15.86 mm
Weight	156 g (5.5 oz)
Exhaust duration (degrees)	144
Transfer duration (degrees)	128
Intake opens (degrees ABDC)	32
Intake closes (degrees ATDC)	15
Intake duration (degrees)	163
Sub-piston induction, total (degrees)	54
Height (mounting face to top of cylinder)	52 mm (2.05 in)
Width (across mounting lugs)	42.4 mm (1.67 in)
Width (bearer spacing)	29 mm (1.14 in)
Length (Backplate to prop seat)	65mm (2.6 in)
Mounting hole spacing	14.4 mm x 35.5 mm (0.57 in x 1.4 in)
Venturi A diameter/choke area	3.0 mm / 7.07 sq. mm (0.118 in / 0.011 sq. in)
Venturi B diameter/choke area	3.2 mm / 8.04 sq. mm (0.126 in / 0.0126 sq. in)



New style racing needle valve assembly has O-ring seal. Cup-shaped spraybar nut can be shortened slightly to further ease entry between bearers into a racing model.

has an O-ring on the needle, sealing against the cup-shaped spraybar nut. This is easy to adjust, but provides enough friction to maintain the desired setting. The spraybar has an annular groove at the jet hole location so that its position is not critical. Actually, the spraybar can be reversed if desired and still feed the carburettor. Two carburettors of quite modest choke area are provided.

The combat T3 is the same, aside from a regular compression screw with tommy bar, taller venturi insert and combat needle valve assembly. Outwardly, it looks like our earlier pre-production engine.

On the Test Bench

Fits and finish of our test engine were excellent. Piston fit was relatively tight with a definite nip when turned over top dead centre. This presented no problems while running in, probably due to the relieved upper skirt, which helps to retain a protective oil film and allows thermal expansion of the piston crown without upsetting things. After an initial period of fairly slow and rich running to settle in the crankpin and conrod bearings, we switched to faster, but safely under-compressed near-peak running with an 8x4 propeller to stabilise the piston fit.

Response to controls was progressive with a fineness of adjustment more than adequate for optimising settings. These were easy to establish at slower speeds, having considerable latitude. At speeds approaching peak power, more care was required. It could take almost one minute's running for the engine to reach stable temperature. The Tiger tolerates an over-compressed setting well, so it can be easy to advance compression too far. Exhaust oil colour is a good indicator of an over-compressed setting, or listen for a hint of 'roughness'. It is useful to check the setting after prolonged running, to establish how much compression can be backed off, while still maintaining top RPM.

If needed for maximum fuel economy, mixture could be set to the point where misfiring begins to occur. This was better controlled and had much less effect on RPM than the pre-production engine, demonstrating the benefit of the new carburettor design.

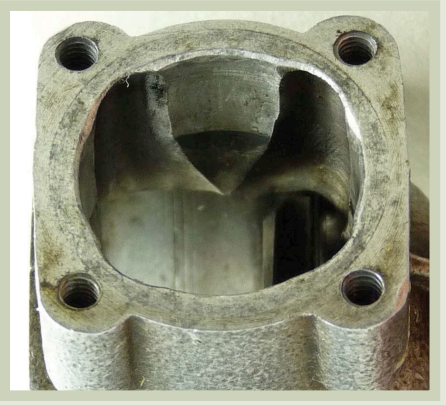
Vibration was commendably low at moderate speeds and still quite acceptable at the top end. Starting was good, without the tendency to knock when hot and lightly loaded. The Tiger needed two to four finger choked turns, or an exhaust prime when starting. At no time did it start backwards, which sometimes happens with the Oliver and similar engines.

Performance Appraisal

Our curves show power climbing steadily by almost 6% per 1000 RPM to around 16,000 RPM, before flattening out to an indicated peak of 0.42 BHP at a little short of 18,000 RPM. That's a very good figure for this style of engine, considering the modest 3.3mm choke size. No doubt the sub-

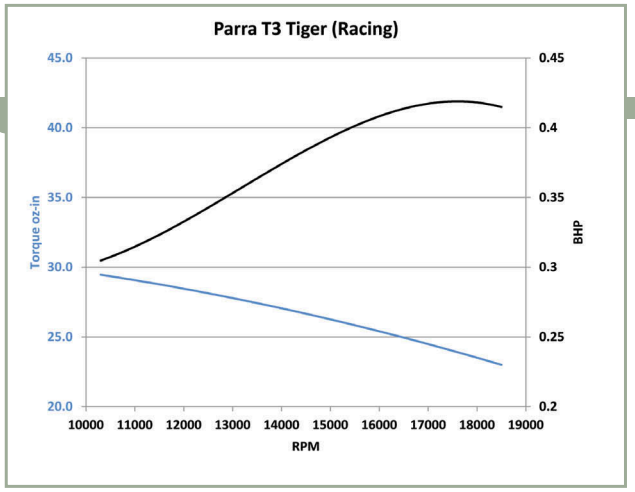
People who don't read instructions, beware! Backplate recess clears piston at bottom dead centre. Piston must be moved upwards out of the way when backplate is removed, or it'll end in tears.

Oliver piston/conrod (top) compared with Parra assembly. Upper 2.5mm of piston diameter is reduced by 0.03mm (0.001 in.) a standard feature of modern high performance engines.



Close up shot of factory modified Oliver Tiger Mk 3 crankcase. Note the flared lower transfer passages aimed at improving gas flow.

Latest Parra T3 crankcase showing revised inner shape aimed at minimising crank chamber volume.



piston induction plays its part in this result. Maximum torque occurs at speeds below our test range, but was a stout 30 oz in at 10,000 RPM. Thereafter, torque declined at a steady 3% per 1000 RPM, to a solid 23 oz-in at the peak BHP point. The accompanying table gives RPM results for potentially suitable propellers.

Our tests with the smaller (3.0 mm) venturi showed an average drop in power of almost 8%, or 300-600 RPM, depending on the propeller. This was quite consistent across all speeds. Alberto reports that it delivers significantly improved fuel economy, resulting in 75 laps per tank in Vintage A and a smaller fuel payload in Combat. At the other end, we would anticipate a similar gain in power if a choke diameter larger than 3.3 mm was used.

It is fairly common practice to judge an engine by an RPM reading with a single 'standard' propeller, such as the APC 7x6 for Oliver Tiger Class engines. Of course the choke area and its effect on RPM should also be considered when comparing engines 'A and B'. We did not experiment with fuel mixtures for absolute best performance, other than opting for a little more ignition improver than normal. In the cold 12-15C conditions, this added a few hundred RPM at the higher running speeds. Our test mix of 20% castor oil, 30% ether, 50% jet A-1 plus 2% EHN was fine for our purposes of characterising performance over the useable speed range, but T3 owners will probably find a better fuel blend for their particular needs.

In summary, it seems in light of recent experience, that the 'Oliver' cylinder porting of four exhausts with four transfers is the defining design element, as it sets the upper RPM limit at which effective scavenging can be maintained. 'Freer breathing' upstream and longer port durations in pursuit of higher RPM to gain horsepower cannot overcome that. Parra's latest changes therefore appear to lift useable performance by achieving and maintaining high torque levels within the practical RPM range. In addition, attention has been paid to carburetion consistency and practical considerations for 'real world' applications.

A New Old Classic!

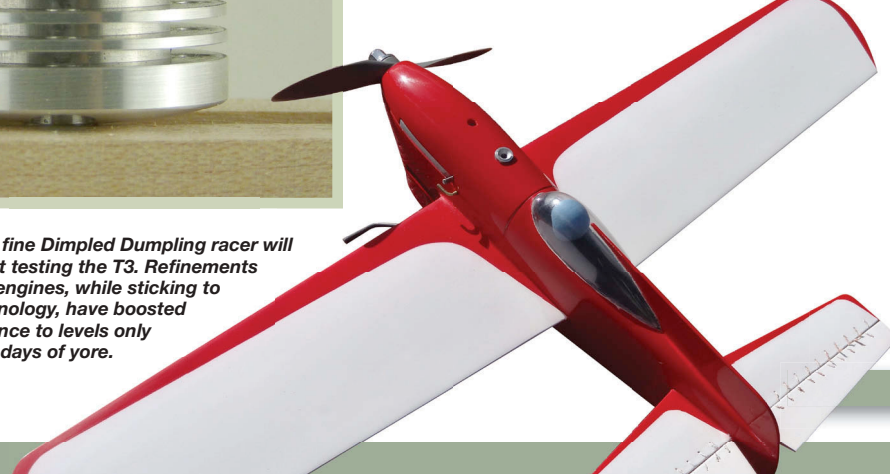
This version of the Parra T3 should, be 'in the money' for Vintage A Team Racing, Oliver Combat and Australian Vintage Combat, and would be a delight in a suitable Classic FF Power model. On a more subjective basis, we rate it high for 'user friendliness' and would not hesitate to recommend the Parra T3 Tiger for general control line sport flying. Or perhaps put that low end torque to work in an Old Time or Scale FF or RC assist model?

You can find out more about the T3 via albparra2@gmail.com at www.clubtamaran.com/Parra.htm or talk to Alberto Parra on one of his many visits to Vintage/Oliver Combat events in the UK.

Propeller	RPM
APC10x4	10300
Graupner 9x5	10800
Kavan 8x6	12700
APC 9x4	12900
APC 8x6	13300
Master S-2 8x6	13800
Graupner 8x5	13900
APC 7x7	14000
JXF 7x6	15600
APC 8x4	15800
APC 7x6	16200
APC 7x5	17300
APC 7x4	18500

Oliver Tiger (L) and Parra T3 (R) cylinder assemblies have significant exterior differences, but actual port openings in the cylinder bore are almost identical.

New venturi insert design (L) has fewer jets, smaller fuel channel and downstream aperture volumes when compared with earlier design (R). It provides more consistent running.



Norm Kirton's fine Dimpled Dumpling racer will be used for flight testing the T3. Refinements in models and engines, while sticking to vintage technology, have boosted modern performance to levels only dreamt of in days of yore.

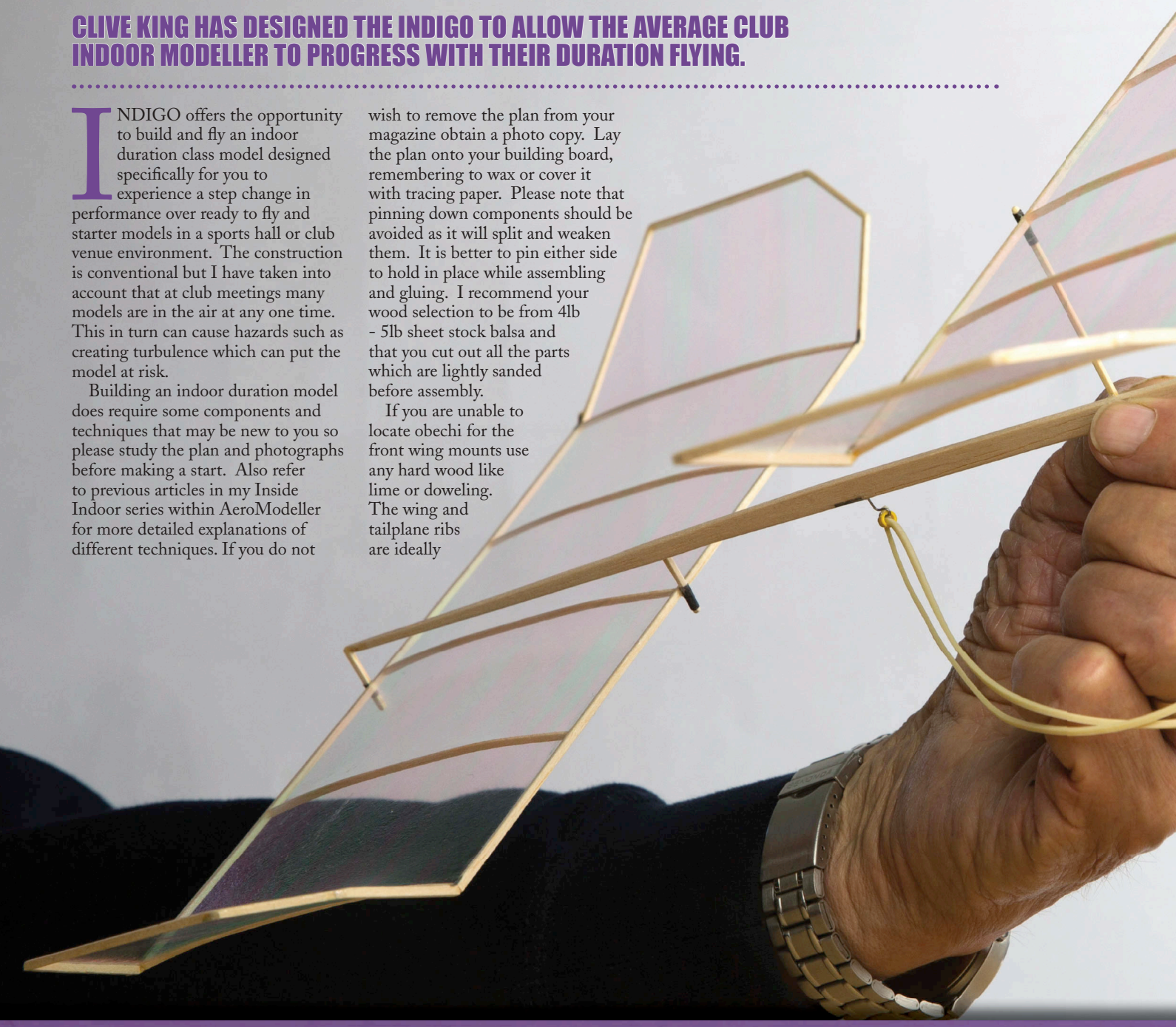
INDIGO

CLIVE KING HAS DESIGNED THE INDIGO TO ALLOW THE AVERAGE CLUB INDOOR MODELLER TO PROGRESS WITH THEIR DURATION FLYING.

INDIGO offers the opportunity to build and fly an indoor duration class model designed specifically for you to experience a step change in performance over ready to fly and starter models in a sports hall or club venue environment. The construction is conventional but I have taken into account that at club meetings many models are in the air at any one time. This in turn can cause hazards such as creating turbulence which can put the model at risk.

Building an indoor duration model does require some components and techniques that may be new to you so please study the plan and photographs before making a start. Also refer to previous articles in my Inside Indoor series within AeroModeller for more detailed explanations of different techniques. If you do not wish to remove the plan from your magazine obtain a photo copy. Lay the plan onto your building board, remembering to wax or cover it with tracing paper. Please note that pinning down components should be avoided as it will split and weaken them. It is better to pin either side to hold in place while assembling and gluing. I recommend your wood selection to be from 4lb - 5lb sheet stock balsa and that you cut out all the parts which are lightly sanded before assembly.

If you are unable to locate obechi for the front wing mounts use any hard wood like lime or doweling. The wing and tailplane ribs are ideally



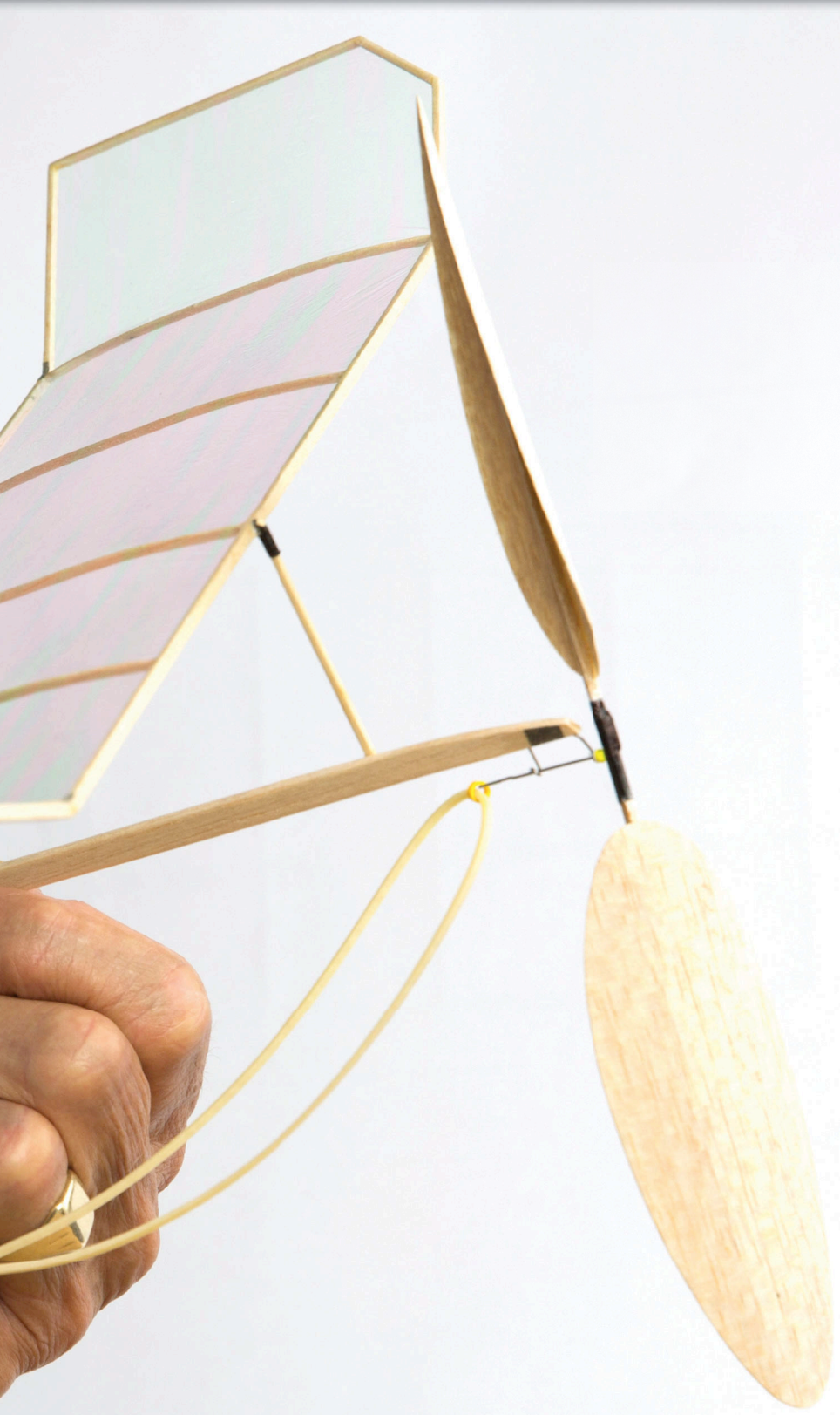


FIG 1

Wing and tail ribs cut from sheet stock using simple template.

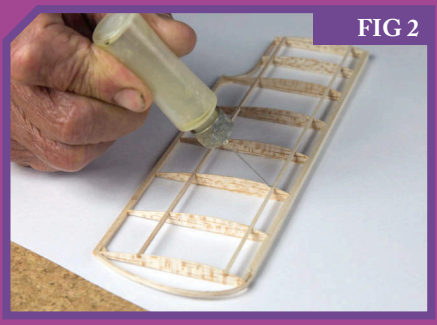


FIG 2

Use thinned adhesive applied from a specialist applicator to avoid applying too much glue or distorting joints.

cut from C-grain as linear grain can cause them to shear along the grain paths. If this does happen simply replace them.

When covering the wing and tailplane only use either condenser paper or ultra film. Please refer to part 5 of my Inside Indoor (939 August) column which takes you through the whole covering process.

I will discuss trimming and flying INDIGO next month. I will also be on hand at the Impington Village College MAC indoor flying day near Cambridge on 1st November2015 www.ivcmac.co.uk) where I will give a presentation about the INDIGO and will include other areas of indoor duration and any topics you may wish to raise from my Inside Indoor column.

Building the INDIGO

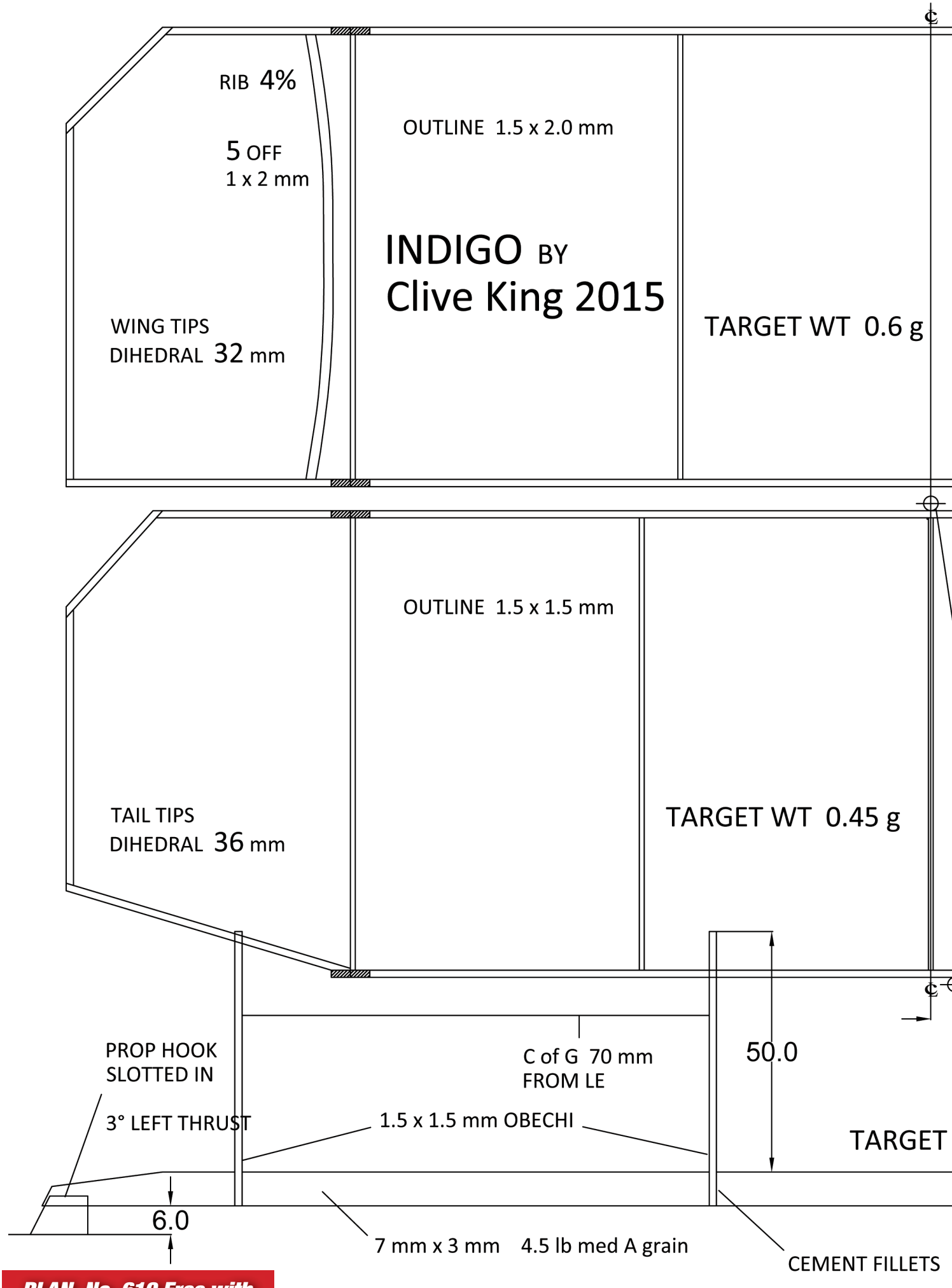
The tandem layout of the INDIGO reduces wing loading coupled with excellent stall recovery. The position of the centre of gravity also gives you more choice as to rubber motor sizes.

FIG 1

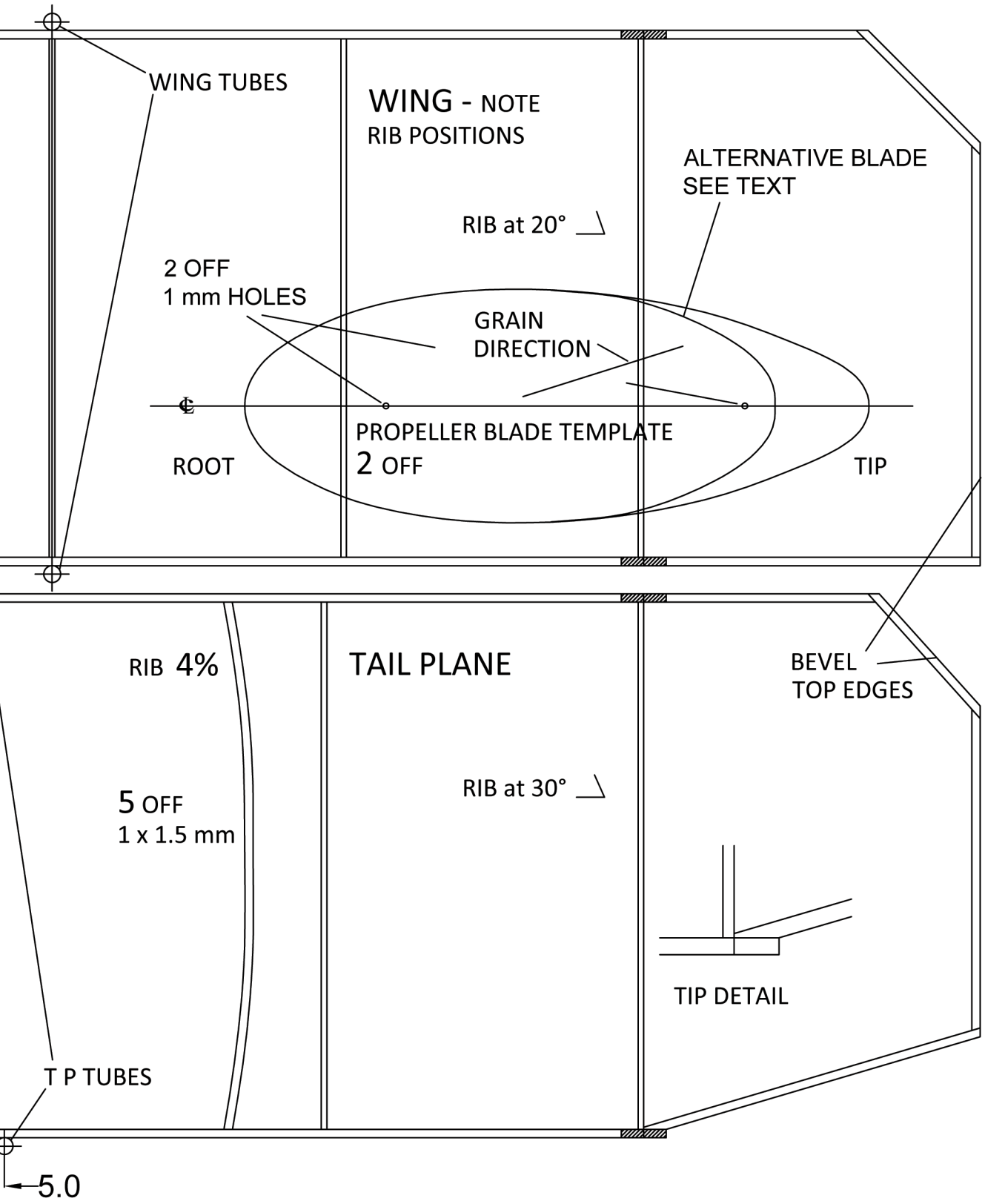
The 'parallel' sided wing and tail ribs are successively cut from sheet stock using a simple thick/hard template. Do make sure you have a sharp blade for all your precision cutting.

FIG 2

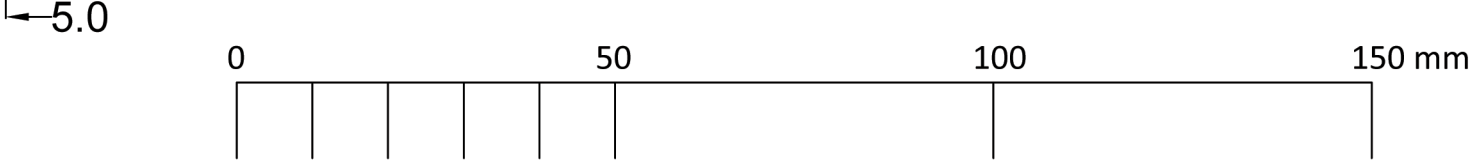
Using commercial adhesives including ambroid, balsa cement, etc. thinned with 50% acetone and



PLAN No. 610 Free with
AeroModeller 942 Nov 2015


WING TUBES
WING - NOTE
RIB POSITIONS
ALTERNATIVE BLADE
SEE TEXT
RIB at 20°
2 OFF
1 mm HOLES
GRAIN
DIRECTION
PROPELLER BLADE TEMPLATE
2 OFF
ROOT
TIP

RIB 4%
TAIL PLANE
BEVEL
TOP EDGES
RIB at 30°
5 OFF
1 x 1.5 mm
TIP DETAIL
T P TUBES


5.0
0
50
100
150 mm

WT 1.0 g

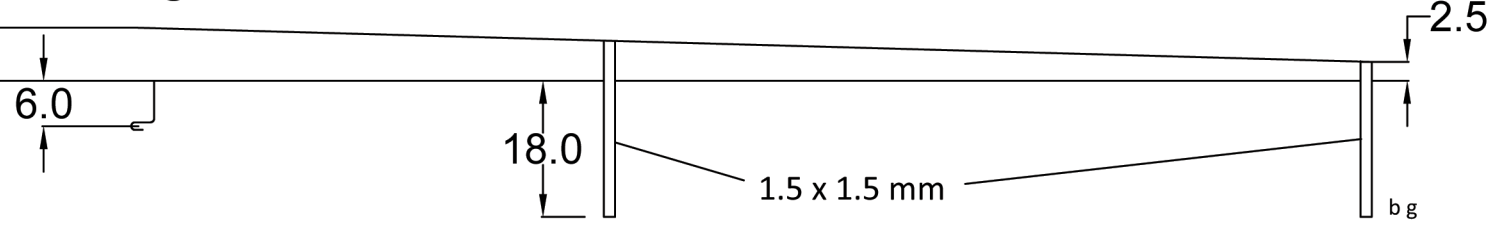
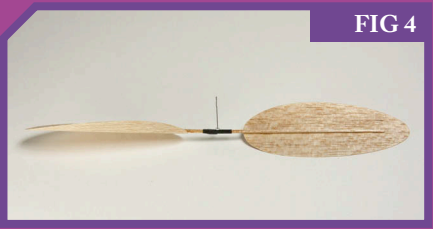

2.5
6.0
18.0
1.5 x 1.5 mm
b g

FIG 3

The damp propeller blanks are bound with tape at an angle of 15 degrees left of the vertical axis. Note the two small holes to aid alignment.

FIG 4



Complete propeller by adding spars, again using the centre line alignment holes.

applied through a commercial applicator, provides even fillets on joint surfaces avoiding distortion.

FIG 3

A three inch diameter bottle or similar former is used to form the propeller blades, and is marked with lines 15 degrees left of the vertical axis. After cutting propeller blades and sanding to a 0.015" even thickness, soak blanks in warm water for 20 - 30 mins, tape into position using the centre alignment holes in the blade blank. (The plan shows an alternative shorter prop blank which is suitable for the raw beginner to this type of flying as it allows the prop to rotate faster and the model is easier to trim.) Allow to dry thoroughly. For a really permanent form, put the assembly to dry in an oven at 110deg.C for 20 mins and put aside for 24 hours before removing from bottle or former.

FIG 4

Complete propeller by adding spars, again using centre line alignment holes. The tubular front hub may be 6 turns of tissue or carbon. The spars must be a sliding fit into the hub. The propshaft and front hook is from 0.015" diameter wire, complete with small thrust washer.

FIG 5

A simple jig ensures blades are set to the correct pitch of 28 degrees at blade tips before gluing into hub tube.

FIG 6 AND 7

Front bearing from 0.015" wire shows

> "The plan shows an alternative shorter prop blank which is suitable for the raw beginner to this type of flying"

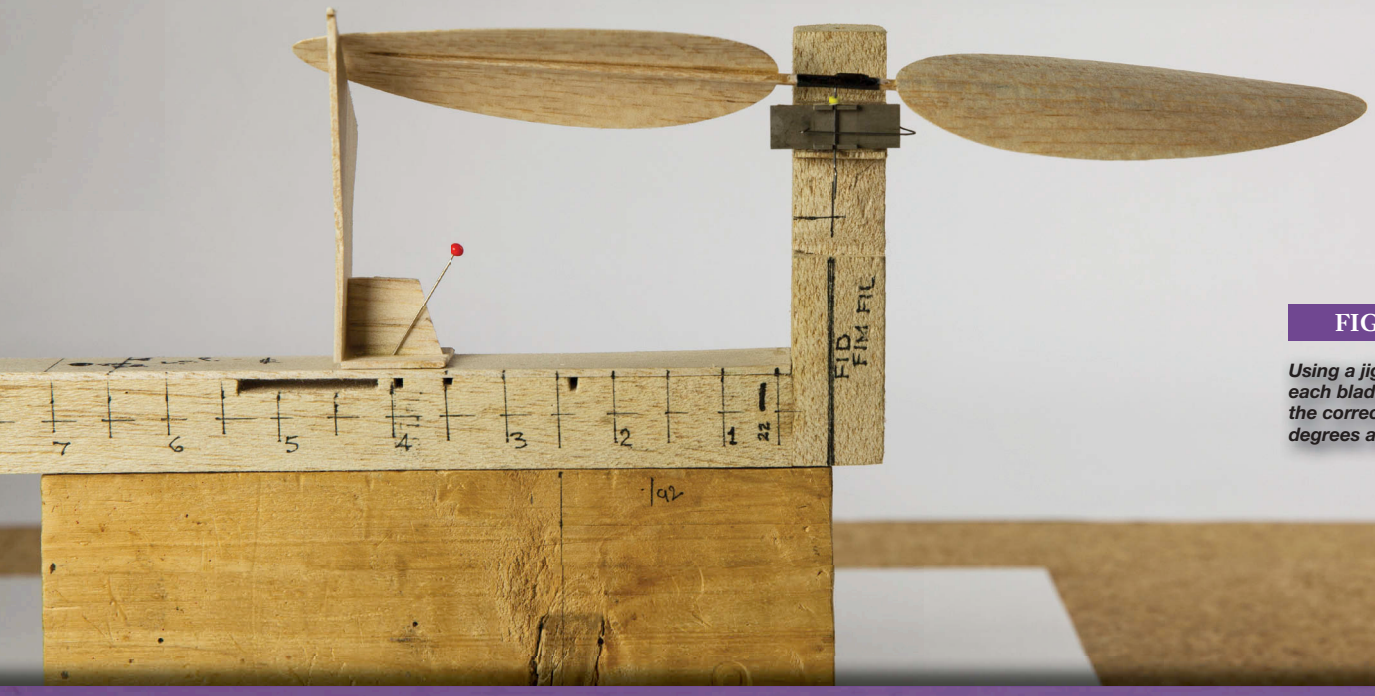


FIG 5

Using a jig ensures each blade is set to the correct pitch of 28 degrees at the tip.

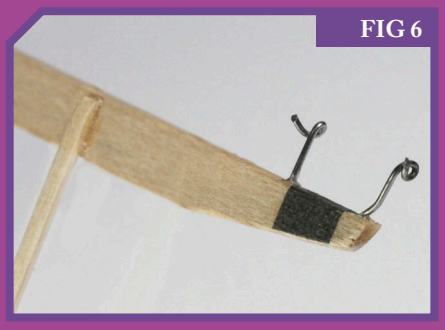


FIG 6

Front bearing shows pigtail to allow removal of propeller for transport.

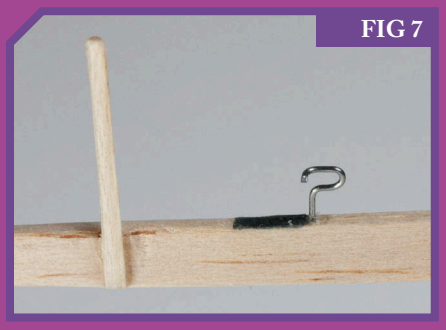


FIG 7

Rear hook with reinforcing tissue.

Next month

I'll discuss trimming and flying, and announce a 'Postal' duration competition for the INDIGO.

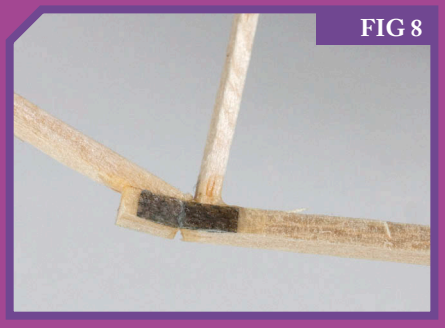


FIG 8

Tissue hinges at dihedral joints.

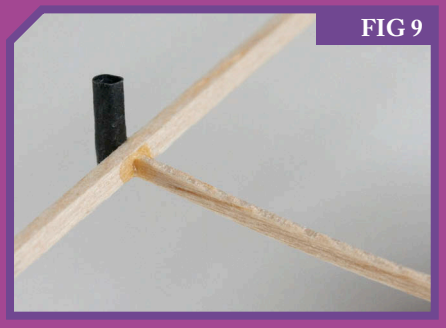


FIG 9

All tissue tubes are wound on 1.5mm diameter mandrel.

FIG 10

INDIGO in travelling box.

pigtail to allow removal of propeller for transport. If a commercial bearing is preferred ensure that the 6mm clearance is maintained from the motor stick. The rear hook is also from 0.015" wire.

FIG 8

Tissue hinges at the dihedral joints allow the wing to be covered flat before dihedral is introduced and the tips are glued at the correct angle.

FIG 9

All the tissue tubes (e.g. Wing and TP/Tail Plane tubes designed to allow alteration of the wing incidences) are wound on a 1.5mm diameter mandrel - 4 to 5 turns are sufficient.

FIG 10

INDIGO may be more fragile than your previous indoor models, so it is best to spend a little time on obtaining a suitable container for transportation. A strong cardboard box should be sufficient, and if you can't find a suitable old box a flat pack postal box of the right dimensions will do.

The iCare transmitter and receiver compared with the traditional radio beacon on the left.

Free Flight Microelectronics – The GPS Locator!

Mike Evatt takes a look at the proliferation of microelectronics for the competitive free flighter with the assistance of Chris Edge an international F1A glider flyer and early adopter of the GPS Model Locator and user of the iCare system.

With the advent of sub microelectronics and lightweight Lithium Polymer batteries, the way was open for small, lightweight devices to aid the FF flyer - from simple radio beacons and timers to more complex items like recording altimeters and remote DeThermalisers. Now we have a lightweight, on-board, GPS location unit.

This is not new. Rene Limberger and Allard Van Wallene had already developed a combined arrangement for F1A Gliders which led to the Favionics systems used in their electronic timers, and others have been known to dabble in this technology.

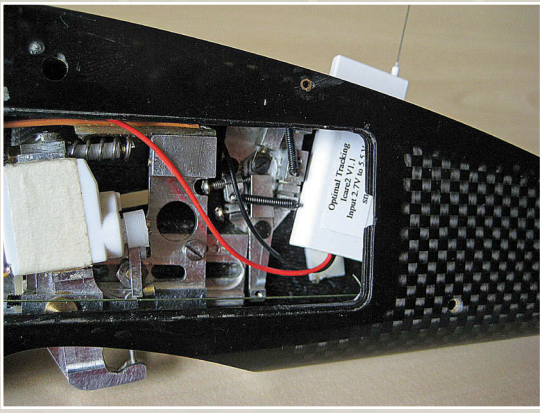
However, the new lightweight iCare2 is a stand-alone GPS geolocation system which works everywhere, without a subscription fee, free of charge, without network coverage, without the need for an internet connection, in isolated areas and overseas.... for peace of mind in all situations! As a GPS system it uses the same satellite network as a car SatNav device.

Ian Kaynes described the use of its heavier predecessor in an F1E (magnet steered glider) in the Free Flight Forum Report for 2014, available from Martin Dilly at 20 Links Road, West Wickham, Kent, BR4 0QW or martindilly20@gmail.com

Over to Chris Edge to explain his initial thoughts after using the newer iCare2.

The iCare2 Locator System

Not being able to find a model is one of the downsides of flying Free Flight aircraft, so anything that helps with retrieval is of huge benefit. I first used a simple constant tone transmitter in the early 1980s – an FM radio provided some range and some directionality - I was able to find models in crops that might otherwise have stayed there.



The completed installation in an F1A Glider showing both GPS and radio antennae.

Then in 1992 I bought my first serious tracker system, the one manufactured by Biotrack, and this gave a huge leap in contest enjoyment; crops were no longer a problem, long retrievals became strangely enjoyable and the first sound of the transmitted tone ensured the model would be found. Step forward to 2015 and now we have a commercial stand-alone GPS tracking system that moves matters on again.

The iCare product is the work of Frederic Aberlenc, a French F1A glider flyer who sells

GPS products through his website www.optimaltracking.com Frederic's previous FF products included a GPS system integrated with his timer that required an interface to a standard GPS receiver, followed by a stand-alone system that was maybe 40grms in flying weight and unsuitable for most models. The new on-board transmitter is 4.9grms without battery with a dedicated receiver that shows directly where the model is at any given time. Having seen a few prototypes I ordered two transmitters and one receiver and set about testing them.

Model Based Transmitter

This is a single unit with battery leads at one end and an aerial at the other. Its size is a little larger in cross section than a radio tracker beacon and also longer. Dimensions are: 36.6mm long, 15.2mm wide and 5.1mm thick, plus the wire antennae. However, I found that by simply opening out an existing tracker hole the unit could be fitted without problems, taking care to ensure that the top of the body (which contains the GPS aerial) was clear of the fuselage. The supplied lead was long enough to reach the nose of the model and I simply added the supplied connector to my timer lead to complete the installation.

The photograph of the completed installation in an F1A shows the white rectangular GPS aerial poking out of the fuselage with the transmitter's wire radio antennae above.

Each transmitter has a unique frequency so not only can your particular model be tracked but you can help other flyers retrieve their models as well. There are also a number of different transmission channels than can be set in case a particular one gets used by too many users – all this can be changed by the receiver communicating to the transmitter at any time, even in flight.

At less than 2grms heavier than my radio tracker, I didn't feel the need to check my CG and in fact flying performance is unaffected.
Tracking Receiver

This is the size of a modern walkie-talkie radio and weighs only 105gm; so very easy to carry. It has a small colour screen and single combined push and rotary button on the side that performs all the necessary operations. It has many menus that I found quite intuitive to use and which allows you to change almost any set up – even down to the character that is used to show the model position.

In Use

You need to be outside to pick up the GPS satellite signals and the receiver needs to be 'told' to look for a transmitter so it is best to switch that on first. Once it has acquired the GPS signals, the transmitter will send out its position, the frequency of the transmission being dependent on how it's moving (very clever !), e.g. when descending on DT it will transmit for every 10m height reduction but when stationary, only every 30seconds. This means you get more transmissions at the critical times and fewer, hence better battery life, when not required. Note: All these default times can be changed if required. Every time the receiver gets a transmission it bleeps (it even vibrates if you prefer) and updates the receiver screen map showing how far and in what direction you are from the transmitter. It does this via both a GPS locator and an electronic compass in the receiver.

To find your model all you do is hold the receiver level and the red arrow points at the model, telling you a direction and annotated distance.

But iCare gives you much more. The model battery voltage is displayed as well as time data from last transmission, accuracy of GPS signal etc. There is a transmitter signal strength meter which is useful when searching in crops within the nominal 15m accuracy of the GPS signal. So far I have seen much greater accuracies when retrieving models. All this is very useful information but this does lead to the small screen being a bit cramped.

Maps

The receiver doesn't have enough memory to load OS maps but you can load simple drawings of your flying field to aid model location. The easiest way to do this is to draw around important areas using Google Earth (free download from: www.google.com/earth/download/ge/agree.html) such as roads, woods, hangers, restricted areas etc. You can then save the drawing and load in to the receiver and use the drawn map as an aid to retrieval. The computer screen-shot shows my map of Barkston Heath overlaid on the Google Earth satellite image which just took a few minutes to create.

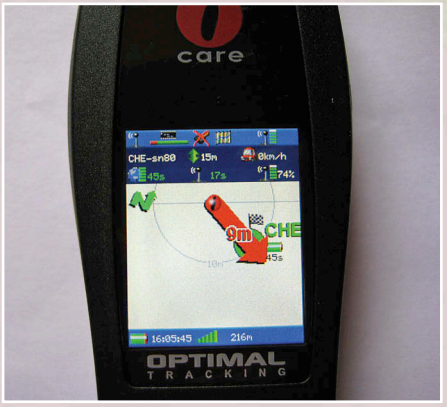
Tracks

The track taken by the model and the receiver is stored and can be downloaded at any time to a Windows PC and viewed on Google Earth or loaded in to a commercial GPS system to aid retrieval at a later date.

The second screen-shot show the GPS tracks of my three BMFA Glider flights from the 2015 Nationals at Barkston Heath with the model altitude being shown by the height of the bars.

Battery Requirements

Whereas a radio tracker will keep working for weeks on a single battery, GPS transmissions are much more demanding on battery power so this is one area where discipline is required as the technology develops. I use a single 350mAH Li-Po to power the GPS transmitter and a 3-servo electronic timer as well. With that configuration I would expect to have close to one full day of flying + GPS positional data but a change of battery or re-charge after ½ day would be a good precaution. Don't forget that the battery voltage is displayed on the receiver so you can tell exactly how much is left and you can always change some of the transmission rates to aid life if you wish; e.g. a 60sec rate when stationary would effectively reduce battery usage by half.



Screen-shot from the receiver

A map of Barkston Heath overlaid on the Google Earth satellite image.
Key: Grey=runways, Purple=compound and Black=buildings

Plots of Chris's three BMFA Glider flights from the 2015 Nationals at Barkston Heath

Conclusions

Taking inflation in to account, I paid 50% more for my Biotrack system in 1992 than I did for my GPS system in 2015 and with the added capability it is excellent value for money. I found the system easy to set up, install and use in a contest so I plan to convert all my F1As to GPS over time.

The key advantage is that I know to within a few metres where the last transmission from my model was with upwards of 10kms of range in the air and 3kms on the ground. OK, if the model flies for many hours then it may not be found but you have a much better chance, all for an extra 1.5grms of on-board weight.

The iCare2 receiver and transmitter are currently listed at www.optimaltracking.com at Euro €238.80 each.

As well as Mini Goodyear, Team Racing encompasses a wide range of classes from the latest F2C carbon finish models to traditional Vintage designs shown here.

Control-line Team Racing – What's the attraction?

For youngsters (and older!) modellers, Mini Goodyear offers an easy and relatively cheap entry point in to competitive Control Line flying with all the excitement of side-by-side flying. Dave Hanks of SBMAC gives the low-down on this form of Team Racing, while Brian Lever of PMFC offers his experiences of competing in Mini Goodyear.

There are many classes of Team Racing spread across the modern and vintage CL scene. Most aeromodellers will have seen plans or kits for classic 1/2A team racers, 'B' team racers, Goodyear racers etc. They all have their own set of rules governing engine sizes, model design, line length, tank sizes etc. - but they all involve a similar style of competition. This will involve 2 or more pilots flying in the same circle over a set number of laps whilst also being required to include a fixed number of pitstops.

The 'Team' part of the title refers to the team of a pilot and pitman (pitman is of course male or female, and occasionally 2 pitmen where glow motors are involved and there is a need for a 'battery' person.) The majority of classes would have heats of 100 laps with two compulsory pitstops and a final with 200 laps and five pitstops. Finals normally involve three teams.

One might think that this is much easier than the contortions of the Control Line combat fliers or the elaborate schedules for aerobatic fliers but this demands a different set of skills – rock-steady piloting, an ability to keep cool under pressure and an appreciation of your pitman's ability and decision making. Although most of the flight may be on the level (you'd be reprimanded for flying high as this gives a lap time advantage as you would fly a smaller circle); you have to be on your toes ready to avoid other aircraft joining or leaving the circuit, and also be ready to take your model over a slower model and back to level flying in a calm manner. If you're only 5' 4" and you're overtaking a 6' 3" pilot it's not easy! Then there is the matter of judging how to safely bring your model in for a pitstop and how to get it right back to your pitman. All the while you can be gyrating (actually walking

***1 & 2.** The pitman in your team will need to develop a launch style to move seamlessly from a successful flick start to flying. Protective headwear is obligatory for the pitman.*
***3.** Members of SBMAC are staunch supporters and helpers at Mini Goodyear events. It is people at clubs like this who make aeromodelling such a great and welcoming hobby/sport.*
***4.** Brian Lever in action as pitman at the 2015 Nats.*

in a small circle) at anything between 2 to 5 seconds per lap for 100 laps (or 200 laps in a final) – quite demanding when bunched in the middle and trying to be aware of what is in front and behind your model!

It really is a team event. Both members of the team have to be really good at their task and working well together to be in with a chance of 'bringing home the goods'! The pitman needs to be alert, to be a great engine starter and to be aware of everything else that's going on around the circle. They also have to know when and if the motor needs 'tweaking' during the pitstop. As the pitman is alongside the lap counter, it's also their responsibility to decide when to call in the model for a pitstop – but it is the pilot's decision how to achieve this safely. The pitman is probably the one to make decisions about the fuel to use, the propeller selection and the general setup of the model. For each competition he may need to 'race adjust' the engine to allow for that day's temperature and humidity.

It's almost Formula 1 for Control Line!

Sure it's challenging, but it's also fun and Team Racing has produced some great characters over the years.

There are many different classes of team racing but it is generally accepted that the place to start is Mini Goodyear flying. These are smaller models (1/12th scale profile models of the American Goodyear Racers) and utilise 1.5cc diesel motors.

One of the major benefits of starting with Mini Goodyear is that they have no undercarriage and are always flown over grass. This limits the likely damage from any unplanned arrivals but also means that you are far more likely to have somewhere suitable for practice – and practice makes perfect as they say.

They are also flown on the shortest of team race lines (13.5 metres). The full rules for Mini Goodyear can be found in the rules book by searching on the BMFA website www.bmfa.org for control line contest rules.

Maybe you and a friend could be the next team to enter the fray?

Whilst being the accepted route in for beginners, it would seem that once you get 'hooked' on Mini Goodyear you might carry on competing long after you get involved in the other categories. Some of the U.K.'s top racing teams still regularly turn out for the Mini Goodyear competition at the Power Nationals.

Read on to find out more and one modeller's thoughts on Mini Goodyear participation.

MINI GOODYEAR - THE PATH TO SUCCESS

Brian Lever of Peterborough MFC shares his experience.

Brian Waterland and I have been competing in Mini Goodyear for at least a couple of decades. In the early years we would both field a model and take turns at both flying and pitting. At first we had very little success as our aircraft had standard PAW or MVVS 1.5cc diesel motors and no cut-outs. However, this never seemed to matter much as we entered for the sheer enjoyment of flying this simple class together.

Originally created for the Dad and Lad brigade by the BMFA, as older modellers got involved the Society wisely split the class into Junior and Senior. Today we still have a healthy junior entry of lassies as well as lads, and in a number of cases we have Grandad's pitting for their Grandchildren - you don't have to be related or of a certain age to make up a team! Numbers are also healthy in the senior class and this has become just as competitive as the advanced Team Racing classes held in the cage and flown over tarmac.

Some eight years ago Brain W. and I decided to try and improve our competitiveness and thus contacted Tony Eifflaender of PAW (www.eifflaender.com) for a tuned single ball race motor as required by the rules. In addition we acquired from Mike North (See www.facebook.com, Mikes Racing Products) a model fitted with a cut-out for the fuel supply. We also decided to try and improve our heat times (we were never fast enough to make the final), by Brian W. concentrating on piloting the model with myself pitting. Until that point it would be true to say we only ever practiced either during the day of the heat or during the heat itself!

Practice Makes Perfect

So it was agreed we should make some practice flights before the actual competition; fortunately we are lucky enough to have a suitable field midway between our homes. Practice would consist of starting the motor both hot and cold, checking lap times for ten laps on different props and determining our total laps possible per tank. Brian W. would also practice his cut-out operation and flying the model to my pit position for refuelling and restarting the engine.

These practice sessions became hugely enjoyable and also gave us the chance to discuss tactics and socialise into the bargain. The result was that our heat times improved and we started to feature in a number of finals where inevitably we would finish 3rd for a bronze certificate.

We then realised that to be able to have a chance of placing better than third in a final, we would have to be making heat times of around the 4.40-45 mark.

So we invested in a lighter model, with a carbon tank incorporating quick fill and cut-out. To finish off the model we ordered a new tuned 1.5 PAW diesel which was carefully run in. Our favoured prop at this time was the Tornado 7x6 cut down to approx. 6.5x6. However, these props had been out of production for some time and were as difficult to find as hens teeth. Over the course of several years we have scoured car boots, auctions and model shops and have found enough to keep us racing. For fuel we have used Model Technics D3000, although there can be variations in performance between tins, particularly if it has been open for a while. For this reason we have found it vital to ensure we have sufficient of the fuel we have used for recent good test flying results to be available when we go racing.

To be competitive in a race you have to be able to start your motor quickly at the commencement. Remember, after the 60 seconds warm up you have to stop your engine, fill the tank, possibly prime your motor (make sure the ports are filled with the piston towards the Top Dead Centre so you do not flood the engine), place the model on the ground and wait for the CD (Competition Director) to count down the start of the race.

Depending on the CD it is possible your model can be on the ground for upwards of 20 seconds with the engine cooling down with every moment. So to practice your race engine starts I would recommend you do not just practice restarting your motor hot. Put the model on the ground after your 60 seconds warm up and leave it there for at least 20 seconds. Now try to start it first flick. You may well find the cooling off period means it is several flicks before the engine is running. Now keep practicing until you can achieve a first flick start even when the engine has cooled down for 20 seconds or so.

Brian and I have learned the hard way that fast launches without checking the position of models already flying can result in a quick return to terra firma. Always give your pilot a clear take off position without other models overtaking at the launch point. This gives your pilot the opportunity to pull the model up to speed and smoothly join the other pilots in the centre circle.

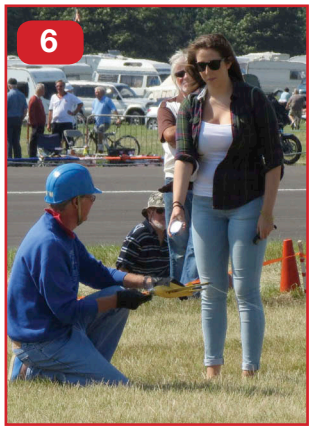
Pitman's Role Between Stops

With your pilot up and running smoothly with perhaps 40+ laps before the first pit stop, put your watch on the opposing models for 5 laps each. Are they faster, slower, or similar speed to your own? If you have the quickest model you can relax a little and look out for a clear space to pit your model. What if of a similar pace to the others? Now we know pit stops will be critical to winning the race. When I call Brian for a stop he knows he has at least 5 laps to land the model. This enables him to plan ahead and cut the motor at the best place possible for him to bring the model to my feet. He is very accurate with his positioning of the model and this saves valuable time when I am refuelling. Be aware of the model coming into land with your fuel bottle at the ready. Fill the model deliberately and calmly, reset the cut-out, prime if necessary (remembering not to flood the motor) flick just as you have practiced and the model will be away again from an immediate start.

What if you are the slowest model? Do not give up! Over 200 laps there are normally plenty of incidents which can slow down the quicker models. Now look to find the maximum number of occasions when you can give your pilot a solo position in the centre when other models are refuelling. For this both pilot and pitman must have a good understanding of the maximum laps that can be flown without refuelling. Your pit stops will not have even intervals but will be driven by when you can obtain the maximum number of occasions to fly solo and thus fly more quickly. Does this work? At the 2014 Nats final we had the slowest model by quite some margin. Our pit stops were all over the place (the last at 193 laps out of 200) but this gave us 18 laps of solo flying and we won what has been considered the best final for many a year by 3 seconds.

In our combined view Mini Goodyear gives the most enjoyment for your bucks than any other control line class. The models are both beautiful and simple. The SBMAC have fine honed the running of the event at the Nationals over the last few years, making you feel both welcome and determined to do your best. Whatever your result you come away smiling having enjoyed the friendly rivalry and the free exchange of information to help you improve for next time.

Mini Goodyear encourages participation from men and women of all ages. Here Anaïs Huning and Brian Lea race in one of the 2015 Nats heats.



6. The pitman will have the 1 minute engine warmup time shown by a helper.
7. The advanced Team Racing classes fly faster models over tarmac and within a safety cage. These are the finalists at the 2013 Nats.
8. Mixing it at the 2013 Nats junior finals are from the left, Ollie Harris, Tom Smith (Pete Jephcott's grandson) and Aaron Schmidtz a contestant from Germany.
9. Brian Waterland, seen front left, is in a Mini Goodyear team with Brian Lever. Here he pilots their model at the 2013 Nats against Geoff Hanks (hidden) and Martyn Dalgleish.

Mini Goodyear - The Path to 'Inner Happiness'…

A great view from Brian Lever. I just wish I'd read such a succinct and inspiring article several years ago. I might not have had so many early exits from Mini Goodyear events!
Brian's comment that Mini Goodyear provides "most enjoyment for your bucks than any other control line class" is certainly hard to dispute. However – may I be allowed to put another slant on this? I believe that Mini Goodyear offers a lot to those who want to participate in a challenging event but may also want to keep it a bit simpler when they start out. Brian is spot on with his thoughts on what is needed to get a good podium finish, but most will happily start along the Mini Goodyear path with simpler engines and models and then work their way up. If you can find a good reliably starting 1.5cc diesel (e.g. a standard PAW 09) then you can start from there. As Brian says there is no substitute for a quick start and restart. A fairly standard 1.5 will not be as fast as Brian's new engine and so an ordinary 7x6 prop will probably be ideal along with Model Technics D2000 fuel.

Ensure you have a flexible (nylon) prop (maybe an old Tornado or Topflite prop or a Taipan combat prop.) Too much time can be wasted replacing broken props.

Fuel Cut-Outs

Mini Goodyear has no tank size limitations. You are required to make two stops in a 100 lap heat and five stops in a 200 lap final. Thus there is the question of whether to use fuel cut-outs – without one of these, and therefore the luxury of getting the model landed back at your pitman's feet, you are not going to win any major event. However some can be difficult to get to work reliably – we have seen many instances where they are not quite set up correctly and either cut just after launch (when down is applied to level the plane) or fail to cut when needed and either give an over run or force a last minute powered ditch of the model in order to fit in the required pitstops! However Brian Lever informs me that the integral cut-outs by Mike North are ultra-reliable – he's never had a failure in the last 10 years of racing.

If you're going down the route of no cut-out you will need a reasonably fit pitman! No cut-out means waiting for the engine to splutter to a halt and then trying to 'glide' it in to your pitman. Most Mini Goodyear models don't glide well so your pitman could have half a circle to run around. In this time your fellow competitors could be fitting in several extra laps!

Also, if you have no cut-out, how do you ensure you get in your 2 pitstops per heat? You will need to experiment with tank sizes. If you start with a 15cc tank temporarily fixed to your new model you can see how many laps you can rely on getting per fill. Ideally you're aiming for about 42 laps per full tank. Knowing how many laps per cc of fuel you are achieving will enable you to buy or make the correct tank size. It also pays to practice flying in different weather conditions as, firstly, you can never rely on good weather for a competition day and, secondly, the engine settings can vary with the temperature and have a marked effect on the fuel consumption!
What else could ruin your day? A broken model could. Flying two up when starting out can be quite exciting and the odd 'unplanned arrival' can stress your model considerably! Try to build a model that is designed to take some punishment – again it will not be the fastest but may provide the least trauma.

Consistency and Fun

All these suggestions would seem to suggest that you would never win a heat as a beginner – but this may not be so! Don't forget the 'Tortoise and the Hare' fable - there are plenty of Gremlins out there waiting to upset your fellow competitors! Even if you don't win you will get the enjoyment of participation, the practice at two-up flying and you can then decide what changes you need to step it up a level and challenge Brian for that podium spot.

The last paragraph in the BMFA rules for Mini Goodyear reads – "The Contest Director at all times shall ensure that the conduct of the contest shall be such so as to encourage the participation of junior and novice competitors."

The South Bristol Club has always strived to apply this principal and if you're tempted to have a bash at Mini Goodyear and enter the Nationals or a local event, you too can be assured of a warm, friendly and helpful welcome.

The next issue of AeroModeller is scheduled to have a Free Plan of a suitable beginner's Mini Goodyear design, or you could get started with a kit from suppliers such as Mikes Racing Products. ●

Part 18

BETTER... Warps

John O'Donnell continues his discussions on warps with a look at wing structure and adjustments.

Front cover of 'Model Gliders' book by Ron Warring - showing his favourite 'Aeolus' design.

Those who have followed my recent articles will know that I regard warps and the like as an important consideration when it comes to the flying of model aeroplanes. Most of my comments have concerned flying surfaces with 'open' framework construction - if only because these are the ones most susceptible to warps. They are also the easiest to straighten out.

One effect that you may notice is the tendency of certain plastic films to slacken in hot weather. This is sometimes aggravated by the covering 'ballooning' due to the air inside the wing expanding with the heat. At least this is easily prevented by venting the interspace. The engineering method is to have holes in the ribs through which the hot air can escape. With thin airfoils this can weaken the ribs. What I do is to make pinholes in the covering - one per bay. A position on the upper surface, adjacent to a rib's junction with another (or a spar), is convenient.

Adjustments

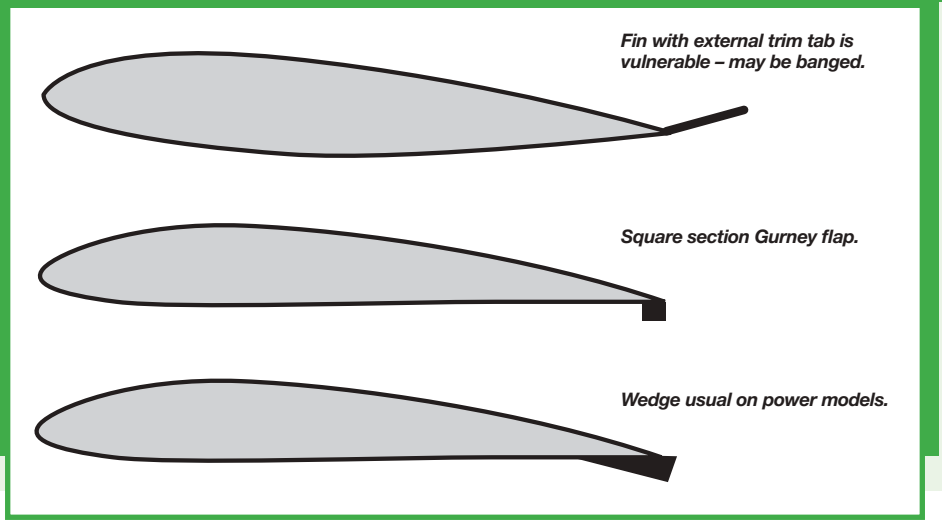
Completely sheeted wings, such as were popular some years ago on F1C models, really need to be got right at the construction stage as later rectification is difficult. Sometimes, however, test-flying reveals the need for more or less warp than anticipated…

There are ways to deal with this situation even on the flying field. The simplest is by the use of 'Gurney flaps' or their equivalent. I have mentioned this idea before but it will stand reiteration. Instead of adding or bending a separate trim tab at an angle much the same result can be obtained in a different way. It merely involves sticking a length of strip wood on to one side of the fin or on the top or bottom of the wing. It is usual to glue the strip on the edge of the TE (Trailing Edge) at a place along the wing where a tab would go. A piece of 1/16 or 3/32 square about ½ or ¾ inch long would be a typical starting point. After this the LENGTH of the strip can be varied as required. It is less sensitive than a tab and less liable to be accidently displaced.

An alternative, usually only seen on power models, is the use of a triangular section wedge (of reversed TE stock material) instead of a rectangular strip. Neither fit into the current ideas of having everything screw-adjustable - a philosophy that I do not favour. Screws are too tempting and too easy to alter.

D Boxes

There is one other style of wing construction that can lead to trouble - the D box approach seen on most FAI competition models. I encountered this many years ago - when I was still at school - and it put me off the idea ever afterwards. Due to a modelling friend presenting me with a plan for Warring's 'Aeolus' glider I felt obliged to build it. This was a major undertaking then and would still be one nowadays. Fitting the wing centre-section to the fuselage was never explained. The wings themselves were sheeted top and bottom back to the spars. Although not a complete D box, since the spars were not webbed, this made the front of the wing very stiff. The rear, with straight ribs connected to the TE, was far from being the same. When tissue-covered and



Derek May built this modern looking glider 10 years ago with a strong D box section to the wing leading edge.

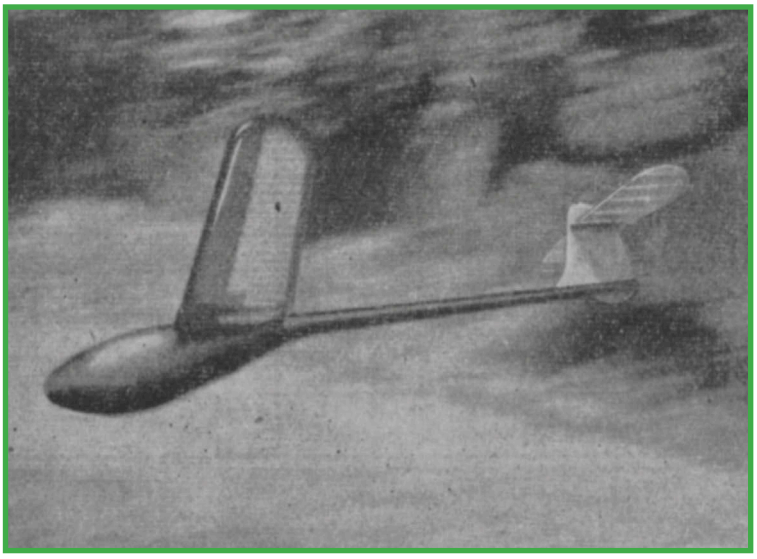
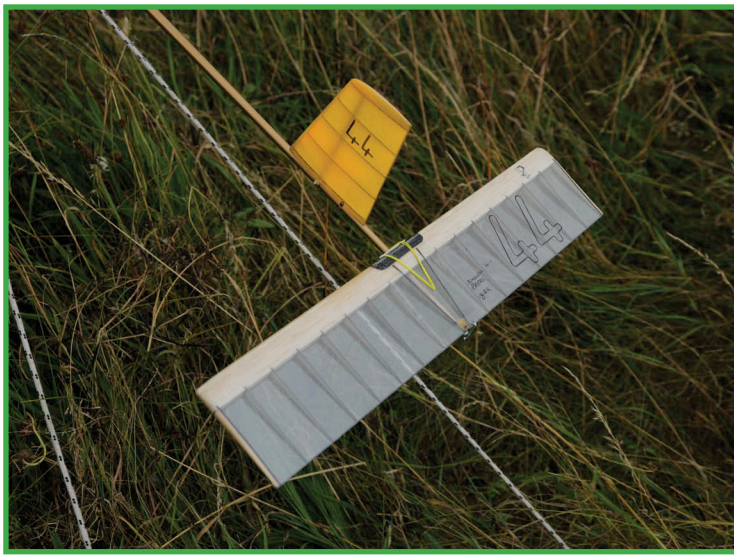


Photo of Warring's Aeolus in October 1942 AeroModeller. As mentioned my experiences had long-term consequences. Perhaps I should say that it did fly - even if not terribly well.



Russell Peers' Andrujkov produced ready-built F1B has a balsa D box tail plane. (Photo by Dave Hipperson.)

doped the TE moved relative to the front box in the only way it could. It waved or 'waggled' up and down - with several ups and downs along each panel. Their effect was uncertain but it was surely undesirable. It might have been due to a poor choice of materials but straightening out the TE proved impossible - at least with what we knew at the time. I have avoided D boxes ever since.

The high-tech FAI models have presumably side-stepped this situation, knowingly or otherwise. The use of carbon capped ribs to support the TE is common practice - but does it really prevent warps from developing? Remember that small size carbon strips make for nice, thin and sharp TEs but they are NOT inherently stiff. If you doubt this then think how small size piano wire would behave. In model sizes and with enough shrinkage I would expect to get the scallop effect seen on full-size WW1 aircraft wings.

Implications

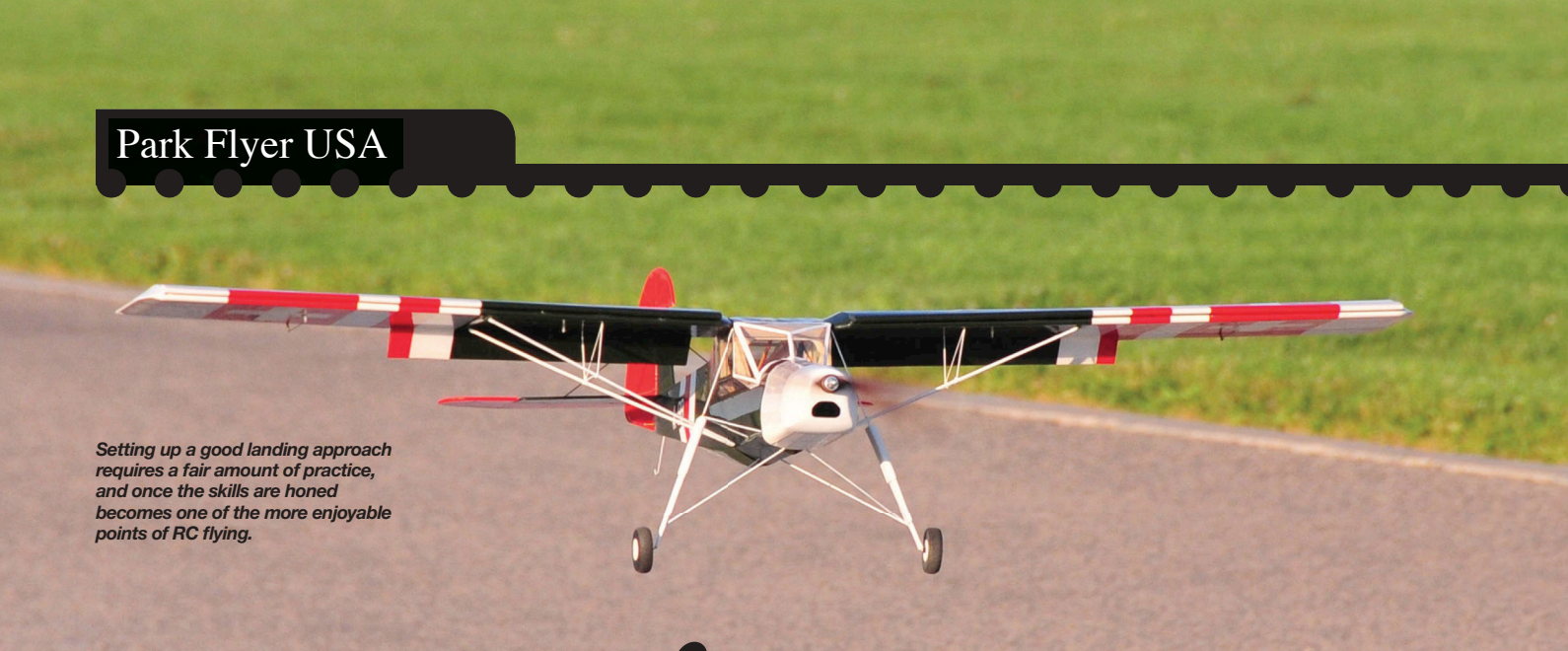
With this in mind I would reckon that the usual covering (aft of the spar) of such wings is not tightly shrunk and hence is unlikely to produce warps. This would be the case with such materials as 'Icarex' and 'Mylar'.

As an aside, whilst there is ample evidence at any F1A contest that modern structures are both very strong and stiff I still wonder if they are truly stable. Is there any 'permanent deformation' after severe loading? Is there any long-term 'creep' or fatigue effects. If not then nothing should be moving - and once trimmed a model should remain 'on trim' indefinitely. This does not appear to be the case from noting the reports of top-class competitors constantly test-flying at major contests - even to 'check-flying' just before official flights. Why is this necessary? Does the best trim really depend on the weather to this extent? Or is it the flyer himself who needs sorting out, or warmed-up, or whatever? Is there an element of psychology involved?

Need I say that this is not the way I like to operate. Once a model is trimmed then I expect to be able to fly it 'straight out of the box'. This includes lightweight models with various coverings. I keep notes so I know what motors, turns and timer settings to use. This means I can tackle the contest without worrying about the model.

Even if your interest does not extend to contests I would still expect it to embrace reliable flying rather than constant retrimming.

My earlier articles have spelt out appropriate ways to do most of what I think is necessary. As it works for me it ought to work for you. If you think that something is too much trouble then consider why I do it!



Setting up a good landing approach requires a fair amount of practice, and once the skills are honed becomes one of the more enjoyable points of RC flying.

A Walk in the Park

Pat Tritle reports on small model activity in the States.

When it comes to flying model airplanes we have a number of options. We can fly sport models, scale models, sport scale models, aerobatics, free flight, U-Control (CL), RC, and just about anything with wings that the mind can conceive. At risk of "pun", the sky really is the limit to the things we can, and in many cases, have flown in our modelling careers. But the best part of all this is that virtually all of these 'options' truly are optional and are totally up to the individual and his or her desires and goals in modelling.

However, there is one facet of flying RC model airplanes that is not optional, and that is landing. The pilot has a choice before take-off to go or not, but once the model is committed to flight, it will ultimately return to terra firma, one way or another. So the best bet is to learn the art of landing properly, and successfully. Unfortunately landings, especially in less than ideal conditions, are the most demanding part of the flight and are generally the manoeuvre most avoided until it becomes absolutely necessary. Personally, after 25 years of flying models of all types, my favorite thing now is to go out and shoot touch and go's – lots of them. And the best part is that it never gets boring, because due to the constantly changing conditions, every landing is a brand new adventure, and landings are always performed at very low altitudes.

I firmly believe that landing a model airplane is the most challenging manoeuvre you'll do. Why? Glad you asked. Because, you can't practice your landings at altitude or at air speeds well above stall speed. By nature, if a landing is going to work, it has to be done low and slow. However, learning to land does begin at a safe altitude by stall testing your model to learn how it will respond at lower air speeds. Once you know how your model will react at full stall you can start working on your approach which in simple terms contains only 3 elements; the downwind leg, the base leg, and final approach.

The downwind leg is used to bleed off altitude and slow the model down a bit. Then once the model passes the end of the runway the base leg turn is done to continue reducing your altitude and to line the model up with the runway on final approach. As a side note, all too often missing the runway is the norm rather then the exception. A good way to keep the model on track on final approach is to align your shoulders parallel with the runway and fly the model straight at the end of your nose. As the model gets closer it will already be aligned with the runway centerline and won't need correction – and I guarantee, you won't run over yourself!

The whole idea for a smooth landing is to have the model at the right speed and attitude when the ground gets there. All too often the model will either be too fast or too slow. The right speed for your model is a judgment call and is learned from experience. The other factor on finals is the sink rate. This is controlled by speed and attitude. Speed is controlled with power, attitude with the elevator. Always remember, it's not the elevator that makes the model go up, it's power. The elevator will only change the angle of attack. It's been said, "pull up and the trees will get smaller. Keep pulling up and they'll start getting bigger again".

On final, I prefer to fly the model just slightly nose up, using minute throttle corrections to control the rate of sink. Ailerons (if present) are used to keep the wings level, and the rudder to keep the model lined up; the idea is to set up a steady sink rate a little above stall, then just before touchdown ease the nose up a bit and reduce power smoothly to induce the stall so the model will gently settle onto the runway. If you're too early, the model will stall high and fall onto the runway, too late and it's likely to ricochet and bounce back into the air. One thing I have learned over the years is that a good approach is the key to a good landing, and if your approach begins to fall apart early on, don't try and salvage a lousy set-up. If you find yourself fighting it, simply power up, go around, and start over.

With a bit of practice there's no doubt you'll get it figured out and will be doing smooth landings consistently, and they'll be a whole lot more fun then wrestling with the model simply trying to get it back in one piece. And by practicing your landings, as you would with any other manoeuvre, before you know it you'll be spending more time in the shed building new models rather then fixing your old ones. Like they say, "a good landing is one you can walk away from. A great landing is one you can walk away from – and use the airplane again".

The Fruits of their Labours

George Laskar is notorious for enlarging old free flight designs, especially Jimmy Allen's, for electric power and 3 channel RC. One of his more recent builds is the Jimmy Allen Yellow Jacket built from Bob Holman plans. The model spans 50 inches and is built primarily like the original 26-inch free flight model adding only the hinge spars in the tail, and beefing up the wing and landing gear slightly to take the additional flight loads. A removable wing was also incorporated for ease of transport, and the battery is cleverly hidden under the removable belly pan. Power is provided by a Suppo 2208 Outrunner and a 1300 mah 2S Lipoly battery, and a pair of sub-micro servos tends to the control function. Cover is Coverite Microlite with graphics from Callie Graphics. The Yellow Jacket is a beautiful model, and at weighing in at just 14 ounces is a terrific flyer as well.

Then slipping into the free flight realm,

1: The Yellow Jacket is set up for modern Brushless power and 3 channel RC using a pair of sub-micro servos to control the rudder and elevator.

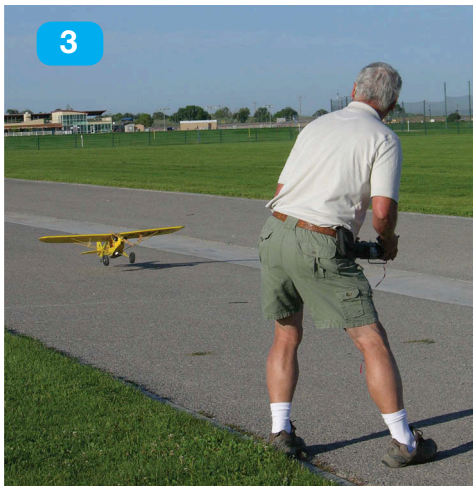
2: George Laskar built this 50" RC Jimmie Allen Yellow Jacket - enlarging these old FF designs makes for some terrific park flyers.

3: Let's not forget that a bit of 'Body English' goes a long way towards a successful landing as Mike Barker clearly demonstrates with his 'Bush Cub'.

4: The Father and Son team of Rodney and Jaden Shumate built this great looking 17-inch span P-51 Mustang from the 900 series Guillow's kit.

5: The new electric powered 4 channel R/C Sky King Songbird is due to be released from Dare/Brodak at the end of July. The kit for this long neglected modeling subject will include plans and laser cut parts along with vac-formed plastic detail parts and all the strip wood, wire, and tubing required to build the model.

6: John McMakin built his 36-inch span SE5 from MAN plans. At 17.5 oz. flying weight the 4 channel electric powered model looks and flies great.



Jaden and Rodney Shumate teamed up to build the 17-inch Guillow's P-51 Mustang. Young Jaden loves to build, but is not a huge fan of covering. His Dad Rodney, on the other hand, loves covering with tissue, so between them they can do some great stuff. The Mustang is still early in the flight trimming process but already shows great promise, and I suspect will prove to be a worthy flyer.

The SE5 is also a very popular modelling subject due to its good proportions, clean lines, and superb flying qualities. John McMakin built his Scout from Model Airplane News plans. The model spans 36-inches and is set up for 4 channel RC using 4, sub-micro servos. Power is a Suppo 2212 Outrunner and a 1300 mah Lipoly battery. The model is covered with Microlite and painted using Model Master Field Drab, with graphics from Callie Graphics and details added using scrap wood and tubing. The pilot is from Park Flyer Plastics painted with various acrylics from the plastic modelling bin.

And finally, a long neglected modelling subject is due to be released from Dare/Brodak. Brodak's claim to fame is of course U-Control, but since they teamed up with Dare Distributors they've been actively expanding their line of RC models as well. The latest offering is Sky King's Songbird form the TV series in the 1950's, due to be released at the end of July. The model is designed for a pair of 400 – 450 class Outrunner motors and a 2200 mah 2S Lipoly battery and 4 channel RC. Construction is of the typical old school "stick and tissue" style primarily of balsa and Lite Ply. Vac-formed detail parts will also be included in the package for the cowls with dummy radial engine detail, nacelle fairings, and nose and tail cone. Building the songbird won't be a problem for the modeller with at least intermediate building skills, and she flies so well that she'd be a perfect first twin for a modeler with intermediate flying skills as well.

That wraps things up for this instalment. Thanks to all who dropped in with some great models and we'll be looking forward to gathering next time around with even more good stuff. In the meantime, if your RC landings are not what you think they should be, don't be afraid to grab your most familiar flyer and head to the field for some practice. Once you get it down, you'll be surprised at just how easy making smooth landings can be.

Contacts:

Callie Graphics www.callie-graphics.com
Park Flyer Plastics www.parkflyerplastics.com
Suppo Motors www.rchotdeals.com
Dare Brodak www.brodak.com
Guillow's Models www.guillow.com
Bob Holman Plans www.bhplans.com

Main photo: Neil Allen walks back after placing 3rd in F1C but he won F1G.

Inset: Pascal Ceres flew this model in both E-36 and F1Q.

Free Flight Days in La Belle France, 6th-8th August 2015

What's not to like? Superb Weather, excellent fine dining and the Euro at its lowest level for a decade! Mike Evatt Reports on the happenings 'en Poitou'.

Day 1 - Mini Classes

The first day (Thursday) of the three-day programme, was organised by the Vol Libre Moncontourois model club on farmers' fields close to the village of Saint-Jean de Sauves some fifty kilometres south of La Loire. It was the 31st time this event has been held and was specifically for the FAI 'Mini' events, namely F1G (rubber), F1H (glider) and F1J (IC power). This year there was a new competition for E-36 (electric power)

The day for the 'mini' classes dawned quite cool but calm. The temperature soon rose into the high twenties and thermal activity was pronounced although it was quite difficult to pick air that would guarantee a maximum. Conditions in round four of the five proved to be particularly challenging.

As usual F1G Rubber was well supported with 29 entrants and resulted in a five man flyoff. The first was to four minutes. Both Neil Allen and Alessandro Manoni made the time and had to fly again. Neil was victorious, for the second time at this event. In third place was Rene Boucher followed by Paul Lagan from New Zealand and Michel Djian.

Disappointingly, by comparison F1H Glider was sparsely supported with only seven entrants posting scores. Gary Madelin won the two man flyoff from Didier Echivard with John Cooper in third place.

Only three flyers needed the timekeepers in F1J Power. This is a class which really does seem to be on the decline. Tom Oxager won the event with a complete score followed by Peter Buchwald and Alan Jack.

In contrast the new event, E-36 Electric Power, had encouraging support. This was won by Ray Elliot from Pascal Ceres and Peter Buchwald.

Days 2 and 3

On the final two days the 38th Journées Internationales de Vol Libre en Poitou, was run by the Aéromodélisme Club Thouarsais on the Plain of Noize, a few miles away. It was a competition for the senior classes, namely F1A (glider), F1B (rubber), and F1C (IC power) together with F1Q (Electric Power).

Day two, for the senior 'power' classes, was similarly blessed with high temperatures and relatively light winds. The air seemed more fickle than on the day before with more than the expected number of dropped flights.

F1B Rubber ended the day in a five way flyoff with both Benoit Jacquemin and Gilles Chauveau making the five minute maximum. It took two more flyoff rounds to settle the issue. Benoit took the title by a mere 10 seconds. In third place by dint of some excellent flying was junior Maxine Tisserond. Evgeny Gorban (UKR) had been looking strong all day but was caught out by the air in the final round.

In F1C Power Neil Allen couldn't repeat his victory of the previous day and had to be content with third spot. Sigurd Seydel won the flyoff for first place from Michel Reverault.

F1Q Electric Power was better supported following CIAM's rule changes which appear to be more to flyers' liking. Some entrants used E-36 models to make their flights. A three-way flyoff was necessary decide the top places and after two flyoffs Peter Buchwald emerged the clear winner from Tom Oxager and Tony Shepherd.

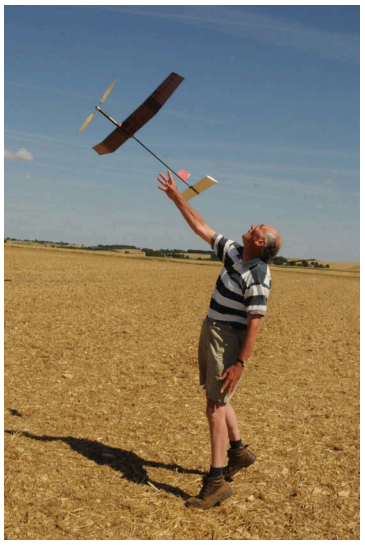
The Saturday was set aside for the F1A Glider Class. This made a fitting climax to the three day competition with 67 contestants posting scores. The weather was again kind with just a little rain in the early evening which did little to dampen the spirits.

This was perhaps a little easier than the previous two days with fourteen individuals making it through to the flyoff. Of these, eleven had to fly again. By now the air was cooling a little but in spite of that factor, junior Luca Aringer from Austria topped the field with a superb flight of 424 seconds ahead of Maarten Van Dijk and Jes Nyhegn who were about one minute behind.

Never participated in International Competition? Maybe now is the time to bite the bullet and consider booking for next year. Take up the E-36 (F1S) / F1Q challenge!

A 2nd place in F1C for Michel Reverault.

Phil Ball was a little unlucky with his large propped F1G.



A delicate F1G launch from Michael Marshall.

Brain Lavis prepares to launch Gary Madelin's winning F1H.

A composed Tom Oxager waits for the moment.

A fine F1J launch by Peter Buchwald from Denmark.

RESULTS

31st Moncontour "Deux Minutes" 6th August 2015

F1G Rubber 29 Flew

1	Neil Allen	GBR	600	+240	+360
2	Alessandro Manoni	ITA	600	+240	+352
3	Rene Boucher	FRA	600	+234	

F1H Glider 8 Flew

1	Gary Madelin	GBR	600	+240
2	Didier Echivard	FRA	600	+155
3	John Cooper	GBR	585	

F1J Power 3 Flew

1	Tom Oxager	DEN	600
2	Alessandro Manoni	DEN	533
3	Rene Boucher	GBR	447

E-36 Electric Power 10 Flew

1	Ray Elliot	GBR	591
2	Pascal Ceres	FRA	564
3	Peter Buchwald	DEN	546

38th Journées Internationales de Vol Libre en Poitou 7th-8th August 2015

F1A Glider 67 Flew

1	Luca Aringer (J)	AUT	1290	420	424
2	Maarten Van Dijk	NED	1290	420	370
3	Jes Nyhegn	DEN	1290	420	367

F1B Rubber 37 Flew

1	Benoit Jacquemin	FRA	1320	300	420
	274				
2	Gilles Chauveau	FRA	1320	300	420
	264				
3	Maxime Tisserond (J)	FRA	1320	271	

F1C Power 10 Flew

1	Sigurd Seydel	GER	1320	300
2	Michel Reverault	FRA	1320	227
3	Neil Allen	GBR	1303	

F1Q Electric Power 7 Flew

1	Peter Buchwald	DEN	1260	300	420
2	Tom Oxager	DEN	1260	300	322
3	Tony Shepherd	GBR	1260	300	205

Far travelled New Zealander Paul Lagan flew both F1G and F1B.

Ray Elliot won E-36 with this elegant model.

TIMPERLEY FREE FLIGHT GALA

A Contest Director's view of the event by John O'Donnell, with photos by Dave and Sue Hipperson

This well-established Club Gala was eventually held on North Luffenham airfield on 16 August - following a long and worrying wait for a Licence to be issued by the Land Agency. In the end it was certainly worth the wait as we were blessed with exceptional weather and no outside problems.

Attendance and entries were good for this day and age - and the contests ran smoothly (as I was the CD I can hardly comment further.) Much help came from Terry Dobson (who took entries and scores all day) and Gerry Ferer. None of us tried to fly.

The benign conditions provided the opportunity to fly to a THREE minute max - with the promise of a normal unlimited flyoff thereafter. This worked well since the calm weather never became more than a light breeze. Some sun and broken and variable cloud cover made for warm and pleasant 'shirt-sleeve' conditions, with plenty of lift and easy retrievals. Mind you, since the airfield grass had not been cut it was advisable to watch just where your model

> "The benign conditions provided the opportunity to fly to a THREE minute max - with the promise of a normal unlimited flyoff thereafter"

The great man of both Control Line and more recently Free Flight Power- Dave Clarkson with his Dixielander.

Allan Brown with his flyoff winning American Trickstar design. Allan has quite possibly built and still owns a version of practically every power duration design ever created.

Peterborough Club come equipped with this substantial windbreak and flag. I bet they are great on the beach too!

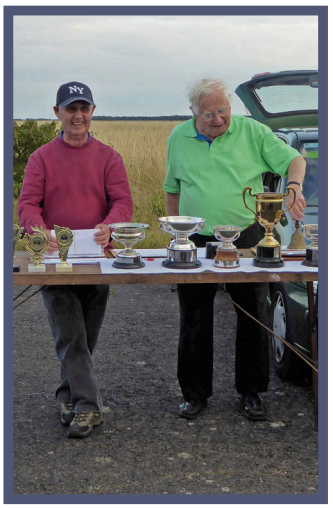
Pete Watson used this Open model to tie for second place with Steve Barnes in the Power Fly-off. Both did 9:06 and flew quite close together – very different approaches.

Russell Peers launches for John Carter in Glider. In the fly-off John towed for some time and launched to a height of some double that of the line.

Rapidly becoming the model of choice for Mini Vintage Power. The Top Banana. This one from Frank Rushby – won the Mini Vintage fly-off convincingly.

Unlucky this year. Trevor Payne produced this enormous model to max out comfortably then over-ran in the flyoff. Had a reserve ready and flew it but not such a good pull-out as usual.

Ivan Taylor's Rubber winning flyoff flight was in another class to the rest of his competition. This angle of climb continued for over a minute then there was a cruise!



The prize-giving. John O'Donnell is on the right, Terry Dobson on the left.

went! It did make for safe test flying - provided the DT was set. I heard of some long thermal flights - up to half-an-hour - but only an odd flyaway.

Our club policy has always been to limit the number of events - rather than to dilute the entries over a multiplicity of individual classes as is becoming commonplace elsewhere. We strive to give all our events sufficient status that they are worth winning. To this end we provide ongoing trophies, souvenir awards, wine and even modest cash prizes - all to show that the Gala matters to us and hopefully that it will also matter to the competitors. How it worked out can be seen from the score sheets.

Naturally enough the weather made for a fair amount of test flying as well as contest flights. Such testing was obviously necessary if the number of 'dropped' flights was an indication. Or perhaps the higher-than-usual max was contributory. By the end of the day the number qualified to flyoff was rather less than might have been expected.

Flyoff Organisation

The intent was to have separate flyoff periods for each class, with the order chosen to avoid anyone having to flyoff in two successive 'slots.' With ten minute in which to launch, and five minute intervals, the whole sequence would take less than an hour.

The power flyoff was first and soon led to complications. Allan Brown was first to launch with Steve Barnes quick to follow. Both had good climbs with Steve being the higher. Surprisingly they then drifted in different directions with Allan's model soon finding real lift. This was the time to fly as shown by Trevor Payne (who over-ran by point two of a second) and Frank Rushby having to take second attempts in indifferent air. Notable was the fact that they both had back-up models ready and waiting. Meanwhile Allan's model was still being timed and obviously set for a long flight - especially as it was a large K&B 40 powered design of Classic style and hence easy to see. The timekeeper was also due to flyoff himself (in rubber) before long. As I could see this situation developing (and being CD) I was able to postpone the rubber flyoff. It was simple enough to add it to the slot for Mini Vintage and tell those involved - all before it was too late.

Steve Barnes waits for the moment in power. Allan Brown times.

This meant that the next actual flyoff was for Glider. Colin Foster was limited to straight tow, but on a long line, with his Classic 'Robin'. The rest were soon circling and trying for lift. John Carter was probably last to launch and justified his high-tech approach (and much practice) with a spectacular climb and bunt into lift. Nearly a quarter-of-an-hour later he used RDT just in front of a downwind wood. This was a definite case of Overkill!

The final flyoff now had Rubber along with Mini Vintage and showed that we have made some progress over the years. Ivan Taylor's modern looking 50 gram model had an impressive climb in good air to record almost 13 minutes. Runner-up was Andrew Moorhouse with a very respectable score of nearly 7 minutes.

Top in Mini Vintage by a wide margin was Frank Rushby flying a 'Top Banana' powered by a 'dieselised' Cox TD. This combination produced a fast and high climb using the generous allowed engine run of 20 seconds. As the model is small (at 36 inch span) and with a flat-bottomed airfoil it is no surprise that the glide is not wonderful. It was still good enough for a 6 minute flyoff - double that of the 'Senator' of Richard Wykes.

Settled without need of a flyoff was the combined event for hand or tip launched and catapult gliders, all flown from the same marked-out box. This was positioned half on the runway and half on grass so as to suit all methods. Standard of flying was good with the top placed (and local) fliers being Mick Page and Ivan Clark - both totalling over 6 minutes out of a possible 7

The Gala ended with a formal prize giving held with little delay once the flyoffs were concluded. The problem of there being a tie (at 9.06 each) for second in Power was resolved by augmenting the third place award to match that for second. This was well received! This year was unusual in one respect - for once I was not the last person to leave the airfield!

Full results will be found at www.aeromodeller.com

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The Strength Inside your Model – Adhesives Part 3

John Bristow of Deluxe Materials '40 years and Getting Stronger focuses on cyanoacrylate glues.

Cyanoacrylate adhesives – the Super in Glue!

Since its introduction into the modelling market, cyanoacrylate (often referred to as ca, cyano or super glue) has become one of the most useful adhesives for the modeller, because it sets so quickly and bonds many materials.

The History

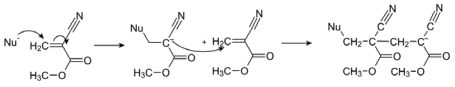
The original cyanoacrylates (the chemical name for the glue) were discovered in 1942 in a search for materials to make clear plastic gun sights during World War II. A team of scientists stumbled upon a formulation of a product that stuck to everything with which it came into contact. This material was rejected for the application in question! Then In 1951 Eastman Kodak researchers, Harry Coover Jr. and Fred Joyner recognized the true commercial potential, and rediscovered cyanoacrylates and 'Eastman 910' was born. The first cyanoacrylate adhesive were sold, in 1958.

Today, there are many big chemical manufacturers and marketers in USA, Europe and the Far East.

How and Why Cyanoacrylate Glue Works so Well

Cyanoacrylate glue cures by a catalytic process of rapid polymerization caused by moisture (or more specifically -OH groups) found in surface contaminants on wood, glass, metal, etc. that is to be bonded.

The equation for the setting (polymerisation) of a methyl cyano is set out below.



In total only around 5 or 6 cyanoacrylate monomers are commercially available and they are outlined in the structure above. The most common type of cyanoacrylate is the ethyl-2-cyanoacrylate type that is found in most products available in the market.
However, for more specialist applications others cyanoacrylate monomers have been developed. The major difference between each type is in the ester group (e.g. methyl, ethyl) - the larger the size of the ester group, the slower the cure speed and the lower the bond strength. The higher analogues have found special use in the medical industry as tissue adhesives.

Creating a Strong Bond

Mechanical 'hooking' described in an earlier part of this series is one of the main ways in which this adhesives works and Cyanoacrylates bond especially well because they have one of the lowest surface energies of any adhesive on the market i.e. they 'wet' (attach to) most surfaces extremely well. Cyano bonds well to rubbers, metal, leather, balsa and hardwood and some plastics. Trace amounts of water present at the surface of the material to be bonded trigger the catalytic setting process. Acidic surface such as certain hardwoods or low surface energy plastics (Polypropylene) are more difficult to bond and require special grades or primers (Tricky Stick being one). The surface primers work by changing the cyano to improve wetting. Chemical treatments are also possible but not really practical for modellers.

Cyanoacrylate monomers are all very low in viscosity so ranges have been developed which include inert fillers to increase the viscosity to expand the scope of joints that can be bonded.

It is their unique chemical structure that allows cyanoacrylates to bond in seconds and makes them excellent adhesives for modelling. However they are not always the right glue for every job.

Limitations: Cyanoacrylates are very brittle and are not advisable where impact resistance is required. Rubber toughened cyanoacrylates have been developed to improve this limitation. Similarly you should not use them when bonding materials with significantly different thermal expansion coefficients such as glass to metal. This is likely to cause catastrophic failure; an example of this would be the bonding of a metal rear view mirror to a windscreen. Applications where there is constant exposure to moisture should also be avoided, as water will eventually break down the joint.

Shelf life: All cyanoacrylates have a shelf life

from a crane and the Super Glue Corporation product was the best! (Some of our competitor's currently have "hanging things" like people, & television sets, but nothing compares to the strength of our hanging car.)

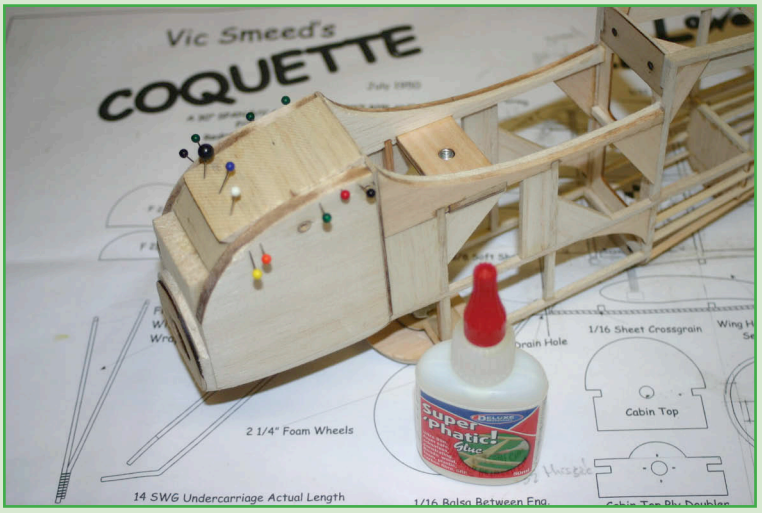
The Eastman Chemical Co. photo at left shows a convertible being hoisted into the air using steel bonded by Eastman 910 — commonly known today as Super Glue. The bonded steel would lift up to 3,000 pounds after just 10 seconds, and eventually hold at least 5,000 pounds. Dr. Harry Coover discovered the glue while working at Eastman Chemical Co. in Kingsport.

KINGSPORT TENNESSEE

TimesNews

July 11, 2004 Price $1.25 SUNDAY

The Kingsport Times News remembers Harry Coover's rediscovery of cyanoacrylate adhesive when at Eastman.



Cyano isn't necessarily the right glue for every job, and the new thin aliphatics can be a sensible alternative or adjunct.

and this is really dependant on the storage conditions however most companies provide 12 month shelf life but this is dependent on the type and grade.

Bond strength and cure speed

Cyanoacrylate glue should be allowed to polymerize slowly and the bond should be left to develop for at least 24 hours. Heating the bond will increase the final bond strength. This is contra to the general understanding by modellers - fast is not strong. The slower the cure speed, the higher the bond strength. If the cyanoacrylate bonds too rapidly, then it can trap uncured cyano material that will reduce the final bond strength.

It is very difficult to slow down the setting process of the cyanoacrylates, so the best option is to obtain the most appropriate grade for your application.

Maximum Operating Temperature

Cyanoacrylate glue joints are slowly degraded at high temperature. Typically don't expect bonds to perform well above 180C.

Storing Cyano Glue

Cyano glue is best stored in unopened bottle in a cool dry room, 5-10 C, away from daylight. Every 10C increase in temperature doubles the deterioration speed so storing unopened bottles in a refrigerator would extend the life (Do not mix the storage of adhesives with food!). Unopened bottles stored in a fridge should be allowed to return to room temperature before use. Once open, keep cyano in a cool, dry place away from daylight. Keep the cap on the bottle or leave a purpose made micro tip on top. The glue will cure at the tip where it is in contact with moisture in the atmosphere and thus seal the bottle ready for next time. Remember, that it is moisture as well as heat that shortens the life of cyanoacrylate.

Finally, what not to do! Do not store your cyano bottle next to a bottle of activator. Fumes from the activator could cross contaminate and will shorten its life.

Tips for Getting the Best from Cyanoacrylate

To stop sneezing and eye irritation: choose a non-fuming, low odour grade or try placing a saucer of water close to where you are working.

How to apply adhesive whilst reducing tip clogging: Squeeze the bottle gently as you pick up the bottle. While still holding the squeeze, apply the glue and return the bottle to upright and release the squeeze. This will draw air through the tip and clear it. Oval bottles are easier to squeeze and specially made micro tips help to dispense the glue where you want it. Using a metal pin to keep the tip clear may have a negative effect by curing the glue around it.

Avoiding blooming on clear plastics: Blooming is caused when the cyano does not fully set and the remaining glue vaporises. This vapour can then react with the moisture present on the clear plastic surface to spoil it. You can reduce this effect in several ways:

- Warming the clear plastic surfaces to 'drive off' moisture.
- Using less cyano.
- Using a non-blooming grade that will eliminate the problem.
- Using an accelerator spray.

To stop caps getting jammed: Use some Teflon tape round the thread on the neck. Kits of spare caps and plugs are available from some makers if you are unlucky enough to jam one.

Using cyano accelerators (kickers): Use only when needed, as they will tend to slightly reduce bond strength. Avoid breathing their vapour. You can often remove the spray head of the pump type kickers and apply with a brush to avoid this.

Using cyano with white glue: You can obtain the benefits of both PVA type glue and also cyano glue. Use cyano to tack the joint in place and then reinforce with the PVA type glue. Some manufacturers make thin penetrating 'white' glue that is ideal for strengthening and toughening the joint.

Far Left: Thin tips can help the application of small amounts of cyano exactly where needed.

Left: For a strong joint where the fit is not so good, take a two-step approach: thick cyano 'squashed' into a thin layer, followed by a fillet of thick grade and a spray of accelerator/kicker.

Forces cure through cyano glue to fill gaps & enable fillets.

To assist dealers to keep a fresh stock of cyanos, Deluxe Materials have made a mix box with a full range of viscosities and types in one tray.

Best joints and fillets: For maximum bond strength, don't leave glued joints open for too long and avoid repositioning as this may weaken the joint. When using thick grades, apply glue to one surface & 'squash' the cyano glue into a thin layer. Add a fillet of thick grade & cure with a quick spray of accelerator.

Opening the bottle first time. In case there is excess pressure inside, hold the bottle away from your face and hold the tip against a solid surface when you cut it.

Bonding Foam: Because of its lightness, foam has replaced balsawood as an aeromodelling construction material. There are many types on the market and they are not always easy to recognize. To be sure foam will not melt in contact with cyano, use an odourless grade on one surface of EPS(styrofoam), EPO or Depron foams. Bring dry surfaces, previously treated with kicker, together for fast bond. Normal cyano may bond other types of foam e.g. on EPP, EPO. A surface primer such as Tricky Stick, is often helpful for gluing Plastic parts, and can be useful for EPO and EPP foam. As it is so difficult to identify unknown foams, always check your adhesives and sprays on scrap beforehand, giving enough time for any adverse reaction or set to take place.

Removing surface marks: There are specially made cyano de-bonders that will quickly dissolve away cured superglue marks etc. Blooming marks can be polished away with fine plastic polish.

Filling gaps over 0.5mm and creating strong fillets: Use a thick grade with a kicker to cure the glue. For larger gaps, use a special filler powder & add thin ca. Cavities or lost material are easily replaced by this method.

Bonding smooth plastics: Abrade surfaces & use a kicker or primer to assist bonding smooth plastic surfaces e.g. polycarbonate acrylic.

Bonding shiny or oily plastics & other tricky materials e.g. EPP foam Polythene, silicone rubber, polypropylene, nylon. Use a surface primer to coat the surfaces and allow to dry and apply cyano. Press together and hold. You may need to clean surfaces with cigarette lighter fluid or paraffin to ensure any mold release agent (used during the manufacture of the plastic) is removed before applying the primer.

Reinforcing joints: try using a small piece of photographic film behind joints or carbon tissue.

Filling gaps can be achieved with thicker viscosity cyano, or by using a filler powder and thin cyano to penetrate through the filler.

John Bristow (left) welcomes your editor on a visit to Deluxe Materials.

Advice for Treating Accidents

Stuck fingers: If you have glued your fingers together, simply immerse the bonded area in warm water. Then perhaps with the aid of a teaspoon, roll or peel the surfaces apart. If necessary, try a specialist cyano de-bonder, working it into the skin or try nail varnish remover. Afterwards, wash skin thoroughly.

If accidents do occur and there is concern or doubt, please seek medical advice.

Ingested glue: It is almost impossible to swallow superglue as it solidifies instantly in the mouth and saliva will dissolve it in 24 hours. Although cyano glue is non-toxic DO NOT swallow the glue.

Eyelids: Consult your doctor. Cyano will dissolve in 1-4 days.

Burns: If large amount is spilled on skin it can burn. Wait for it to solidify, release and treat as normal burn.

Finally perhaps you didn't know… superglue has had many interesting uses outside modelling. For medical use it was first used for heart transplants by Dr Barnard and in the Vietnam War for wounds. However it was not approved for medical use until 1998 when a special 2 octyl grade was released.

Other uses for specialist formulations include:

- On ballerinas shoes to harden points.
- As a forensic tool to capture fingerprints on non-porous surfaces.
- For sticking corals in aquaria.
- Veterinary use – Stick horses skin on damaged hooves so then can continue to race.

I hope you've enjoyed this series of articles and have found them useful. I would like to thank Andrew Boddington for his encouragement in asking me to write these articles. Both he and his father David have been great inspiration to us over the years.

Do feel free to send me any great ideas or uses you have found for Deluxe Materials products. Our products are available from model shops through our network of worldwide distributors including Ripmax Ltd in the UK who have supported us for over 40 years. If you are already using our products we say thank you for choosing us; if not we will look forward to serving you soon!
www.deluxematerials.com

TOPICAL TWISTS

By Jeremy Paxolin. Illustrated by Sherry.

MODELLING MATRIMONY 2

When the great Pylonius twisted his first topics (in AeroModeller, at least) in January 1966, political correctness meant successfully guessing the name of your M.P. So when under the heading 'Modelling Matrimony' he mused on the new-fangled rarity of aeromodelling wives, his chief anxiety was who, if not the stereotypical harridan in floral apron and curlers, would nag the balsa-obsessed male into re-erecting the garden fence? Now at this historic juncture, his question can at last be answered, for Topical Twists has scooped an exclusive interview with just such a happy couple.

"The garden fence? No, that's not a problem. You can't see it behind the lawn for most of the flying season anyway. Mind you, there were some frosty glares across the breakfast table when 'our' last piece of 5lb quarter-grain mysteriously went missing."

It turns out that the only fly in the otherwise balmy ointment is one that Pylonius in his chauvinist innocence could never have imagined, as it turns out the lucky fellow's better half is, quite literally, better.

"Now I've heard that there's a certain type of chap who quite enjoys being regularly beaten by his missus, but I can't say it does much for me, especially in the flyoff at the Nationals. Mind you, I'm a pretty modern guy. I can think of a few macho types who would need some urgent re-attachment surgery after an experience like that".

"Never mind, dear. It's not as though you had much to lose anyway".

NAME OF THE GAME

Another weighty matter which has vexed AeroModeller's greatest brains seemingly since the dawn of time is the vexed question of whether our little evocation should be considered a sport or a hobby. This Lilliputian war of attrition has seen passions roused and friendships sundered, but no more, as our pragmatic cousins across the pond have it solved. A quick scan through the online chatrooms of the US FAI community, many of whom think nothing of retrieving a test glide by golf buggy, reveals that the correct appellation for Homo chuckitupicus is not 'modeler', or even 'model flyer', but 'sportsman'. So it's with much relief that my fellow sportsmen and I can put our semantic differences behind us and move arthritically on- after a minute's dignified silence for poor old irony, of course.

PI IN THE SKY

Mention polar curves to a subscriber to one of the less august model mags, and he'll likely assume you're referring to a dodgy website for Eskimos, but we AeroModeller readers are a more numerate bunch. Surveying the

"I knew we shouldn't have offered to hold the Wakefield here"

hallowed archive, it seems that hardly an issue went by without some learned tract by an Emeritus professor of Banana Oil at the University of Propwah, packed with graphs, formulae and vector diagrams, so that only the most witless village idiot could dare doubt the voracity of his opinions. By such intellectual tours de force we learned the proven truths which guide us to this day; that a model jet turbine can never work; that by 1960, all Wakefields will be tail-less, and that the A2 glider would spontaneously explode should its wingspan ever exceed five foot eight. Of course, you and I speak algebra fluently, but out of pity for the poor fools who did not benefit from a proper education, and therefore read RCM&E, let me explain. The key to deciphering such articles is the unit-less number Bs, or coefficient of bovine efflux, defined by the formula X Sigma to the power N, X being the number of algebraic terms involved, Sigma equalling how many Greek letters were used, and N the number of pages the whole thing took up. We can now obtain the reciprocal P= 1/Bs, P being the probability of ever seeing the author's name on the first page of the contest results.

QUEER AS FOLK

The great Pylonius always had a finger firmly on the jugular of pop culture (who can forget Affray Balsadust, the famous aeromodeller who practised the curious hobby of pop stardom to pass his spare time?). I feel certain that he would have thus have deciphered the latest bizarre fixation of the grandees of Free Flight; that a model aeroplane landing in a farmer's field (even if the farmer doesn't mind) will automatically summon legions of writ-waving lawyers and death on a pale horse. The cunning plan to forefend against such an apocalypse appears to be a new contest format so boring that nobody will even trample the flight line, let alone the downwind corn. Furthermore, when asked what act of parliament or Royal decree has suddenly forced such indignity upon us, the reply is always a cryptic *"times have changed"*. Apply Pylonius' post-modern squint, and the reason becomes obvious; a frustrated career in folk music;

Now listen free-flighters, no more must you roam,
For never again can we fly off the 'drome,
For the sky will fall in should a landowner moan,
And these venues take quite some arranging
So if the wind blows just pack up and go home,
For the times they are a- changing.

Forget open rubber, those days are all done.
But worry you not; we can still all have fun,
Flying E36 on a five- second run
(Or on three if that's still too far ranging)
With a nice DT flyoff to find out who's won,
For the times they are a-changing.

There's no use protesting you miss all the thrills,
For we need drastic measures to sort out our ills,
And the surest of cures are the bitterest pills
So you might as well just stop complaining.
Now if you'll excuse me I'm off to Lost Hills,
For the times they are a-changing.

For Old Times'

A look at pioneering models and modellers by Don Howie.

American Designs

Most of the designs and models flown from 1935 to 1942 with petrol powered small spark ignition engines were in the U.S.A. Other countries such as England, France, Germany, Italy and Australia produced small spark engines during this period, but only in quite small numbers.

The American engines and kits for these engines were exported to Europe until near the end of 1939. However Australia and South Africa still received them up to the end of 1941. Many of my late modelling friends in Australia mentioned they bought their first American petrol engine about 1940/41.

This month's first American design, seen climbing away, is Bill Britcher's 41 inch span (tip to tip) 'Red Ripper' powered with a Cox .049 reed valve engine, flown in the International ½ A Texaco event. The original 72 inch span 'Red Ripper' was designed by Jerry T Peeples, powered with a Brown Junior engine and flown in the 20 second engine run Duration event. The design was published in July 1940 Flying Aces magazine and is a great flying lightweight design.

Next design, seen at Constellation Club field in South Australia, is a 44 inch span 'Yogi' with rudder and elevator control, using a Turnigy electric motor from HobbyKing, turning a 9x6 electric prop, running backwards. The builder and flyer is Paul Daniels, who has covered the model with Polyspan on the wing, tail and fins, whilst blue silk is used on the fuselage. The original 'Yogi' at 42 inch span was designed by Gerry Stoloff as a contest design for Class A spark engines, such as the Bantam 19 and Ohlsson 19. The design was published in October 1944 Model Airplane News, when I expect many modellers in the U.S.A. were overseas fighting in W.W .2. After the war ended in 1945, it was kitted by Eagle Model Aircraft Co. in the U.S.A.

Next model shown is a 46 inch span 'Air Trails Sportster', first published in that magazine in March 1939, designed by Ben E Shereshaw. The model shown was built from the plan published in March 1968 AeroModeller, when Ron Moulton was the editor. The plan differs from the photos of the original model shown in AeroModeller, bringing the front of the fin to the tailplane leading edge, making the model nicer looking.

'Red Ripper' 1/2A Texaco version climbs away with Cox .049 reed valve engine.

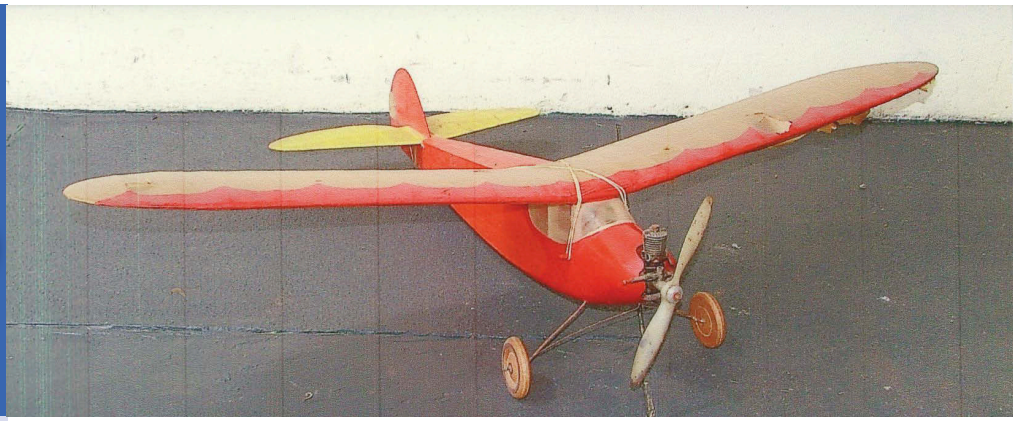
While Ron described the later Bantam 19 rear disc induction engine in his article, the model was designed for the smaller American spark engines around 2.5cc. The original model (photos of which appear in the AeroModeller article) was powered by a side port Bantam 16 (2.66cc) made in small numbers by Ben in the basement of his home in 1938/9.The model built by Tony Williams in South Australia has a 1949 Frog 100 Mk 2 diesel fitted and the model is now over 40 years old. The AM 10 diesel fitted to my Sportster has more than enough power.

Tornado

This was not the first published small model by American draughtsman Paul Plecan. His first published small model design, the 'Gas Flea' at 36 inch span, was in December 1937 Flying Aces magazine, powered with the first ELF engine of .138 cubic inch capacity.

I like the designs of Paul Plecan as they are quite simple to build. The 60 inch span

Sake



'Air Trails Sportster' by Tony Williams, model built about 40 years ago.

'Simplex', published in February 1941 Air Trails is about as simple as one can get, the original model powered with a Sky Chief .526 spark engine. This low cost engine used 'muck metal' (containing lead and zinc) for the crankcase castings and the cylinder, fins, intake were cast iron, making the engine quite heavy. The nose on the Simplex is therefore quite short and I remember seeing the late Charlie Yost flying one at the S.A.M. Camps in the U.S.A., powered with an original Sky Chief engine.

The Tornado was designed for the original Bantam 16 engine in 1938/9, which is only seen in recent times in replica form. When the 30 inch span model was published in April 1946 Model Airplane News, the most popular small engine was the Atom .098 and this is shown on the plan drawings (not included here). The original tank is removed and a separate tank fitted behind the engine on top of the engine bearers. The Atom is a hot engine on a small prop and on full power would have made the Tornado difficult to trim.

The design is very clever, as the shape of the wing would normally mean each wing rib is different. Using sliced cap strips, above and below the tapered wing spar, means you can build the wing without a plan; the trailing edge sections W1 to W4 were shown full size. The fin, tail and formers etc. were also shown full size in the magazine.

The design became a more practical sports model in the late 1940's with the introduction of the small 1/2A glo engines in the U.S.A. Even better were the small British side port diesels which could be adjusted with the compression lever to give just the right power.

Paul Daniels holds his electric powered 'Yogi', design first published in 1944.

David Hill at Middle Wallop was using a replica of the 1947/8 Ace 0.5cc diesel made by Derek Collin. Geoff Woodward's at Old Warden had a .4cc version of the Mills .75 fitted, turning a 6x4 nylon prop. That model has red silk over tissue and Geoff has even fitted a pilot.

This design is best flown in large circles under power and on the glide. No mention is made of how to build the original cowling, not shown other than as an outline on the plan. David Hill's Tornado looks to be made from block balsa. One could shape and carve the cowl from Styrofoam, covering the foam with fibreglass cloth and epoxy, then dissolve the foam away with solvent. I think this Paul Plecan design from the thirties is a great small field model for today.

Atom Piston Valve Engines

Before focusing on this month's featured engine, I want to side-step a little. Ray Arden is often regarded as the inventor of the small piston valve engine, and after WW2, also of the '360 degree' cylinder porting for model petrol engines. I beg to differ as I regard the engines made by the M & M Model Wheel Co. (Merry and Merz)as the first to introduce both systems. Some people point to the Neptune Motors .266 cubic inch engine made in St. Louis MO, which also had a piston valve like the M & M engine, but its introduction date is not known for certain.

The M & M Model Wheel Co. Started making airwheels for power model aircraft about 1936 and also conventional side-port model engines in small numbers during 1937/8. The company was based in Seattle, in the northwest corner of the U.S.A. In late 1938 they made nine engines, called the M & M 19. Perhaps using their then current M & M 23's crankcase, this new design featured innovative flutter (reed) valve induction and fuel bypass in the centre of the piston via a sub-piston (piston valve). I suspect these engines were sent to their agents for evaluation, with the hope that orders would be forthcoming. I also suspect Polk's (Irwin and Nathan Polk) at 429 7th Avenue New York were east coast agents for M & M Airwheels in the late 1930's and would have been familiar with the M & M 19.

In mid 1939 we saw two piston valve engines

introduced. One was the Mighty Atom of .097 cubic inch capacity, commissioned by the Polk brothers, designed by Ray Arden and manufactured by the Bard-Parker Company in Connecticut. Its piston porting and peripheral drilled exhausts bear an uncanny resemblance to the earlier M & M engine. Thanks partly to considerable advertising in the model magazines, the Might Atom was an instant good seller.

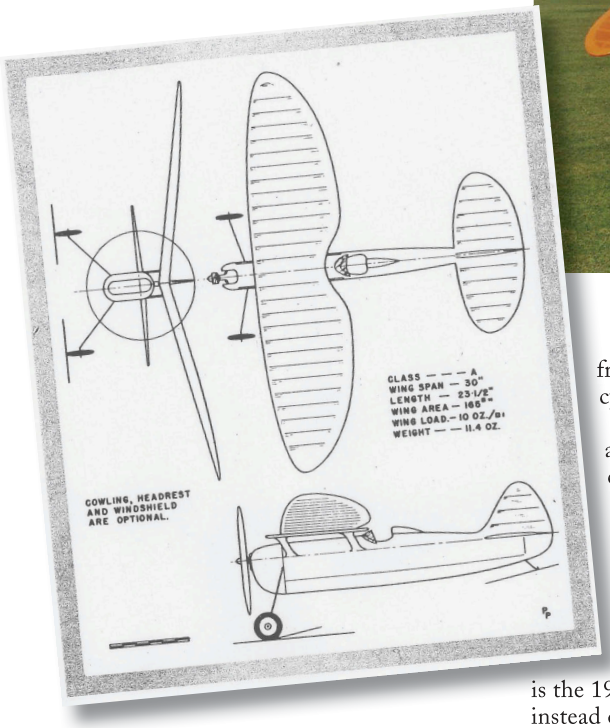
The other was the M & M 'Piston Valve Motor' of .292 cu. in. capacity, essentially a scaled up successor to the M & M 19. It did not have the benefit of advertising, but was to be sold by Megow's, based on the U.S.A's. East coast. That suggested scaling up production for a much larger market.

The Mighty Atom had 'Patent Pending' cast on the crankcase, relating to the patent filed in May and granted in August 1939 to Ray Arden for his piston valve engine. Perhaps fearing competition, Polks decided to take M & M Model Wheel Co. to court, for infringing Arden's patent. M & M did not go through with this legal process and stopped production of their engine, possibly because Megows were no longer agents, as they were about to introduce their own new Megow 199 motor for $12.50.

In 1940 M&M released the revised 'High Speed' .292 which now used an aluminium sleeve below the exhaust to contain the external transfer ports, along with a conventional piston. By my reckoning, that makes this the first 360-degree ported model engine. As they were sold on the west coast, U.S.A. and I suspect Shigeo Ogawa in Japan obtained one at this time, as his engines from 1943 appear to have 360-degree cylinder porting.

Geoff Woodward at Old Warden with his 30 inch span Tornado. Pilot adds a nice touch.

David Hill holds his FF Tornado at Middle Wallop, Ace 0.5cc diesel powered.



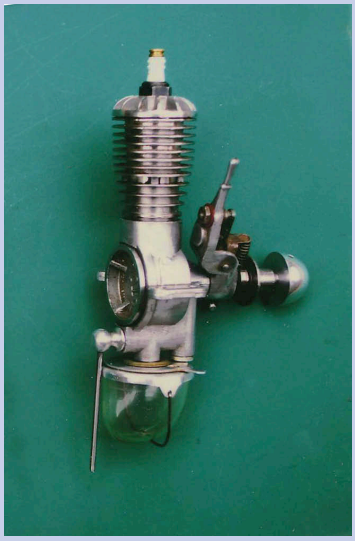
Tornado drawing heads article in April 1946 M.A.N. Model has wing area of 165 square inches, weight 11.4 ounces.

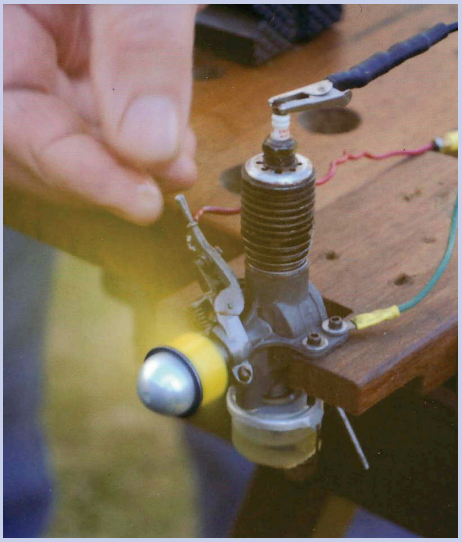
In any event, the concept of such a small engine of less than .1 cu in capacity was, for its time, ample demonstration of Ray Arden's design flair and inventiveness. The improved Super Atom .097 followed in mid 1940 which changed from 2 to 5 port transfers in the sub-piston, giving more power.

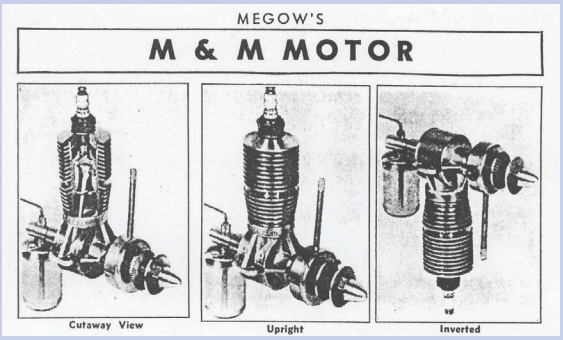
The Super Atom engine I own is the 1941 model with aluminium castings instead of the earlier magnesium type. Over 30,000 Atoms were made, but mine has no serial number. I suspect it was built from parts found in the 1960's and there seem to have been several ventures aimed at reproducing Atoms wholly or in part from left over original parts. Mine did not have any compression seal until the sub-piston was lapped in. Much help was given to me by the late John Maddaford, who was an expert on these engines and he sent me a copy of the instruction manual.

Main problem is the fixed .008 inch diameter jet that is easily blocked, stopping the engine from running. This requires very clean fuel and a wire of the correct diameter to clean the fuel jet. The Super Atom used in our tests was the second model, with 5 transfer ports and normal 360 degree exhaust slits rather than holes drilled for the exhaust.

The temperature was cool at 15 degrees C



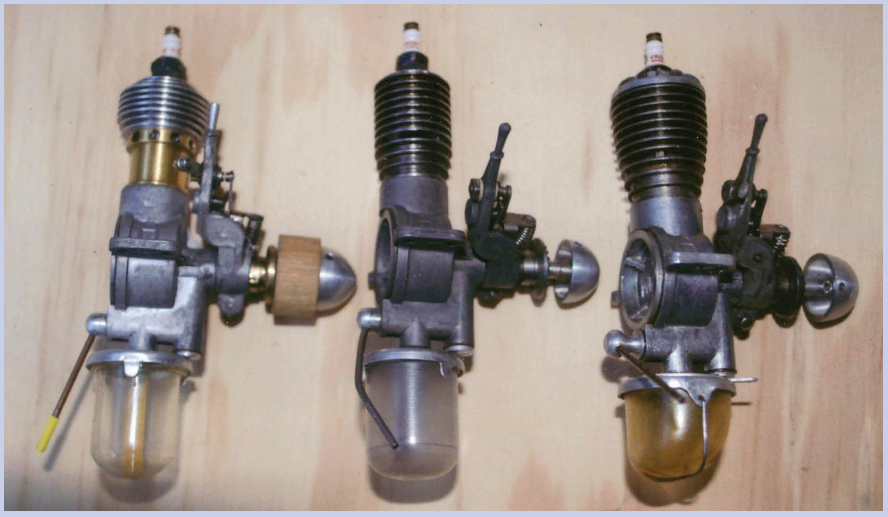




Far left: Super Atom .098 Mk 3 from 1941 uses aluminium castings and radial head fins.

Lef: Super Atom from 1940 running at over 10,000 revs with 8x4 Kavan prop. Note 8 holes for tightening the aluminium head

Above: Possibly the only advert for the M&M Piston Valve Motor, from the 1940 Megows catalogue. Advert text extols its



Left: 1939 Mighty Atom Mk 1 (Left), test engine 1940 Super Atom Mk 2 (centre), final 1946 Super Atom Mk 4 (Right)

Below: Tornado wing and fuselage were shown half size with dimensions in the magazine. Other items (tailplane, fin, formers, UC etc.) were shown full size.

and we set up at the home of Bill Britcher, as he is the owner of the three engines shown in the photo. One has to retard the ignition for starting and also partly close the air throttle for starting. We began with a small 8x4 Kavan prop, as these engines like to rev quite hard. The temporary fuel tank was a plastic cap from a drink container, which would safely allow us to use methanol as well as petrol-based fuel.

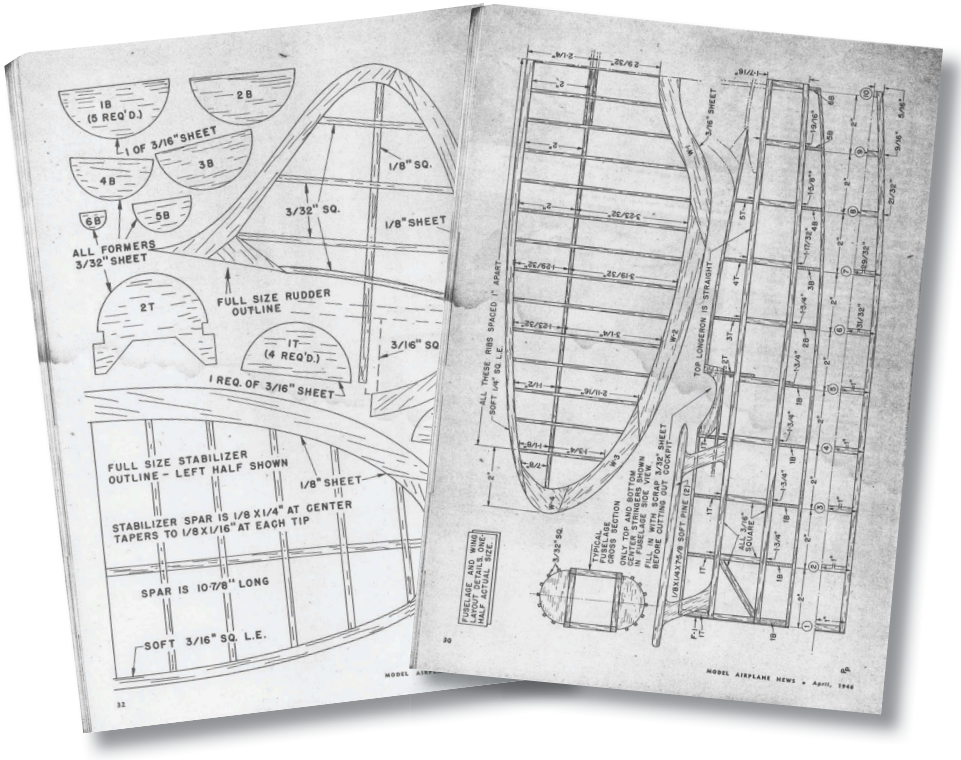
The engine was run on petrol fuel, which gave easy starting in the cool conditions.

Results on different props were;

8x4 Kavan yellow	10,000 RPM
8x5 Master Airscrew	9,300 RPM
9x4 APC	5,300 RPM

The engine obtained more than 10,000 revs on the 8x4, but came back to about the shown revs as it became hot. It did not like the 9x4 prop and when the engine ran out of fuel, the propeller kept turning for some time as it had lost all compression. I suspect that this is too much load and the Atom is best on small props and higher revs.

When running the engine on petrol fuel, the throttle is to the right, giving maximum air (see photo) whilst running on methanol fuel requires the arm positioned to the left (less air, more fuel). No difference in performance was found. The Arden engines from 1946 still used the air throttle and most people think he finally got it right in 1947 with a conventional spray bar and needle valve.



GLIDER WING DESIGN – PART 2

Some thoughts on glider wing aerodynamics by Martyn Pressnell, FRAeS.

The essence of wing design involves, in the first place, aerodynamic decision making to resolve all geometric issues including the plan-form shape, aspect ratio and aerofoil sections. The wing dihedral also needs considering in terms of the stability and control of the model glider as a whole. In this note the deeper under laying issues, such as boundary layers and Reynolds number, aerofoil design, turbulators and invigorators, etc., are not considered. The most suitable aerofoils for each type of glider can be adopted from common practice.

Boeing 737–800 series with winglets top and bottom.

Some basics

Aerodynamicists use a non-dimensional method of quantifying lift (L) and drag (D) so that in general the aerodynamic performance of an aerofoil or the glider as a whole becomes independent of airspeed (V), air density (ϱ), and wing area (A). The non-dimensional form is referred to as a coefficient:

Lift coefficient C_L = Lift /(½ ϱ V^2 A) and Drag coefficient C_D = Drag /(½ ϱ V^2 A)

The air density ϱ = 1.2256 kg/m^3 at sea level, which can be used for model calculations.

For simple estimates the lift can be taken equal to the overall weight (W) for a steadily gliding model, where the weight is the force due to gravity, and in the Standard International (S.I.) system of units, it is measured in newtons (N). There are 4.448 newtons to the pound force, which makes 1 N equivalent in weight to a good sized apple. The term (½ ϱ V^2 A) as seen above is actually the pressure that would be created by bringing the airflow to an abrupt halt and known as the 'stagnation pressure'. This is the pressure felt at a point on an aerofoil near the leading edge where the flow splits, some then passing over the aerofoil and some beneath. Of course it is the drag that causes a gliding model to descend, if drag could be completely eliminated the model would glide on forever, cruising in the thermals and downdrafts. In reality as it descends, the glider is losing energy by giving up height which is absorbed by the model flying forward against its own drag. The rate of energy exchange can be simply expressed taking the rate of descent as (U):

U W = V D so that the rate of descent is U= V / (L/D) = V / (C_L/C_D)

Evidently a slow flying speed and high lift to drag ratio produces a low rate of descent in the glide, and this we are aiming for. The lift coefficient increases with wing incidence, that is the angle between the chord line and the approaching airflow. The chord line is usually taken as the straight line from the leading edge to the trailing edge. At a certain high incidence, perhaps 12 degrees or more, the flow breaks away from the upper surface of the wing at some point as it begins to stall. This is accompanied by a sharp drag rise, the model inevitably adopting a high rate of descent or a pitching, oscillatory flight path. In the worst scenario a wing drops and the model enters a spiral descent.

Demon Drag

Clearly drag must be understood and reduced so far as possible. If we consider a glider in which the incidence is slowly being increased by re-trimming it nose up, the first milestone reached is the maximum lift to drag ratio (C_L/C_D)max, this is the condition in which the glider would achieve the greatest range, a good condition for flying between thermals, and most significant for height stability. Slowing the glide a little further achieves a condition of ($C_L^{3/2}$/C_D)max, sometimes called the power factor, which is the condition for minimum rate of descent. Slowing the model further induces the stall as mentioned above.

Now drag is composed of several parts which may be familiar, essentially form drag (C_{Do}) and induced drag (C_{Di}). The form drag includes skin friction due to the viscous forces in the airflow, excrescence drag related to such items as pegs, elastic bands, timers and recovery devices, aerials and cameras protruding from the surface of the model. Also there is interference drag, such as interference between the airflow around the fuselage and wing or other components, requiring good fairings to minimise the drag that are not always seen on models.

An agricultural aircraft flying through a wall of coloured smoke reveals a strong tip vortex system (NASA).

Induced drag is very important for slow gliding models and can be described as a drag penalty for producing lift and casting off a vortex system behind the model, particularly at the wing tips. This vortex system induces a downwash between the wings and over the tail-plane. The wing then is not flying in a simply plane airflow but in a distorted airflow.

Factory moulded FVK Rival - a heavy and fast flying slope glider with three-piece, semi-elliptical wing and crow brakes.

The effect of this is that the lift force is canted backwards producing a drag force component. Lift can't be produced without this vortex system and the inevitable induced drag. Induced drag depends twice on the lift because it affects the downwash angle as well as the drag-wise component. In general we can write the drag coefficients as:

$C_D = C_{Do} + C_{Di}$ where the induced drag:

$C_{Di} = k C_L^2 / (a)$

The aspect ratio (a) represents the slenderness of the wing usually found as span/mean chord (s/c) or span squared divided by area (s^2/A), whilst the wing efficiency factor (k) depends largely on the plan-form shape of the wing. Thus we have:

$C_D = C_{Do} + k C_L^2 / (a)$ and dividing by C_L

$C_D/CL = C_{Do}/C_L + k C_L / (a)$

Here we have one term reducing with C_L and one term increasing with CL so that we need to find the condition producing the maximum lift/drag ratio CL/CD. The maximum is found when the two drag terms are equal, so that:

$C_{Do} = k C_L^2 / (a)$ and extracting the optimum aspect ratio it becomes $^{a}opt = k C_L^2 / \varpi C_{Do}$

The terms CL and CDo can be estimated from wind tunnel test results or from rather complex computer fluid dynamics (CFD) evaluations. Using an aerofoil's lift and drag charact eristics, this formula is an important design tool in giving the optimum aspect ratio.

One further principle is also revealed. If the model is trimmed and flying close to its maximum Lift/Drag ratio, a change of trim to fly faster or slower causes the drag to increase. If the speed increases a rising drag is expected and stabilises the flight. However if the speed is reducing a reducing drag encourages even slower flight. This latter condition is not stable and level flight can't be maintained automatically. A radio control pilot can enforce the stability, but it requires continuous attention and makes for uncomfortable flying. The free-flight model is likely to wallow down effectively out of control. Thus the condition for maximum lift/drag ratio or a little faster, effectively designates the optimum flying speed.

Wing Plan-Form Shape

The choice of shape should be made to minimise induced drag and obtain the highest lift coefficient from the wing. We are well aware that excessive wing taper leads to tip stalling, often resulting in a spin or spiral dive following a stall. This is unsafe and poor design for a model; a modest taper, not less than a ratio 0.6 between wing tip to root chord, would seem safe. Some scale models will exceed this taper, but a correction to the lift distribution along the wing can be introduced by using wash-out towards the tip (i.e. twist progressively reducing incidence outboard). Some modern full-size wing designs aim to recover energy from the wing tip vortex system and the heading photo shows an elaborate winglet as used on the new Boeing 737 - 800 series airliner. It is well worthwhile making a study of full-size practice whenever an opportunity arises.

Clearly the maximum lift coefficient will be obtained by arranging for next to no variation over the wing span. The only shape to do this reliably over a range of airspeed is the elliptically shaped wing. Many commercially moulded models attempt to achieve this, usually by curving the leading edge and retaining a straight trailing edge to simplify fitting ailerons and flaps. A close approximation to the elliptical shape can be achieved with a series of linear tapers both in the trailing edge and the leading edge, as can be seen for example in the photo of the FVK Rival. It seems that a good compromise is to use a linear-taper in the inner 50% of the wing, going fully elliptical outboard. Sweepback is undesirable as it moves load towards the wing tips and may precipitate stalling there.

The induced drag factors that can be obtained are k=1 for the elliptical wing as a datum, 1.12 for a rectangular wing of aspect ratio 16 and 1.07 for a 0.8 tip tapered wing at aspect ratio 16 etc. But remember it is the elliptically shaped wing that offers the highest overall lift coefficient as well as minimising the induced drag. Wing sweep is measured at the ¼ chord line, so this is the best line to construct the ellipse about. Of course building an elliptical wing is not for the fainthearted and this is looked at in Part III.

Some Typical Wing Aerofoils

Some six arofoils are illustrated in figure 2.1, two each for the glider categories being compared in this series of articles. They have been designed by six acknowledged aerofoil designers who have contributed to our hobby. George Benedek of Hungary was probably the first to contribute his designs specifically for the modeller expressed in mathematical formulation and wind-tunnel tested. The five other more modern designers have used advanced computer technology, able to predict boundary layer behaviour and stalling. Brian Eggleston in Canada is one of the few designers working on Low Drag Aerofoils (LDA) to optimise the zoom /catapult launch used by the latest F1A international class free-flight gliders.

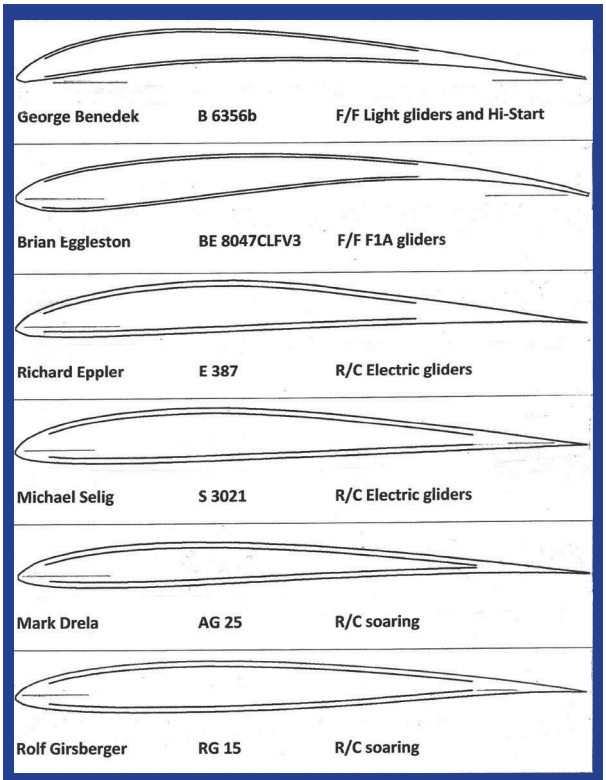


Figure 2.1 Aerofoils by recognised designers.

References

Aerodynamics for Engineering Students, E L Houghton and N B Carruthers.
3rd edition. Edward Arnold 1982. (Standard recommended text in undergraduate courses.)

Model Planes: Aerofoils and Wings, Martyn Pressnell. 1st edition. Robert Hale Ltd. 2015 (Further information: www.msp-plans.blogspot.com)

AeroPost

Do let us know your thoughts on AeroModeller and aeromodelling in general. We're happy to receive post to the ADH office address, or emails to editor@aeromodeller.com – all are read although you may not get a reply. Featured letters may be edited. Regards, Andrew Boddington

Frog Vespa Glider

Hi,
I have an old time partial kit, it's a Frog 'VESPA' FF glider from the 50's. I'm converting it to RC and plan to fly it in SAMs events. I have no idea when it was designed, can you (or your readers) provide the design year and any information?
Frank Corsaro, So. Calif. USA

Hi Frank, The accompanying sketch is from an August 1952 Frog

Advert in AeroModeller. Can anyone date it earlier than this? Andrew

CL Flying in Devon

Hi Andrew,
I wonder if you can help me. I fly control line and have a 9 acre field with a wonderful flat CL circle near Diptford, South Hams, Devon.

Would you mention in your wonderful magazine, that if anyone would like to fly there they would be most welcome and can contact me on 01803 844424 or 07771 727 051 or email aaeromod@gmail.com
Best Regards Adrian Bassett.

Adrian, Duly publicised! I hope you get plenty of like minded flyers, Andrew.

More Eaton Bray Memories

Hi Andrew,
I enjoyed reading the history of the Eaton Bray Model Sportsdrome, it brought back memories of my only visit there for the AeroModeller Rally/International Week in August 1950. My Cardiff MAC clubmate Malcom Bennett and I loaded our bikes, 'coffins' and camping gear onto the train at Cardiff station with tickets through to Watford. Arriving at Eaton Bray we were a bit disappointed by the half-finished look of the place, but the welcome was friendly enough

The F.A.I. Sailplane was the first event entered, with a blustery wind blowing across the field. I managed three flights between two and two and a half minutes which was enough for sixth place in a field of thirty four. We were not involved in competition again for the next three days and spent the time watching the CL events and exploring the locality. Sunday came with the A/2 Sailplane competition, a lovely summer day with no wind! My first flight, before lunch, was a straight up and down landing back on the field for four minutes and thirty four seconds. Needless to say the air was very benign! After lunch the wind began, not much but a gentle summer breeze. My second flight caught a thermal and drifted O.O.S .for a five minute max. I was using a DT but had knotted the rubber band which jammed in my rather primitive hooks, causing only partial tail tilt. The model was collected from Luton that evening by Ron Moulton. My two flights were enough for eleventh place in the competition. Malcom flew his OD glider into sixth place with a first flight of four minutes forty seconds followed by two over three minutes for an excellent result.
Memories of the other competitors have faded with the years, but I do recall that the O'Donnell brothers were campaigning a model covered in brown paper!
Best regards, John Phillips.

Hi Andrew,
With regard to Eaton Bray. I visited this wonderful place a few times as a lad. My flying pal Mac and I were driven there by his Dad, a Royal Air Force officer who knew Squadron Leader Harvey - or was it Hervey? I can't remember! He would have managed the sportsdrome as it was called.

I do remember that there was much more than flying facilities, such as a lake for boats. I wasn't that interested, too busy trying to get my K.K. Ajax and my Skyleada flying wing to do their thing. The Ajax performed nicely, but the flying wing (I must have had one of the very first kits) flew like an underpowered outhouse door!
I remember quite a few people whose faces turned up in AeroModeller being there, my pal and I nudging each other and saying "coo, isn't that so and so". On one occasion we met the great Eddie Keil - we all but genuflected. It really was too much for a couple of star struck kids.

Nowadays I do vintage (mostly) rubber powered models and CL Stunters. All the very best, and thanks for a great magazine, John (G.S.) Davies

Thanks to both Johns for their recollections. The piece in September AeroModeller on Eaton Bray has sparked many fond memories from model flyers. I hope we soon reach a stage where we once again have a national site open for all forms of model flying.
Regards, Andrew

RC Round the Pole

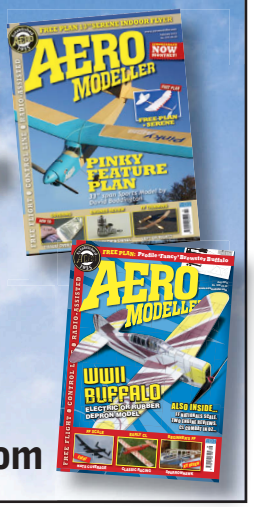
Hi from New Zealand,
I was interested in your article on RC Control Line Flying (April 2015). I am a member of Rotorua MAC and I suppose like most clubs we have a high proportion of older members. Gradually failing eyesight is a problem for a number of these flyers (Oh, the joys of getting old). In particular one of our members, Les, was devastated when his macular degradation forced him to quit flying. We tried electric RC slow flyers and park flyers, but it was no good, he just could not see them well enough.

In desperation I decided that maybe control line was the answer, but no, Les also has a gammy leg so couldn't return to the delights of the magic circle. I then considered control from outside the circle using a centre rotating bell crank arrangement and joystick outside the circle. Unfortunately Les was a dyed in the wool RC stick waver, so this was no good.
Finally I converted one of his RC models to elevator and throttle control and we flew the model with a single tether wire back to the fuselage and set up to balance like a CL model. It was now RC round the pole.

Les and his RC buddy Cliff, after the first flight of the RC RTP.

It flew great, but unfortunately did not last long (even though it was wing overed and looped) because he could not follow the model fast enough. As a method of satisfying the urge to fly RC when one has failing eyesight it is a real possibility. At 67 years old, mine are still good enough and I can still fly combat and stunt CL, but eventually I am sure I will have to try RC round the pole or outside the circle CL
Regards, David Thornley, Rotorua.

AERO MODELLER



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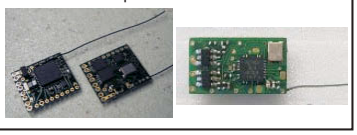

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Tail End Charlie

Fun at the Nats

Every year the Nats is 'the best ever', and this year saw me spend a while on the ADH Publications Stand where I was delighted to chat to lots of you over the weekend; I even managed to sell a few magazines and subscriptions!

The 'Chuck and Duck' was an exceptionally good event this year, with loads of fun and one or two minor 'incidents' but as far as I know nothing more. Lots of beautifully built traditional models powered by small diesels – lovely; pictures say more than words. Only darkness stopped play.

1950's Gifts

The Combat boys kindly gave me a couple of very old models to investigate. They are both expertly built to designs they and I cannot identify. Hopefully you can tell us more about the designers and builders? I date them as 1950s but perhaps they are a little more recent?

The flying wing is expertly 'over engineered' and looks like it was built by a cabinet maker with joints which would put a laser cutter to shame! It has a custom built tinplate tank with very small diameter vents and a 'pyramid' shaped outboard section. The airframe has an aileron/trim tab on the outboard tip. Strangely, the adjuster for this will be inaccessible once the model is covered. It's 31 inches span, mean chord is 7 ½ inches. The unusual annular fin is an integral part of the fuselage and looks weak – until you notice the piece of ply expertly let into the rear three quarters of it for strength.

The completed model 'Kobweb', has an engine mounting arrangement where the motor is apparently clamped between two parallel bearers – never seen that before. It has an enormous rectangular tank built in and is silk covered. Wingspan is 28 inches, chord 8 ½ inches. The elliptical tailplane has a large aerodynamically 'balanced' elevator (over balanced I suspect!)

It sports a number '23765' perhaps digging around in the SAME/BMFA archives will reveal the builder/pilot?

There is an unusual logo on the forward fuselage – Is this a club logo that someone recognises?

Feedback Loop

Peter Gain offered his thoughts on getting youngsters involved in the hobby and as he has personal experience with a similar model engineering scheme he knows a bit about it. He rightly says we need to look at the organisation of the successful schools model rocketry scheme covered in the same issue of AeroModeller.

Peter feels that for any chance of success an initiative should be included in the National Curriculum (However, John Jacomb and UKAYRoC's success stems from making sure that the competition links in with the syllabus, particularly Design and Technology – Editor), but also points out that many politicians have had little or no experience business and/or engineering having gone straight in to political careers or professions such as law or accountancy. They will need persuading.

So, does anyone know Nicky Morgan our current Education Minister (Oxford Law Degree!)?

A Real 'Charlie'

If you are looking for an excellent Christmas read, then buy 'A Tail End Charlie's Story' by H James Flowers. This very personal book conveys perfectly some of the wartime experiences of a Lancaster rear gunner. It goes on to recount his possibly even more terrifying peacetime career as a driving test examiner. As I've been in contact with him I know he really is the 'genuine' character portrayed in the book. It also conveys vividly what it was like to live through those times thus also appeals to those who are not 'aviation buffs'.

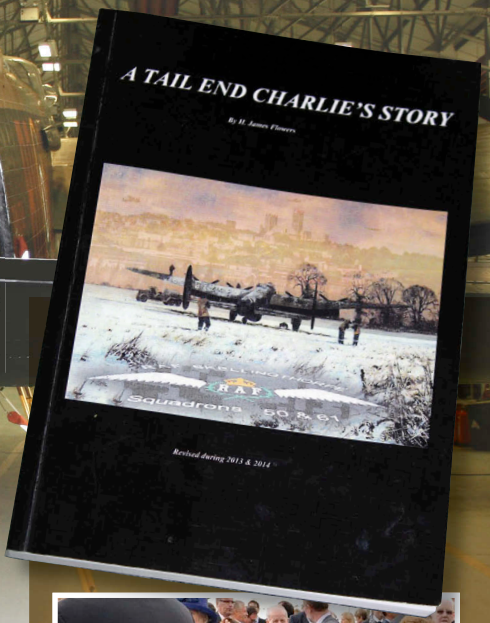
You can buy the book direct from James by sending him a cheque for £12 made out to 'H.J. Flowers'. His address is 35, Fillingham Crescent, Cleethorpes, DN35 0JB. Overseas postage will be considerably higher, so if you aren't in the UK, ask James before sending any money. Very generously, he is donating all the profits to 'The International Bomber Command Centre' IBCC being established in Lincolnshire. See www.internationalbombercommandcentre.com

He told me – '*I have already donated around £2,000, and I expect to present more when the Spire is opened on the 2nd of Oct (2015); this gives me much pleasure. By the way, my book can (also) be bought direct from the IBCC shop. Regards, James.*'

So, a great read, supporting an important cause – the perfect Christmas gift.

Once again, I'm out of space, but don't forget to send your thoughts to chrisottewell@anworld.com or by snail mail via the editorial offices. ●

By Chris Ottewell



Real 'Charlie' James Flowers is on the left of these veterans.

Fully prepared for a Nats evening!

Duck! A Ladybird glides in.

Unknown 1950's models

Unique engine mount and unknown logo

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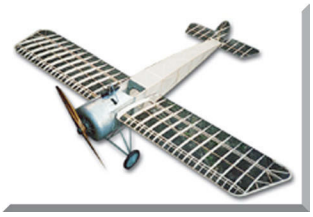


Fokker E.III (Rubber power)

A British National Championships winner, this 1/8th true-scale replica of the famous German WW.1 fighter aircraft features authentic airframe structure. It flies with scale dihedral and has a wingspan of 44.5" (1131mm). First Appeared in: FSM - Sep 2003

Plan: £12.50
Cut Parts: N/A

PLAN230

S.E.5a

Doug McHard's 1:12th scale free flight scale model with a wingspan of 27" Published in FSM November 2002 issue 36 2 sheet plan

Plan: £14.95
Cut Parts: N/A

PLAN421

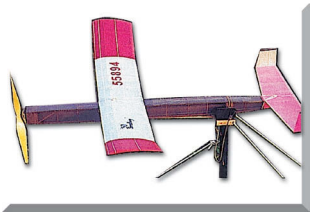
Free Flight Contest Models

Dixielander

Power F/F duration for sports or SLOP competition. 50" wingspan Originally appeared in Model Flyer Magazine Issue: Nov-00 Designer: G Fuller Power: SLOP

Plan: £7.95
Cut Parts: N/A

PLANMF34



Thirty Something

P30 Class contest rubber-powered model that also offers fine performance for sport free flight. Has a novel dethermaliser system. First Appeared in: Aviation Modeller International - May 1998.

Plan: £10.00
Cut Parts: N/A

PLAN201

Control Line

Grumman Guardian

C/L Carrier Deck, Class 1 for .40 size 2-strokes .44" wingspan. Originally appeared in Model Flyer Magazine Issue: Aug-01 Designer: J Marsh Power: .40 Class 1

Plan: £9.95
Cut Parts: N/A

PLANMF59

Midget Mustang

Ian Peacock brings the classic 1948 Dave Long design up to date for the control line clubman sport stunt enthusiast, 38".

Plan: £9.95
Cut Parts: N/A

PLAN449

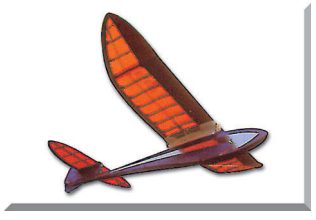
Liquidator

Frank Dowling's 34.75" model from 1969 updated by Richard Evans for today's vintage combat published in AeroModeller 921 (ADH003)

Plan: £9.95
Cut Parts: N/A

PLAN465

Free Flight Sport



Leprechaun 2

A true vintage 1949 design eligible for SAM events, this 67" (1702mm) wingspan design is the middle size of three versions created by Dick Twomey. For free flight fun. First Appeared in: AMI- June 1999.

Plan: £12.50
Cut Parts: N/A

PLAN105

Mercury 3

96" (2438mm) of sheer elegance for free flight or R/C assist and engines of .60-.90 cu.in. Rudder and elevator control surfaces shown. A real beauty! First Appeared in: Aviation Modeller International - October 1996.

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Cut Parts: N/A

PLAN116

Twelf

A 38.5" (978mm) span vintage style biplane for free flight, using engines in the 0.5-1cc range. Attractive lines and stable performance. First Appeared in: Aviation Modeller International - November 1998.

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