

## CONTENTS

The Squid its Sons and Other Stories by Alan Jack	88	Equinox Cup, Salisbury Plain, Sep 17-18	96
NFFS Symposium Report 2011	94	Croydon omission	96
Mongolia Cup, Ulaanbaatar, Mongolia, July 30 - August 5	95	FAI Free Flight World Cup	97
Canada Cup, Borden, Canada, Aug 13-14	95	Governor's Cup, Toszek, Poland, Sept 10	97
FF Holiday - Latvia, Berehove, Ukraine, Sept 9-11	95	Toszek Cup, Toszek, Poland, Sept 11	97
Black Sea Cup - Estonia, Berehove, Ukraine, Sept 13-15	96	Poitou F1E, Tourtenay, France, Sept 24-25	97
FF Holiday - Lithuania, Berehove, Ukraine, Sept 16-18	96	Correspondence	98
Bulgaria Cup, Pazardzik, Bulgaria, Sept 16-18	96	Southern Gala, Salisbury Plain, Sept 3	98
		2011 BMFA Free Flight Forum	98

## FFn DIARY

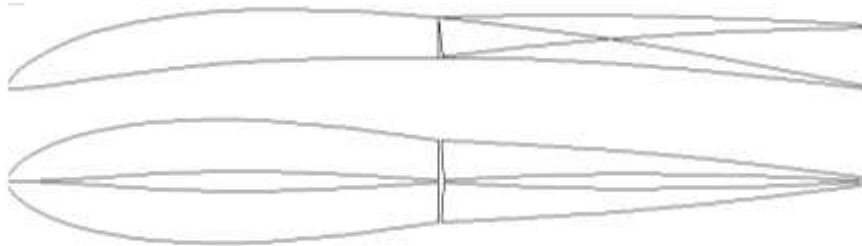
October 1-2 Salisbury Plain	BMFA Trimming Weekend. See FFn 1012 Must call Peter Tribe on Friday before 01225 862748.	October 16 Area Venues	BMFA 8th Area. CG Team (M'Engineer/Plugge), F1C(Buskell), F1Q(Plugge), F1G, Classic R/P (Plugge), Mini Vintage. Contact: Area Comp Secs.
October 1-2 Near Sheffield	BMFA 6th F1E. To be flown on Saturday or Sunday or one event each day, according to weather, to be decided on Sept 29. Contact: Ian Kaynes 01252 512538 or 07941852144.	October 21-23 Sentjerne, Novo mesto, Slovenia	Krka Cup. F1A, F1B, F1C, F1Q World Cup event. Contact: Dragan Stankovic, tel: +386 41 860 891, email: aeroklubkrka@siol.net
October 2 Barkston Heath	Grantham Grand Prix. Comb R, Comb G, Comb P, mini vintage, Comb HLG+CLG. Start 9am. See FFn 1107. All attending must book in on arrival and book out on departure even if leaving the site to retrieve models. Sticky buns free to all entrants plus possible free buffet. Contact Phil Ball, 01332 665361, phil.ball@ntlworld.com	October 22-23 Werrington Leisure Centre, Peterborough	BMFA Salisbury Plain. See October 1-2.  BMFA Indoor Trials for 2012 World Champs. 09.00 to 17.00. See FFn 1107.
October 8 Tass, Hungary	Cup of Szeged (postponed from July 10). F1A, F1B, F1C, F1P, F1Q. Contact: Gabor Zsengeller, t: +36 30953 2100, fx: +36 6231 0006 gabez@eastcom.hu www.fai1abc.com	October 22-23 Near Sheffield	BMFA 7th F1E. To be flown on Saturday or Sunday or one event each day, according to weather, to be decided on Oct 20. Contact: Ian Kaynes 01252 512538 or 07941852144.
October 8-9 Salisbury Plain	BMFA Team Selection 3. F1A, F1B, F1C. Contact: J Carter 01782 398816.	October 29-30 Mühlenthurnen, Switzerland	Eurofly. F1A, F1B, F1C, F1G, F1H, F1Q World Cup event. Contact: Walter Eggimann, tel: +41 31 819 17 84, email: eurofly@belponline.ch www.modellflug.ch
October 9 Crivelle- uttiglieria, Italy	18th Coppa Guido Fea F1G international. See FFn 1108. Aldo Manoni, tel 011 4110 132, alessandro_manoni@hotmail.com	October 29-30 Narrandera, NSW, Australia	Australian FF Society Championships. Postponed from June. F1A, F1C World Cup event. Contact: Phil Mitchell, tel: +61 24 38 43 217, fax: +61 24 36 78 316, email: filnoels@bigpond.net.au
October 11-12 Lost Hills, California, USA	Bissonette Cup of Denmark. F1A, F1B, F1C, F1E, F1P, F1Q World Cup event. Contact: Walt Ghio, tel: +1 209 478 8225, email: f1bwalt@comcast.net	October 29-30 North Luffenham	BMFA Salisbury Plain. See October 1-2.  Midland Gala. SLOP, Mini Vintage, F1G, F1H, F1J-1/2A, P30, CO2, E30, HLG/CLG. Contact: P.Ball 01332 665361.
October 14-16 Sentjerne, Novo mesto, Slovenia	Sentjerne Cup. F1A, F1B, F1C, F1P. Contact: Janko Groselj, t: +386 733 48222 or +386 41 731660, fax: +386 7 3348222, aeroklub@insert.si www.aeroklub.insert.si	November 5-6	BMFA Salisbury Plain. See October 1-2.
October 14-17 Lost Hills, California, USA	Sierra Cup. F1A, F1B, F1C, F1P, F1Q World Cup event. Mike McKeever, tel: +1 916 967 84 75, email: vamkeever@aol.com	November 6	Zapresic Indoor Open F1N. Contact: Robert Lesko, tel: +385 95 90 61550, fax: +305 133 57 976, email: mkz@mk-z.hr
October 15-16	BMFA Salisbury Plain. See October 1-2.		

## THE SQUID ITS SONS AND OTHER STORIES BY ALAN JACK

When I started to think about what to make next after the Odessa World Champs it was clear that my C's were going to have to get a lot better to compete. It seemed then that folders were the way to go. Folders with highly cambered sections have very thick effective sections when the wing is folded so the obvious route was to flap them too. Gil Morris's and Giesecking's efforts in this direction were unknown to me at the time but I make no claim to any originality of concept – to me it was a clear direction to follow with the real questions being could it be made to work and perhaps as important at a reasonable weight?

My original plan of October 2007 was to have a model ready for the Bulgaria Euro Champs in summer 2008 what a ridiculous plan that turned out to be!

I spent some time thinking about suitable glider sections and settled in the first instance on B6356. After fiddling with bits of paper with the section split at various points I came to see that a flap of 50% of the chord would make the best folded and flapped section because the bottom profile on most sections is quite close to a circular arc. The resulting sections with the flap up and down and then flapped and folded is shown below.



*Flapped and flapped and folded B6356 wing sections*

I wanted to see what the reaction to this brilliant effort was so I Emailed it to Chris Edge with the question “what do you think of this”. The reply was simply “with the wing folded it looks like a squid” – excellent just what I needed; a brilliant exposition on the finer aerodynamic points of my choice of section and the position of the flaps. That's how the model series got its name – I can see what he meant OK but cruel?

Not put off by this reaction I set about “designing” the model. I wanted it to have the same aspect ratio as my current models (circa 15:1) and as I thought about it I was really trying to make two wings each of 30:1. Of course the flaps are linked in bending to the fixed part of the wing but in torsion there is only a minor connection. Getting the stiffness is thus far harder than in a normal model and I knew that my normal models were already struggling to make the weight – this was not going to be easy!

It became clear that the speed of progress was not going to result in a model by the Bulgaria Champs and I felt that I needed some operating experience with the flap mechanics so the decision was made to run two programs; first a flapping only model and in parallel the full flapping and folding deal – thus “son of squid” was born. In fact the “son of squid” series now reaches 6 models with 6 sets of flap spar variants.

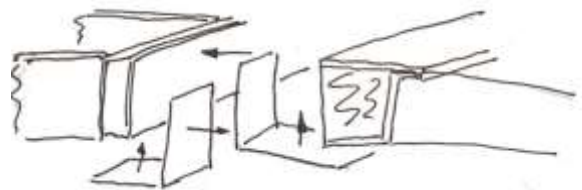
The layout of the various models is shown in the drawing on the next page. I shall now give an account of the development model by model.

**Son of Squid 1 (No23):** The model is more or less defined by three critical points; hinge, actuation and flap torsional stiffness.

The hinge needs to be flexible in rotation but stiff in both the horizontal and vertical planes. One must also think about a seal between the flap and fixed wing. In addition the hinge must be able to stand the rough and tumble that we subject our models to. I was well aware of the feats of engineering executed by Thomas (Koster) and Evgeny (Verbitski) making mechanical hinges and I knew that that was not a direction I wanted to follow not least because suspension of the flap at just a few span-wise points was bound to lead to high stress (concentrations) at these points when shock loaded. In my past I must admit to flying competition combat and in those far off days we used nylon “over-under” hinges [each section stuck alternately on the top and bottom of the fixed wing with the same element stuck on the opposite side of the elevator]. The over-under nature provides strength in the vertical plane and the tension under which they are applied provides strength in the horizontal plane. At this point one must decide where the hinge point should be; I decided for the first model that fidelity of the section, once gliding, should be the dominant feature and so I made the hinge axis coincident with the top of the flap/wing joint making the joint close during glide and open during power. Experience has shown this to be the wrong choice; a gap at the top of the joint seems to have virtually no

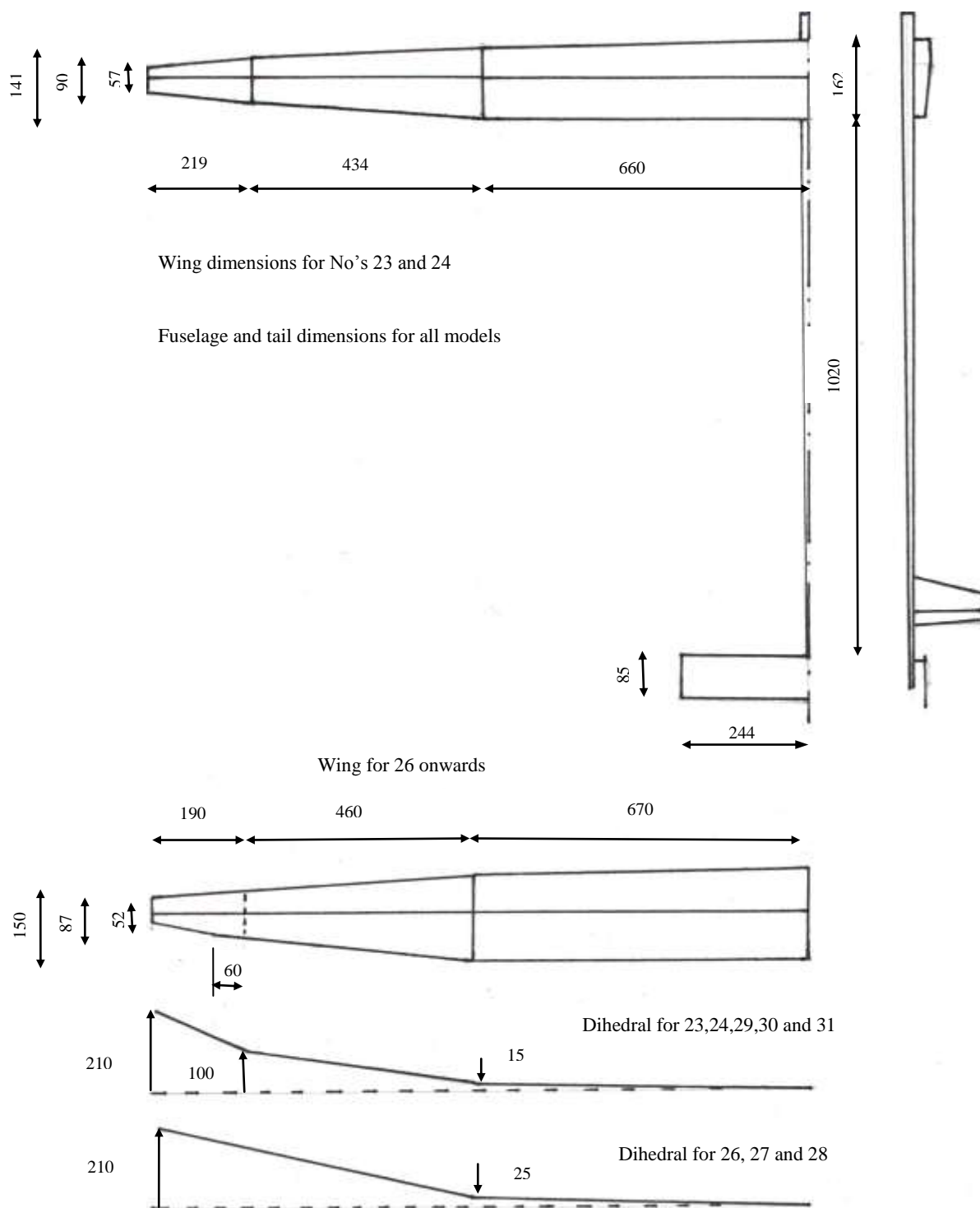
effect on the glide and closing the joint during the power phase makes for a stiffer wing when the model is travelling fast. I used Icarex as my nylon hinges for this first model (and subsequently for all my flapped models) and in this case the hinge sections were

glued onto the vertical faces of the flap and the top of the fixed wing spars and vice versa. The sketch below shows the principal but this actually relates to the later arrangements for flap and mainframe rear spar and a hinge position on the bottom surface.



*Icarex flap hinges applied to spar faces and spar bottom (or top for top hinge)*

These hinges don't turn the purists on but I have found them excellent with all of the right mechanical characteristics and in addition they are light and easy to apply. I found it practically impossible to fill the whole span with hinge so the seal is not perfect. I could fill a book with attempts to complete the seal in a way which is flexible and stands up to oil attack but as yet I do not have a perfect solution, best so far is another layer of Icarex laid straight across the joint. It turns out that a significant gap (circa 1mm) chord-wise between the flap and the fixed wing is useful to allow the gap-closed-position to be managed. The accuracy of the alignment of the mating vertical surfaces of the flap and fixed wing spars are critical in this respect and are very hard to manage with sufficient accuracy (at least for this ham fisted builder!). Leaving a small gap allows the gap to be “chocked” after assembly.

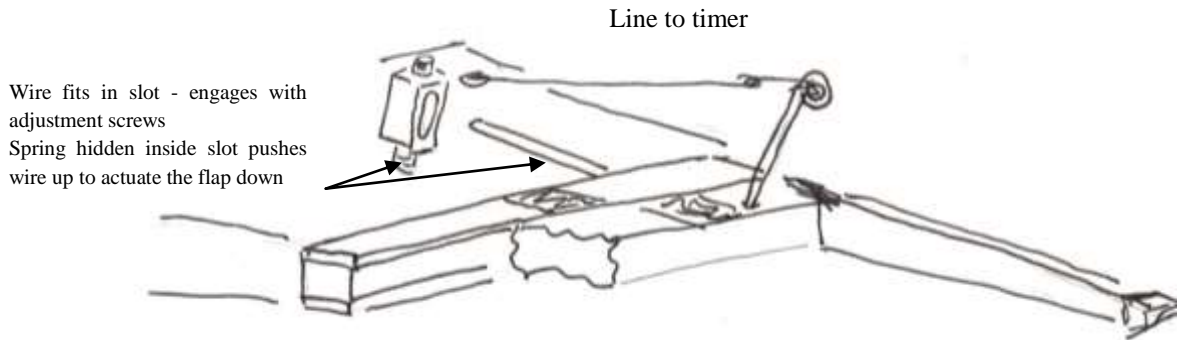


I decided early on that I wanted the flap position to be rather secure in both climb and glide. My 50% chord choice of split makes this a harder problem than it would be if the flap split occurred further aft (as per for instances in Verbitski's models). I also decided that I wanted the wing angle of attack on "Son of Squid" to be the same before and after flap operation. Consequently I chose for No. 23 to apply flap actuation at the root and at the first dihedral joint. This firmly holds the flap in place and using this arrangement I have had no signs of the wing flap moving for example "washing out" after a big stall (but I have with other methods - see later comments on No. 26 and the full Squid). The wing pivots around the joiner. The wing is pushed up at the rear of the

fixed wing by a spring-loaded lever which is in the pylon and which is, in turn, pulled down by a line connected to the timer (with a 3:1 mechanical advantage in the flap and the line connected to the lever by a pulley giving a further 2:1 advantage). There is another pin in the flap(s) as far behind the actuation point as the joiner is in front which slides in a horizontal slot in the pylon. There are adjustment screws to limit the travel up and also down in each wing half for the flap actuation and two opposing screws in the right half rear pin to allow differential wing incidence to be adjusted. The first version of the flap actuation at the dihedral break used a simple actuation arm and line running to a trigger in the pylon which was in turn attached to the main flap lever in the pylon and

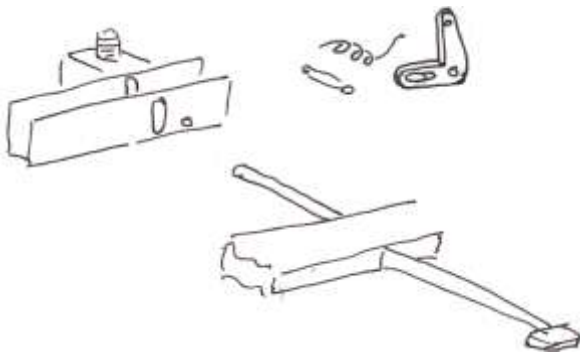
thence the timer. To set the position of the flap a 14swg wire arm, attached to the flap and running through the fixed wing rear spar, moved in a slot with a coil spring pushing the flap

towards the down position - as shown in the "part disassembled" sketch.



*First generation flap actuation (at the dihedral break)*

With an adequate flap spring at the dihedral break one had to apply a great deal of force to the line (circa 60mm of stretch on a 35lb monofilament line) to firmly pull the flap up - I was never happy with it! Subsequently for Sons of Squid 24 and 26 and for Squids 27 and 28 I developed a lever rotating around a chord-wise axis with a line to the same arrangement as before in the pylon. The lever is spring loaded by a mouse trap type spring and the arm from the flap runs in a slot in the lever as shown in the "disassembled" sketch.



*Second generation d-break flap actuation*

The nature of the lever is that the mechanical advantage in the flap up and down positions is about 4:1. In 24 I used a direct line but in the later models I couple the line via a pulley which has a further 2:1 advantage. The whole system fits inside the wing and is a far better arrangement than the first method. There was to be one further adventure (with 26) which helps point to the dangers.....read on!

The wing section for 23 (and 24) used the unfolded version i.e. B6356 with the flap at 50% chord and the flap up position so that the LE, flap spar bottom and TE are in line as shown above.

**Son of Squid 2; No. 24:** The flap spar torsional stiffness is a crucial element of the whole system. My first effort for 23 used 0.2 mm carbon top and bottom and a ply of 4 layers of 1.5mm balsa with grains alternatively at  $\pm 45^\circ$ . This was then carbon socked to give the torsional strength. After manufacture it felt very stiff but when it was put into the wing it was clear that it was only marginally acceptable. In addition 23's wing was 285g complete - too heavy - hmm more thought needed! For 24 I tried a box with 200g carbon at  $45^\circ$  for the sides, top and bottom. There are 1.5mm balsa sides and ribs at 15mm pitch. The whole is then carbon socked. This was better, more torsionally stiff although the same weight. Note that in this spar there is very little bending strength I figured that the bending loads would transfer through the hinge to the fixed wing. This

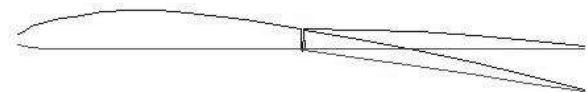
proved true and no damage to the spar (or even the complete wing) has occurred to 24 despite an extensive career of somewhere near 30, 7 flight, comps and all the trimming that goes with them.

**No 25:** is a conventional fixed wing model.

**Squid 1; No 27:** A first attempt at a folding flapper. Chronologically this was before No 26 but was completed rather later. I shall not dwell long on this model since as soon as finishing it I decided it was impractical to operate. It had a 3 panel wing (centres in one piece with the tips on each wing hinged to allow the fold) with transport arranged with the wings folded. This meant that for transport a screw had to be adjusted to compress the flap spring to allow permanent fold for transport and coupled to wing bolts and wing folding spring attachment it took 20 mins to put it together - not viable!. It all worked nicely when it was assembled and it was close to weight but never mind put it down to experience!

**Son of Squid 3; No 26:** For this model I made a serious attempt to get weight out of the fixed part of the wing by reducing the size of the main spar, by using thinner material for the D-box covering (160g in the inners and 80g cloth in the outers) and by missing out the tow leading edge I usually use. Subsequent flying experience showed that I had gone too far with the D-box covering! I was rewarded by a wing weight of 230g by far my lightest flapped wing to date.

This model had two further innovations in the wing section and in the flap construction. It will be clear from the original flapped 6356 sections that the under-camber curvature wastes wing thickness when folded and flapped. It is also poor from a drag point of view with its double re-entrant bottom surface when used for a flapper as I had done for No's 23 and 24. To this end I decided to make the bottom surface flat producing folded/flapped and just-flapped sections as shown below.



*Second generation flapped wing section*

As will be clear the effect is to make the wing slightly thicker at the main spar and thinner at the flap spar. Thicker at the main spar allows smaller spar flanges for the same stiffness/stress which is good, but a thinner flap exacerbates the torsional stiffness problem. The flap is hinged at the bottom surface and is thus open when in the flap down position. How would the model glide with this compromised bottom surface of two flat elements and the open top of the hinge. The answer was very well as evidenced by several to-the-ground test flights and its first fly-off - all more than 7 mins (which is rather good for me!). I did not realise it at the time but sections a bit like

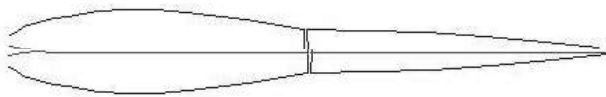


this style had been developed by Allard Van Wallene for his flapped gliders.

The other innovation for this model was flaps made using 80g spread tow carbon covering. The construction used 0.2mm carbon backed by 1.5mm balsa for the front of the flap with 1.5mm ribs at 15mm pitch and the skin made of the carbon. On first construction these looked very promising indeed being ultra stiff and of usable weight.

Using this 230g wing with the monocoque flaps the model was completed right on the 750g weight limit. The flaps were so stiff that actuation at the root alone was deemed sufficient (using the arm to push up/down the centre of the wing as per No's 23 and 24). This model then had a very eventful life!

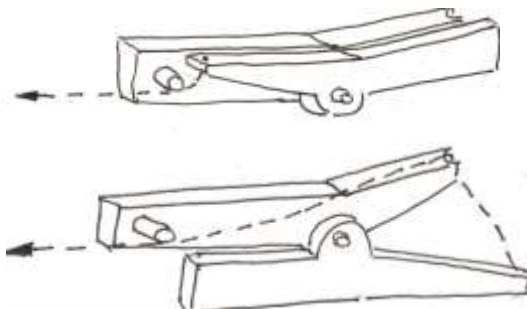
**Squid 2; No28.** Poor old still born Squid 1 had at least laid a few pointers to its progeny. No 28 abandoned the 3 panel wing in favour of the usual separate wing halves. The model, as shown has a four panel wing. The section is the same as used on 26 (as above) and when folded (as shown following) it has a much thinner profile than the original ideas using flapped B6356. Question: does it still look like a squid?



*Squid 2's folded wing section*

The outer section of the fixed wing is made in the usual fashion with spar and D-box. The inner D-box of the fixed wing however is hollow and made in a layup from three layers of carbon cloth – 200g at 45deg, 80g spread tow at 0/90 and the heavier of Mike Woodhouse's supply of unidirectional cloth. This is drawn, in a wet lay up, around a wing-form-male-mould and clamped into a two part female mould with an overlap between top and bottom layers of 3mm (chord-wise) at the top rear of the section. In retrospect this was too much cloth faas the result is near bullet proof.

This hollow D-box then houses the wing folding system; this is powered by 10 strands of 3mm by 160mm long black FAI rubber. The rubber is attached to a line which goes around a pulley thus the line to the wing moves half as far as the rubber is stretched thus doubling the force on the wing fold. The tension at full fold in the line to the wing is 25lb. I had worked out that the drag of the wing tip when at right angles to a side slip of 30mph was 30lbs in my actuation line at the poorest moments that occur during unfolding and that is what had driven my design thoughts. In practice that seemed a little too much force in the line and I reduced it slightly. The path for the line attached to the rubber/pulley system is via a PTFE tube, over a pulley to direct the line upwards when the wing is nearly folded, then over a stationary guide when the wing is fully folded (which directs the line downwards to the folded wing lever arm and hence provides a lot of force to start the wing unfolding) and then to the lever arm in the folding wing. That's a bit of a mouthful so perhaps the two diagrammatic sketches with the wing open and folded may help.



*Squid 2's spar wing folding pivot and actuation line (dotted)*

The method of passing the line over a stationary arm came from Gil Morris; Trevor Payne also used a similar system in his open power model folder. This system combines to produce a lot of torque in the initial phase, keeps the torque high until the wing is about half unfolded and then progressively drops the torque to a minimum at fully unfolded. On the plus side the torque is high where it needs to be and yet provides a relatively soft landing for the wing as it hits its final position but the minus side is that the pulley and stationary guide over which the line passes abrades the line and the line needs replacing every 20 flights or so (although the latest line – 150lb Chinese origin spectra – shows no sign of fraying after many more than 20 flights).

The wing pivot bearings are formed at the LE, at the main spar and at the rear spar of the fixed wing portion using alloy plates and pins running in brass bushes. They are arranged to leave a small clearance between the wing halves when the wing is folded. Obviously one wants the gap between the folded wings to be zero but some tolerance is needed to allow for cap strip thickness and irregularities. Controlling this to be as low as possible is probably very important but is far from easy. The hinge line is skewed slightly so that the LE of the inner and outer panels line up. I thought this necessary following some published work by Geiseking who suggested that having staggered LE's was very drag inducing and I wanted to use a tapered wing and some leading edge sweep back. Getting the hinges in the right place was not easy and resulted in much "tearing of hair" – worse in my case as there is not much of it (hair that is) left! I was afraid that shock loads would be problematic for the attachment points for the hinges but as yet this has not proven a problem.

The flaps in Squid 2 were built chronologically before those in 26. They employed a torsion spar but this time made in a moulding process. The mould is formed from an upside down U section aluminium base on to whose side two steel strips are bolted. The strips are slotted so that the amount they protrude above is adjustable which allows the depth of the spar to set. Thus the bottom of the mould is the bottom of U section aluminium, the sides are the protruding parts of the steel strip. The mould is closed by another aluminium strip. The core of the spar is formed from blue foam. This is first cut oversize. Then it is held in one side and the bottom (attached using double sided tape) and sanded to width. The second side is added and the foam is sanded to thickness. The carbon (one layer of 80g spread tow at 0/90 and another at +/- 45) is then impregnated on a plastic film and then forced into the open-top mould with the foam core. The top of the spar is then formed by folding one side of the carbon over the foam and on top of the (also folded) 2<sup>nd</sup> side. In the inner flaps the width of the flap spar is constant. In the outer it is tapered in width by inserting a balsa wedge along one side. The construction method is simple and produced very nice spars, lighter than anything so far, and they seemed very stiff. In practice when built into the flap these spars were only of adequate torsional stiffness and the flap was much less stiff than the monocoque structure used in 26.

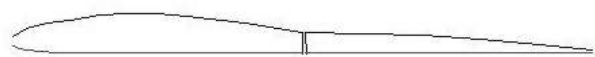
In a flapper the link in the flaps between panels needs to be able to slide spanwise as the flap deploys. In a flapping folder the link needs to both slide spanwise and rotate about the panel rotation centre. In both Squid 1 and 2 this was solved by a wire, bent to form a right angle, running in two tubes, the first is placed fore/aft and is mounted on the inner panel and the second in placed along the trailing edge of the outer panel. During the unfolding the wing needs to unfold before the flap deploys. Again this was a big cause of worry before I built the model, would the whole thing jam up, would the flaps need to be held up until after the wing unfolded? In practice it all happens naturally, the folded wing holds the flaps up without drama

(against the reaction of the flap actuation spring) until the wing is nearly completely unfolded.

In the flappers the angle of the wing relative to the fuselage stays more or less constant but arranging for this did not seem practical (at the time) in the folding/flapping wing. Instead the flap deploys downwards and the wing moves to a significant angle of attack (relative to the fuselage) in the glide position. Originally there was no attachment of the flap to the fuselage at the root with the entire actuation of the flap at the dihedral break. This was later altered – see the flying experience notes. To slightly offset the high angle of the wing to the fuselage in the glide position the front part of the wing was set at  $-2^\circ$  to the fuselage – another mistake – again see the flying notes.

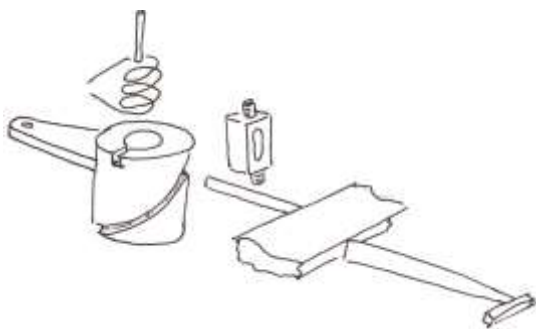
The wing was provided with screw adjusters, for flap up and flap down on, each wing and in addition the root has an adjuster on the right hand panel for differential incidence. This makes 5 screw adjustments to set the wing up. Clearly any differential placement of the flaps makes both camber and roll adjustment. There is a lot to set up! Again this was to prove major issue in flying these models.

**No 29 and 31:** I decided over the winter of 2010/2011 that I needed to make a better effort at a flapper. The section for 26 and Squid 2 was really decided in favour of the best fold position when used in a folding flapper. For the case of the pure flapper it was obvious that a drag reduction could be achieved for the climb by using LE upsweep (i.e. Phillips entry). Accordingly I did a quick redesign of the section to come up with that shown below. Not much changed but it proved to provide a big climb height improvement.



*Third generation flapped wing section (more symmetrical entry)*

The flaps were built as per Squid 2 but I used 200g cloth at  $\pm 45^\circ$  in company with 80g spread tow at  $0/90^\circ$  in the flap spar. I also developed a Mk3 flap actuation system (as shown in the blow up sketch) and this has proven to be the best yet. Much lower actuation forces are needed and it virtually will not back drive – i.e. the flap is held very securely with only a small spring force. The flaps were also actuated at the root in the same style as previous flappers with an arm in the fuselage making the wing keep more or less the same angle with the fuselage with flaps up or down.



3<sup>rd</sup> generation flap actuator

### Flying Experience

**No 23:** This started with trying to make No 23 fit for use in the Bulgaria Eurochamps. This was to prove impossible despite lots of effort both before and during the Champs. The eventual non-use was down to worries over the quality of the engine (a geared Cyclon which was running 3000 rpm down on my Hummers on the same prop) and weird glide behaviour. The glide tended to wander excessively with extremely tight glide

circles in both directions in a single flight. The climb was without vice if not particularly fast – was the lack of speed down to the engine, or the weight (the model weighed 780g), or were flaps no real drag advantage, or.... Conventional modern FIC's with a relatively cambered section have a marked tendency to fly "S" patterns – nose up at first, then nosing down to maybe go flat. Perhaps this is due to the pitching moment of the section. This means that extra decalage is required when the model is travelling fast, that produces a distinct nose up in the acceleration phase before the speed gets high. This necessitates a launch at less than  $90^\circ$  which given the best trim and dynamics noses up into pure vertical. It's much easier to judge vertical consistently than a lesser angle when launching and 23 showed that the far lower camber of the flaps-up-section removed the "S pattern" and the necessary nose up initial phase. This has proven true of all of the flapped models that I have built. Less decalage probably means less drag in addition to anything that comes from the lower camber section. The other good point that came up from flying 23 at these Champs was that the systems worked consistently and the wing was able to stand up to the rough and tumble of flying.

On returning home and spending some careful hours examining the rigging it became clear that the wing had been set up with a fair amount of "wrong-way-round" roll trim in the glide (i.e. assisting spinning in to the right). This explained the odd turn of the model either dragging left with the "warp" or trying to spin in to the right. The set up had marginally more flap deflection on the right hand wing and a little wrong-way-round differential incidence. All of these features are screw adjustable and so easily corrected but it was a lesson that all these screw settings need real care to get right – lots more degrees of freedom may not be an advantage! 23 then had its first (and last) competition experience in the 3<sup>rd</sup> trials of that year. Having already qualified for the team in the first two trials a little experimentation was welcome. It did not distinguish itself however because the glide had periods of near dethermalising decent interspersed with periods of really good glide in the same flight. I started to think turbulator and after the trials I added a piece of 1/64 ply applied with double sided tape (which adds about 50% thickness to the 1/64 ply). The glide immediately improved and became consistent in quite a few long trimming flights that late autumn. That became standard on all of the flap models and on the Squid thereafter. Interestingly I measured the climb height (using an altimeter) before and after adding the turbulator and it was identical within measurement error. The climb trim was also unaffected. The glide trim tolerated about 1 turn more incidence (on an 8BA screw).

**So to the 2009 season and No 24.** This model has a stiffer flap spar (in torsion) was better made (its hard to get a really smooth and accurate section through the wing/flap transition) but it was even heavier at 795g. It trimmed really easily at Lost Hills but it dropped a flight in the Maxmen mostly because I had not fully sorted the glide. I then flew it through the two internationals in Australia and it flew really well winning both contests and only dropping a flight when I dt'd early. It is really easy to launch - just straight up with no tendency to nose over and tolerance to miss-launch in any direction – quite the easiest to fly I have had since the flat bottomed MVA101 section days. I then felt confident about flying it in Croatia at the World Champs but my goodness that was a bitter pill! Thinking back on it I was too precious. Any mishap at a Champs with an FIC gets lots of publicity and it's hard to perform after an "event" and the inevitable "good wishes" from the onlookers (did I say goulds....). Not enough flying at first round time and I fell slap bang into the terribly thin air over the mown square (as the heat of the day built up at this relatively high altitude site). The result was 2.45 off a perfect climb and transition; that's not pleasant! Bad got worse as I stumbled

from one bit of sink to the next finally being texted from the UK(!), as I walked downwind to pick up the 7<sup>th</sup> round duff less than 5 mins after the flight, that I had blown a place for the team ... who said instant comms are essential!

I flew 24 through the trials and it (partially) redeemed itself flying very well throughout. This event had several flyoffs and the model was making circa 6 mins +. It was not a match for Pete Watson's best (but few are!) but it was pretty good none the less and left me feeling that down to weight it might have been truly competitive. It also made the Poitou flyoff (won so impressively by Neill Allen) but it was unlucky enough (or poor enough in thermal centring) to catch the edge of the thermal and drift out of it and down.

**26:** The latter end of the season saw the completion of No26 with its monocoque flaps. Discussion with my "mechanical consultant" had centred on the possible weakness of the glue joint between top and bottom skins at the TE. The flaps were certainly extremely stiff in torsion but it was obvious that torsion introduced shear in the TE and I had only used a 0.2mm carbon TE. The criticism was proved correct on its very first "flight", a test glide which stalled, dropped the right wing slightly and broke the TE joint at the right root, hmm! It was a simple fix though and the model trimmed out easily and it was obvious that its still air looked really good including a dt'd 7min plus in late evening air during trimming without any obvious assistance. A trip to Barkston for the last area event saw it making the flyoff and then produce a 7.50 flyoff. It did not climb exceptionally but it seemed to have an outstanding glide. At this time the model weighed 755g i.e. it was down to weight even though at the time it had a Verbitski engine (which, with a brass liner, is by far the heaviest of the geared engines). Unfortunately it glided into the middle of a tree and damaged the wing (once more) taking two lumps out of the dbox and damaging both flaps (again at the TE but now also separating the skin from the ribs in several places). The model was clearly capable of the best still air time of any model that I had built and it fully justified the section with its two flat bottom underside.

In the rebuild of 26 during the winter I solved the skins breaking apart at the TE problem by using a strip of icarex around the joint, this has held together to date despite some extreme provocation.

This takes the story forward to 2010. The Lost Hills gig had me ready with a rebuilt 26 wing and at last Squid 2 ready to go. The original flap actuation on 26 had been at the root only. I had decided that the concentration of all of the torsion restraint at the root was part of the problem with respect to damage of the flaps in incidents. To get over this I made the decision to replace this with the mousetrap style restraint at the dihedral beak that has been used successfully on 24. Unfortunately, as it turned out, I removed the actuation of the flap at the root. Three flights into trimming it at Lost Hills saw a (very slight) over-bunt transition and the model slowly wound up into a near vertical dive. It was one of those that "lands" at your feet and one has a fleeting thought to catch it only being discouraged by the rising crescendo of slipstream noise as the speed builds up for its final coup de grace. It was obvious that the flaps had (torsionally) bent under the (fast) glide forces. The previous "contusions" that the flaps had experienced had certainly weakened them but they were still quite stiff. For instance they were still much stiffer than any of the flapping A2's I had had the joy of tweaking. An F1C must certainly be built to have very high stiffness in the flaps. It also showed that loss of camber at the root was much more dangerous than the same at the dihedral break. This "landing" was a major problem because it meant that Squid 2 had to await mods because it was similarly equipped. This was a shame because the extensive trip with all its flying experience to Australia and NZ that

immediately followed had to be done without Squid 2. Worse still I managed to crash the repaired (yet again) 26 in the first flyoff in Australia when no systems worked after the engine cut. I still don't know why that was since the timer was OK, I can only guess I must have put the lines on the wrong triggers. This meant that the 4 internationals down under had to be done with just No. 24. It went well as usual apart from one "hole" in Aus until the first comp in NZ when it started to glide very eccentrically. This turned out to be a broken spring in the root flap actuator. This did not affect the climb where the arm is held hard down by the timer line but meant that the flaps were undefined at the root – I was very lucky this did not result in the same fate as 26 had suffered at Lost Hills.

**Squid 2 (28)** was quite easy to trim once I realised that having the wing at -2° meant that the engine had to have down-thrust of the same amount to put the engine in line with the wing. (without that it S patterned). It finally made it to a competitive flight at the BMFA Centralised comp at Barkston in the summer. A very odd affair this, one rounds flight in a brisk wind, agreement with my only other competitor to hang off till a flyoff then agreement to dt at 1min after the engine flood. I used the Squid despite the still high wind because I had found during testing that it made very little difference to it. Experience in trimming had been more or less straightforward despite the horrible feeling of launching what seems a half finished model (where are the tips????) and with the question "will the wings open" beating its drum. The model tends to roll about 90 deg anticlockwise as seen from the back (torque reaction I presume) in the first second (or less) then stops rolling and climbs more or less straight up. It looks incredibly high as the wings open but one must take into account that with the wings folded it's a much smaller model than normal. Any lurid flights so far have been with the model veering left, taken together with the roll this tends to end up in a massive wingover and the model then "bunting horizontally". The wings have always opened (so far) despite some very iffy and very fast moving situations when they are asked to do the necessary. In this first flyoff I launched it on the money and it did a very nice flight to win albeit only because it dtd for 45 secs (from memory) from 1 minutes glide!

Sadly a model assembly error with my old favourite conventional model in the 6<sup>th</sup> round of the Eurochamps in Turkey put paid to the flyoff chances for the Squid, very frustrating because it had been going so well in practice. So to Poitou and the 5 min flyoff; here I launched it close to straight up but with a very slight left bias and sure enough it was the wingover option. Pulling out left and far lower than full height it took a fair time to settle which put it behind the air. It caught up however and thermalled its way to max. The seven minute flyoff launch was good and a straight up climb and excellent glide in light lift saw the seven minutes still at climb height, very nice and worth the three years effort to see it work at last!

The verdict thus far on the Squid is that all the systems work, the wings unfold even in extremis, the launch may be critical (5 flyoffs; two duff climbs although my trimming average is much better than 3 good out of 5), lots of potential and lots of wow factor for the crowds. This last is a negative for me, I could do with being a bit more under the radar! At first getting the model to transition nicely was not easy. The model bunts with the wings folded, one then needs just long enough bunt delay to let the model slow down so that when the wings open the model does not pitch up into a stall. All my models now have (my own) electronic timer so the bunt delay can be precisely timed, a major advantage over fiddling with disc alignments.

Its final effort to date was in the last flyoff at the world champs in Argentina. Prior to the Champs I had test flown it quite a bit at home. The climb was still on the money but I found I had to

de-elevate the glide a bit from the Poitou flyoff setting. In the end this may have been its undoing because in the Champs flyoff, at least to my eye, it got the highest of anyone but it was significantly out-glidged by the three who finished above. Perhaps this was down to the fact that my model drifted to the left of the three models that beat me, perhaps the glide needed to be pushed a little more back to its Poitou setting or perhaps it just does not glide as well as these other models – who can say? It may be of interest to note that because of the morning freezing fog and day time wind on the prep days I only made seven test flights in total in Argentina before the comp and two of them were the two world cup contest flights. If a realistic effort is to be made in the show down flights at a Champs everything has to be just so and I feel the hardest thing to get really right is the glide trim. Our weather and sites make that a really difficult challenge – no amount of changing the trials makes any difference to that level of preparation!

**No's 29 and 31:** For 2011 I built two new flappers (with a slightly altered wing section as noted above). I also built Squid 3 (No. 30) but that has yet to reach a satisfactory stage of development. No 29 has flown quite nicely in a number of comps but it is 31 which has proven to be the better option. This model climbs higher and more consistently than any model that I have flown. I used it through the rounds and the first flyoff in Argentina and also in the two flyoffs at the first trials and throughout the model has flown really nicely. The section change (more symmetrical entry) has definitely resulted in a faster and thence higher climb and it does not seem to have affected the glide adversely. I did let it down at Poitou where I launched it with the engine rich into poor air and the subsequent off-run failed to get it high enough for the max but this model is the best that I have ever built (OK I hear you say that does not count for much!).

Are flaps and folding+flaps worth all the effort? One of our most senior and respected fliers asked me “why I bother with all this flap stuff when your models are no better for it” severe perhaps especially when he was probably failing to realise just how bad my conventional models are! In the end however the best bit of all of this has been the continuous drive to fiddle with new stuff – so much fun for me as an aeromodeller in the conventional sense rather than just being a flier. It will thus come as an apparent contradiction when I say that I would very much support a no flaps, no fold, no bunt, no VIT and no gears F1C even after all of the development effort but that's very much another story!

## NFFS SYMPOSIUM REPORT 2011

We noted last month that this year's NFFS Symposium Report has now been printed and is available via FFn.

David Lacey was the editor of this report and in his introduction he states his aim of including items for the “intermediate” modeller, i.e. less than expert.

The first article is “New comers and free flight modelling” by Glen Simperts. He discusses ways of exposing the public to FF activities including new events that may be flown in public places or attract media attention.

“Capacitor- powered free flight and the Science Olympiad” by Chuck Markos describes his development of an indoor electric model based on the idea proposed by Vin Morgan for capacitor power storage. The class could be a replacement for the rubber power model that has been retired from the Science Olympiad. Capacitor models could have high performance and would need to be limited by a minimum weight or payload. Chuck also sees potential for capacitors in outdoor electric.

“Disjointed memories of Brokerspar” is an account of some episodes in Hardy Brodersen's early life in aeromodelling.

M J Whittemore presents “The story of a longstanding club – The C.I.A Central Indiana Modellers”.

In “It's all in your head” Louis Joyner describes his approach to design and building.

“Trimming classic power models” is Bob Hansford's account of how to do exactly that, including a range of detailed tips.

“Gliders – a primer for the intermediate modeler – Get in on the fun” by Gene Ulm is a detailed description of building and flying catapult or tip launch gliders. Gene notes that both form of gliders open up participation to many people who could not be competitive in launching conventional HLG.

“A compilation of historical papers on rubber model flight trimming” is the editor's assembly of articles from NFFS Digest and earlier Symposium Reports. The original articles are described as being virtually unobtainable, but that is only true for those without their own collection of the original documents. The articles include “Making it fly” by Bill Warner, “Things everyone already knows about rubber motors” by Don Hughes, “What to do after the dope dries” by Bob White, and a trio by Jim O'Reilly: “3 trim schemes for rubber powered models”, “Compound hinge angles for folding props”, and “Bob Hatschek's Hiborks – an all-wire reverse Montreal front end”

Jim O'Reilly then presents an article on “CG v Tail volume coefficient” which is a revision of an earlier article of his and also reproduced are his three earlier papers on the same subject from 1983, 1985 and 1995.

In the same theme of re-presenting earlier information from NFFS Digests, Bob Stalick gives a range of sketches and tips on specific gadgets or techniques.

Returning now to new articles, Tom Iorger contributes “Covering materials for intermediate modelers”. He describes the properties of most current materials. The same theme is then continued by Ralph Smalley and Dave Lacey in “Covering the free flight model” which includes tables of adhesive and covering weights, given in the ludicrously mixed units of grams per 100 square inches.

“What next” by David Mills is a discussion of how to progress to more advanced models and the decisions involved.

“Estimating rubber cross-section requirements for small scale and sports models” by Don Snull discusses the possible motor sizes for rubber scale. Stew Meyers continues the same type of theme for electric scale models in “Single lipo electric power for small FF scale and sport models”. This includes detailed photos of all parts of the electric power system.

In “Lubomir Koutny, his scale models and his wonderful aeromodelling book” Bernard Guest describes the life and models of this Czech flyer.

“Sensitivity of flight time vs aspect ratio and plan form shape” is a description of an analytical study by Jon Champion. He does not define what type of model he is considering and it appears to be just a consideration of sink rate. He appears to equate span loading to the planform shape, without any consideration of effects due to washout, etc.

“Single cylinder engine balance” by John Shannon describes the analysis of vibration and how to minimise the out of balance forces.

“Airfoils for F1C power models” by Brian Eggleston describes the development of low drag aerofoils for F1C power models in the same way that Brian has worked on LDA for F1A gliders. He gives comparisons of sections he has developed against the standard Verbitsky BE50 and, by a combination of higher climb and making an optimum bunt strategy, he predicts a duration increase of 50 seconds with his new aerofoils.

In “Low drag airfoil F1A 3D analysis” Claudio Bognolo describes his development of LDA aerofoils in conjunction



with Roland Koglot. Claudio has used the XFLR5 3D aerodynamic code for analysis of the complete 3D model rather than XFOIL which gives on the 2D section characteristics. The XFLR5 process is described in some detail.

“Some reflections on hand glide tests, wind gradients and momentum” is a discussion by Peter King of possible effects of wind on glide testing.

“Whatever happened to May 99 Tan II?” by Ron Pollard considers the energy storage of May 99 Tan II when originally assessed as sensational and more recent tests. The recent results had one sample at a similar energy to that when measured originally and another one with a high value, a puzzling effect of age and variability.

“Rubber mechanics” by Aram Schlosberg runs through testing techniques, variability and breaking-in motors.

“A short history of our F1E adventure” by Paul Seren describes the past five years of flying F1E by Paul and his wife Daniela. In particular Paul describes his development of an electronic steering method based on measuring the rotation of a conventional magnet. Certainly it produces an electronic system which is immune to roll and pitch sensitivity, unlike the electronic systems using direct measurement of magnetic field.

“Energy management and the free flight modeler” by David Lacey describe show motive power energy and performance have increased over the years.

Mike Fedor chaired the 2011 model of the year selection committee and their choices were as follows, all presented with plans:

Gollywock vintage rubber	Wally Simmers
6 panel F1B with BE profiles	Tony Mathews
F1C folder	Artem Babenko
F1G	Eugene Gorban
Amalgam IHLG	Jim Buxton
Limited Pennyplane	Tom Iacobellis
Peanut Mitsubishi 1MF1	Tom Hallman
Genie Redux ½A/F1J	Jean Paillet
F1Q	Matti Lihtamo/Sergei Vorvihost
DiscUSKid OHLG	Jan Langelius
Tandem A6 indoor	Bill Gowen

Rex Hinson chaired the selection committee for the 2011 NFFS Hall of Fame and selected the following: John O'Donnell, Bill and Bob Hunter, Larry Davidson, Dave Linstrum, Bill Vanderbeek, and Larry Coslick.

The new NFFS Symposium Report is available through FFN. There will be a review next month, for those who want to order immediately the costs including postage are: UK £24, Europe £27, worldwide outside Europe £29.80. Cheques payable to FFN or pay via Paypal on the FFN website. If you wish to pay your FFN subscription at the same time the costs for one year remain at £20 UK, £22 Europe, £27 worldwide. A subscription renewal form will be included in FFN next month.

## **MONGOLIA CUP, ULAANBAATAR, MONGOLIA, JULY 30 - AUGUST 5**

### **F1A 29 flew**

1	S Evsukov	RUS	1290
2	C Won	PRK	1266
3	D Zemerov	RUS	1214
4	I Kwang	PRK	1211
5	A Ganzorig (J)	MGL	1184
6	A Vasilchenko	RUS	1173

### **F1A-Junior 1 flew**

1	A Ganzorig	MGL	1184
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### **F1B 12 flew**

1	W Yunsheng	CHN	1320	+356
2	S Shagdar	MGL	1320	+340
3	G Mijiddorj	MGL	1305	
4	B Chimed	MGL	1280	

### **F1C 8 flew**

1	A Kaitchuk	RUS	1257
2	B Bayaraa	MGL	1245
3	E Batzorigt	MGL	1242

## **CANADA CUP, BORDEN, Canada, Aug 13-14**

### **F1A 6 flew**

1	T Boyadzhiev	CAN	1269
2	S Rosenzweig	CAN	1168
3	T Tzvetkov	BUL	1098

### **F1B 7 flew**

1	T Mathews	CAN	1374
2	J Clapp	USA	1362
3	G Simon	USA	1356

### **F1C 3 flew**

1	Y Shvedenkov	CAN	1380
2	F Schlachta	CAN	1267

## **FF HOLIDAY - LATVIA, BEREHOVE, UKRAINE, SEPT 9-11**

### **F1A 52 flew 17 full scores, 16 F/O**

1	Y Titov	RUS	900	+300	+420
2	N Lomov (J)	RUS	900	+300	+359
3	A Bezchasnyy (J)	UKR	900	+300	+277
4	E Kantipaylo	UKR	900	+300	+265
4	Y Grushkovskiy	UKR	900	+300	+265
6	V Bezchasnyy	UKR	900	+300	+254
7	V Bardin	RUS	900	+300	+194
8	G Dobrydnev	RUS	900	+300	+160
9	V Chigir	UKR	900	+300	
10	O Kokh	RUS	900	+247	
11	S Burenok	RUS	900	+193	
12	A Koropato	UKR	900	+161	

### **F1A-Junior 10 flew**

1	N Lomov	RUS	900	+300	+359
2	A Bezchasnyy	UKR	900	+300	+277
3	A Khoroshev	RUS	882		

### **F1B 37 flew 15 F/O**

1	A Ribchenkov	GEO	900	+300	+420	+364
2	A Shagun	UKR	900	+300	+420	+327
3	A Bulatov	RUS	900	+300	+420	+314
4	V Goryachev	RUS	900	+300	+420	
5	A Novikov	RUS	900	+300	+334	
6	V Romanchenko	UKR	900	+300	+315	
7	I Vivchar	UKR	900	+300	+305	
8	R Khuziev	RUS	900	+300	+291	
9	T Useynov	RUS	900	+300	+250	
10	V Starostenko	UKR	900	+300	+184	

### **F1B-Junior 2 flew**

1	M Vivchar	UKR	852
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### **F1C 23 flew**

1	D Stakhanov	UKR	900	+300	+420
2	B Ivanov	UKR	900	+300	+346
3	S Katyba	UKR	900	+300	+300
4	E Verbitsky	UKR	900	+241	
5	Y Vasiliev	BLR	900	+214	
6	V Timoshenko	UKR	900	+163	
7	A Babenko	UKR	894		

### **F1P-Junior 5 flew**

1	A Ponomarev	UKR	889
2	V Dovgopoly	UKR	878

## BLACK SEA CUP - ESTONIA, BEREHOVE, UKRAINE, SEPT 13-15

### F1A 44 flew 9 F/O

1	N Lomov (J)	RUS	930	+300
2	Y Titov	RUS	930	+259
3	A Petrov	RUS	930	+195
4	A Koroparov	UKR	930	+181
5	S Burenok	RUS	930	+180
6	A Korobitsin	RUS	930	+170
7	V Bardin	RUS	930	+147
8	M Kosonozhkin	RUS	930	+146
9	V Ishutov	UKR	930	+71

### F1A-Junior 7 flew

1	N Lomov	RUS	930	+300
2	D Mezentsev	UKR	898	

### F1B 33 flew 10 F/O

1	T Useynov	RUS	960	+320
2	W Ghio	USA	960	+283
3	V Starostenko	UKR	960	+278
4	N Vivchar	UKR	960	+264
5	V Kurabtsev	UKR	960	+257
6	N Kovalenko	UKR	960	+241
7	E Yakukhin	RUS	960	+180
8	S Degtyarev	RUS	960	+167
9	I Yurtseven	TUR	960	+165

### F1B-Junior 2 flew

1	M Vivchar	UKR	840	
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### F1C 23 flew 7 full scores, 5 F/O

1	R Truppe	AUT	960	+300	+502
2	V Alersandrov	UKR	960	+300	+444
3	E Verbitsky	UKR	960	+300	+433
4	A Babenko	UKR	960	+300	+429

### F1P-Junior 6 flew

1	A Ponomarev	UKR	910	
2	A Viazov	RUS	779	

## FF HOLIDAY - LITHUANIA, BEREHOVE, UKRAINE, SEPT 16-18

### F1A 36 flew 11 F/O

1	V Stamov	UKR	930	+354
2	S Gromov	RUS	930	+287
3	V Bardin	RUS	930	+279
4	A Naloev	RUS	930	+262
5	G Mkrtchyan	RUS	930	+256
6	E Kantipaylo	UKR	930	+254
7	E Sankin	RUS	930	+252
8	B Van Nest	USA	930	+240

### F1A-Junior 6 flew

1	A Khoroshev	RUS	930	+239
2	T Kiss	ROU	930	+210

### F1B 26 flew 13 full scores

1	A Burdov	RUS	960	+420	+330	+457
2	O Kulakovsky	UKR	960	+420	+330	+400
3	A Bulatov	RUS	960	+420	+315	
4	R Khuziev	RUS	960	+420	+296	
5	A Ribchenkov	GEO	960	+384		
6	W Ghio	USA	960	+375		

### F1B-Junior 1 flew

1	P Lomov	RUS	218	
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### F1C 18 flew 8 full scores

1	M Kharitonov	RUS	960	+420	+382
2	R Truppe	AUT	960	+420	+359
3	O Grishkov	UKR	960	+420	+187
4	V Timoshenko	UKR	960	+420	+153
5	S Savukhin	RUS	960	+310	

### F1P-Junior 4 flew

1	A Ponomarev	UKR	929	
2	G Radchenko	UKR	726	

## BULGARIA CUP, PAZARDZIK, BULGARIA, SEPT 16-18

### F1A 25 flew

1	N Nikolov	BUL	1290
2	R Blagojevic	SRB	1286
3	D Zulic	SLO	1282
4	N Bardarov (J)	BUL	1249
5	M Tica	SRB	1240
6	B Bardarov	BUL	1231
7	S Savic (J)	SRB	1208
8	M Mandichev	BUL	1169

### F1A-Junior 7 flew

1	N Bardarov	BUL	1249
2	S Savic	SRB	1208

### F1B 8 flew

1	R Blagojevic	SRB	1320
2	V Savov	BUL	1281
3	S Sabo	BIH	1269

### F1B-Junior 3 flew

1	S Savic	SRB	1228
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### F1C 6 flew

1	E Atanasov	BUL	1149
2	N Z Nikolov	BUL	1051

## EQUINOX CUP, SALISBURY PLAIN, Sep 17-18

### F1A 12 flew

1	J Cooper	GBR	714
2	J Carter	GBR	685
3	C Edge	GBR	676
4	P Williams	GBR	669
5	B Baines	GBR	651
6	W Colledge	GBR	600

### F1B 12 flew

1	M Woodhouse	GBR	750	+418
2	P Martin	GBR	750	+155
3	M Woolner	GBR	735	
4	C Chapman	GBR	693	
5	P Brown	GBR	688	
6	T Tyson	GBR	618	

### F1C 4 flew

1	N Allen	GBR	750
2	A Jack	GBR	732

### F1Q 3 flew

1	A Shepherd	GBR	750
2	T Grey	GBR	729

## CROYDON OMISSION

The Croydon history published in August FFn unfortunately missed out Dave Hipperson's 20 years in the club. He flew proxy at the 1965 World Champs, qualified and placed 7th in the 1972 European Champs in F1B, went on to qualify and fly in various Euro and World Champs 1979, 1983, 1985, 1986. Ran the complete Free Flight Nationals in 1979 and 1983 and collated the SMAE Area results for twelve years, a longer period than anyone before or since. He was a member of the FFTC for many years and as its Chairman in 1983 invented and got adopted the two classes that became and still are, the two most popular events flown in the UK and in the case of Slow Open Power around the World. Only one other Croydon member ever invented a class.

During the time when it was reported that the Club was exclusively FAI, Dave competed in and won many CDH and Open rubber events. From 1979 to 1984 he ran a series of events for his favourite class, The Open Rubber Trophy, injecting it with a re-birth of interest which lasted for many years.

## FAI FREE FLIGHT WORLD CUP

Correction: The Trofeo Citta di Capannori World Cup results in FFn last month showed the wrong date for the competition in Italy. It had been moved and was flown on August 20-21

Top 4 results shown for each person.

### F1A

1	M Kosonozhkin	RUS	158	VJ-1	ER-1	HL-1	BC-1
2	R Koglot	SLO	158	EM-1	LC-1	SL-1	MM-1
3	Y Titov	RUS	147	LA-1	NL-1	EM-2	BS-2
4	N Lomov (J)	RUS	145	BS-1	ZM-1	LA-2	MK-8
5	P Findahl	SWE	133	MV-1	BC-2	AZ-2	SL-6
6	A van Wallene	NED	125	ED-1	VS-2	PT-4	ER-4
7	R Holzleitner	AUT	125	CR-1	VJ-2	LC-3	CL-4
8	R Blagojevic	SRB	121	IK-1	SF-1	SM-6	SA-8
9	D Rossler (J)	CZE	118	SE-1	SU-2	DZ-4	VJ-13
10	V Stamov	UKR	112	LU-1	ZM-3	WS-3	AZ-4
11	S Makarov	RUS	105	HL-2	EM-3	MK-3	NL-13
12	W Colledge	GBR	103	DK-2	SE-2	PT-7	EQ-6

### F1A-Junior

1	D Rossler	CZE	156	SU-1	VJ-1	SE-1	DZ-2
2	W Herwig	GER	154	VS-1	DK-1	EF-1	ED-2
3	N Lomov	RUS	153	ZM-1	LA-1	BS-1	MK-2

### F1B

1	A Ribchenkov	GEO	158	MM-1	LA-1	IC-1	ZM-4
2	B Silz	GER	156	ER-1	VJ-1	LC-1	VS-24
3	A Burdov	RUS	149	LU-1	MK-1	EM-2	LA-16
4	D Sokolic	CRO	144	ED-1	DZ-1	MS-2	IK-4
5	R Blagojevic	SRB	140	SA-1	BU-1	DZ-2	IK-3
6	W Ghio	USA	139	BC-1	AZ-2	BS-2	MV-2
7	O Kulakovsky	UKR	138	AN-1	MM-2	EF-2	LU-2
8	B Eimar	SWE	138	EM-1	DK-1	MV-3	HL-9
9	A Andriukov	USA	133	AZ-1	HL-1	EF-4	MM-5
10	I Yurtseven	TUR	131	MR-1	IC-2	SF-2	AN-5

### F1B-Junior

1	B Skibicki	POL	152	BL-1	SU-1	LC-1	HA-1
2	S Savic	SRB	151	VJ-1	SM-1	EM-1	BU-1
3	J Ancans	LAT	150	HL-1	MV-1	ED-1	BC-1

### F1C

1	L Patocs	HUN	156	VJ-1	DZ-1	SL-1	LC-2
2	R Truppe	AUT	154	BS-1	CR-1	MS-1	MR-1
3	G Zsengeller	HUN	154	SM-1	HA-1	SE-1	DK-2
4	A Babenko	UKR	148	AZ-1	WS-1	ZM-2	BS-4
5	V Sychov	SLO	146	EM-1	SA-1	SM-2	WS-4
6	P De Boer	NED	133	DK-1	PT-2	SE-2	EF-5

### F1Q

1	A Lindner	GER	152	ED-1	ER-1	HL-1	
2	M Lihtamo	FIN	150	BL-1	DK-1	EF-1	SE-1
3	R Assmuss	GER	112	ER-2	VJ-2	ED-3	

### F1P-Junior

1	A Ponomarev	UKR	151	BS-1	LA-1	ZM-1	LU-1
2	T Malkhasyan	USA	100	AZ-1	MM-1		
3	G Radchenko	UKR	70	LU-2	LA-3		

### F1E

1	A Anca (J)	ROU	161	OB-1	LX-1	PC-1	NM-9
2	A Roux	FRA	158	RA-1	NM-1	CS-1	PC-2
3	S Kubit	POL	125	ZB-1	GC-2	OB-4	RB-4
4	M Straffellini	ITA	124	RB-1	NM-2	PM-4	OB-8
5	P Chaussebourg	FRA	110	CP-1	MC-2	PM-11	TC-15
6	F Mang	AUT	107	RB-2	TC-3	GC-3	FB-8
7	P Brocks	USA	100	ZE-1	CA-1		
8	J-L Drapeau	FRA	96	CS-2	NM-3	PC-6	ZB-8

### F1E-Junior

1	A Anca	ROU	155	NM-1	LX-1	PC-1	OB-1
2	M Niculescu	ROU	133	MC-1	FB-1	PC-3	LX-6
3	K Szymanska	POL	114	LX-2	TZ-2	NM-3	

## GOVERNOR'S CUP, TOSZEK, POLAND, SEPT 10

### F1E 19 flew 7 F/O

1	K Zurowski (J)	POL	500.00	+109
2	S Kubit	POL	500.00	+99
3	F Mang	AUT	500.00	+95
4	J Orel	CZE	500.00	+82
4	E Mang	AUT	500.00	+82
6	V Gorynin	UKR	500.00	+78

### F1E-Junior 6 flew

1	K Zurowski	POL	500.00	+109
2	M Stryja	POL	500.00	+9
3	J Matisek	SVK	493.33	

## TOSZEK CUP, TOSZEK, POLAND, SEPT 11

### F1E 23 flew

1	K Zurowski (J)	POL	500.00	+198
2	I Treger	SVK	500.00	+184
3	J Orel	CZE	500.00	+119
4	M Pieczka	POL	500.00	+105
5	S Bochenski	POL	490.00	
6	W Dziuba	POL	445.83	

### F1E-Junior 8 flew

1	K Zurowski	POL	500.00	+198
2	K Szymanska	POL	390.28	

## POITOU F1E, TOURTENAY, France, Sept 24-25

Report by Ian Kaynes.

The weather for this year's F1E World Cup events in France was very summery. The first day was effectively calm all day and would have been ideal for flat field events, and indeed between F1E action Paul Seren was flying his very nice F1P-sized F1Q model, and catching most flights on DT.

After a lot of consideration the launch position was established on part of the western slope, but on an area rather south of the usual position. This was claimed to have the benefit of a slight extra slope to help juniors launching but the disadvantage was that just down the hill the slope was much flatter than on the usual area and several model then landed on that before reaching the main steeper slope. The max was sensibly kept at two minutes for all five flights on Saturday and just three French flyers completed a full score. The flyoff, from near the bottom of the slope, was won by Didier Chevenard. It was notable how many French are flying F1E – while the international side had one Romanian, one Brit, two Germans and four Italians, the remainder was 27 French flyers, of whom 12 were juniors. What it is to have good weather and good hills reasonably near to a larger population of active modellers.

The prize-giving was held in the Tourtenay Pigeonnerie and followed by the usual pleasant meal, in this case soup followed by duck, cheese, and apple pie.

Windfinder.com, after successfully predicting the calm on Saturday was forecasting a south west breeze on Sunday. The same launch area was used and the wind started off at about 2 m/sec but increased to 5 or 6 by the last round. While more usual for F1E flying the wind did not eliminate problems on the launch site, since the local slope lift was very gentle until the model managed to progress down the slope to the steeper part. Quite a few flights were nail-bitingly close to the edge of the hill – or landed on it. After a two minute max in round one, the target was raised to three minutes for the last four rounds. Again there were just three flyers in the flyoff – Didier Chevenard again, joined by Robert Champion and Maurizio Tomazzoni. Flown from low down the slope, Didier looked to have found the best air when the two others flying after him stayed low. Eventually they also worked into some lift and Champion found the most powerful help to win.

While the competition had no effect on the F1E World Cup first or second places – Andrei Anca having won with three wins and lots of bonus points from winning the largest competitions of the year and Alain Roux being runner up with three wins but fewer bonus points – the competition was wide open for third place. The question now is who might go to Lost Hills for the final, Danish, event in the F1E World Cup. Peter Brocks must be favourite to add another win to his previous two Lost Hills wins, but if Stanislav Kubit, Mara Straffellini or Pierre Chaussebourg win the event they would take third place.

### 7th Poitou Charentes Sept 24

#### F1E 35 flew

1	D Chevenard	FRA	500.00	+108
2	J Chabot	FRA	500.00	+90
3	M Rigault	FRA	500.00	+70
4	A Roux	FRA	498.33	
5	M Delfabro	ITA	490.00	
6	R Masson	FRA	484.16	
7	G Brochard	FRA	483.32	
8	P Seren	GER	481.66	

#### F1E-Junior 12 flew

1	A Lefebvre	FRA	480.83	
2	A Trachez	FRA	469.16	
3	C Trachez	FRA	401.66	

### Poitou – Moncontour, Sept 25

#### F1E 34 flew

1	R Champion	FRA	500.00	+240
2	D Chevenard	FRA	500.00	+215
3	M Tomazzoni	ITA	500.00	+166
4	M Straffellini	ITA	492.20	
5	A Roux	FRA	477.77	
6	A Lefebvre (J)	FRA	467.21	
7	C Trachez (J)	FRA	466.66	
8	S Trachez	FRA	457.77	

#### F1E-Junior 11 flew

1	A Lefebvre	FRA	467.21	
2	C Trachez	FRA	466.66	
3	E Godet	FRA	411.10	

## CORRESPONDENCE

*Times As Well As Places Please From Martin Dilly*

First, before the usual response of “Put up or shut up...”, could I mention how grateful we all are that people volunteer to do the CD-ing jobs without which contests would be impossible.

However, in free flight what we are all interested in is duration and it's that that decides the results. Could I beseech CDs to let us all know what times the people collecting the prizes did, as well as just announcing the places. I suspect the prizewinners would quite like to have their efforts recognised like this, too, and those of us who don't feature in the ceremony would be interested to hear how much we were beaten by.

### SOUTHERN GALA, Salisbury Plain, Sept 3

#### Combined Glider 8 flew

1	J Carter	Grantham	7.30	
2	D Cox	Crookham	7.20	
3	D Brawn	Biggles	6.57	
4	M Gibbs	B&W	6.56	

#### Combined Rubber 12 flew, 6 flyoff

1	J Cooper	Biggles	7.30	+10.11
2	P Ball	Grantham	7.30	+4.38
3	D Beales	Croydon	7.30	+4.22
4	A Beales	Croydon	7.30	+4.18
5	T Tyson	Crookham	7.30	+3.49
6	A Morehouse	Vikings	7.30	+3.20

#### Combined Power 6 flew, 4 flyoff

1	C Strachan	Biggles	7.30	+6.53
2	T Grey	Crookham	7.30	+6.37
3	C Redrup	Crookham	7.30	+3.43

#### Club Champs Team Scores 11 teams

Club		C/G	C/R	C/P	total
1	Biggles	75	100	100	275
2	Crookham	88	62	83	233
3	Grantham	100	92		192
4	Croydon		83		83

#### HLG/CAT 9 flew

1	J Pennington	B&W	6.39	
2	P Seeley	B&W	5.58	
3	M Cook	Crookham	4.23	
4	P Tolhurst	Hayes	4.22	

#### F1H 8 flew

1	J Cooper	Biggles	9.45	+5.30
2	J Oulds		9.45	+1.16
3	J Hook	Crookham	8.25	

#### F1J/1/2A 3 flew

1	M Lester	Birmingham	10.00	
2	S Dixon	Birmingham	9.11	

#### FIG 6 flew

1	R Vaughan		10.00	
2	P Brown	Grantham	9.32	
3	C Chapman	B&W	9.29	

#### CO2 3 flew

1	P Seeley	B&W	6.00	
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#### E30 6 flew, 3 flyoff

1	T Shepherd	Crookham	6.00	+5.25
2	T Grey	Crookham	6.00	+3.52
3	C Strachan	Biggles	6.00	+2.36

#### Mini Vintage 5 flew, 3 flyoff

1	T Shepherd	Crookham	6.00	+5.29
2	C Redrup		6.00	+3.37

#### SLOP 3 flew

1	D Cox	Crookham	4.59	
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## 2011 BMFA FREE FLIGHT FORUM

The 28th BMFA Free Flight Forum will start at 10 a.m. on Nov. 13th, the day after the AGM, at the Barcelo Hinckley Island Hotel, A5 Watling Street, Hinckley, LE10 3JA. Every year the Forums cover much of the technology that makes today's free-flight so fascinating. The following papers and speakers will be included and one or two more are expected:

Anodizing	Simon Dixon
Playing with Pistachios	Paul Seeley
Catapult Glider technology	Phil Ball
Model Aircraft technology - A review of invigorators as an aid to stable flight	Neil Cliff
Printing tissue for models	Paul Seeley
Experiences with electronic timer design and use	Alan Jack
Model aircraft construction with an emphasis on FIG	Neil Cliff
Model construction using brown paper	Ivan Taylor
Experiences in BMFA Electric in 2011 and the rule changes for 2012	Chris Strachan
Rice pudding skin pullers - 2011 rules for E30	Peter Tolhurst.

Lunch will be available and the finish will be at around 5 p.m. 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 F/F Championships. Pre-booking will ensure that you get a seat, so send your cheque to BMFA, Chacksfield House, 31, St. Andrews Road, Leicester LE2 8RE, payable to 'BMFA F/F Team Support Fund'.