Newsletter of Aberdeen & District Soarers **May 2002**

ADS Short Finals

Harassed by Hurricanes
Maryculter site update
ESCs, BECs, etc
Perfect daze...

EDIFICATION *Derek Robertson*

Newsletter time again folks! Apologies to all for being a month late with this issue, but several factors came into play, with a general lack of material to commit to print being top of the list. But what the heck …… we'll just settle for a slim version this time around. For my own part, I haven't had much time to spare of late, with increasing domestic demands, a mother with a dickie ticker and an ageing car with a dickie tickover! (classic cases of wear and tear ……. but I think I can save the car.)

Well, the winter meetings at the Cove Bay Hotel have come and gone with a mixed degree of success, starting on the 15th Jan with a video evening and an opportunity for the handfull present to feast their eyes on examples of some hair-raising dynamic soaring, slope flying and scale models …as well as a jolly good natter too!

The "electric forum" meeting on the 12th Feb attracted the best turnout, with around a dozen or more members present, many bringing along new models. Neil Masson and George Whelan both appeared with, as of yet, untried ARTF "Elipsoids" …… beautifully finished 110 inch electric soarers of Czech manufacture. John Barnes confessed to having bought one of these models too. Interestingly, all three aircraft sport exactly the same colour scheme, which should make things interesting if all of the above gentlemen turn up at the club site on the same day.

Both Alan Stewart and George Thomson had brought along home-built stuff. Alan's recently completed offering was a scaled-up version of the diminutive "Flinger" hand launch glider, boasting an 85 inch wing span and fitted with a speed 600 motor ……. yet another electric glider! George had put together a cute little sports model, the "Tiger Shark", built from a free plan (I think). A 36 inch span, aileron controlled low-winger powered by a speed 400 motor which has already taken to the air and, by all accounts, performs very well.

ADS's own "Mr Electric", Mike Pirie, armed with Moto-calc on his laptop, was kept busy working out motor, battery and prop. combinations for a variety of future projects, as well as fine tuning some of the above. This was of particular interest to Graham Irvine, who had brought along a partially completed fuz for a quarter scale IC powered "Piper Cub" that he was keen to convert to electric. Moto-calc suggested several options, ranging from some very exotic motors down to strapping three speed 600's together!

(I'm going to digress a little here to report some breaking news! I'm sure that most of you are aware that Mike has invested quite heavily in Astro and Hacker motors for his electric models, but what you won't know is that fairly recently he was seen throwing out the entire contents of his broom cupboard …….. evidentally he harboured an ambition to have the first "brushless" wife in ADS!)

The final indoor meeting on Tuesday 12th March, a presentation on competition rules by George Whelan, was unfortunately very poorly attended. If it proves to be difficult to get hold of speakers for next year's winter meets, then I guess we'll have no-one to blame but ourselves!!! …….. 'nuff said. Thanks go to George for providing comprehensive coverage on the mysteries of competition organisation, and to Mike for spending an evening on the laptop helping sort out other peoples' problems.

British summer-time's here! Light nights, warm sunshine, model in one hand and cocktail glass with the little coloured brolly in the other ...yes, time for my "reality pill" again! The first event of the new season, the slope fly-in on April 28th, has come and gone with the weather well and truly putting a spanner in the works. Cairn 'O' Mount was the chosen venue, and despite the dodgey weather forecast, 7 optimists made the journey. Only three brief flights were squeezed in before low cloud and heavy rain sweeping up the valley reduced visibility to less than 25 yards. Most unfortunate, considering how dry the preceeding weeks had been.

But wait, there have been some good days already, with Calder Park, Brimmond, and the proposed new flying site at Maryculter all

Cover Pic: *Two vintage models at Calder Park! George Thomson enjoys yet another great flight with his well-proven electrified Junior 60-ish model. Shot taken as the photographer dives to the right, ADS photographic practices rivalling blindfold bungee jumping for thrills and excitement. We get the best!*

The adventurous GoreTex Gang hiding out at the Cairn in April, enjoying typical Aberdeenshire spring weather while attempting to liven things up by exhorting the photographer, perched precariously on the edge of the abyss, to "Back a bit, back a bit....."

having been visited over the last few months, and by God, we have a few photos to prove it!

I would guess that the most significant news so far this year, has been the possibility of ADS obtaining a new flying site at Maryculter, thanks largely to the sterling efforts of committee member Jim Ruxton. More details and a date for the EGM should appear in the following pages.

Most members have already visited and test-flown the site, which has proved to be no problem at all for those using thermal soarers or electric gliders, models with light wing loadings and low landing speeds. However, surface ruts and tufts would leave heavier, faster flying machines more susceptible to landing damage, and unless very large wheels are used, ROG's (at present) would be virtually impossible. My point in mentioning this is that, although potentially a far superior site, a fair degree of "gardening" would be required in order to make it as versatile as Calder Park.

Right, waffle over, so here's what we have for you this time round.

ESC's, BEC's and Servos *Mike Pirie*

The Electronic Speed Controller (ESC) is the solid state device which provides the proportional speed control required for our electric models. The units we use in our gliders and small electric models invariably incorporate a Battery Eliminating Circuit (BEC) which, by tapping into the flight pack battery, generates a stable 5 volt supply used to power the receiver and servos, thus eliminating the need for a seperate receiver battery.

Because the BEC circuitry has to 'lose' the voltage in dropping down from say, an 8.4 volt flight pack, to the 5 volt BEC supply, losses occur in the form of heat. The more cells in the flight pack, the more the losses (i.e. heat) will be. This process combined with the high speed switching process in the main part of the controller should make it obvious why speed controllers require cooling for effective operation. Most controllers will shut down when overheated.

The high speed switching mentioned above (switching the motor on and off very quickly) is the means by which the controller varies the speed of the motor. At full throttle, the switch is at ON all the time and the controller will stay cool. At no throttle the switch is OFF all the time. At part throttle settings, the switch is changing between ON and OFF at high speed, and depending on the proportion of ON time to OFF time, the motor receives an 'average' voltage and runs at its required speed. In this mode, the controller is subject to heating up.

Now we come to the servo question. How many servos can my BEC controller support and what happens if I add one servo too many? The answer to the first part should come from the user instructions provided with the controller. The makers of the more expensive controllers will specify a BEC current as well as indicating how many servos the controller will support (this varies according to the flight pack voltage). As for the second part of the question, I will try and lead you through the sequence of events which would result from a servo overload.

Suppose we have a controller with a specified safe BEC current of 1.5 amps. Now if we have four servos connected, each with a stall current of 500 mA, operating under maximum load (current draw would be 2 amps), the voltage of the BEC system will collapse, just like a flat battery would, and the receiver, now without a power supply, would give up the ghost. It would briefly send wild signals to the servos before shutting down completely, together with the servos. However, the servos are no longer moving, so the BEC voltage recovers to 5 volts again, and the receiver resumes working – until the next time!

So at the end of the day, it's up to the individual to check out the specifications and recommendations that come with the controller and if consideration is being given to extra servos, then the stall currents of those servos would have to be known (not always easy to find I believe). One way of overcoming the problem, if there's any doubt, is to buffer the BEC system with a small receiver pack (50 – 100 mAh) connected in parallel with the BEC system. This gives you a form of dual power supply and at the same time maximises the permissible load on the system since the buffer battery can cope with the peak currents which would flow should a servo stall. In this set-up, any twitches and glitches which occur occasionally due to voltage surges are eliminated altogether.

And finally, for those of us (including myself) who get a bit concerned when we replace a single centrally mounted aileron servo with two wing mounted servos. The reason for the concern being that we're now using four servos with an ESC which is designed to support only three. In my opinion, this is permissible, as each individual aileron servo will be drawing half the current of that being drawn by the centrally mounted one. Also in our favour is the fact that the elimination of control-run friction is going to reduce current draw even further. But don't hold me to this! ***MP***

[Mike is right, minimising control run friction is absolutely essential for model survival and reliable control response. Some ARTF models are supplied with solid wire drives which run through plastic tubes with compound bends (e.g. steerable nose wheel), very high drag and a surefire recipe for early doom! Note that servos with coreless motors draw many amps if stalled, much more than non-coreless types. ***JB****]*

A dressed to thrill Mike Pirie gets his Phase Lift airborne on Brimmond. Has anyone else noticed that Mike is to hats what Amelda Marcus was to shoes!

Quietly enjoying a high degree of success with electric models, George Thomson with the dinky little Tiger Shark and what looks like a cross between a Lazy Bee and a Junior 60, the vintagesque Magpie. You've probably guessed, yet another Speed 600 motor, this time with an 8 cell 2100 Nicad pack making up the powertrain.

Are we having fun? A study in concentration as Neil Davidson's Pico Cub almost eludes the photographer. Unfortunately, during a subsequent flight the model eluded him completely, never to be seen again... but a replacement is almost ready to take to the air.

John McConville's mix 'n' match electric soarer is made up of the fuz. from a Graupner Pink Lady, with the wings replaced by those from an Algebra, powered (as I recall) by a Speed 600 on 7 cells. A significant improvement over the original, this model thermals as well as most 100" gliders.

Simplified Blood Knot

Broken tow line? This knot is designed to make the smallest knot possible when joining two pieces of line so that the line runs smoothly through winch turnarounds.

1. Tie the two ends together with a simple overhand knot.
2. Form a loop and begin turning one side around line. Leave twists loose.
3. Make 3-4 turns, then pull loop through the centre opening.
4. Hold loop with teeth while pulling ends to tighten knot.
5. Clip loop off close to knot.

It's a well known fact that the Aberdeen Aeromodellers dress code insists upon the wearing of a boiler-suit, but beware, Mike Pirie may be trying to introduce a mandatory "silly hats" rule for ADS!

Maryculter site update *Mike Pirie*

By now most of us will have at least visited the proposed flying site at Maryculter. Those of us who have flown there have already enjoyed the wide open spaces and the booming thermals. The site has a lot going for it as a thermal site, and it might even bring the club a much needed boost to thermal soaring. Slope soaring is also on offer. To the north of the site is a gentle south-facing slope where we might possibly get slope lift, and in the right conditions, might enjoy some nice evening thermals kicking off from the rocky face. The local buzzards are already wise to this one! There is also a likely looking hill not too far away to the south which is presently being investigated. We will keep you informed.

The farmer is keen to see us use the facility and has offered to carry out several items of work to make life a little easier for us. You will, by this time, have received the notice of the EGM, which you are reminded, is at the Cove Bay Hotel on Tuesday 28th May commencing at 8.45 pm. This will allow us to enjoy our Tuesday evening flying at Calder Park beforehand. The committee is recommending a vote in favour of the proposal to adopt this site as it seems to meet most of our requirements, so in order to make your voice heard please come along to the meeting on the 28th.

Finally, get your gliders and electric models ready for the next two ADS events – the thermal fly-in at Calder Park on Sunday 19th May and our annual Hazlehead weekend on the 8th and 9th of June. ***MP***

General view looking northwards

A closer look at the proposed Maryculter site terrain. No problem for the bigger "birds", but Graham's Fantrainer suffered minor damage despite a good landing approach!

The late, great Davie Davidson (L) in good form during the very busy '93 club BBQ. Now that the thermal season has started, a quick reminder that Davie's Memorial Trophy is up for grabs again, so come on lads, let's have some flight times from you! (photo - Mike Pirie.)

No wonder he's smiling! Mid April on Brimmond sees Brian Ord preparing his absolute bargain buy Model Technology Calypso for a flight off the NW face … £60 worth of flying plastic complete with 6 servos!

Snug as bugs in a rug, men and machines in perfect harmony. Hasn't anyone told these guys it's Summer?

How I became a middle-aged Albino

Derek Robertson

For me, the building process holds little in the way of joy, so I'll go straight to the most interesting part, flying my recently completed electric powered Hawker Hurricane. It's a Balsacraft kit with a cheapie Speed 600 motor up front, loaded with the 8 cell 2400 mAh pack that I currently use to power my four-engined Dash 7.

It was mid April and disappointingly, the finished model was some 6 ozs overweight, but I wasn't overly concerned because a steady NW breeze dictated that the maiden flight would take place off Brimmond. Lots of space and plenty of lift!

Of the three other club members present, I managed to persuade my regular launcher Mike Pirie to do the honours. With a successful range-check complete, off it went with a firm chuck, dropping around 4 feet before the prop eventually began to bite. The flying was, I'm delighted to say, uneventful, with the Hurricane proving to be very stable once a few clicks of up-trim had been fed in. Cutting the power in an attempt to slope soar wasn't very successful, my new toy going down faster than my wife eating a bar of chocolate, but set on half throttle it cruised around quite happily. Even when throttled back, it flew a lot faster than I had anticipated, with landings requiring a lot of space, but what else could I expect with a wing loading of 22.5 ozs / sq. ft!

Less than a week later, there I was, on my own at Calder Park, in ideal conditions with a light easterly caressing my freshly cut hair (by sheer coincidence, the grass had been cut too!). Checks complete, I gave the Hurricane full throttle and a good firm throw ……. but before I could get me hands back onto the Tx, it had buried itself into the middle of the park. Didn't get it up to flying speed, did I! Result, broken prop and bent motor shaft, but no structural damage. Phew! (Fortunately, I wouldn't need to rob a bank in order to buy replacement parts. Going through my wife's purse at 3am in the morning would just about cover it!)

I arrived back home from this disappointing outing around lunch-time and was in the process of unloading my plane as a bunch of primary school kids accompanied by an adult walked past. A deep voice boomed out, "Hey grandad, does your 'effing Spitfire really fly?" (Terrible language for a school chaplain to use, I thought). In all honesty, the answer at this stage would have been "very possibly", but I was still too upset to even bother correcting his simple mistake, so I turned the other cheek and made a dash for my front door.

I know it's just a load of balsa wood but I still get a thrill when the lid of the box is opened for the first time …… rather like opening the "Playboy" centrefold for the first time that day!

Must book Geoff Capes for my next visit to Calder Park though! But what of the build itself?

Construction of this model proved to be fairly straightforward, with the wings and fuz. taking shape quite quickly thanks to the many CNC cut lite-ply components. Apart from installing one servo per aileron (making 4 in total), no other mods were made. Being picky, the wing section and

length of the ribs near the tips of the fully sheeted wing would have resulted in wafer thin trailing edges after sanding ……. I had no alternative but to apply filler to the top sheeting/ TE joint in order to leave enough meat and maintain the correct planform.

Started in mid-September last year, this model was 7 months in the making, with a disproportionately large chunk of the time spent on preparation for painting (and helped along by approx 14 boxes of red wine and around a kilo of tobacco. Prior to this, I had hardly touched the stuff, my only bad habit was sniffing glue, another legacy of aeromodelling!). Getting an acceptable finish using the recommended dope and tissue method proved to be almost a bridge too far for me. It would take 8 coats of sanding sealer, lovingly rubbed down between coats, just to remove the wood grain, but add to that the now evident sags and ripples of a poorly sheeted wing, and the job became a marathon. So, as you might imagine, the build progressed ever so slowly. Throughout the winter months I would be transformed from a wrinkly, middle-aged nice guy into a crazed albino during lengthy sanding sessions, which would take place at least a couple of times per week. The dust got everywhere, up my nose, coating my mustache and even covering my bald patches. There was that much of it about!

Monday 11th March '02 and I'd gone about as far as I could with this sanding lark. This would be the last time my wife would call me "Whitey"! Still a long way short of achieving a concours finish, I stuck strips of Solartrim onto the rear portions of the wings and fuz to simulate the ribs and stringers of the original Mk 1, then began the painting. I wanted something a little more eye-catching than the usual brown/green camouflage, so the colour scheme selected was taken from video footage of a recently restored Hurricane. Brown/pale yellow upper surfaces, red spinner and split black/white undersurfaces. I have no idea whether or not this is a genuine WW 11 scheme or just one of those pseudo paint jobs, but I really liked it …….. and I wanted to get the bloody thing finished!

And that's my winter tale of woe. Think I'll by-pass the dope 'n' tissue next time. I could have saved myself a lot of unnecessary work by covering the airframe with Litespan, a coat of dope and straight into the painting, for only a marginally inferior finish. Now, I wonder if there's any chocolate left....? ***DR***

Phew! The Hurricane completed. The 6 oz overweight is not such a surprise, the difference between prototype weights and productionised kit weights often depressingly large. As this builder's idea of a poor finish is one where ripples can be seen when viewed under an electron microscope, this'll be another corker from Derek! ***JB***

Back with the '93 club BBQ, a rare sight as six pilots chuck their HLG's for a "first up, last down" comp. (photo - Mike Pirie.)

Just a perfect day... *John Barnes*

Warm, calm, sunny, blue skies and white fluffy clouds. It is April 9th, me and Mike Baillie taking the opportunity to give Mike's first electric ship its second airing.

A Graupner Electro Junior, perfect flying manners for an introduction to the delights of electric flight. We'd been out with it a few weeks before to test the new power train/prop combo and get Mike some electric airtime. The ship had performed perfectly then, 30 second motor runs cruising it sedately to about 400 feet. Switch off, a dab of down elevator to level it out then a few minutes of genteel loafing around, about 20 odd minutes total flight time from the 1700 mAh nicad pack.

April 9th is different. It is quickly apparent from the first launch of the day that something is seriously wrong. On full throttle the model is barely climbing. After 40 seconds it has struggled to about 100 feet. On switching off the motor, the model drops its nose instantly and commences a very rapid 30 degree dive. Elevator control is ineffective, rudder control fortunately better. We just have time to line up the model with the landing area before it terminates the now 20 degree dive by hitting Scotland at an unhealthy velocity. Feck.

The grass is lush and the model survives the impact apparently undamaged. Radio check. The controls appear to be working okay. It must be something broken inside. The model is stripped and checked over. We can't find anything broken, binding, trapped or on holiday. Hold the rudder, waggle the rudder stick and the model waggles side to side. Hold the elevator, waggle the stick and the model nods up and down, so nowt wrong with the control linkage integrity. The model's balance is okay. The wings are on straight, nothing is warped more than normal. It is baffling.

The sun shines, the white fluffy clouds hang under a warm, windless blue canopy. Just perfect. Time for a coffee, recharge and try again.

12 year old Electro Junior recovering from a strip and search operation after its first flight of the day, so close to being its last ever. John waxing lyrical about the benefits of Schultze chargers while Mike wonders if he can get home in time for the golf coverage (charger speaks German, John only Gibberish, not the most inspiring of combinations!).

Before the second flight the battery pack is moved back a whisker (25.4 whiskers = 1 inch) and the amount of elevator throw increased slightly.

The second flight attempt is a carbon copy of the first. The model barely climbs, although the rate at which it dimensionally dwindles towards speckdom is good. After a long motor run it's made about 100 feet altitude. Cutting the motor causes the model's nose to drop alarmingly, as before. Elevator response is virtually nil. There is just enough height and time to sweep it round and line up for a high speed landing, this time at a shallower angle than before but with the model still acting like the CG is somewhere in front of the leading edge. This time we notice that the motor is glitching on and off on the landing approach.

The radio functioning is verified as okay, range checks are good. Another strip and search routine is run through, with the same negative results as before. The degree of bafflement increases by an order of magnitude. The model has been flown extensively over the past 12 years without a hiccup, a test bed for a variety of motors from Speed 600's to hot 10 cell units, its exemplary flight characteristics well understood and experienced.

The sun shines, the white fluffy clouds hang under a warm, windless blue canopy. Just perfect. Time for a second coffee, recharge and try again.

The third attempt is no different to the second, the model plummeting back to earth.

Time for a rethink. We've explored all the usual avenues and we know there appears to be nothing wrong with the model. The only unknown left is the air! But it's a perfect day. We put the model on charge, pour another coffee. I tell Mike about the soaring experiences I have, of thermals and sink, sink sometimes so severe a large thermal soarer can be back on the ground in just a couple of minutes after a launch to 500-600 feet. The sink only lasts a few minutes but it's a pain in soaring comps when you've just launched into it! But sink only lasts a few minutes. Doesn't it? It dawns on us that in the two hours or so we've been at the field we haven't seen a bird in the sky. While we discuss these matters, the calm is suddenly disrupted by a strong wind which whips across the area. Where did that come from? A nearby windsock goes horizontal. In a minute the wind has swung through 180 degrees, the windsock still straight out. Then it stops as quickly as it arrived. Instantly calm again. And now there are birds in the air. Nah, couldn't be, could it? Savage sink, sink so severe it renders a model virtually unflyable. And so long-lasting? On such a perfect day? Never.

The fourth flight proves the answer is **YES**, the model now performing impeccably.

Bloody Nora! I've never experienced anything like it before, but the implications of the experience are interesting. Of course, had the model been too damaged to fly again after its first flight we'd never have found the "problem", so thank you yet again, Lady Luck.

We were fortunately flying a model with proven, well-known flying characteristics, so had a reference point for comparison. Had this been a new, untested model off on its first ever flight, who knows what the outcome could have been. The sink we experienced made a perfectly trimmed-out, viceless model almost crash, elevator control virtually non-existent. At the very least, assuming it survived its first flight, one would consider one's latest pride and joy to be an unflyable pig of a thing. The loss/lack of control authority is scary stuff.

We have no idea how long the murderously malevolent sink had existed before we arrived at the field. We know it persisted for well over 2 hours. We may never experience it again. But next time we go flying on such a perfect day..... ***JB***

Grampian Fire Brigade participate in the Hazlehead fly-in after an aerotowing mishap which left this particular model sharing a nest with a family of crows. Name of owner withheld for blackmail purposes! (photo Mike Pirie.)

ADS & SCOTTISH SOARING EVENTS CALENDAR 2002

Month	Date	Event	Venue	Organiser	Tel. No.
MAR	31	International Postal	Mossmorran	Brian Sharp	01738-626589
APR	7	Fun Fly	Fairley	B. Shaw	01294-602686
	14				
	21				
	28	***ADS Slope Fly-in***	TBA	Mike Pirie	01224-323640
	28	Open/100S	Mossmorran	Dave Bradbury	01592-782906
MAY	5	Open/100S	Warrick	Harry Merrick	01563-526980
	12	Electroslot/Mini Glider	Mossmorran	Dave Bradbury	
	19	***ADS Thermal Fly-in***	Calder Park	Mike Pirie	
	19	Open/100S	Mossmorran	Dave Bradbury	
	26	Open/100S	Mossmorran	Dave Bradbury	
JUN	1,2,3,4	RadioGlide	Oxford		
	8, 9	***ADS Hazlehead - fun-fly 8th - Open/100S 9th***	Hazlehead Park	Mike Pirie	
	16	Open/100S	Mossmorran	Dave Bradbury	
	23	Electroslot/Mini Glider	Mossmorran	Dave Bradbury	
	30	***ADS Slope Fly-in***	TBA	Mike Pirie	
	30	Open/100S	Boldon	Brian Johnson	01915-368178
JUL	7	Test day/Electroslot/Mini Glider	Mossmorran	B. Sharp/D. Bradbury	
	14				
	21	***ADS Electric Fly-in***	Calder Park	Mike Pirie	
	21	Open/100S	Mossmorran	Dave Bradbury	
	28	Anything goes Fun Day (?)	Mossmorran	Dave Bradbury	
AUG	3,4,5	Scot Nats - Open/100S/E-slot/ScotSlot/Mini Glider	Mossmorran	Dave Bradbury	
	11	***ADS BBQ & Fly-in***	Calder Park	Mike Pirie	
	11	Open/100S	Mossmorran	Dave Bradbury	
	18	Open/100S	Mossmorran	Dave Bradbury	
	24,25,26	British Nats			
SEP	1	International Postal	Mossmorran	Brian Sharp	
	8	Electroslot/Mini Glider	Mossmorran	Dave Bradbury	
	15	***ADS Slope Fly-in***	TBA	Mike Pirie	
	15	Fun Day	Fairley	B. Shaw	
	22	Electric Fun Fly	West Calder	Tom Laird	07761-645644
	29	Electroslot/Mini Glider	Mossmorran	Dave Bradbury	
OCT	6	Standby Date			
	13	Standby Date			

Movers & Shakers

Chairman	*Keith Donaldson*	01358 743322	(keith.donaldson@trihedral.com)
Sec/Treasurer	*Mike Pirie*	01224 323640	(mpirie@angusfield67.freeserve.co.uk)
Editor	*Derek Robertson*	01224 821368	(drobertson@btinternet.com)

ADS welcomes any material of modelling interest for publication, so a few words (& photos please) about one's latest aeronautical creation/experiences/hints'n'tips will be warmly welcomed. The Ed has fitted an extra large letter box in anticipation of being overwhelmed with information!