

Leek & Moorland Model Gliding Association

Web Sites: - <http://lmmga.org>

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March 2012



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Dates for this years competitions

March the 25thFly 4 Fun

April 22 ndCross country Richard Campbell's Trophy

May 20 thF3F

June 24 th.....Fly 4 Fun

Aug 18th-19th.....Scale weekend

Sept 23 rd.....F3F

Oct 21 st.....Spare

Make sure you jot these dates down . If you've not had a bash at one of our comps you don't know what you're missing.

The scale do is well worth a visit even if you've nothing to fly. Some great models

If you want an enjoyable day on the slopes come and join us for one of these days. Our comps cater for all abilities and you are guaranteed a laugh. What more can you ask

Front Cover Simon Cocker's 6m 1/3 scale Ventus 2C and that looks like Phil Cook launching it but not sure

TO BALLAST OR NOT TO BALLAST THAT IS THE QUESTION

Throughout all the years I've slope soared, there's always been something of a 'Black Art' mentality associated with the use of ballast in model gliders ~ Do I need to use ballast ~ If so, when do I need to use it ~ How much should I use? ~ How will ballast affect the flying of my model etc.etc.

This 'Black Art' has constantly been refuelled over the years by the so called experts guarding the amount of ballast they themselves use as if it were some Top State Secret. To confuse things even more, many bog standard slope soarer also throw their own opinions into the ballast caldron. As a result; it's not surprising that many new comers to the hobby are totally bemused when they hear the word 'Ballast'. Some even think we are talking about nose weight



An all carbon 'Pace' ~ One of the new breed of fast models

Putting ballast in models is not new. I remember it was a much discussed topic when I regularly flew in pylon competitions in the 60's and 70's. This was long before F3F events were on the BMFA's calendar, and, the only time your model ever flew on the back side of a slope was when you'd cocked your landing up.

During any breaks in these proceedings, you would often see some guy furtively slinking up to either Ken Binks's or Chris Foss's model, (These were the slope gurus of the day) take a sneaky look around to make sure Messre Binks and Foss were preoccupied, and then lift one of their models a couple of inches off the ground to feel its weight; a particular practice that I never indulged in by the way. --- Well OK!! I admit I did it once or twice but this was only done in the name of essential scientific research. At this particular time, I was carrying out an in depth study into why I

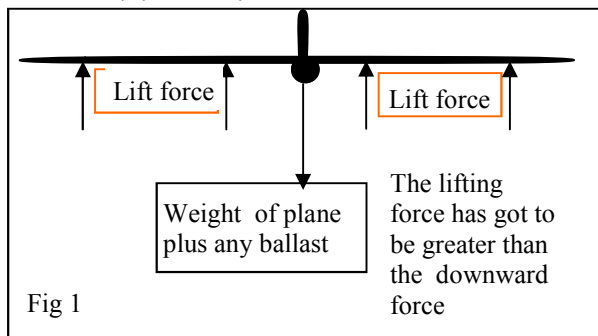
could never get better than second place whenever I raced against one of these buggers.

Anyway, enough of my woes! I'll now try to do the impossible and give the lowdown on how to and why we use ballast in model gliders. I want to stress here that this article is only aimed at those guys in our club who are comparatively new to the hobby. This is because most if not all our elder members will, if pressed, proudly admit that they know everything there is about ballasting model gliders, and like I've said many times before, you can never impart knowledge to a man who knows everything.

I should also make it clear at this point that I don't profess to have any aeronautical or engineering qualifications. All my knowledge about putting chunks of lead in model gliders has been gleaned by careful observations during the hundreds; nay thousands of hours I've spent standing on some God forsaken slope risking the complete loss of my private parts to those sub-arctic temperatures.

Back to Basics

As we all know, the shape of a wing section is designed to generate lift as it moves through the air. The faster



it goes the more lift it generates. BUT!!! The faster it goes the more resistance to the forward speed it creates (Drag) and if we are to believe the real experts; as the speed continues to increase, there eventually comes a point when this lift versus drag battle starts to swing heavily in favour of drag. However, few of us bog standard fliers ever need to be too concerned about reaching these speeds.

Another point that we rarely think about is that no heavier than air machine, whatever the section or speed, can remain airborne without some other additional form of lift. (engine, rocket or in the case of gliders, slope or thermal lift) Without this extra lift a glider will fly on an ever descending flight path until it lands.

Therefore, the upward force on a model (lift) must always be equal to or greater than the total downward force. (Models weight) This applies no matter what the conditions. ~ A howling gale, loads of thermal lift or marginal conditions. (See Fig 1)



Ample room in Mark Ollier's all carbon 60" D60 for a shed load of ballast.

To enable the glider to penetrate into a wind that is blowing faster than the normal flying speed of the aircraft, we should use ballast.

~ I know what some of you are saying ~ you are saying that you don't need ballast to penetrate in strong winds because you can make the model penetrate by applying down elevator (down trim).

This is true, but it is not the ideal solution.

A previously trimmed out model that needs additional down elevator to penetrate in strong winds is not flying to its true potential; far better to use ballast. What is happening when you apply down elevator is that the model speeds up because it is diving. It might still appear to be flying straight and level. This is because the stronger winds are generating more lift than the model is losing in the dive. ~ It's



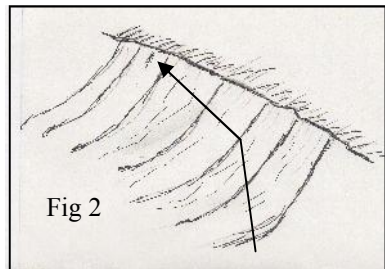
Mark with his D 60

like someone trying to walk the wrong way down an escalator. To a bystander who can only see the top of the guy's head, it would appear that he was either walking on the spot or, if the elevator was moving quicker than he's walking, (stronger lift) it would appear as if he was walking backwards.

If the wing loading is increased (Using ballast) the flying speed would increase without the need for a trim change and the model would be able to take full advantage of the extra lift. It will also maintain its inertia much better throughout the turns.

Any speed merchant will tell you how important ballast is to the speed of a model. To a dedicated F3F fanatic, ballast is more important than sex but even these speed worshipers can't make their minds up as to what the ideal ballast should be for their own model let alone the range of models we see on our slopes.

This is not surprising because the weather responsible for generating lift is an extremely complex machine. It's not just wind or thermal strength; there's a multitude of different conditions that influences lift. Things like, air temperature ~ ground temperature ~ humidity ~ passing clouds or a passing weather front and of course wind direction and strength. And! That's not just the wind direction on the flying slope ~ A slight change in wind direction on the terrain several miles up wind can cause a plus or a minus effect to the lift on the slope we fly on. It can cause rolling turbulence and or wave lift. These are just a few of the things that can



This is just one of the reasons why wind speeds are not always a true indicator of lift. If the wind is not dead square on a straight ridge like Edgetop, the wind shears across the face of the slope and much of its potential lift is lost

affect the micro conditions of a particular slope. This is the reason why wind speed alone is not always a true guide to the lift strength. (see Fig 2) It is also why a few members of the LMMGA go to places like the Great Orme Llandudno several times a year and drool over the ultra smooth lift these costal slopes can produce. Lift is more relevant to wind speed on these sites unlike many inland slopes.

Questions and Answers::

So!! How much ballast do you need to put in your model??

To be absolutely frank, I haven't the foggiest idea!! It's a case of how long is a piece of string. However, there are a few points that some of our newer members should bear in mind.



Ian Webb with his D 40

They say there are horses for courses; this is doubly true for gliders. All gliders have their limitations as far as speed (penetration) is concerned. It depends on their size, strength, wing section, weight and the frontal cross section of the plane, (profile drag) you can't expect a foamy costing £80 to perform like an all carbon mouldy costing several hundred pounds.

As for ballasting in strong winds; it's not the weight of the model that affects its ability to penetrate (fly fast) , it is its wing loading.

e.g. A large span model can weigh several times more than a small one but the smaller model can penetrate much better if it has a heavier wing loading. ~ Two such models that can be seen on our slope are the 3 metre Dragon and the 40" D40.

6 oz of ballast in the D40 will increase its wing loading much more than the same 6oz would in the Dragon. The increase in speed (Penetration) of the Dragon with 6ozs of ballast would hardly be noticed where as 6oz in a D40 would make a significant difference.

A model's wing loading is worked out by dividing the weight of the model by the area of its wing. With me being an old as-been I work in old money. I use square feet for the wing area and ounces for its weight ~

Let's see what affect the 6oz of ballast makes to the wing loading (wl) of the two models

Dragon: > Wing area 5 Sq feet ~ therefore $6\text{oz} \div 5\text{sq/ft} =$ increase wl by **1.2oz per sq ft**. This would have little affect on performance/penetration.

D40 :> Wing area 2sq feet ~ therefore $6\text{oz} \div 2\text{ft} =$ increase wl by **3oz per sq ft** ~ This would have a significant effect on its performance

(The wing areas for the models are only approximations)

From my experience, modellers who use ballast fall in one of two main groups

By far the largest group only use ballast through sheer necessity. They arrive on the slope ~ find they haven't a model to suit the unexpected strong wind ~ start to rant about the "Bloody Weather Forcastres" because the steady 10mph westerly the BBC mentioned as turned out to be a 30 gusting 40.



Gary Furnival with his 3m Dragon

I call this group 'The Sellotapers' because they go round the slope begging or borrowing any lead they can lay their hands on and Sellotaping it somewhere close to where they think the CofG should be. They then hurl the model off more in hope than certianty .

The other group I call the 'Whistlers' because they just love the whistling sound a high speed model makes. These guys rarely fly without ballast even in light winds and their all carbon models unballasted can weigh heavier than some similar sized glass planes fully ballasted. The guy who volunteers to launch these all carbon models when ballasted up would be well advised to wear a truss

Most of the Sellotapers rarely increase the wing loading enough in windy conditions. To make any significant difference the wing loading would easily stand an increase of 3 to 4ozs per sq



Scott Ravenscroft with his D80 flying at the gate in winds gusting above 50mph (22nd Jan. this year) It was no problem for this all carbon 80" model

foot and for the larger more efficient models quite a bit more. This is assuming of course that the wing loading of the unballasted model is around the average wing loading of 16oz per sq ft range e.g. My Foamy, (Halfpipe) has a wing area of approx 3sq ft. When I fly it in winds of 25 mph gusting mid 30's; I Selloptape 10 ozs of lead to it which increases its wing loading by a tad over 3ozs per sq ft. And it makes quite a difference. (Does this make me one of the 'Sellotapers I wonder??)

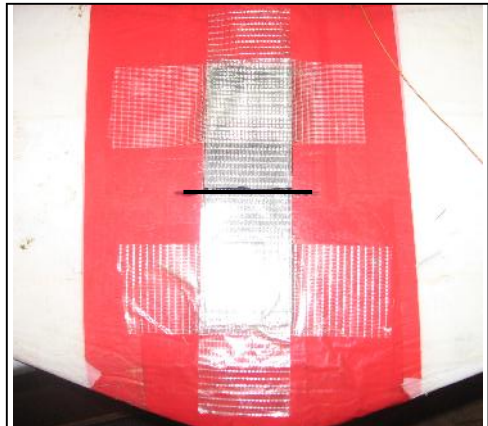
I suppose the next question to answer is :>> Is it possible to over ballast?~ In a word ~ Yes!! I've found on the odd occasion when I've piled a touch too much lead on for the available lift, the affect has been very similar to flying when the lift as suddenly dropped

off. In these marginal like conditions, we tend to droop the flaps if we have this option and pull back a little on the elevator stick making the model fly with a slight nose up attitude. This increases the angle of attack of the wing which gives the model a little more lift. However, there's a down side to this trim change. It slows the model down and creates more drag. Less speed means the wing section generates less lift and the Flap/elevator changes plus a nose up attitude makes for quite a bit more drag
 In my opinion ; an over ballasted model is less efficient for speed or penetration than one that's a little under ballasted.

A word to the guys who occasionally use Sellotape to secure their ballast.
 (Mainly foamy wings)
 Make sure the ballast is well secured. Sticky tape is notorious for failing in damp conditions. A chunk of lead falling from a height can cause more than a headache.

Adding ballast should **never** alter the trim of the model. (It must NOT change the position of the Centre of Gravity) This is particularly important for planks or flying wings which are extremely sensitive to a *C of G* shift >>> Ignore this at your peril,
 Another point to remember is that a ballasted model lands faster than an unballasted model ~ well you can't have it both ways.

If you're a Sellotaper, know the approximate wing area of your model and fix yourself up with a couple of pieces of lead so that you can increase the wing loading by a known amount. This will be



Ballast Sellopated to my Halfpipe
 Note :-> The C of G marked on the wing and lead makes it easy to line the two up

easier if you mark the position of the model's C of G clearly on the model and also mark the position of the C of G (balancing point) on the lead. Then by lining the two marks up you are sure the ballast is in the right place.

Remember when launching in strong winds there's nearly always a compression zone at the top of a hill. (A very localised increase in wind speed) This is caused by the wind that's coming up the slope being squeezed as it passes over the top of the hill by the higher winds which are less affected by the slope. (a Venturi effect) The strength of the wind can be significantly less if you walk a few yards further down the slope to launch the model. It is also advisable to get someone else to launch your model in strong winds leaving both hands free to make a quick correction if needed.

At this point I was going to give my thoughts on how the Whistlers could squeeze another couple mph out of their lead ships but I've realised that I've been rattling on too long already and in any case, for a Sellotaper like myself to be foolish enough to give advice on ballasting to a Whistler would be putting what's left of my private parts at considerable risk.

P.S:> A Thought!!

Most Whistlers (mainly F3F competitors) will admit that they only ballast according to the wind speed (not the strength of lift) Not quite sure why because if they took thermal lift plus slope lift into consideration (particularly in the summer months) I think they could knock seconds off their time Perhaps it's because thermal lift is not so predictable as slope lift?

Maybe we'll get an answer in the next newsletter???? Narr I doubt it!!

Letters



Hello Ivan,

This is a picture of my Gentle Lady that you might like to include in your next newsletter

It was taken after a stall over Elkstone. (It came down like a dart)

The fuselage on closer inspection had shattered beyond repair, the nose was buried up to the wing. You wouldn't think its my second year flying in the club.

Regards,
Mick Bussey

This can happens to the best of us Mick. Ed.



Eric Parr concentrating on flying his Easy Glider under the watchful eye of Ivan Bradbury



As anyone seen Mr Brewer? He's not been on the slopes for months. He's circulating this rumour about working long hours. Come on Nigel; pull the other one!!

Dear Editor,

Could I use the pages of our newsletter to give some encouragement and advice to those of us who are still feeling the pain?

A couple of weeks ago I was at the Gate, standing by my car slurping a cup of hot coffee to help thaw out my hands and bring back some feeling to my frozen cheeks when this wing (looked like a Zagi) shot over the road and landed some 40-50 yards on the other side of the road.

After retrieving his model the pilot came up to me and said; "Been flying two or three years now, I don't think I'll ever get the hang of this bloody game"

Well I've got news for all you disheartened Slope Soarers. Learning to fly any remote control model plane takes time and I mean stick time not time the model spends in the hanger. Having flown both power and gliders, I think both are difficult to master but the rough terrain and the ever variable lift conditions that slope soarers have to contend with, puts leaning to fly gliders at the top of my difficulty list.

Another thing that the more matured learner finds frustrating is that the older you are when you start this hobby, the longer it seems to take to master the basics.

The only advice I can give is 'Stick At It' the skills **will** come and remember; you have one great plus today than I had when I started this crashing game. Today there are quite a few models that will take the rough knocks and bangs unlike in my early days.

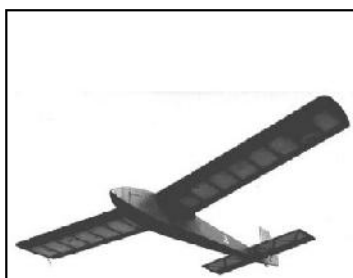
When I first started it would take me 50 minutes to get to the slope ~ 5 minutes to rig the glider ~ and if I was really lucky I'd get 5 minutes flying time before I was putting the bits and pieces in the car and heading back home; not a happy bunny. I'm not going to mention all the repair time I put in after I'd got back; the

thought of it still gives me the shudders.

Don't forget the other plus you can get from our hobby. Despite the rain, the cold, low cloud, and yes the crashes ~ Standing on the top of some hill with other complete idiots and joining in with the bantering the leg pulling and the laughs is a much better therapy than you would ever get from lying on some shrinks couch. So! Always arrange to go up flying on the slopes with someone else; it's much more enjoyable and it makes good sense especially for us oldies who are not so good on our



Pat Kennelly with his Easy Glider. It's one of multiplex's foam models ~ The model fly's in a reasonable range of wind speeds for a foamy and when trimmed out it is ultra stable in the air . Ideal for a beginners or intermediate model and it's not too expensive



This is Dave Hughes Soarcereer It was one of the classic of its day. An extremely versatile ruder elevator model that would fly in a wide range of wind speeds

pins as we used to be

Don't be a quitter ~ stick at it ~ only fly models suitable for your standard of flying ~ it's all too easy to over step the mark and on the spur of the moment treat yourself to one of these handsome glass devils ~ Be prepared to learn slowly ~ One day you'll think you've cracked it ~ the next day you'll crash it ~ How do I know all this ~ I've been there myself!!!

M. Endem



Wayne Haycock with his Slinky

Hi Ivan
Thought you may like to put this in the in the newsletter.

This is a photograph of me with my 35 year old slinky2.

It was built by my dad back in 1976 as my second model to fly (the first was a mini phase) It is covered in nylon, doped and painted. It has a 61" span and you can still get the plan today.

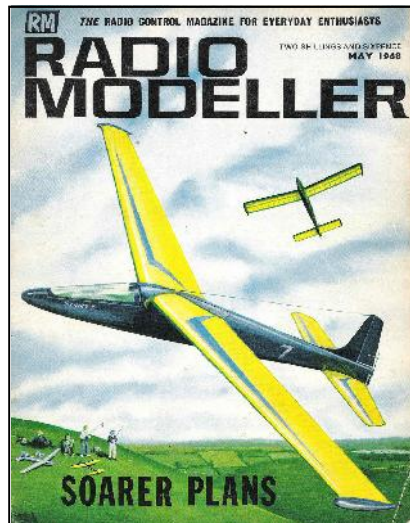
The model was designed by a Mr Barry Winter in 1968 as a single channel model and you could get a copy of the plan for 8s 6d. My Slinky is rudder and

elevator and was originally flown with Futaba M series radio 27 meg. It then got shelved for some years and was then fitted out with Futaba challenger 6 35 meg gear and flown for around 12 months then shelved again until now, it now has JR DXS9 2.4 radio and fly's as well as ever.

Wayne.

Ed

The Slinky was quite a popular model in the early 70's ~ John Matthews (One of our long in the tooth members) still has the one he flew in the late 60s ~ He's recovered it several times and must have clocked well over a hundred flying hours with it by now ~ The Slinky was typical of the type of model that competed in what was then called 'Intermediate Acrobatics' rudder elevator only models ~no ailerons.



I've put this in because I had a nostalgic moment . I think it was the best soaring Mag we've ever had. This one was published in May 1968 Price 12.5p in today's money

John Cockram 1941 - 2011

John was born and lived in Buxton all his life and started aeromodelling as a schoolboy flying freeflight power on Fairfield Common, the golf links on the Chapel side of Buxton. Even as a youngster, he loved to experiment and took several airborne photos using a time fuse and a very old camera.

I first met him in 1966 with Fred Beresford when we all started flying single channel, superegen gliders with elastic driven escapements. From there we progressed to multi channel reeds and eventually when pocket money allowed to early proportional.

We always flew the same sort of models and progressed from "bitsas" to the "Bolas" and our own version of the Monterey (still flying although improved from 1970). We flew Phase 2 and 4, semi scale Skylark (John) and Dart (Rob), and more recently we both made "Red Kites", a 1990s design by Dick Edmonds. John's was fitted with sound. We also flew power and John went from a Merco 61 Fun Tiger (modified for vertical take off !) to a .40 powered Piper Cub (modified for floats), a Rodeo biplane, and (of course) we both flew Wot 4s. We built a purpose designed AeroPhot and acquired a cheap motorised camera triggered by servo. One day when John launched it he forgot to remove the lens cover so we took a full roll of colour slides (v.expensive in those days) of the very black inside of the cap! And on another occasion he flicked the receiver power switch off as he launched it with disastrous results....

John was a car body specialist by trade and worked originally for Saunders, then Kennings, in Buxton before setting up his own business with a partner (Terry) at Harper Hill just outside Buxton. He retired in 2005. He re-built a beautiful maroon Austin Healey Froggy Sprite.

John also used to go sailing, loved a beer (or two), and we often played snooker at the Fairfield Club in Buxton. We were planning to take up bowls next summer.

He went flying with me several times in both Chipmunks and a K13 glider.

We were letting down out of wave one day when I suddenly pulled three consecutive loops without warning him ~ he didn't speak to me for several days ! Life (and flying) was always fun with John around and he will be very sorely missed

Rob Faulkner



John with his Red Kite

Earnie Thorpe.

Pete Barnett rang me up in December to tell me that Earnie Thorpe (Ernie) had died suddenly. I think he was 70yrs ~ He had been a lecturer at Stoke's Northern College until he retired. I've no other details.

I first met Ernie in the late 70's when he was a regular flier on the slopes. Sometime in the early 80's Ernie disappeared from the scene and it wasn't until three years ago, after he'd rejoined the club, that I saw him again.

Ernie was quite talented guy and would have a go at anything. He built his own house ~ he's made fibre glass canoes, aprons and mud-wings for the Mini car ~ he made the first fibre glass fuz I ever had, a 1/4 sale Skylark 4. The last thing I heard he was doing was making gear boxes for electric motors.

When you get to my age you've collected a barrow load of memories. One lasting memory I have of Ernie is flying on the east facing slope at the Roaches and watching a thick bank of mist slowly coming up the slope towards us. It looked pretty menacing to me so I landed. I walked over to Ernie and warned him about the advancing mist. "That's OK" he said "I've already seen it. ~ I'll show you a little trick on how to get out of fog if you accidentally fly into it" With that he continued to fly his model at about 150 to 200 feet until it suddenly disappeared in the mist.

"Now I'll put it into a spin and wait for it to come out under the mist; should come out just in front of us" he said. After a few seconds of glaring bog-eyed into the mist I heard this thud just behind me, Turning, I saw Ernie's model about 20 yards away with its nose buried at least 6" in the ground. "The wind must have been stronger than I thought" he said.

Over the intervening years I've never put Ernie's theory on fog flying into practice; it just remains one of the many memories I have that makes me smile whenever Ernie's name crops up.

Ivan

Please make an effort to send something in for the newsletter::
 Opinions about your latest Model ~ quality ~
 performance ~ value for money .~. Any good sites you've visited.~.
 Building or installation tips.~. Good or bad internet model
 shops.~, Your moans and groans ,~, just about anything goes.

HOTLINER HOPEFUL

By Derek Illsley

At the pre AGM lunch, I happened to be sitting with three pylon racing zealots Ian Webb, Scott Ravenscroft and Garry Furnival. Scott showed me his latest purchase, a wing of moulded carbon, beautiful in its own right. The servos had absolutely no play and will hopefully be on the market in early spring 2012.



It was explained to me that instantaneous response was needed from these speed machines and 2.4MGh was essential. It so happened that I had been considering purchase of 2.4MGh kit for some moths but deep pockets and arthritic fingers had delayed things. Further information was that a Hi-Tec Aurora 9 could be recommended, so, an early Christmas present was purchased together with the full telemetry bits and pieces. A subsequent routine blood pressure test showed that the heart had suffered little from this mad expenditure

Another well known member of the club had commented that my models were old fashioned but omitted to say that I had at least designed and built them using ply, carbon, class cloth carbon and spars etc. Having got the all singing, all dancing gizmos what was I going to put them in? As an old style aeromodeller no way was I going to spend a thousand pounds plus on a toy, all be it superb. A further consideration is that I also fly from a very good flat field with a Lancaster club. Here ducted fan fully carbon moulded flying wings less than two feet span regularly fly at speeds around 200 mph.

So far I have been unable to source light weight carbon cloth but do have some heavier material emanating from the old T.V.R. car firm. This could be used on the centre section of a three piece wing, each piece being about three feet long. 12" root chord, 8" at the tips should give a reasonable balance between strength, roll rate and appearance. It's going to be no light weight so a wing loading of around one and half pounds per square foot will be likely equating to a weight of, say, thirteen pounds

A kilowatt of power with the right prop will give about 12lbs of thrust so one and half KW will make the model jump about a bit at about 115 watts/lb. eight cells of LiPos at 60 amps will give about two and half KW so I'll get a 75 amp controller. 100 mph on the flat equates to say 8000 feet/minute so it looks like a 12" pitch prop to turn at 12,00 rpm to allow for slip. With 30V

I'm looking for a KV of about 400 rpm/v. This is brushless inrunner country since I don't want the outlet cables at right angles to the motor and I also prefer not to have to use a gearbox.

With a R.G15 or similar section, it should be able to soar and it will be interesting to see how it performs on the slope. At the end of the day it is, as Ivan says, that there are only two sorts of flying models; those that are broken and those that will be.

Addendum: The above blurb was written when full of Christmas cheer (aka alcohol) Now on a cold early February morning with fuselage built and the wing well on the way doubts arise. A run of the mill motor and controller have been used instead of more expensive kit (three times as much) and I have finished up with a system only capable 6 instead of 8 cell ~ 9.000 rpm instead of 12.000 ~ probably means a prop probably not commercially available. Not important on the slope but the edge blunted on the flat

Don't Time Fly?

I was nattering to Phil Clarke on Skype, as us old 'uns do these days, when I just happen to mention that I hadn't seen his 43" scale Canberra on the slopes for a while. We rabbited on for a bit and during our chat we both came to the

conclusion that it was about three years since both his and Ken Buckley's model had made their inaugural flight at the gate. (They had both made one in a joint project))

After looking up some photographs of the models we realised to our surprise that it had been eight years (2004) not three since the models first flew.



Phil Clarke's 43" Canberra at the gate

There's not doubt in my mind; time actually speeds up as you grow older? Couldn't give a sh*t what Brian Cox says

Canberra

English Electric Canberra is a first-generation jet-powered light bomber manufactured in large numbers through the 1950s. The Canberra could fly at a higher altitude than any other bomber through the 1950s and set a world altitude record of 70,310 ft (21,430 m) in 1957.



The real thing

Due to its ability to evade early interceptors and providing a significant performance advancement over piston-engined bombers then common, the Canberra was a popular export product and served with many nations.

It first flew in May 13th 1949 and was retired on June 23 2006



Dave Gains with his now deceased Calypso. It passed away suddenly at the Orme Llandudno when the onboard gear refused to listen to the transmitter ~ Well that's what he said.

Dave' I think it's time we visited the slope again if only to shed the odd tear and scatter a few petals on the spot

Bottom right shows one of our visiting aliens well protected from our hostile environment

