



# Newsletter

February 2020

It's hardly worth talking about the weather - it was just bad. One of my daughters who lives in Shropshire woke up one morning to find their ground floor flooded. They were insured and all praise should go to Nationwide - their insurers, for their swift and very kind handling of the affair. A lot of house owners are of course in exactly the same situation right now.

You guys have, I understand, been enjoying yourselves flying your miniature quads through a tortuous circuit at the Social evening recently whilst imbibing quantities of various beverages - lucky people. Thanks to Andy Harrison for sending this info to Steve so that I could put it in the newsletter:-

*Hi Steve*

*The members who took part were Tony Ollerton, Tank Dave , Brian Castleton, Jason Reid , Jake Reid , Justin Goldstone, Tim Walton and daughter, Archie, yourself, and ME I think that was everyone I've thrown the piece of paper, the times were about this, the first three positions are correct . **Tony first 54 seconds, Dave 1 min, Brian third 1 min 20 .***

*Andy.*

Thank you very much Andy for that feedback and congratulations to all of you who took part.

This Corona Virus could have devastating effects on the world. We so rely on China as major producers of so many diverse components from the car industry, to all manner of goods especially electronics which of course includes our own hobby, model aircraft and all that goes with them. If those factories stand idle due to this virus, they will become economically unviable and we will then have far reaching problems.

I've just bought a a 16" wingspan Hobbyzone Cub S which I will use primarily for indoor flying. It cost just less than £100 and for this I get a ready to bind and fly model complete with SAFE technology which means it's got a gyro contraption all built in to assist nerds like me to fly spectacularly (I hope). Anyway, in just a couple of hours, I will know if it all works because they fly on a Thursday at the local YMCA.

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Well, now back from the YMCA and wow, what a beautifully flying model. The ground handling needed some getting used to. I tried at first steering the model around the floor but found that it tends to ground loop. With a tail dragger I like to gently feed in the power and watch the tail rise, get to a good flying speed before rising off the ground. My old Depron biplanes would do this so easily - this one won't. I find it needs a positive push on the power and simply leaps straight in the air. It needed a couple of click to the right on the ailerons and it was flying straight and level.

I had never flown using this gyro assistance but it does make for a smooth flight. Rudder is the main input for making the turns (as was the the old biplane referred to earlier), elevator was satisfying in it's response. Taking the model to ceiling height and chopping the throttle produced a very nice glide - it really id a lovely model. Landings were easy and every one was safe and enjoyable. Slow flight was easy and many of the guys present were asking what it cost and vowing to buy one for themselves. I hadn't flown for literally months but Judy thought this model looked so pretty she wanted to come to watch it fly. It really is cracking model. It's flying weight is just 47 grammes.



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## A VIEW FROM THE HEDGE. (By Will Sparrow)



It has been a miserable time in the hedge of late. Our lamentations started, although we did not know it at the time, on the day we had a visit from a bird with lovely yellow plumage (he was a yellowhammer – WOO). He did not stay long as he had to visit other nearby hedges but he made, as we later found, a lasting impression on us. A week later, most of our little flock came down with a severe case of the sniffles. The Wise Old Owl, from a perch at the up-wind limit of the hedge, diagnosed our plight as bird 'flu! Whatever it was called, we all felt pretty miserable with watering eyes, runny beaks and head-aches. As luck would have it my/our incapacity has coincided with the worst weather that I can remember and not a model has taken to the skies over the hallowed (if soggy and long) turf. Even if the latest, greatest scale creation, blistering jet or huge glider had taken to the air I was too far gone to notice.

News always filters down to the hedge, so I know that your species has also been experiencing a health scare. Something called coronavirus has been on the march from its origins in far-off Cathay and, because of the wonders of air travel (!), has started to develop into a world-wide problem. A sniffle in the beak is no fun, but your problem seems to have wider, far-reaching consequences. It seems that most of Cathay and the rest of distant Asia has shut down: cities are in lock-down, transport is forbidden and factories and businesses are idle. I have heard of riots in a place called Hong Kong as residents realised that their supplies of toilet paper were running low... all their toilet paper is made in China... and all the Chinese factories are closed!

You modellers are unlikely to catch this nasty bug, but your favourite hobby is about to suffer secondary effects. Remember, all the far-eastern factories are closed – and that includes those making model aeroplanes and all the bits that go with them. I have heard that Hangar No 9 has been converted into a 1,000 bed hospital. ARTFs will shortly be a thing of the past. If you break one, you will have to mend it (a dying craft – WOO). All over the western world modellers will be having to learn the old skills of model-making. Yellowing model-making manuals will be retrieved from dusty attics and the pages turned by chaps wearing protective cotton gloves. Aged sages will be consulted as to wood and glue selection. Televisions will be left un-watched and "little screens" will be turned off as a resurrected class of modellers retreat to their hangars and sheds. Oh, brave new world!

I'm getting over my dose of bird 'flu now, but the viewing twig remains unused as yet more wind and rain sweeps the countryside. Still, every succeeding day is getting four or five minutes longer, every twig has a bud and spring is surely on its way. I'm already looking forward to seeing all your latest new-season models... and a few less-than-new ARTFs!

WS



## **The Art of Course Model Flying**

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A number of years ago now, the phone rang and it was an old model flying mate of mine from the last century (Yes I really am that old) the sixties to be precise. This character was never ready when we called round for him and it was a routine that we would have to drill his engine bearers for him, but that was back in the sixties when we all flew Oliver Tigers in control line Peacemakers, things must have improved. I thought "Don't tell me- you want your engine bearers drilling don't you!" "No not" at all he said "I have got the hang of drilling holes in the right place now".

"Are you any good with Glass Cloth & Resin" he said? "I have been known to dabble I replied". "Well I'm struggling a little; I can get it on OK but it never seems to cure properly" After a lengthy discussion it turned out that he was covering his model in his garage which was heated by a Calor Gas heater. Now these things chuck out loads of moisture and some resins take exception to it.

I asked him if he had anywhere warm and dry, he said that he had the perfect place and would let me know how it went.

At about 6.00 o'clock in the morning, my phone rang, it was him! "ERRR how do you get a wing off a carpet?" "WHAT", I said "did I hear you right?" "Yes," he said. "I left my wing to dry in the lounge and the cat must have rubbed up against it and knocked it over, because the cat has resin on it too" the wings now stuck to the Axminster. "I have some time" he said "the wife is at her sisters"

I told him that I didn't have a clue how to do it; he said he had an idea. About an hour later he rang back and said he had it all sorted. He had cut around the wing with a Stanley knife and moved the furniture around, he then intended telling his wife that he was going to re-decorate the lounge and at an appropriate moment a can of paint would go over he would take up the carpet and claim on his house hold insurance! I never did find out how that went. But after much sanding the wing turned out OK and he partly shaved the cat to get rid of the incriminating evidence! He told his wife that he had to take the cat to the vets to get rid of some ticks and they had shaved it!

He still married!

By John Prothero





# Glider Set Up

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*Article by Brian Holdsworth*

Reflex and camber settings are very sensitive to CG position and flying speed so these need to be established before too much effort is put into fine trimming. Slow flight for a glider can be useful although the benefits are generally small.

As covered earlier, the airspeed for a glider with positive pitch stability is controlled by elevator trim, so that applying up trim from the baseline setting will reduce the airspeed. Flight depends upon the lift generated by the wings supporting the aircraft where this lift is proportional to the square of the airspeed and the angle of attack.

If the airspeed is reduced, the required angle of attack for level flight increases and the aircraft adopts a more nose-up attitude. Where flaps and/or flaperons are available, a small improvement may be achieved by applying camber (lowering the wing control surfaces slightly below neutral). This has the effect of increasing the lift so that, to maintain the lift for a given angle of attack, the required airspeed is reduced, moving the drag curve to a better position, reducing the drag. The benefits are limited and some of the more exotic wing sections show little benefit or even increased drag with camber.

The optimal camber angle will be small, a couple of millimetres or so at the trailing edge, and barely visible. A section with obvious undercamber is likely to show little benefit from camber. Generally, flaperon movement should be less than that of the flaps to reduce the tip-stalling potential, and the effects of drag from the disturbed airflow at the tips. The effect of camber generates a nose-down pitch moment so that slightly more up-elevator mix will be needed than without camber for the same airspeed. Flight trials to determine optimum settings are even more difficult than for reflex.

The main application for slow flight is probably to increase the sensitivity to slight air turbulence which can be an indicator of thermal activity. It also allows loitering in the thermal area by reducing the need for constant turning which would increase drag and consequential height loss. Being close to stalling and more prone to zooming with wind speed variations should make it easier to identify any thermal activity. This is only effective in light winds since stronger winds are



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# Glider Set Up Continued....

*Article by Brian Holdsworth*

liable to generate turbulence from hedges, uneven ground etc. which would confuse the picture. Also, in windy weather, thermals are likely to go downwind too fast to be of any use!

Another application for camber assists circling flight when trying to remain within an area of lift. A small amount of up elevator is required to maintain the turn, and this can be difficult to apply manually due to the poor visibility at considerable distances and/or heights. A small amount of camber is applied and sufficient up-elevator mixed in to set the airspeed slightly slower than the default (faster than for slow flight above). This has the effect of increasing pitch stability so that, ideally, the model maintains a smooth turn with little control application needed while drifting down wind within the thermal - hopefully! In practice, the effects are limited, but it could be an interesting experiment for the curious.

If a thermal is encountered head-on, the model is likely to pitch up when a turn either way is performed after waiting a few seconds to allow the model to pass through most (not all!) of the thermal. An S-turn where the model is immediately turned about 45 degrees one way before entering a circle in the opposite direction is, perhaps, the simplest way to increase the probability of centering within the thermal area. Usually, the thermal will be to one side when the model will tend to turn away from it as one wing is lifted by the rising air. This is an important indication when it is generally preferable to turn towards the lift. However, if the induced turn is significant, it can take too long to overcome the turning effect so that it may be preferable to complete a near-360 degree turn away to return to the area of suspected lift. Unfortunately, similar effects can be seen if an area of sink is encountered when the model is likely to turn towards the sink as one wing drops in the sinking air - turning away from the area is obviously preferable as soon as possible. The difference between the two conditions can be subtle which some regard as part of the attraction of such flying.



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# Glider Set Up Continued....

*Article by Brian Holdsworth*

Applying some camber and up-elevator may be helpful to assist launching, especially for a large or heavy model when it can be difficult to achieve sufficient flying speed. These settings are likely to be somewhat different from those above so that a choice may have to be made where a separate "Airbrake" option or sufficient mixers etc. are not available.

When landing a model without an undercarriage, there is the potential for the tail to touch the ground before the fuselage belly which would produce a heavy touch down where the drag lowers the nose, reducing the lift and increasing the nose-down forces. This also increases the possibility of one wing dropping and catching the ground resulting in a damaging ground loop. It is caused by the high angle of attack near the stall at the end of the landing flare. Applying some camber reduces the physical angle of attack and hence the fuselage angle with respect to the ground. Appropriately adjusted, the belly would then touch before the tail producing the desirable smooth touchdown. Many full-size and model gliders have a pod-and-boom fuselage profile which usually avoids this problem.

A model used for racing with reflex applied would benefit from that reflex being replaced by camber to increase the generated lift when executing the required tight turns around the pylons. This may be achieved by mixing elevator into the flaps/flaperons to apply camber proportional to the amount of up elevator. Some transmitters include a dedicated menu option for this purpose but many apply the mix from neutral, with no adjustment available, when it is preferable to introduce it above about half-elevator stick. A free mixer linking the elevator stick to the flaps/flaperons would then be preferable using "Offset" to start the mix from part stick movement. As covered earlier, if "Back" mixing is not available, several mixers would be required, one for each flap/flaperon surface, and sufficient mixers may not be available.

If mixing starts from neutral stick, the effects can be confusing. A small amount of up elevator would result in an increase in height but the pitch-down couple from the camber would cause the fuselage angle to become slightly nose-down, resulting in a dive when the stick is released. This is an unstable effect



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## Glider Set Up Continued....

*Article by Brian Holdsworth*

and liable to result in pilot-induced oscillation needing constant corrections as the flyer tries to maintain level flight.

Starting the mix from about half stick would allow small corrections without any camber, but apply the camber when full stick is applied for the turn. For this application, only small and full stick movements would be needed, with nothing between. If the turn becomes too tight, the model is prone to a high-speed stall resulting in a violent flick into the ground before the flyer realises what is happening - many models have met their end in this manner! Limiting the maximum elevator throw by suitable settings of elevator rates etc. is an effective technique allowing full stick to be used, improving turn repeatability and reducing stall probability - visibility would be too poor, especially at the far pylon, to limit movements manually, particularly under the stress of competition.

A mix which could be used to assist tight turning couples ailerons into flaps so that the ailerons effectively become full span, increasing their roll authority. Obviously, a separate channel would be required for each flap. To reduce the stall potential etc, flap differential would be desirable to reduce down movement, but is rarely available as an option; if implemented via separate mixers, differential may be produced by using a lower mix value for down than for up. Using flaps for this purpose can create considerable drag for limited benefits so, typically, throws are limited to about half aileron movement.

Some big gliders have several ailerons and flaps in each wing which could be controlled separately if sufficient channels are available. Some top-end transmitters have wing options with multiple flaps/aileron for this purpose, together with menu options to allow definition of each surface position for switch/stick operation. Generally, movements would be set proportional to their position along the wing so that, for flap control, the root flap has maximum throw, reducing steadily to the tip aileron; the sequence would be reversed where the flaps are used as ailerons when, generally, the root flaps would not be coupled. Crow braking could be increased if each flap movement was opposite to its neighbours, generating a vortex at each junction as





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## Glider Set Up Continued/..... *Article by Brian Holdsworth*

covered earlier. However, this is perhaps excessive and would need menu options since it is doubtful if sufficient mixers would be available.

Particularly for contest use where duration and speed tasks are in separate flights, it could be convenient to set up multiple model memories, one for each task, simplifying switch allocation and allowing increased functionality where insufficient mixers are available for the full range of desired capability. However, some transmitters may require receiver re-binding which would make this technique impracticable.

## Club Instructors

Jason Reid, John Higgins, Chris Vernon, Mark Conlin, Brian Holdsworth, Jim Sheldon, Paul Cusworth, Andy Harrison, Justin Goldstone, John Prothero

## Upcoming Events

Wednesday 4<sup>th</sup> March *String along and bring a video evening.*

Wednesday 1<sup>st</sup> April *Back to basics - Safety Talk*

# In Conclusion

February 2020

Well guys, I see that the forecast promises more gale force winds, more rain and I know for a fact there is some interesting white stuff up on those hills.

I bet you're all just itching to fly - well you can - get on down to the indoor flying and start to enjoy putting in some very exciting stick time. It's nice and warm in the Sports Hall, no wind, no rain - just perfect flying conditions. If you start doing it, you may well find it's a bigger challenge than you think, it will improve your reactions for when you fly 'proper' models at the field.

I'm off shortly to my local office supply shop for some sticky labels to put my CAA Operator N<sup>o</sup> in my models.

Well I guess that's it for this inclement month.



## The End