



Newsletter

September 2019

Another month of mixed weather and we are very quickly running out of 'Summer' into a crap Autumn. There was a time in my life when I so looked forward to coming back to live in UK with it's quirky mixed weather patterns. Then again, I've known months when the desert was literally flooded and there was nowhere for that water to go. Fortunately, our 'Portacabins' had been erected on high supports so at least our living accommodation wasn't flooded.

Thank goodness for those trail bikes a couple of us had bought - when you couldn't fly but you could still have fun on the bikes. Happy times!

In more normal weather patterns out there, we would get up early on our Fridays off, when it was still cool, drive out into the desert and would be flying by 7:30. This we would enjoy till around midday by which time you were just too hot, pack up and get away to the Binladen company camp (yes, 'that' Binladen we heard so much of in recent years). They let us ex pats use their pool and enjoy a very good restaurant for the rest of the day. There was so much freedom to life over there. We may have been very restricted in not being allowed alcohol but we had roads where you could bomb along at 100 MPH if you wished - no one would stop you. You could also ride all day on those roads or through the desert. It was in fact a wonderful unrestricted freedom.

So, back to the present, because of this inclement weather, the Scale and Aero Show is now moved to this coming Sunday 29th September subject of course to suitable weather. Subsequently, this event is cancelled for this year.

Geoff Brown's widow has very kindly donated all of the proceeds from the auction which is being held on 2nd October at the Marton Institute - this will be for his complete collection of models - not to be missed.



NiMh Charging

September 2019

Article by Brian Holdsworth

An article in the last RCM&E magazine shows a disturbing attitude to charging in a rather blatant informercial for Overlander. It is hoped that this is not an indication of the future from its new editor or the last remaining R/C modelling magazine (with an increasing control-line and free-flight content!) is likely to follow the others and cease publication!

As covered earlier, batteries should not become hot after charging and such heat would indicate a problem. Lixx should be no more than vaguely warm. NiMh's will become warm to the touch, but certainly not hot, even in a transmitter where the case will provide insulation.

Older sets often included a wall charger for the transmitter and receiver batteries with little documentation as to functionality. Some produced a low current for trickle charging taking up to 14 hours which was fine for the now obsolete NiCad's used at the time, but dubious for NiMh's though the low current did not normally result in excessive heat. Usually, two outputs were provided for 8 cell transmitter and 4 cell receiver batteries; very high currents and generated heat would result if a 4 cell transmitter battery was charged by such a transmitter output! Some were of the peak-detect variety using a higher current terminated when fully charged after up to 2 hours or so, with an indication by a change to their indicator lights. These were also intended for NiCad chemistry and would not terminate reliably if used for NiMh's. The resultant continued charging would generate a lot of heat so that the battery becomes very hot. Even though such a battery may seem to operate afterwards, it will have been damaged resulting in reduced capacity and current capability together with increased self-discharge rates and likelihood of failure. The mentioned need for several replacements should have indicated that all was not well!

It seems wise to replace airborne NiMh's about three years after first charge, since there is an age-dependent failure mode which all too often occurs during the first flight of a session resulting in a sudden loss of capacity so that the radio stops working with obvious consequences. No tests have been identified to predict this problem and an affected battery can often be recharged and cycled apparently normally before failing again after a period. The transmitter battery has an easier life but, similarly, replacement after maybe 5 years would be wise to reduce the



NiMh Charging Continued....

September 2019

Article by Brian Holdsworth

likelihood of failure. While this will result in some batteries with considerable remaining useful life being discarded, the potential consequences suggest that it would be worthwhile - compromise! Any NiCad's still in use are long overdue for replacement. The meters available give a very poor indication of charge status even where a small load is applied - many include warnings about such usage in their data sheets. However, a failure indication would suggest a very sick battery!

Most multi-chemistry chargers should be adequate with charge rates typically about 600 to 800 milliamps for the commonly used AA size. The smaller AAA size is inappropriate for R/C since it would not be capable of supplying sufficient current for satisfactory receiver and servo operation. The charge rate is a compromise since a low value might not produce sufficient indication for the charger circuitry to detect the fully-charged status and a high value would increase the heat, potentially damaging the battery.

There is a tendency for NiMh's to "false peak" terminating charging early so that a battery is only part-charged, becoming discharged earlier than expected with consequences as above. Such a termination usually occurs a few minutes after starting the charge - checking duration and returned capacity should identify any occurrence. This is a documented characteristic of the chemistry and seems random in occurrence with no obvious sensitivity to age, usage etc. "Topping-up" a charged battery is also liable to overheat it and shorten its life.

Recently, a compact charger design has appeared from several brands where their similar specification and case layout suggests that they are the same unit with different case colours and labels. This includes the new Overlander RC-565 mentioned in the article, and their older VSR Mini with lower power capability. While they include support for NiMh charging, the specifications state that this is restricted to 6-8 cells, meaning that they are incapable of charging 4-5 cell transmitter and receiver packs!

September 2019

A VIEW FROM THE HEDGE. (By Will Sparrow)



Autumn is now well established, and, it seems, that every time I look up I see geese, in large "Vs" heading south, flock upon flock of them. All the painted ladies are making their way back to the Sahara (I thought that the painted ladies worked in Blackpool all year round? – Jim Sparrow). The hedge, which seems green when viewed from afar, has more than a few leaves tinged with russet and gold. On the up-side, yummy berries are hanging from every twig! Our hedge is getting a bit over crowded at the moment as not all the young birds have yet branched out to make their own way in life. We have reached peak bird! If you are lucky enough to spot me in the hedge you might think me a poor specimen (I would never think that of the hedge's sex god! – Hermione Sparrow), but, at this time of year we birds moult in order to make room for our winter feathers. This is a very energetic process and really drains our energies: we tend to keep a low profile. We birds are still about but you might be less aware of us.

There are some good flying days to be had in autumn and a steady trickle of members have been taking advantage. One bright Sunday a rather interesting new warbird appeared on the scene. The model in question was an artf Douglas Dauntless. Being the nosey sort of bird that I am, I locked my beady eye and engaged my super hearing. The Dauntless was powered by a 4-stroke glow engine and had amazing scale detail. There were guns, pilots, a scale aerial, retracts and even flaps and working dive brakes! The dive brakes were proving a bit problematical to set up so the decision was taken to disconnect them for the maiden flight. I ask you. When did you last see anyone use dive brakes on a first flight... or at all, for that matter? The test flight, entrusted to a supposedly safe pair of thumbs, went well. The model tracked straight on its take off run, lifted its tail and took to the skies. Wheels up, the model looked good in the air. Its stall showed a tendency to drop the left wing, but only if provoked, and the recovery from the spin was uneventful. After an uneventful landing it was the owner's turn to fly. I really do like to see satisfied modellers with wide grins: I was not disappointed!

The Indian summer, gifted to us after mid-September, saw a good bit of flying activity with beginners trying to maximise their flying hours in preparation for their "A" tests and more experienced modellers exercising nice scale models before the onset of winter (there is nothing quite as nice as the "beat" produced by a large-scale twin-motored model). I had not noticed anyone practising for the Scale and Aeroshow events, scheduled for the 22nd of September. Is this because of the well-known fact that "gentlemen never



A View from the Hedge Continued....

September 2019

practise" or is it down to apathy? Either way, it mattered not because on the 22nd of September it rained and the event had to be postponed. 'Such is life!

WS

The Digital Dividend?

These days a large part of our modelling purchases have to be done online, since the internet has meant that model shops are as rare as hen's teeth and we have all transferred our shopping away from real shops. We benefit from online bargains but, at the same time, we leave a little of ourselves behind in the form of personal data. Every time we put posts on social media or ask Alexa a question we reveal more about ourselves. Mark Zuckerberg, Google and Amazon probably know more about the personal lives of some folk than the folk do themselves... and these giants will never forget what they have learned. The individual is "the product" as his data is gleaned from the use of these wonderful services – and this leads to targeted advertising. Here is one modeller's recent experience of his digital dividend...

"I have reached the age at which the commercial world decides I need help. Suddenly, every insurance company knows my date of birth and I am showered with offers of incontinence pants, spectacles with lenses like jam jar bottoms, zip-up slippers and dominoes with spots the size of pound coins.

Every day the mail brings a choice of surgical supports for everything from kneecaps to nostrils, pre-paid funerals and magic potions that will darken my hair, straighten my back and increase the size of my tomatoes all for the never-to-be-repeated price of £4.99

Do I need specially adapted abseiling equipment to help me reach the top shelf in my modelling shed? No. Nor do I want a fur cap with ear flaps "To enhance the winter flying experience" or a denture mug with a picture of a Lancaster bomber that glows in the dark."

You have been warned: the future is out there.

John Higgins (Inspired by original thoughts from BW of Shropshire)



Glider Set Up.

September 2019

Article by Brian Holdsworth

Where the transmitter has a "Servo Position" display, this can be useful when setting up the various flap options, especially where small movements are being used. Determining whether a positive or negative value is required can be difficult, so initially setting a large value would make it obvious which way to adjust it.

The transmitter used has a "Flap Mixer" option which allows the positions of Flap, Aileron (Flaperon) and Elevator to be defined for each position of the controlling switch. Some transmitters have a similar "Camber" option. A three-position switch was used with Up selecting Reflex for Fast flight and Down selecting Camber for Slow flight. The Mid position has no values set, since this corresponds to Normal flight where the transmitter trims are used as usual. Small flap movements of about 3 mm were set initially for Reflex and Camber, being about the maximum expected. Typically, flaperon deflections will be set to about half the flap movement which will be barely visible. Excessive movements would increase drag, reducing performance, which is obviously contradictory for the purpose.

Considerable down elevator trim will be needed in Reflex since raising the trailing edge with the flap and flaperon movements generates a nose-up pitching moment requiring some down trim to compensate. Additional down trim is then needed to increase the speed for the Fast mode. A small amount of down elevator was set initially, making it obvious which way to adjust during flight testing.

Camber has the opposite effect, producing a nose-down pitching moment so a small amount of up elevator was set, again making it obvious which way to adjust during flight testing.

Where such a transmitter option is not available, implementing Reflex and Camber becomes more difficult. An "Airbrake" or "Trim Mix" option may be available allowing a single position of the selecting switch to select Flap, Aileron (Flaperon) and Elevator to be set as above; in general, Fast mode is more useful, so it may be considered appropriate to ignore Slow mode. There is usually an option to control the flap channel from a switch with elevator compensation adjusted via a menu option. The Flap channel could then be mixed to the appropriate aileron channel to drive them as flaperons with another mixer to provide elevator



Glider Set Up Continued....

September 2019

Article by Brian Holdsworth

compensation; often, a mixer for each aileron will be required so that the mixers may run short!

Even where flaps are not fitted, these options may be setup using the ailerons as flaperons with reduced effectiveness. A Rudder/Elevator model with a flap-enabled wing type defined would allow the elevator trim to be setup as above to achieve similar results. Unconnected channels have no effect!

Lowering flaps on their own does not have a great effect, even with a throw of 80 degrees or so. Some claim that no elevator trim is needed with flaps lowered, but this usually just produces slow flight with a poor sink rate - the margin above stall speed is then low with a resultant tendency to sink rapidly from a few feet above the ground as the effective wind speed reduces, producing a clumsy touch down. Thus, down elevator trim should be mixed in to keep the airspeed about that of slow cruise, which will produce a greater sink rate with better response available for the desirable smooth touchdown.

Similarly, raising the ailerons by a significant amount (much more than for Reflex above) does not achieve much, even with down elevator trim.

Combining the two effects, generally referred to as Crow or Butterfly, produces a result considerably greater than the sum of the parts due to the vortex generated at the narrow junction between the lowered flaps and raised ailerons. This vortex would be greatly reduced by any leakage through the hinge lines, so that film hinges are an effective sealing technique. As this vortex would reduce tail plane effectiveness, usage of a T-tail would help to lift it out of the vortex or the flap/aileron junction should be well beyond the tail plane half-span. With a significant amount of down elevator trim mixed in, a near-vertical descent can be achieved for the example lightweight model. With the convenience of proportional control via the throttle stick, a smooth pull-out may be produced by slowly retracting Crow as the ground approaches without requiring any elevator stick usage - spectacular and very satisfying!

A major limitation is that aileron response can be very limited when using Crow, even where switched differential is available and setup so that the ailerons only



Glider Set Up Continued....

September 2019

Article by Brian Holdsworth

move down with stick movements in this mode. It would be wise to line up the landing approach before extending Crow. A fair amount of Aileron-Rudder mixing is applied to assist turning in normal flight and this also produced sufficient control during this critical phase.

Increasingly, transmitters have a Glider (Sailplane) model type with a menu option for Crow (Butterfly). Some only allow switched selection which, as covered earlier, would be rather sudden in operation and hard to use satisfactorily. A few have sliders on the back of the transmitter which can be operated by a finger while maintaining control of the sticks; this can be awkward and ground practice may be useful before usage in flight. Some have a front-mounted knob, but using this would require the hand to be removed from the stick for operation which is not ideal just before landing! Where the option allows operation from the throttle stick, this may mean that motor control is not available - sometimes, that channel can only be used as a second flap channel. Some have an option for the throttle channel to be switched with an adjustable delay to smooth starting and stopping of the motor which is essential to reduce the likelihood of the considerable start-up motor torque ripping the front bulkhead out of the model. As above, proportional throttle control seems easier, and consequently safer, for general usage, especially where considerable motor power is available as for this example.

Using three free mixers, the flaps, flaperons and elevator are mixed from the throttle stick to implement variable Crow. To inhibit throttle control, Throttle Hold is setup with a two-position switch preferred to avoid ambiguity in selection. The mixers are enabled by that switch to be active in the position where the throttle is held. It seemed logical to use the Up position to control the motor (Launch mode) and the Down position for Crow (Landing mode).

Mixers allow different values to be set for their controlling stick positions above or below centre. In this application, only the values above centre will be used. Since this would only produce a limited amount of movement from half the total stick movement, the Offset value for each mixer is set so that they become effective from two throttle ratchet steps above closed, using most of the available stick movement. A margin above fully closed is desirable to avoid any unwanted



Glider Set Up Continued....

September 2019

Article by Brian Holdsworth

movement as the stick flexes against its stop. Flight testing may indicate that it would be helpful to start elevator coupling earlier or later to ease the transition as Crow is deployed or retracted, when this Offset value would be adjusted as appropriate.

One mixer is linked to the second aileron channel to produce flaperon mixing with the mix value adjusted for ~40 degrees up movement at full throttle stick position. Where this type of mixing (referred to by Spektrum/JR as "Back Mixing") is not available, an additional mixer will be needed for the other channel, set to the same Offset and inverse mix value to give matching flap movement.

Similarly, a mixer is linked to the flap channel with its mix value adjusted for ~80 degrees down movement at full throttle stick position. In most cases, there will be insufficient servo movement available before the internal mechanical stop of the servo is reached. The Subtrim of the flap channel is set to ~80 to increase the achievable servo movement. With the servo arm and linkage setup as covered earlier, this would correspond to retracted flaps, so the output arm is re-positioned to give half flap with the throttle stick centered. Where separate channels are used for each flap and "Back Mixing" is not available, additional mixers would be needed as above.

The third mixer is linked to the elevator channel. In general, considerable down elevator will be needed but this will be adjusted during flight testing. This model uses a V-tail and, as above, an additional mixer would be needed for the second tail servo if "Back Mixing" is not available. Again, a small amount of down elevator is set initially, making it obvious which way to adjust during flight testing.



September 2019

Guiding the Lilly

You all know that my initial reason for putting a newsletter together was to improve my photography of flying models. I've now been doing this for over 11 years, initially for the Fleetwood club and finally for this club. Over this period, camera technology has moved quite incredibly forward - you can now pick up a camera phone and produce amazing quality. Also 'point and shoot' cameras are capable of some wonderful images.

Hand in hand with camera technology, processing has become in itself an artform and it is that which I study for hours on end when I'm stuck here at home. My latest camera takes a full frame image like the old 35mm film cameras - the image sensor is exactly the same size. This now gives me much higher quality colour and a very large colour range. This is a picture I took of an evening sky.



Guiding the Lilly Continued/.....

September 2019

In that picture of the sky you can see that incredible range of tones now available to me with this camera. The point of this article concerns skies because one of the problems when you take a fast moving model aircraft is the horrible bland sky.

However, with modern processing software, it is now possible to add in sky which fools the eye and hopefully does not provoke some nasty sod to say that 'it's been Photoshopped'. So, I've found that if you can find a sky which has some interest but is the same lumenosity as the one in which you took your picture of the model, then you achieve a sky which 'fits'. It's stupid to try adding a brightly lit blue sunny sky with pretty fluffy clouds to something which was taken in dull conditions.

For this reason I now take pictures of all sorts of skies and at different times of day and am building a library of them to use.



I took this at the field in 2014 - really bland sky - no features whatsoever.

Perhaps this is not the best choice of sky - it is perhaps a bit too dramatic but it is surely no longer 'bland'.





Club Instructors

September 2019

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

Club Events 2019

Swap Meet/Auction - Wednesday 2nd October at the Marton Institute, Oxford Square, Blackpool FY4 4DR commencing 8pm.

Saturday 2nd November at the field Bonfire Night with fireworks & Spectacular Night Flying Display.

Wednesday 6th November Mark's Futaba Night & Dave's Turbine Night.

Thursday 5th December Annual General Meeting.

Thursday 19th December Quiz Night and Hot Pot Supper.

In Conclusion

I'm sorry that this is a shorter newsletter than normal but it has been a difficult time due to various commitments beyond my control. I keep believing that 'things' will stabilise and everything will become 'normal'. It never seems to. We seem to be spending more and more time seeing consultants, physios etc. They've now agreed that she needs to have a knee replacement which she actually needed years ago but wasn't well enough to have that operation.

May this weather calm down again so that you guys can get those models back in the air. Thanks to you kind gentlemen and bird for once more putting pen to paper - THANKS.