

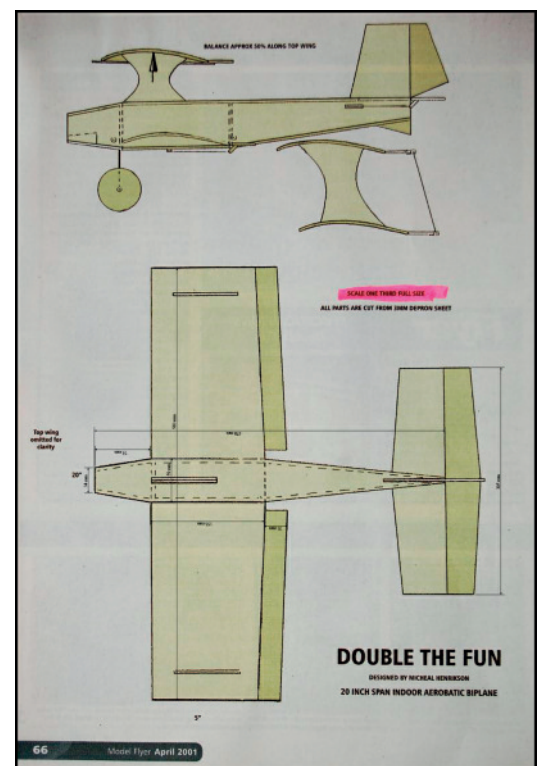
Newsletter

September 2017

Another month and shame to say, I still haven't got down to the field. However, from what I hear from Will Sparrow's article, the weather hasn't been up to much. It seems to be yet another year that 'Summer' seems to have passed us by. There have nevertheless been a few absolutely perfect flying days intermingled with wind and rain.

I've been working hard to get myself back to fitness and am attending a 12 week course at the YMCA - it's 'knackering' - technical term, but needs to be done.

I finished building a new biplane for the indoor flying and boy does this one really fly. I changed the wing design - it looks better and it rolls faster - simply, it flies better in every way. The original design was from the Model Flyer magazine and it was called Double the Fun. It was designed with an under cambered wing and flew very predictably but with limited aerobatic performance.



I've been developing it ever since over the past 4 years and the latest and most successful looks like this. I really must do a bit of airbrushing on the thing but to be honest, I'm now just enjoying the flying. I soon found that a wheeled undercarriage was not such a good thing because it was too easy for it become really entangled in the hanging string nets. I now use a simple but crude reinforced legs which work perfectly well but don't look half as pretty as those wheels. I had tried various wing spans from 600mm down to a 450mm but found that 550mm seem to be the best compromise. It was the flat wing which produced the best change to the design - then it started to fly properly. I use the 2S 350mah LiPos' which give a good 8 minutes of exciting flying. We have as many as 6 or more models flying simultaneously which of course leads to one or two mid airs. These things are FUN from the moment they take off - no one gets hurt (except the plane) but a bit of Clear Tape and off it goes again. My indoor models usually last about a year.



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A VIEW FROM THE HEDGE. (By Will Sparrow)



I just happened to be down at the bottom end of the hedge the other day and, whilst there, I took the opportunity of having a chat with The Wise Old Owl (the old boy who perches in our hedge occasionally and is well known as the fount of all knowledge). I got to moaning as to the poor state of the current British summer; this proved to be just the spur to set him off. He exclaimed, shaking droplets of water from his feathers as he did so, that the UK received 320mm of rainfall between the beginning of June and the end of August – 32.8% more than the 241mm average – making 2017 the 11th wettest summer on record. (How he knows all these things is a mystery to me). He went on to say that, in his opinion, summer did not, nowadays, exist as a separate season at all. “In this era of anthropogenic climate change (picture, if you would, a poor sparrow with eyes glazed over...) we should cut summer adrift and regard it as a mere, if slightly warmer, windier, wetter extension of spring...” Well, said I, trying desperately to hold my end up, that at least autumn is a distinct season. Regardless of what the weather gods dish up, the leaves will still turn brown, crisp up and fall to the ground, filling the air with their mouldering scents. The owl gave me a long, studied look... Respect!

Well, now that the equinox is behind us, a little look back at activities on the field, as viewed by yours truly, is in order. The maize is still with us, I'm afraid, and has claimed another victim in the shape of a little foam model which was observed to perform a terminal death dive into its welcoming arms (stalks?). Despite searches and drone missions the model has yet to be found. Still on the subject of death dives, I watched as one of those nice, ultra-lightly-constructed aerobatic models totally destroyed itself in a one-sided confrontation with the planet. It is often said that sheep, when not actually asleep, devote all of their limited brain power to thinking up new and novel ways of harming themselves. I don't think that you modellers are quite in that category but you sometimes come close when determining the destinies of your aeroplanes. How does taking off with the transmitter in range check mode grab you? Don't you dare scoff... to err is human!

At the end of August one of those twin-boomed jets (the replacement for the model that self-immolated a few weeks past) was having a swoosh about the sky, and was flying exceptionally well, as its owner instructed it to carve up the sky. As landing time approached



A View from the Hedge Continued/...

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it was clear that all was not well... all the wheels were not down. The decision to do a wheels-up landing was made: we birds held our collective breaths and tightened our grips on our twigs. On finals the model looked to be very low, then, just short of the hedge, it gave a sort of vertical heave, waggled its wings and scythed into the top of the hedge. At this time of year, the top of our hedge is not populated with the feathery shoots of spring, but with long, prickly hawthorn twigs anything up to a couple of centimetres thick and a metre long. Who would have thought that a balsa leading edge could remove a few dozen of these arboreal sentinels and chuck them in a heap onto the track? The model suffered substantial damage to its wings, booms and tail but the fuselage was almost unscathed. The model is repairable and is likely to be gracing the skies again in short order. Later the same day an engine-powered model destroyed itself in the bean field to the north of the strip. To paraphrase Beatty at Jutland (Who? Where? – Jim Sparrow), “There seems to be something wrong with our models today”.

After all this long, depressing list of crashes it was refreshing to witness something a little more uplifting. One of your long-standing members turned up with an electric pattern plane. The member, being something of an electric virgin, had kitted out the model with the recommended set-up and, as the model lifted off, it was obvious to this observer that the recommended set-up was a good one. The model flew just as a pattern plane should, apart from a tendency to pull to the left in the verticals. To my eye, the rudder/fin looked to be a little out of alignment; a view confirmed when the plane landed. This sort of model needs lots of flights on nice, calm days, for careful trimming/mixing to be fully sorted out. Only then can its full potential be realized. I’ve forgotten what a calm day feels like... still, we can but hope!

WS



Flaps - 3

September 2017

Article by Brian Holdsworth

Models are able to use combinations of flaps and flaperons etc, which are impracticable for full-size aircraft, thanks to the use of modern transmitters with their considerable mixing capabilities. For small movements, flaps operate in a similar fashion to the other control surfaces - ailerons, elevators and rudder. Larger movements produce other effects making performance less predictable.

Camber is a term used for two different attributes of a wing section. It can be used to describe the curvature of the upper or lower surface as in "under-cambered" sections where part of the lower surface is concave so that the chord line may be partly outside the section. For most analysis purposes, it is used to describe the curvature of the centre-line of the section (half way between upper and lower surfaces) which is only straight for a symmetrical section, and is curved upwards for semi-symmetrical sections; it may rise and fall along the section for more complex shapes. Where the trailing edge is raised, this becomes negative camber and is referred to as Reflex; such sections are often used for tail-less aircraft, generating the downward force at the rear, which is required for stability - sometimes a symmetrical section is used with elevons raised slightly to produce a similar effect.

The generated lift is roughly proportional to the amount of camber. WW1 biplanes used thin wing sections with considerable camber (effectively a curved plate) which produced good lift at low airspeeds and were well suited to the heavy, low-powered engines and the structural materials and techniques of the time. The disadvantage of camber is that lift moves forward with increasing angle of attack and/or airspeed, which is destabilising, causing pitch-up, requiring attention to stability and limiting the practical speed range. Aerobatic aircraft usually use symmetrical sections with zero camber producing little lift movement (not none as often claimed) of the lift centre.

Even when retracted, flaps inevitably disturb the smooth surface of the airfoil, reducing lift and increasing drag. When deployed, some improvements may be produced if carefully setup, but this improvement should really be compared with that of a flap-less wing which is, essentially, impossible. The performance gains are not great and may not be worth the extra weight and complexity, especially for smaller sizes. The gains are greater for thinner sections and they may do little for a thick, symmetrical section. Their main practical benefit is the ability to use large down-flap positions to generate drag and increase the sink rate for descent from altitude or to steepen the landing approach. This can be more effective if combined with up-flaperon to produce Crow braking as is often used on gliders.



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Flaps - 3 Continued/...

Article by Brian Holdsworth

Where flaps and/or flaperons are lowered or raised by a small amount (a few degrees), as often used on gliders, this is referred to as Camber or Reflex respectively since the section characteristics are changed towards those of one with camber or reflex as above. They have the effect of increasing or reducing lift with only small effects upon the resultant drag - for some sections, applying some reflex may reduce the drag slightly at higher airspeeds. Camber can be useful for slow flight such as when searching for thermal lift, since the reaction to any lift can be increased in the form of a visible pitch-up, allowing the lift to be detected by the flyer. Reflex allows a higher airspeed, increasing the distance covered for a relatively small increase in sink rate, which is useful when moving from one area to another.

Camber increases the amount of down wash generating more lift, moving the centre of lift rearward which increases stability. This generates a nose-down pitching moment so that some up-elevator may be needed to compensate. Reflex reduces the amount of down wash or even produces up wash; this generates less lift moving the centre of lift forward, which reduces stability. This generates a nose-up pitching moment so that some down-elevator may be needed to compensate. This is potentially dangerous since, if not corrected, a stall may be provoked which could be difficult to recover from at low altitude, which will generally be the case in the landing approach.

Complicating the analysis, the amount of down wash over the tail plane is affected, particularly at smaller sizes; this produces nose-up if increased and nose-down if reduced. The increased turbulence reduces the tail plane effectiveness producing a nose-down moment and reducing elevator effectiveness. These effects are sensitive to small variations in flap/flaperon angles, airspeed, tail plane size and position, so that apparently similar layouts can have different trim changes.

It seems quite easy to hold a little up elevator during the approach, but much harder to apply sufficient down elevator, perhaps because this seems unnatural when the ground is approaching rapidly! Thus, it is preferable for early flights to be performed without any defined elevator compensation (particularly up) until the actual requirements are identified.

When camber is applied, the effective chord line follows the trailing edge, increasing the angle of attack for a fuselage angle to the airflow. This causes zoom (momentary increase in height) until the inherent stability re-balances the aircraft to give a more nose-down attitude with the effective angle of attack roughly the same as before - it will not be quite the same



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Flaps - 3 Continued/...

Article by Brian Holdsworth

due the various airflow effects outlined above, generally requiring reduced airspeed. Airliners circling in a stack, awaiting landing clearance, often deploy some flap to keep the fuselage level at the low airspeeds; this is claimed to be for passenger comfort, but is perhaps for the benefit of the cabin crew pushing trolleys to sell over-priced duty-free!

A hand-launched model has the potential problem, when landing, of the tail touching the ground before the fuselage belly. This would cause a heavy touch down due to the resultant nose-down moment slamming the fuselage onto the ground. Applying camber, even for flaperons with their limited flap effectiveness, has the effect of levelling the fuselage during approach and touchdown so that the belly touches first. For power models without a folding propeller, this also means that the propeller tips touch the ground some time before the fuselage, allowing the propeller rotation to stop before full touchdown - experience shows that this technique reduces the risk of propeller breakage.

When reflex is applied, the effective chord line follows the trailing edge, reducing the angle of attack. This causes a momentary loss of height until the inherent stability re-balances the aircraft to give a more nose-up attitude with the effective angle of attack roughly the same as before, generally requiring increased airspeed. As the flap/flaperon deployment angle is increased, the apparent nose-up angle increases, generating more drag, which can be beneficial for steepening a landing approach. The stall potential is increased, especially at the tips, and if too much is used, any stall is likely to be more violent, especially in a turn.

Larger flap deployment angles are too much for the airflow to follow the section shape, resulting in turbulence and increased drag. Flaperons should not be used at flap angles of more than a few degrees, since aileron effectiveness would be reduced or even reversed which would not be good! The control surface is operating more like a flat plate at an angle to the airflow, which deflects the airflow downwards (for down movements), increasing the down wash and increasing the lift from the lower surface by increasing the air pressure. That from the upper surface would be reduced due to the airflow separating behind the hinge line. The centre of lift moves forward, reducing stability with only a small increase, or even a reduction, in total lift; considerable extra drag is produced. The resultant nose-up or nose-down pitching moment can be significant and often differs from that for smaller angles.

Split flaps are generally more effective than plain flaps, since the airflow is maintained over the upper surface, but they can be more difficult to implement. Fowler flaps are implemented



Flaps - 3 Continued/...

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Article by *Brian Holdsworth*

in several parts, often sliding out to increase the wing area, and usually with carefully profiled gaps between each to produce a slot to maintain a smooth airflow. The parts are deployed at increasing angles to produce an approximation to a smoothly curved plate, which gives better performance. However, implementation is complex, so they are only used on larger aircraft - model usage would be difficult.

The effects generally increase up to about 70 degrees with little change at greater angles. Angles of the order of 10 to 20 degrees can be awkward, since the effects could be those for small or large angles, or even switch between them with airspeed variations, which would be awkward if the flap on one side behaved differently from that on the other side, generating considerable moments in pitch, roll and/or yaw.

And Now for Something Completely Different

Dave Swarbrick sent this in:-

Donald Trump wants to paint the White House.

He calls for quotations.....

Chinese guy quoted 3 millions.

European guy quoted 7 millions.

Aussie guy quoted 10 millions.

Trump asked Chinese guy.. "How did you quote 3 millions?"

Chinese guy replied "1 million for paint, 1 million for labour, 1 million profit."

Trump asked European guy same question.

He replied "3 million for paint, 2 million for labour, 2 million profit."

Trump asked Aussie guy how he arrived at his quote.

Aussie replied "4 million for you, 3 million for me and we will give 3 million to the Chinese guy and ask him to paint!!"

The Aussie got the contract!!!



September 2017

The Art of Course Model Flying

Article by John Prothero

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 following 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.

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The Art of Course Model Flying Continued/...

Article by John Prothero

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 is still married!

On a similar theme, I called round to go flying with a certain member of this club many years ago now.

On arrival I could hear a banging coming from the kitchen what's all the noise I asked? "Well I did a spot of fuel proofing last night and sprayed it on in the kitchen all the pans are now stuck to the shelves, I got a good finish though – lets go flying".

The noise was his wife knocking the pans off the shelves with a mallet or similar!



Taken at the field at the Scale Competition - Andy's Lovely Chipmunk.



List of our instructors.

September 2017

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

Social Evenings

These will again be held at the Marton Institute, Oxford Square, Blackpool FY4 4DR. Come at around 7:30 for 8pm.

It has been booked for the following dates:-

Tuesday 10 th October	'Bring what you're doing'
Wednesday 1 st November	Chuck Glider Evening
Thursday 7 th December	AGM
Thursday 21 st December	Hot Pot & Quiz
Wednesday 3 rd January	tba
Wednesday 7 th February	tba
Thursday 8 th March	tba
Wednesday 4 th April	tba

Bonfire & Fireworks at the Field

This will be held at the field on Saturday 4th November. There will be night flying demonstrations, fireworks - always a great night. Bring some food and fireworks.

You will be informed by Email the details of each Social evening closer to the events.



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In Conclusion

The evenings are drawing in - it doesn't seem many weeks ago that we were watching Spring emerge! Summer seems to have passed us by oh so quickly this year.

Every cloud has a silver lining however and we start the evening Social Meetings again. You will have noticed that due to the popularity of the venue, we have been unable to run these on Wednesday nights throughout the Winter season. We had to get what we could get!.

The first night (Tuesday 10th October) is an invitation for you to bring along whatever modelling project you are currently doing. We had a similar meeting last year and it was a great success. You don't have to give a talk about the project but you are welcome to do so. If you are having problems with your particular project, this Club has a lot of expertise amongst some highly knowledgeable members - they are always there to give you advice.

For any new members who have never been to the venue, you will find that there is plenty of parking but it's better to come early (because it's so much easier to park!). I find that getting there at around 7:30 is ideal - gives you plenty of time to buy yourself a pint first and they do some very nice guest beers.

So come along and enjoy the evening. I wish I could say that I will see you at the field but for the present, my ability to stand up for long periods is just a dream. When I fly at the indoor, I do this sitting down on the impact mats which they very conveniently leave in the corner of the Sports Hall - luxury (or is that pure laziness - whatever).

Thanks to all of you who have contributed to this newsletter - Brian Holdsworth, John Prothero, Dave Swarbrick and of course our tame little bird, Will Sparrow. Thanks guys.

Enjoy your flying and I hope to be seeing you at the Social evening on the 10th.