# Newsletter

June 2017

This has been such a strange, and in so many ways, a terrifying month in the 'real world'. Every time you hear the news it seems that the world has gone crazy. It's just been one disaster after another culminating in that terrible fire at the Grenfell block of flats. Seeing that almost unbelievable holocaust was almost like seeing a Hollywood disaster movie - something that would never happen in the 'real world' - but it did.

Coming back to what this newsletter is supposed to be about, model aircraft, I made a decision and that I would go through every single one of my models and re-set them up properly.

I have a Multiplex Fun Cub and I've read over and again by guys who fly them that they are one of the best models they have flown. Well, I have had mine now about 5 years and I certainly wouldn't have described it as the best model I had flown.


***Picture taken by Jason of my Fun Cub***

OK, so what was wrong. I had fallen into the trap of fiddling in a most unscientific way with it's controls. One problem with the Fun Cub is it's C of G point - it's rather nose heavy and with a 3S 2200 LiPo up front won't balance out. So I stuck on a few weights on the tail. I noticed in the various threads on the net that other owners had flown them with 3S 1500 battery packs to get the C of G right.

I had then fitted a very powerful (far too powerful) hotliner glider motor up front which in turn made the C of G problem worse. It was in any event now far too powerful, so I then re calibrated the throttle down to 75% which tamed the beast but not that C of G. I then made matters worse by gradually increasing the control throws thinking that it would then become a highly aerobatic model - wrong again - it just became more and more of a nightmare.

It was time to draw a line and start again - from scratch. I unplugged everything and deleted the model memory from my radio. I carefully set up every control exactly to the specified throws except the flaps

- I decided to fly without those flaps until I could get the model to behave as it was designed to. I then installed a 2200 LiPo and after re-arranging the position of the receiver was able to relocate that LiPo further back. That sorted the C of G nicely. I then checked out the lateral balance and all seemed good so, out to the field.

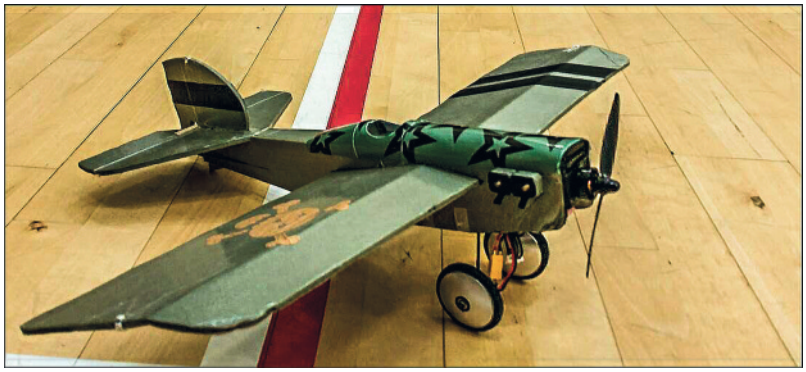
I took it to the field one warm trainer evening. At around ½ throttle it had lifted without any 'UP' being applied. In fact I was able to give a few clicks of down trim. It was just a different aircraft.

I can only say that the model was transformed in it's behaviour and it can only get better because I could also now swap that over powerful tuned down motor for a lighter and more suitable one which would then mean that I could remove some of the tail weight. To be honest, it was these articles which Brian Holdsworth has been writing which inspired me to sort the model out. It was all so simple to do and it's a bit pathetic to think of those years I've been flying that excellent model so out of tune.

# BMFA 'A' Certificate Awards

Congratulations to Jake Reid and Rob Ellis on passing your 'A' certificates.

# Jason's Latest Camera Phone Pictures



*Tony Ollerton' lovely Indoor Old Timer*

***Watch out guys - it's Lucy giving us that stare. She is obviously NOT amused although it was her who had walked into the path of an unsuspecting model. Don't be alarmed guys, the model wasn't damaged (neither was Lucy).***

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

As the merry month of May drew to its close, the weather was proving to be a bit mixed, so only those of "the leisured classes" were able to take advantage of a nice day when one decided to turn up. It always surprises me that since so many of your members fall into the "leisured" category, so few of them avail themselves of your excellent facilities. Could it be that the lures of shopping (Ugh!) or gardening are having a stronger pull than they once did? Luckily, there are still some keen members out there who are determined to provide this aviation-minded sparrow with something to view. More power to their elbow, say I!

The Sunday before your long-anticipated fly-in promised the prospect of a reasonable flying day but the wind was from the south, bringing with it nasty turbulence over the strip. A few brave souls managed to get their weekend aviation fix but many stayed away. My interest level was raised when I saw a large jet engine being fixed to the assembly bench (my mate, Jim Sparrow, reckoned that the bench would never fly, even with such mighty thrust… sometimes I have real doubts regarding Jim!). The engine was duly fired up, the bench did not take off (a smug look from Jim, here) but the oak tree, a few metres away from the tailpipe, visibly clenched its roots and hung on for dear life. Having brought a large jet model, the same jet-jockey was later tempted to give it some air time, but a low approach over my hedge coupled with the turbulent, southerly air conspired to produce a somewhat hard landing. I'm sure that I'll see this model again, once the landing gear has been glued back in.

Time has but one direction, so the day of your fly-in finally arrived. I had been looking forward to this for ages and had invited several feathered chums to come over to share a twig and view the action. It was obvious that lots of effort had been put into preparing for the day; the strip had been cut, spectator viewing areas prepared, BMFA toilets (!) had been requested, a burger van had been booked and a whiz-kid, international pilot had been scheduled to wow us all with his super-human prowess. All the local clubs had been invited to attend too. Initially, I wasn't sure about the music from the PA system but, as the day progressed, I began to find it strangely hypnotic – my guests felt the same. We all began tapping our feet to the beat, our twig hit resonance and two of us fell off! The weather on the day could have been better. The morning was overcast and a bit cold, but improved considerably in the afternoon. There was a fair turnout of your members: all of the models were ARTF, of the "EXTRA" type. It was refreshing to see one self-built jet present, which flew exceptionally well and merited the round of applause it received on landing. The visitor (I only spotted the one, but one of my chums reckoned there were two of them!) brought a fleet of nice scale models. What of the promised whiz-kid, I hear you ask? Well, he didn't turn up. BMFA decided that you didn't qualify to have their toilets, so it was a blessing in disguise that the attendance was so low. The low numbers also had an effect on the burger man. His announcement over the PA had us twig-sitters in stitches. "We will be closing soon and we have only 200 burgers and 300 sausages left…"

There has been a fair amount of glider flying taking place recently. I find glider flying strangely soothing; watching those long-winged beauties wheeling in the sky, trying to emulate the buzzards and gulls, whilst listening to the soporific bleeps of the variometers, is surely the aviation parallel to watching a fishing float in anticipation of a bite! As I say, strangely soothing. Glider flying, however, is not without its hazards. Only recently one soarer, soon after launch, made "a funny noise". Now, "funny noises" always give rise to concerns. In this instance the model had shed one of its folding prop blades not, as sometimes happens, due to failure of the pivot pin, but plastic fatigue in the blade itself. The pilot had the presence of mind to shut down the motor immediately, so there was no resultant damage caused by the out of balance prop; the model landed safely. Not all gliders have been landing safely, however. One had the misfortune of catching a wing tip on landing; the resulting cartwheel did serious damage to the fuselage but left the wings and tailplane unscathed. I suppose that you modellers have to be philosophical, but it must be hard at times. Another model to test the philosophical nature of its owner was that jet-that-looks-like-a trainer-on-steroids. This model, tough as old boots, was flying a high-energy, high "g" routine when the tailplane yelled "enough" and failed. The model destroyed itself in a safe area: I doubt that I'll have the pleasure of seeing it perform again, but you never know, modern glues are wonderful and the resolve of you modellers is unsurpassable!

Our hedge is not in any way mono cultural; only the other day I was having a very interesting chat with a swallow, called Derek, who had just dropped by to rest his wings. Swallows have a strange accent that gets a bit of getting used to, but as long as I concentrate I can get the gist of what they say. The subject of high "g" turns was one of our topics of conversation. As we all know, swallows dart about the sky at high speed and have to perform tight turns to catch their lunch. I commented that I had once done a tight pull out from a vertical dive which made me feel a bit sick and left me with a sprained wing. Derek found this most amusing and said that sparrows were not built for that sort of thing, whereas swallows… He explained to me that in doing a 1 metre radius turn at roughly 20 mph would have him pulling 10 "g". "Doesn't that make you feel sick?" I enquired. He said that swallows get used to it from an early age; he just tenses his stomach muscles and thinks no more about it. He then threw in a note of caution. "Even swallows are not indestructible. If I tried the same turn at 40mph I would be pulling 40 "g"… faced with this choice the midge has to be the one that got away!"

I trust that, by now, you are all flocking to the field to enjoy the long hours of daylight, zephyr-like breezes and summer sunshine. Have lots of fun and don't pull too much "g"!

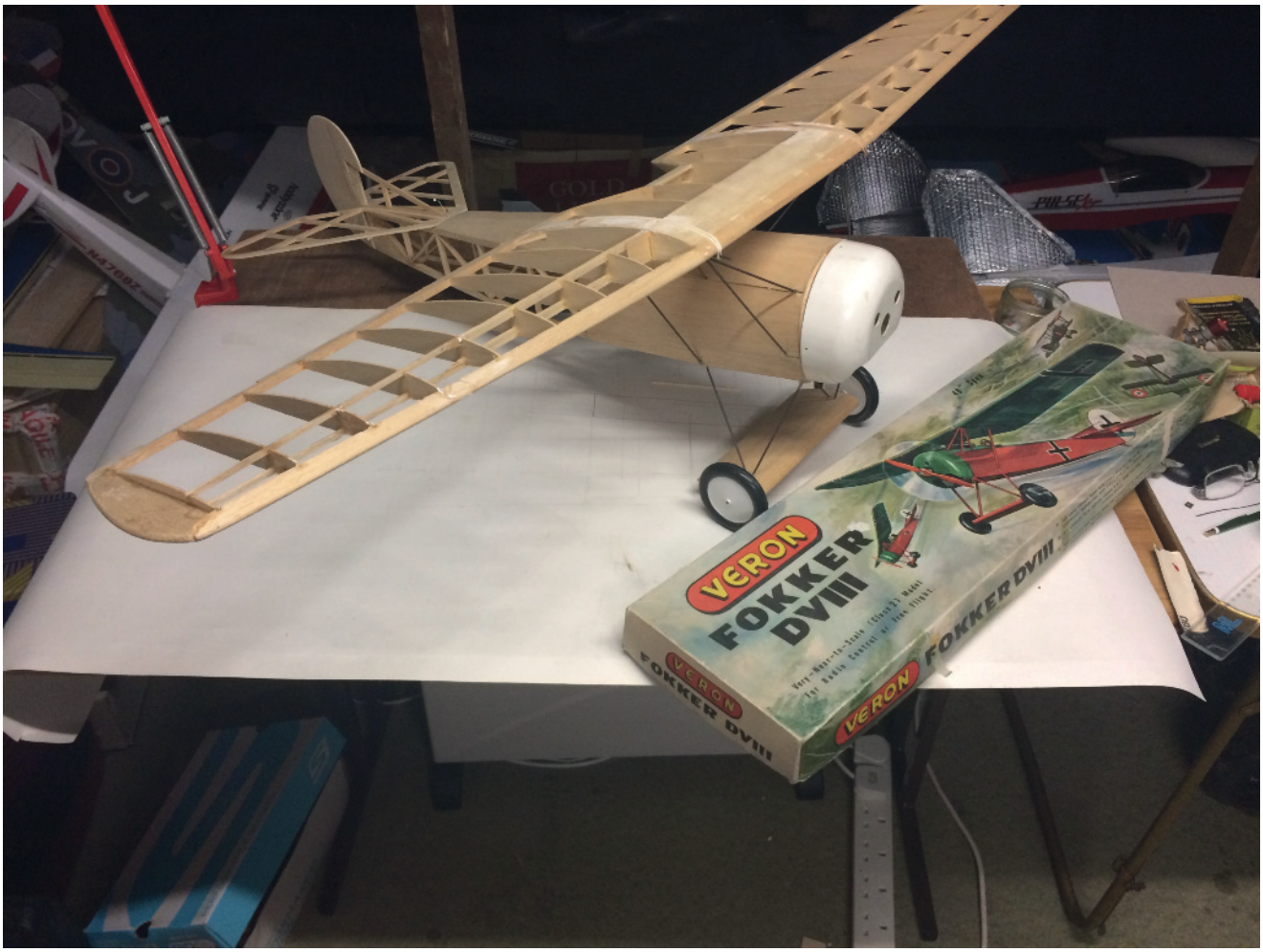
WS

# Meet the Old Fokker

June 2017

*Article by Steve Warburton*

This tale dates back to the early 70s, to the time when I had just started my Craft Apprenticeship at British Aircraft Corporation Strand Road Preston and despite the three day week, strikes, petrol rationing and power black outs, I had become very distracted by scooters, pubs, night clubs and of course girls! So although I made a good start initially on the journey into the world of Aero modelling, my involvement with the hobby suddenly stalled as a consequence of the foregoing. When the right girl came along, I made no time or finances available to pursue the Hobby further, and shortly after getting married and moving into my own house, my father presented me with all my "useful stuff,"




that had been cluttering up the family home, including a big box of model aircraft bits, which were immediately consigned to the loft where it mouldered away for almost forty years.

In 2012, following my voluntary redundancy after working 42 years for BAE or British Aerospace, I managed to make time to re-kindle my interest in the hobby and following completion of a partial loft conversion, I managed to commandeer an area of about half the loft for a couple of small my work

# Meet the Old Fokker Continued/..

*Article by Steve Warburton*

tables, models, building materials and equipment. A few months ago when I was tidying up trying to make a bit more space due to the increasing number of model aircraft, in a dark corner of the un-converted part of the old loft, I came across a large dusty (torching droppings!) box of model aircraft bits. Inside the box were a couple of large black bin bags in which I found the skeletal remains of a wing (yes - some damage had occurred) a fuselage and the original kit box belonging to a lovely 46' wing span, near scale Veron Fokker DVIII kit that my parents gave me one Christmas nearly 50 years ago.

Now, with the recent revival of interest in classic model aircraft and kits, it didn't take long for me to decide to embark on a restoration and repair programme with a view to completing and flying the model one day, after all it seemed such a shame not to complete and perhaps one day fly this interesting model.

The kit box contained the original plans now yellowed and a bit fragile, the instructions, two sheets of curled up transfers, tissue paper, some well-seasoned balsa and lots of other bits and pieces that brought back happy memories.

First thing I did was to repair the broken wing which fortunately had only been damaged on one side of the towards the wing tip however, I soon found that the balsa cement I had used during the original build had now turned brittle in many places and could no longer be relied upon so I set about carefully removing what I could and regluing the wing joints with a good quality cyano-acrylate super glue. Fortunately with being stored in the damp atmosphere of our loft the balsa wood seemed to have remained moist and the re-gluing seemed to work well. Re-gluing the centre section of the wing around the hardwood main spar was not required as I had used PVA, which was still good.

The fuselage had sustained very little damage, just a few joints in the rear half of the fuselage where the balsa cement had become detached, again I removed as much of the brittle cement as I could and reinforced all the joints with cyano.

Re-gluing was not required on the front half of the fuselage because I had used copious amounts of PVA to achieve the strength required for the attachment of the wing and undercarriage wire strut framework and the plywood fuselage structure.

Back in the day when I first started building the Fokker I intended using an original Mills 1.3 diesel, which had always been a good runner and was sufficient to power a heavy 56" rudder only trainer I used to fly, so I decided to stick to the original plan as it would be in keeping with the model although I'm not sure how well it will cope with an inverted installation especially during starting.

There were a couple of hurdles to overcome with the Mills as it was goo'd-up solid and trying to obtain diesel fuel wasn't going to be easy however, after a couple of weeks soaking the engine in a nice bath

# Meet the Old Fokker Continued/..

of paraffin everything loosened up nicely and it was time to enquire about the diesel fuel I had ordered a few weeks earlier from the nearest model shop. I phoned them up to be told that they had not ordered the fuel in fact nothing had been ordered recently and wouldn't ever be because they were closing down the business in two days time – even more disappointing!

After chatting to various club members our very kind club secretary: Mr Peter Cathrow offered to lend me some of his diesel fuel, so we met one day at the club field and with the Mills fitted to suitable test rig, fuelled up and started her up - relatively easily. What a sound and oh what a lovely smell of that ether and Castrol mix!

This success filled me with more determination to complete the build however, I had arrived at a crossroads and needed to make a decision - do I cover the model in the old and familiar way with the Modelspan tissue paper supplied in the kit or use some type of iron-on covering film with which I had very little experience apart from using it for the odd repair.

The instructions did not recommend the use Nylon or Iron on coverings because of the weight so eventually, after having decided to go for the tissue option I asked Peter if he had any suggestions for which dope and tissue adhesive to use. Peter recommended that I consider using LiteSpan instead of tissue, as it is stronger, not as brittle, gives a similar finish and is more vibrant.

After consulting the Internet I soon found a supplier with a reasonable range of colours including World War 1 Camouflage Green. Not wanting to spend a lot of time or the complication of producing the more ambitious lozenge type camouflage schemes, I decided to use the green and red scheme Veron used for the prototype model as illustrated on the kit box lid. I ordered the LiteSpan and BalsaLoc and awaited its arrival.

A few days later the parcel arrived and I set about carefully sanding down the structure. I decided to start with covering the wing first, cutting out the LiteSpan for the upper and lower panels for the centre section, left and right hand sides of the wing. Following this I painted on the BalsaLoc to the upper and lower structure surfaces. I decided to cover the lower surface of the centre section of the wing first, which would then allow me to overlap the outer wing panels on top of the centre section covering.

Initially I found the covering process quite difficult and time consuming especially trying to ensure all the creases were removed prior to the final heat finishing but overall for first attempt I was pleased with the end result. The only mistake I made was to avoid wastage I cut the centre wing panels out of the LiteSpan at 90 degrees to the grain direction of the outer wing panels. I then compounded this error by applying the centre panels' matt side up so there is a marked difference in finish between the outer and centre wing panels, which was annoying, but lesson learned.

# Meet the Old Fokker Continued/..

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Applying LiteSpan to sheet balsa requires the BalsaLoc to be applied to the underside or contact surface of the LiteSpan as well over all the sheet balsa making it important to ensure you get the LiteSpan the right side up before applying the BalsaLoc. I didn't and this resulted in the fuselage having a matt finish but I don't think it matters too much. I did have some difficulty trying to get rid of all the air bubbles on the sheet surfaces. In conclusion I will certainly use LiteSpan again.

Next job is to glue on the Tail plane and fin, control horns, radio etc., and finish off all the fiddly bits. The original prototype model was flown with single channel proportional but the plan allows for 2 channels proportional on rudder and elevator. I have decided to go for the deluxe rudder and elevator option, but there is no throttle control on the Mills so every flight will result in a dead stick landing assuming all goes well! Watch out for the first flight pics!

Sometimes being a hoarder pays - off eventually!

# Flaps - 1

June 2017

*Article by Brian Holdsworth*

This is a broad subject, which seems to cause some confusion, raising several questions, especially in a model context. What are they? What do they do? How do they work? What are their advantages and disadvantages? What can they be used for? How can the transmitter be set up to control them? They are widely used in full-size aircraft but model usage is less common, especially for the smaller sizes, probably due to their complexity for limited benefits. Some model uses seem to have no full-size equivalents. Everything in aerodynamics is a compromise between advantages and disadvantages, including structural considerations, so that different choices may be made for apparently similar applications. In general, at model sizes, advantages are reduced and disadvantages are increased - fortunately, this is not always a problem!

Any part of a flying surface, which is moveable in flight, could be regarded as a form of flap. However, the term is generally applied to the separate moveable portions at the root trailing edge of the wings, with ailerons being the moveable portion positioned towards the tips for greater effectiveness from the leverage. Ailerons on models are often extended towards the root with greater effect at the expense of increased drag - full-span (strip) ailerons are common and can be quite effective with structural advantages at model sizes. Normally, ailerons are driven in opposite directions, so that one rises as the other falls to produce a rolling force. If they are driven so that both can also rise and fall together, the surfaces are referred to as Flaperons, since they function as ailerons and also provide some flap functionality, although such movement must be limited to retain aileron control. Flaps may also be driven as ailerons with small differential movements used in combination with the ailerons to increase roll rate; some slope racers use this technique, but the effect is small and the increased drag limits any benefits.

There are several flap configurations with some being quite complex. They are mainly used for approach and landing, but they can be used for take off and in other flight conditions. Spoilers, airbrakes and slats can have similar effects and are often used in combination with flaps. They are generally only deployed at low airspeeds due to their considerable structural effects, though some aircraft use airbrakes at higher speeds, even supersonic.

Flaps are used to increase drag and lift when deployed. Drag increases with increasing angle and lift increases with increasing angle up to a point after which it reduces; at higher angles, the lift may be less than with the flaps retracted. These effects are non-linear and often change rapidly over a small angular change. Take-off performance would benefit from increased lift but not increased drag, so small flap angles are used. Approach and landing generally benefits from increased drag, with any increased lift being a bonus, so that large angles are used. To reduce adverse effects during deployment, flaps are often lowered in stages allowing the aircraft to settle between each; there are usually two positions (take-off and landing) but there may be more, especially for larger aircraft.

Some aircraft have moving surfaces at the leading edge, hinged as a mirror image of flaps so that the leading edge is lowered when deployed. Unsurprisingly, these are referred to as leading edge flaps. In combination with trailing edge flaps, the wing section is changed towards a curved plate section,

# Flaps - 1 Continued/...

June 2017

*Article by Brian Holdsworth*

which can generate considerable lift at low airspeeds. Supersonic jets have very thin flat wing sections, which produce little lift at low airspeed, so their landing performance can benefit considerably from their use. They are used in some airliners and military transports, but the structural forces generated are considerable and several prototypes have used them, but their production versions use a fixed compromise position, derived from flight trials, to reduce the structural costs. The difficulties of use at model sizes could be extreme.

In a similar fashion, some aircraft use slats, which are effectively separate narrow chord wings, near full span, deployed just in front of each wing. When retracted they usually merge with the wing to become effectively invisible. They are intended to smooth the airflow over the leading edge to increase lift at high angles of attack. Deployment is often automatic, and it is obviously essential that both sides are inter-connected so that they move together. They were used on the Bf109 to achieve good turning performance from its small, heavily loaded wings. The Lysander also used them, though its aerodynamic characteristics were such that considerable pilot ability was required to maintain controlled flight! The shape of the gap between the slat and wing is critical and not proportional to scale, which can cause problems for scale models since performance may be reduced rather improved by their use; automatic deployment would be impractical but manual operation should not be obvious in flight. Sometimes, slats are fixed, trading simpler implementation against reduced high-speed performance from the increased drag.

Spoilers reduce lift with some increase in drag and are usually only retracted or extended with no intermediate settings. They are positioned about mid-chord on the wing, and are used to steepen descent, especially for the landing approach. They may be implemented as fences, usually perforated, rising vertically through the upper surface, and sometimes the lower surface, usually beyond the tail span to reduce adverse effects; they are widely used on full-size gliders. Model gliders often use front-hinged surfaces about mid-chord on the wing upper surface raised towards the vertical, since these are effective and relatively simple to implement.

Many transonic and supersonic aircraft drive their ailerons as spoilers, only moving upwards, with differential movement of their all-moving tail plane providing much of any required rolling forces. Their wing loadings are so high that increasing lift by lowering an aileron could be difficult to achieve! Such configurations provide poor roll control, which could cause difficulties for scale models - driving their ailerons conventionally in flight would give better control and might not be obvious!

There are several flap configurations with significant compromises between structural complexity and performance. Sometimes, there is a gap between the flap and the wing in the form of a slot, whose shape and size are critical for performance as for slats above. Plain flaps are the simplest, being just hinged surfaces, moving the rear of the wing in a similar fashion to ailerons - they are often bottom-hinged since only downward movement is required. Split flaps are more complex, and only move the lower surface with the upper surface remaining fixed; they are more effective than plain flaps, but are prone to structural problems and, even on full-size aircraft, misalignments at the trailing

# Flaps - 1 Continued/...

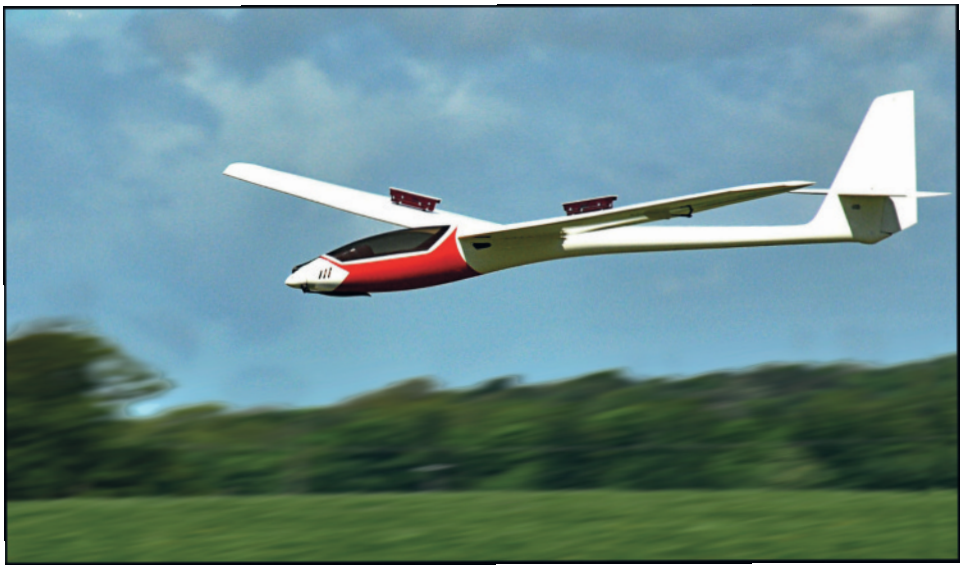
June 2017

*Article by Brian Holdsworth*

edge are often evident.

Fowler flaps are the most effective but are complex, generally consisting of several sections sliding out on extending rails, increasing the wing area and lowering the trailing edge. Considerable forces are required for deployment, so they are only practicable on larger aircraft. Model usage would be challenging, due to the difficulty of achieving sufficient strength and precision in the positioning of the parts. Many modern airliners implement them, often with a hinged spoiler, just in front on the upper surface, which is raised immediately after landing touch down, disrupting the airflow over the flaps causing a sudden loss of lift which settles the aircraft onto its wheels so that brakes and reverse thrust may be applied. Sometimes such spoilers are also deployed without extended flaps to aid descent from cruising altitude - if deployed in flight with lowered flaps, the loss of lift could be too great for continued flight, which would not be good!

Sometimes separate sub-wings are used, mounted significantly behind and below the trailing edge of the wing, acting as ailerons and flaps. These are often referred to as Junkers flaps after their use on the Ju52 tri-motor transport and Ju87 Stuka dive bomber Their effectiveness is limited and there are few other users, though some home-built aircraft have them for ailerons, and sometimes flaps, since their construction can be simpler for amateur builders.



Airbrakes produce drag, sometimes with reduced lift from the disturbed airflow, and are usually only retracted or extended. They may be dedicated surfaces or combinational use of existing surfaces. Positioned at the wing trailing edge, a dedicated surface, pivoted at about quarter chord so that the front rises above the wing while the rear drops below, can produce drag with little pitch change. The pivot position is critical to avoid flutter and considerable structural forces will be exerted, especially on the rising portion during extension. The WW1 Sopwith One-and-a-Half Strutter had such pivoted airbrakes, which is odd considering its inherently high drag.

Some military jets have front-hinged panels on the rear fuselage opening sideways, upwards or downwards, often perforated to increase drag. The resultant turbulent airflow can reduce the tail plane and fin effectiveness, so they are usually mounted well back - the Buccaneer has a split tail cone

# Flaps - 1 Continued/...

June 2017

*Article by Brian Holdsworth*

opening sideways. The rudder on the Space Shuttle is split, so that one side could be moved left while the other moved right to act as an airbrake. Some full-size flying wings have no fins and use split aileron surfaces to provide yaw control by increasing drag on the opened side, though with poor performance until complex fly-by-wire systems became available.

For retractable undercarriages, doors are often fitted to close over the legs and wheels when retracted, to reduce turbulence and hence drag around the wheel wells; they may also be closed after extension. Especially for smaller aircraft, the doors may be fixed to the legs rather than being hinged and driven separately. The main legs usually retract along the wingspan where fixed doors would be aligned with the airflow, producing little drag. Where the legs retract backwards, parallel to the wing chord, or for a nose leg, fixed doors would be at right angles to the airflow becoming an airbrake, where the resultant drag would be helpful for landing but not for take-off - compromise!

Crow (Butterfly) braking is often used on model gliders by lowering flaps and raising flaperons to produce drag, with some lift reduction but relatively little pitch coupling. The effect is similar to that for the pivoted surface above with lower structural forces. Due to the limited flap clearance from the ground, they need to be retracted just before touch down to avoid damage. It uses the existing control surfaces via transmitter mixing, so the technique is impracticable for the full-size (unless via fly-by-wire).

Some model gliders have hinged the cockpit canopy at the back to produce drag when opened in flight towards vertical - this is obviously inappropriate for the full-size! Considerable structural forces are generated with reduced fin and tail plane effectiveness from the resultant turbulent airflow. The generated drag is small for the problems and spoilers or, with current transmitter capabilities, Crow braking are more effective.


***Alan Bates flying his lovely Extra at the Fly In.***

# Shows and Events

June 2017


## List of our instructors.

June 2017

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

# Wednesday Nights are Training Nights

*Photos by Jason Reid*

Thanks to all you guys who have contributed to this newsletter. I will be out of contention for a few weeks - I am at last having the knee replacement operation. This will stop me driving for at least 6 weeks so, any of you going to the Shows - could you send me in some pictures and a few notes on what was good (or bad).

I really look forward to seeing Steve's DV111 fly - he's made a superb job of it. Steve has also helped me a lot with the Secretarial duties - he puts lots of work in behind the scenes.

That's it - enjoy your flying guys.

***You think that Mr Sheldon is pulling a funny face - wrong again - he always looks like that.***