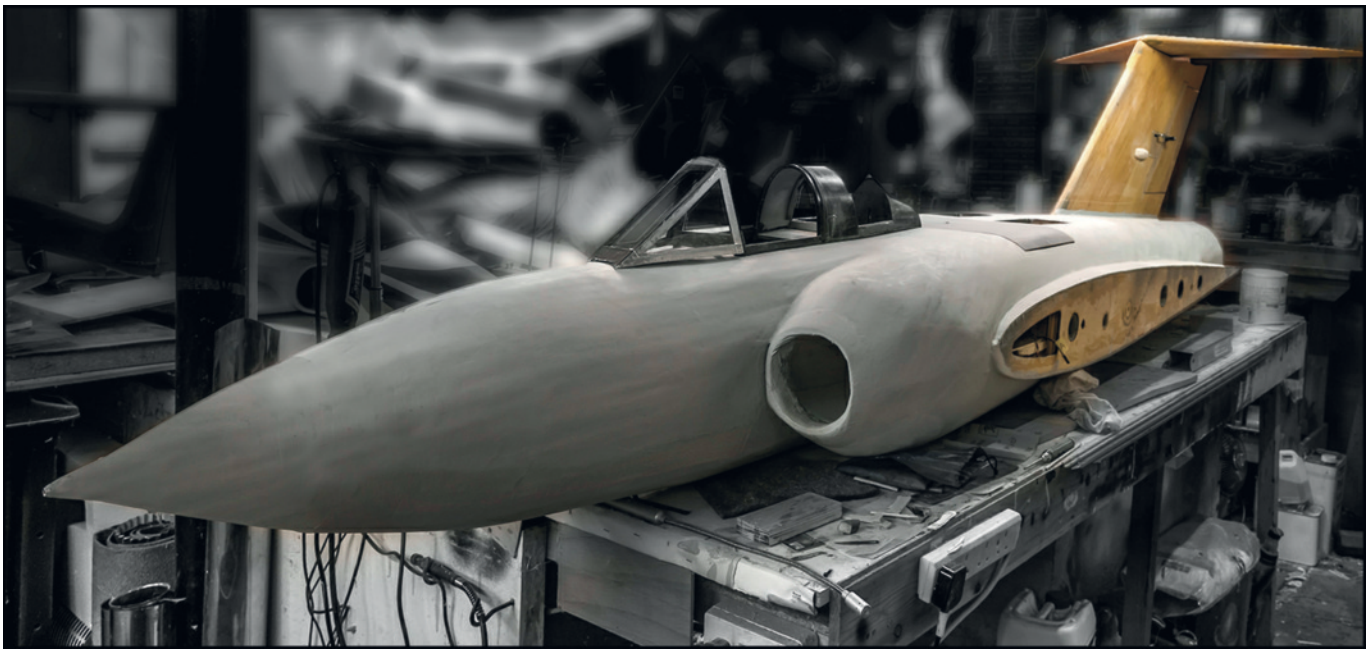
Newsletter

October 2017

November is just around the corner and the weather is getting cooler. The forecasters are promising us even more storms. I had the pleasure of visiting Dave in his fascinating workshop. You open the door to be hit by the smell of some sort of resin he was applying to this massive Gloster Javelin he is building. It is at the moment in it's raw state, the fuselage is glassed and ready for it's final sanding before paint. These 1950s' jets had such 'class' in their shapes and the Javelin is up with the most interesting in 'classical' design.



Dave's beautiful Gloster Javelin in it's raw state soon to be take it's final sanding and being painted up ready for display flying - such a lovely shape.

He also showed me the undercarriage - all of it precision engineering. Few people in the modelling world have the skill to create such incredible models - I know you can buy ready made large scale stuff from China but, for me, the very top of the skill tree are those few guys who have the skill and dedication to scratch build. The satisfaction at the end, flying a model you have actually built, has to be the greatest.

The reason that Dave had invited me over was because he had cleared out his loft to find some early kits (1950s'/60s' kits) and some part finished models. We agreed a very reasonable sum and I went away with a Kiel Kraft Ladybird complete and untouched kit, a Veron Deacon, a small Moth Minor rubber powered kit, a Ben Buckle Matador, 1960s' model handbooks, plans and the part finished models. Lots of fodder for the coming winter.

Social Evening

Report and Pictures by John Prothero

The Last meeting proved to be very popular John Higgins turned up with a roll of "FROG TAPE" he seemed to get very excited about this tape, John says he now "swears" by it – it doesn't bleed, to quote John, "Its Jolly Good!".

Dave brought along an undercarriage (now you see it, now you don't) that he had fabricated within his own work shop on his machine tools, he demonstrated the power of the pneumatic system and its potential to remove fingers, this is a substantial bit of kit!

Jason brought along two flying scale fish (Scale – fish get it?) he said they tended to do their own thing but he was working on it!

Report and Pictures by John Prothero

I brought my B17 along and explained how I was converting it to electric from I.C. and how it should be ready by June 2080 at this rate.

John Smith brought along a mystery engine which turned out to be a very early YIN YAN diesel engine from the late 50's, similar to the one pictured here but with a red head.

Steve brought along a scratch built SAAB (not too sure if it's a Viggen?).

He also brought along all the patterns he produced to make the Depron components for this model – very impressive. He did say he felt it may be underpowered and was difficult to launch

Carl brought along a GEE BEE, he explained the history and development behind the full size aircraft as well as a potted history about the company and how they were considered to be a cottage industry, but shocked the aviation world.

A VIEW FROM THE HEDGE. (By Will Sparrow)

The equinox now well behind us, the day broke with that beautiful clarity that only an autumn day can provide. The hedge was strung with dewy spiders' webs and the haws were reddening like blushing bridesmaids. By mid-morning the sky was a spectacular royal blue and the rapidly-turning trees, surrounding the car park, were back-lit as the sun picked out their myriad shades of yellow and gold. I was perched on my favourite viewing twig as a couple of dozen members waited patiently to fly their models or gazed skyward to admire the beauty of nice aircraft well-flown. High in the sky gliders soared trying to emulate the abilities of the handful of buzzards already circling in the abundant lift. Back on the strip the occasional ripple of applause wafted towards the hedge as yet another scale masterpiece made a perfect landing or an aerobatic model completed a well-executed (and recognizable!) manoeuvre…

Well, that's enough of my dream! I hope that you don't mind me sharing it with you. The reality has not, shame to say, matched up with the best of this sparrow's dreams; the weather has been truly appalling with day after day of gales and rain. It does not surprise me, therefore, that there has been little activity on the field with just the odd few members and the occasional "lone wolf" turning up for their aviation fix. I observed one such pair of members only the other day as they battled with the elements. One was obviously an optimist and the other seemed to be a confirmed pessimist. I overheard the pessimist exclaim, "This is really awful, things can't possibly get any worse" The optimist's rejoinder was priceless: "Yes, they can!" he exclaimed.

I know that this is nothing to do with what we all like best, but, if you missed the harvest moon on the 5th October, you missed a real treat. For once, the skies were perfectly clear and, at this stage of the year, the moon rises just after the sun sets. Sure enough, just as gloom started to fall over the hedge, the lunar orb appeared in the south eastern sky, bathed in rose-gold and luminescent as a Canaletto… As I say, if you missed it, you missed a treat.

Not all recent days have been washouts; we have had the odd good flying day and, on 8th October, one such day coincided with a Sunday! As a result, members who have to work

for a living could join forces with "the gentlemen of leisure" to enjoy the conditions. When I say, "enjoy" I do so with tongue firmly in cheek: Okay, the wind was light and the day was warm, but the grass was long and the grass was very wet. On days like this, the ideal sort of model is one that is light enough to sit on top of the grass without sinking in, or one that has no wheels and can be hand-launched. The sort of model that is not of this ilk, but is heavy and is fitted with small wheels has its work cut out. This fact did not deter one of your jet men from giving it a go. The model, aided by the Saturn 5-like thrust from its engine, hurtled down the strip and, despite reaching terminal velocity after a few metres and throwing up huge sheets of water, lifted off to have a good flight. The landing was good too, although the deceleration, caused by the ground conditions, must have had the little plastic pilot hanging in his straps. I also noticed that one of your recently-joined members was able to have a new model flight- tested successfully (nice big wheels on this one) and that nice purple and yellow trainer I first encountered a few weeks back, was, once again, able to take to the skies following its recent attempt to hide from its owner in the potatoes! Any damage, inflicted by the crop, must have been slight, or expertly repaired; from the hedge, all looked as it should.

The middle Sunday of the month initially looked as if it was to be a good flying day with light winds and even a bit of weak sunshine: lots of members turned up – some of them had even brought models! As is often the case, however, the weather rapidly took a turn for the worse but not before a couple of models had taken to the skies. Just as I was getting my hopes up for a good morning's viewing the rising wind (a prelude to hurricane Ophelia) put paid to any more model flying. After a while I got a bit bored watching a sizeable group of members standing in a huddle in the middle of the field, chatting and staring at those funny little glass screens that many humans seem to be addicted to. You modellers are funny at times, but at least you provide us hedge-dwellers with a good old laugh!

WS

Birthday Visit to Thomas Cook's Hangar Manchester Airport

October 2017

For my 70th birthday my daughter and son in law arranged for Linda and I to visit the Thomas Cook Hanger at Manchester Airport. We had to show our passports to enter the airside area - security is very tight as you can imagine, we were greeted at reception by security who once again checked our passports.

This is a very large hanger and can accommodate around 6 airliners, to my surprise it also has offices with banks of computers for various departments of the operation. They also supply servicing facilities for certain other airlines, at the time we visited they had a JET 2 Airbus in along with some Thomas Cook Aircraft , Thomas Cook operate Airbus A321, Airbus A330 and a few Boeing 757 300,s which I believe are being phased out.

We were shown around by one of the operations managers, nothing was too much trouble, he explained the whole operation, he was ex-military so had an in-depth knowledge of aircraft and their workings, from airframes to engines. I was fascinated to see a full size FADEC and how many parameters it monitored compared with the ones on our model jets. Just to walk around these monsters on the ground with their huge under carriage legs and wheels was very impressive, looking up into the various avionics bays and seeing the masses of wiring and systems made you realise what goes into one of these aircraft and just how complex the systems really are.

They do everything from seat changes to engine and airframe overhauls and repairs, the whole hanger was immaculate and seemed to run like and be organised like a Swiss clock.

It was a fantastic experience and if you ever get the opportunity to do something similar go for it you won't regret it!

Flaps - 4

October 2017

Article by Brian Holdsworth

Flaps generally exert greater forces on linkages etc than the other control surfaces, since they are large with considerable movements. They are positioned in the turbulent propeller slipstream so that they see higher air speeds than the other surfaces, especially during an overshoot when the opening throttle increased the forces. Thus, aircraft should be slowed before flap deployment, and the throttle opened slowly on overshoot with the flaps being partly retracted once sufficient speed is achieved.

For a lever with equal arm lengths about the pivot, the force exerted on the output side is the same as that from the input side. If the input length is twice that of the output, the force would be doubled with the input movement double that of the output. The forces exerted by a control surface may be assumed to be at its mid-chord point. Thus, a control horn of length equal to half chord would exert the same forces on the linkage as produced by the surface. A half-length horn would double the force etc.

For best mechanical advantage, it is preferable to use the full range of servo movement with the longest control horns and servo arms practicable. With equal lengths of servo and control horns, the turning force applied to the control surface is equal to that produced by the servo regardless of the length. As the arm length is increased, the force applied to the linkage connecting them reduces proportionally and the distance moved by the linkage increases. This reduces flexure in the linkage and any slop, where the holes in the arms are not sufficiently tight on the linkage, is reduced, as a proportion of the control movement, together with the lateral forces on the hinges. This helps to minimise the unwanted free movement of the surface (backlash). The only disadvantage to using long horns is the space occupied and the consequent difficulty in accommodating them in the structure. While it may seem desirable to hide linkages within the structure, especially for scale models, this often needs short horns increasing the potential for problems with flexing, flutter etc.

It is preferable for horns to be near the mid-span of the control surface to reduce the twisting forces, but practical considerations often mean that the horn is positioned nearer one end, usually the root. It is helpful to have a hinge as close to the horn as practical to reduce the surface twisting under load.

To reduce the force exerted by a deployed flap on the servo, the arm could be positioned such that it is parallel to the linkage at full flap, so that there is little turning force applied

Flaps - 4 Continued/...

Article by Brian Holdsworth

to the servo from aerodynamic forces on the surface. This technique was often used for mechanical retractable undercarriages to reduce the risk of landing shocks destroying the servo gears. This would give a very non-linear response between the servo and flap, but this has little practical effect since flaps are normally deployed in discrete stages (none, part and full). However, there are problems in implementing a suitable linkage configuration, so this technique is rarely used.

Some installations only use half the available servo movement, with the servo midpoint as the retracted position. If it is setup so that retracted has the servo throw at one end and full flap at the other, producing half flap at servo centre, the best use would be made of the available servo and linkage capability. This suggests that the horn be positioned towards the trailing edge such that half flap would put the horn linkage hole at right angles to the hinge line and equal to the vertical servo arm angle; this offset behind the hinge line would be nearly half the horn length.

Servo throws are about 40 degrees each way for 100% travel set in the transmitter. Any more, and the mechanical advantage reduces considerably with increased risk of movement loss and a greater potential for flutter which can be very destructive. Thus, equal length servo arm and control horn would give about 80 degrees total movement. This suggests flap horns should be slightly longer than the servo arm - 80 degrees of flap movement is generally too much with ~60 degrees as a compromise.

Often, a separate servo is used for each flap, which can simplify the linkage in a similar way as dual servos for ailerons, which became universal once servo sizes, weights and costs reduced from the original equipment. Aileron servos have opposite orientation (e.g. each with their servo arm towards their respective wing tip) so that, with the same rotation, the surfaces move in opposite directions (one up and one down) which are appropriate for aileron function. If flap servos were similarly installed with opposite orientation, the surfaces would move as for ailerons, which is obviously incorrect. A 7+ channel set would be required (2 ailerons, elevator, throttle, rudder and 2 flaps), with one channel reversed to give opposite rotation for the servos. If the flap servos were installed with the same orientation, e.g. both servo arms towards one wing tip, they could be driven via a Y lead from a single channel, which would reduce the number of channels required

Servo reversers are available which can be plugged in series with the servo lead to reverse

Flaps - 4 Continued/...

Article by Brian Holdsworth

the servo rotation direction with some incorporated in a Y lead for convenience. Unfortunately, the examples seen are prone to interaction between the channels, due to their sensitivity to the supply voltage fluctuations caused by the current drawn by servo operation. Careful testing is advised before usage with any cross-channel jitter suggesting that they should not be used.

Spoilers and airbrakes have similar linkage requirements to flaps, and are usually open or shut with no intermediate positions. Thermal soarers often use front-hinged surfaces mounted about mid-chord towards the wing root as spoilers to descend from lift or to steepen the landing approach - any additional lift generation would be a disadvantage for these types. These are sometimes described as "Barn Door" spoilers and can be quite effective and relatively simple to implement.

Early installations often used a single servo mounted in the fuselage, due to the bulky servos of the time, which raised the problem of a suitable linkage for the two-piece wings generally needed for transportation. A common solution used a thin flexible wire from each wing root, running through curved plastic tubing to exit the surface in front of the spoiler hinge lining up with the horn on its upper surface. These were simple to hook onto opposite sides of the servo arm after the wings had been attached. The wires would be pulled by the servo rotation to raise the spoilers when activated by the transmitter switch. When retracted, the airflow and the weight of the spoiler was usually sufficient to close the spoiler, providing the hinges were free moving - generally achieved by the use of film or adhesive tape hinges. A small magnet fitted on each spoiler would snap it shut - sufficiently strong to resist the lifting force of the airflow, but allowing the servo to pull the airbrake open. While crude, this technique was effective. However, with small, powerful servos now available, it is easier and more effective to mount a servo in each wing half driving the spoiler through short pushrods, with their leads routed through the wing and plugging into extension leads suitably positioned in the fuselage.

Sometimes there is no linkage between the servo and spoiler. A micro servo is fitted onto the underside of the spoiler, raising it by the rotating servo arm pushing onto a conveniently positioned ledge in the structure. The servo weight helps the spoiler to close, with a small magnet snapping it shut. There are no external linkages to generate turbulence and drag, but installation layout is critical to achieve the required movement.

Flaps - 4 Continued/...

Article by Brian Holdsworth

The "Scissors" type of spoiler, rising vertically from the wing is sometimes used for gliders, especially scale types since they are commonly used by the full-size. Commercial units are often used, since construction would be difficult with normal modelling materials and techniques. Separate servos in each wing half are convenient with internal pushrods.

Both types of spoiler have the disadvantage of reducing wing efficiency, even when retracted, since the low pressure on the top surface, generating the lift, sucks air through the wing structure via the gaps around the retracted spoiler, reducing the lift. The full-size are able to implement reasonably effective seals to reduce the effects, but this is difficult to achieve at model sizes - compromise!

An Experience of a Lifetime

I was talking with Justin at the last indoor flying session. He seemed just a little bit excited. His better half has just given him an amazing present - 55 minutes flying in a real live Spitfire. He has arranged to take the flight sometime in November. He will be flying from Biggin Hill which was so famous during the second World War. Just will be allowed to take the controls during the flight - what could be better - truly an experience of a lifetime.

List of our instructors.

October 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:-

Wednesday 1st November	Bring and Buy Sale
Thursday 7th December	AGM
Thursday 21st December	Hot Pot & Quiz
Wednesday 3rd January	tba
Wednesday 7th February	tba
Thursday 8th March	tba
Wednesday 4th 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.

In Conclusion

October 2017

Well guys, you have two evenings to look forward to - 1st November, the **Bring and Buy Sale.**

This will be followed by our **Bonfire/Fireworks Evening** on Saturday 4th November. There will of course be night flying by Jason, Jake and others which is always spectacular. I'll be pratting around trying to get pictures of the said night flying models and that's not as easy as you may think.

Do come, it's such a great evening and fireworks will as usual be laid on. If you would like to bring some fireworks, yourselves, you would be welcome to do so - the more the merrier. The evening starts at around 5pm at the field and the bonfire is usually lit by around 6pm. Bring some food and enjoy the evening.

I leave you with a picture from a previous year.