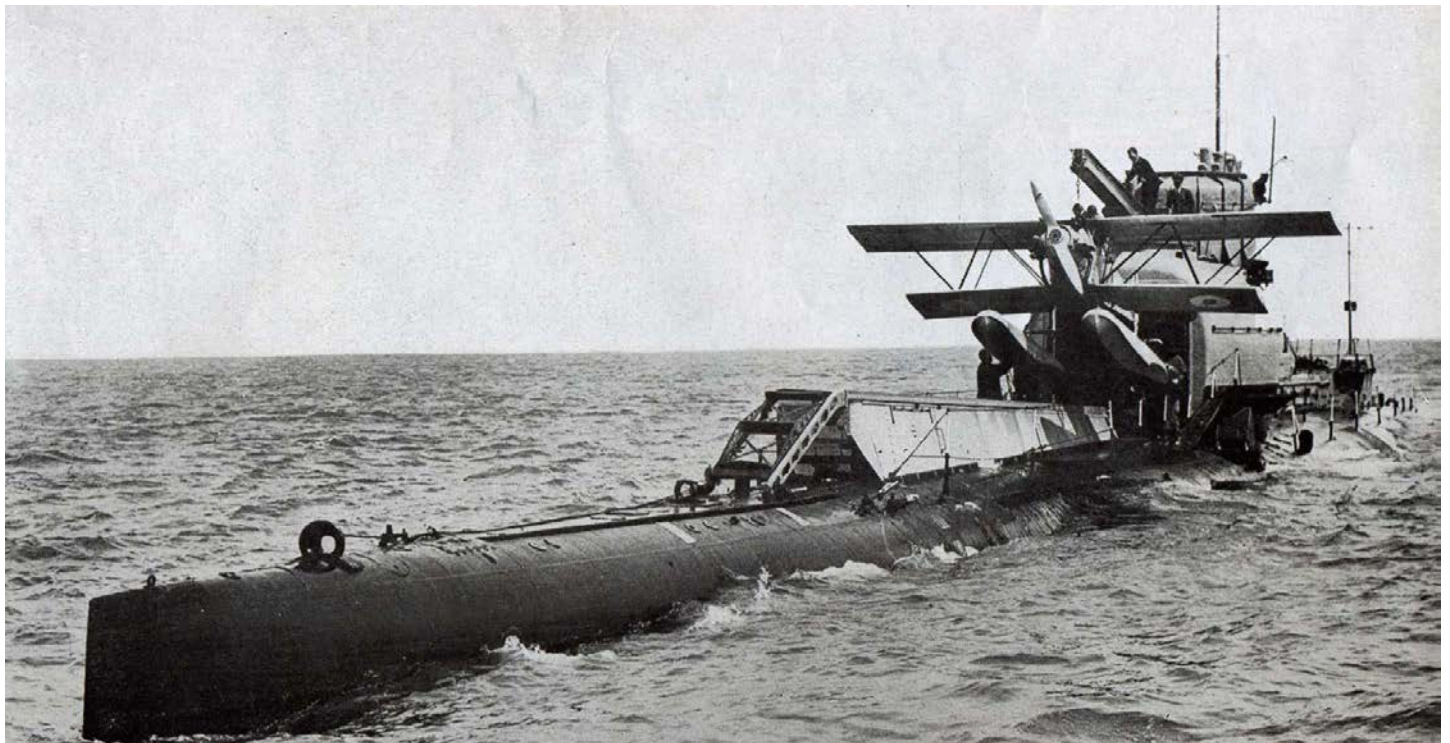


November 2016
www.impmac.co.uk

Edited by Bryan Gostlow
Distributed by Tony Harper

Flying underwater *the Parnall Peto and the Hansa-Brandenburg W.20*



It must have seemed like a good idea at the time, adding a hangar to a submarine, but it didn't end well. George Parnall and Company had Harold Bolas design the Peto. It could be launched using a compressed air catapult, later to be recovered by crane.



first prototype N181 later to become N255

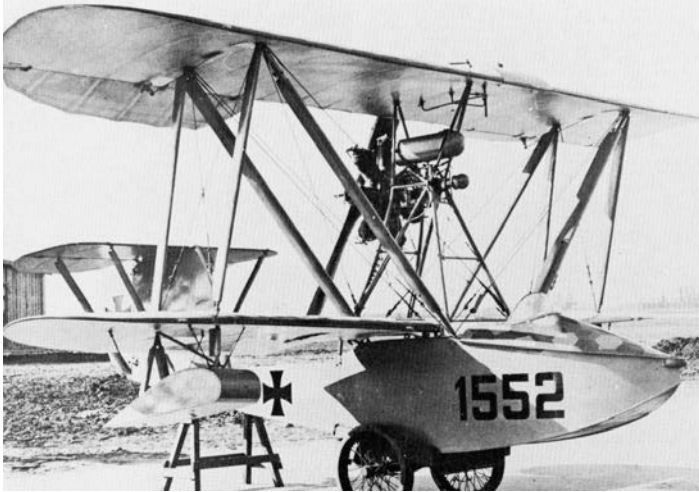
M2 left her base at Portland on 26 January 1932, for an exercise in West Bay, Dorset, carrying Parnall Peto serial N255. Her last communication was a radio message at 10:11 to her submarine

depot ship, Titania, to announce that she would dive at 10:30. The captain of a passing merchant ship, the Newcastle coaster Tynesider, mentioned that he had seen a large submarine dive stern first at around 11:15. Unaware of the significance of this, he only reported it in passing once he reached port. Her entire crew of 60 was killed in the accident. In an operation lasting nearly a year and 1,500 dives, on 8 December 1932, she was lifted to within 20 ft of the surface before a gale sprang up, sending her down to her final resting place. The hangar door was found open and the aircraft still in it. The accident was believed to be due to water entering the submarine through the hangar door, which had been opened to launch the aircraft shortly after surfacing. One theory is that the flooding of the hangar was due to failure of the stern hydroplanes. High pressure air tanks were used to bring the boat to the surface in an awash condition, but then air compressors were started to completely clear the ballast tanks of water by blowing air into them. This could take as long as 15 minutes to complete. The normal procedure for launching the aircraft was therefore to hold the boat on the surface using the hydroplanes whilst the hangar door was opened and the aircraft launched. Failure of the rear hydroplanes would have sent the stern down as observed by the merchant officers and water would have eventually entered the hangar.

The Hansa-Brandenburg W.20

This was a German submarine-launched reconnaissance flying boat of the World War I era.

Due to the need to be stored and launched from a submarine the W.20 was a small single-seat biplane flying boat that was designed to be assembled and dismantled quickly. It was powered by a seven-cylinder, 80 PS Oberursel U.0 rotary engine — basically a German-made near-clone of the Gnome Lambda pre-war French rotary — mounted on struts between the wings driving a pusher propeller. The pilot had an open cockpit just forward of the lower wing. Because of the slender hull stabilising floats were fitted below and at the end of the lower wings. The submarine intended to carry the W.20 was not built and only three W.20s were built.



Hansa-Brandenburg W.20

Peter Iliffe has modelled the W.20 at 1/12th scale for radio control and electric power.

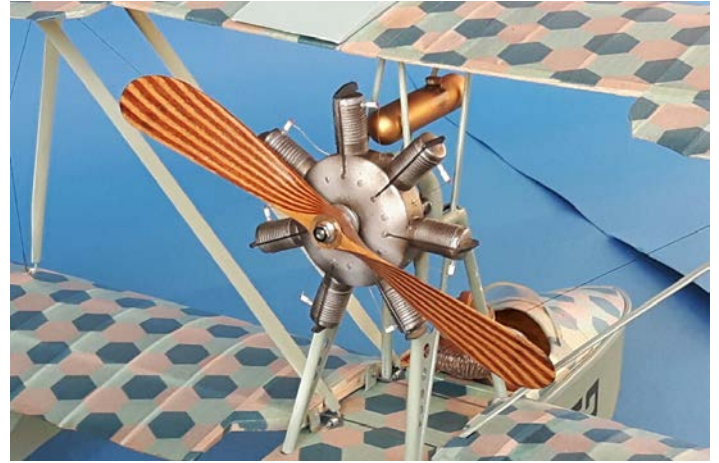


Pete's 22in W.20

He says it flies well, and clearly he's not just saying that or he wouldn't have dared take off and land back on a nearby pond. And, just like the full size, a few ripples help it to unstick.

The pusher prop came from SAMS and though the pitch isn't ideal you'd have to agree that it looks 'just right'.

To achieve the unusual hexagonal camouflage Pete used his Epson inkjet printer. Why Epson? — well their inks are waterproof and he prefers to apply the tissue damp. The dummy motor is free-running on the shaft and picks up enough speed to provide a convincing blur.



Pete's Oberursel

I'm not aware of any truly successful pairings of aeroplane and submarine and I suppose the closest was the catapult launched Supermarine Walrus



test flown in December 1935

This example of the much loved Walrus can be found at RAF Hendon. If you're tempted to build one then Profile Publication 224 covers the Walrus and the Seagull.

Introduced to the public at the S.B.A.C. held at Hendon as the Seagull V, the publication *Aeroplane* reported, *"For pure lighthearted cavorting, the new Supermarine Seagull V boat-amphibian, with Bristol Pegasus engine operating as a pusher, provided a turn which must have astonished many. This boat made its maiden flight on 21 June, five days before its first public appearance, but Mr Summers proved its qualities by throwing it about in a most carefree manner. Of its performance little is known but there can be little doubt about its general handiness in the air or on the ground. One must be prepared to see all sorts of aeroplanes looping and rolling with abandon nowadays, but somehow one has, up to now, looked to the flying-boat to preserve that Victorian dignity which one associates with bell-bottom trousers and metal hulls. The Seagull V destroyed all one's illusions."*

'Mutt' Summers didn't clear his display with designer R J Mitchell who was forced to watch on nervously.

In service H J F Lane found the tedium of a long patrol could be shaken off by loops, rolls or 'rolls off the top' though he gave up straight-forward rolls due to the disconcerting habit bilge water had of pouring down — or up — the neck. The Barrel roll being a preferred and cleaner evolution.

Pisceopter

Gareth Evans sets out in search of horse manure

So anyway, the other side of the M5, life is very different. There is Almondsbury Garden Centre - the kind of place where customers wear green quilted body warmers. Looking for good horse manure for growing spuds, I somehow ended up in the aquarium. I watched the fish swim about, and thought how much they have in common with aeroplanes: Mid-placed horizontal surfaces for lift, a laminar flow fuselage, a cockpit at the front, vertical fins and a horizontal stabiliser somewhere further aft. Of course they don't have a propeller. Mother Nature doesn't do rotary motion.....or does it.

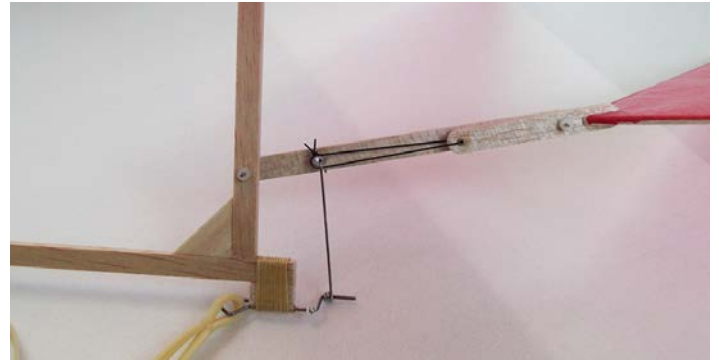
Watch the fish. Wagging a fish tail doesn't translate into motion. Wagging anything randomly doesn't translate into motion unless you are hitch hiking. Fish propagate a Sine Wave, and then surf along the front of it. Their whole body articulates. A sine wave is sort of rotary motion, unpicked and laid out flat to the ticking of a clock. So nature does do rotary motion after all.

Rubber is great. You get maximum torque at zero revs, so it's ideal for converting rotary motion into sine waves for flight propulsion. It's a "piscicopter". Now Peter Smart doesn't like this and insists it should be called a "cetacopter" (dolphins and porpoises) because the propelling fin is horizontal. You can argue with me and agree with him, but I like "piscicopter". Now here's the assumptions I made (some were wrong) from the first thought experiment:

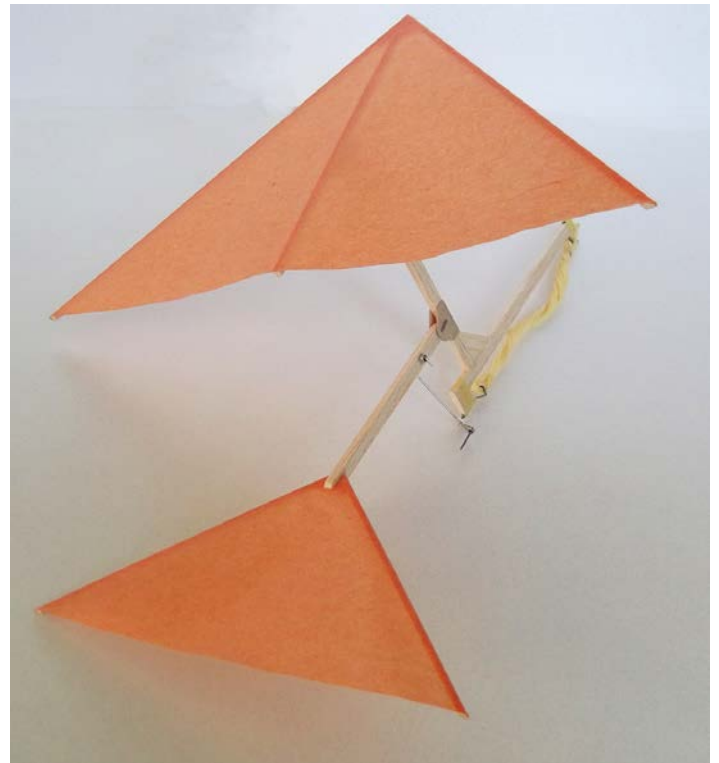
- 1) Net angle of attack for all surfaces must be positive in alpha at all times in the cycle.
- 2) A main lifting surface will be treated as isolated from the propelling surface.
- 3) Wing generates lift at CG position, tail generates thrust.
- 4) Low CG, mass of rubber motor with large lifting surface will damp any reactions to the flapping tail (wrong!)
- 5) Trim to glide with wing at zero and tail at full up (30 degrees)
- 6) Tail generates an upward couple about centre of drag when flapping



The first red machine has an elbow like the knees of a free diver or the hips of someone doing butterfly stroke. The hinge is damped with special air superiority knicker elastic. The response of the articulated driving arm can be adjusted by putting different lengths of elastic on. The red one flies really well. Berinsfield sports hall is not big enough for it. The piscicopter in context at Berinsfield has the handy advantage of removing the illusion of realism from Peter Smarts peanut models as it clatters past.



I made an identical yellow version which is rubbish and will only fly when wound anticlockwise. Hmmm. Watching piscicopters in flight told me I had assumption 4) wrong. Actually the main wing does flap out of phase with the tail. The apex of both deltas actually follow two points along our sine curve. So then, I made the orange version with no elbow, and it flies OK, but not quite as well as the red version, and only after steaming some tail tilt into the back end.



As a generalisation, all other things being equal, a clockwise wind from behind results in a left hand spiral dive while an anticlockwise wind results in a right hand spiral dive. As the rubber runs out piscicopter flies straight. The only cure seems to be tilting the tail in the opposite direction to the spiral dive (use kettle steam on the driving arm).

With a fully wound motor, I can't see any distortion though. We will make some slightly bigger pisceopters this winter and try them.

the detail

All three prototypes are 300mm span, just because it all fits on A4 paper.

I assumed that the low centre of gravity and larger size of the forward wing would mean I could ignore the reaction placed upon it by the oscillating tail. This is why RED and YELLOW pisceopters are fitted with an "elbow" and a knicker elastic loop to encourage the propelling arm itself to propagate the sine wave as an isolated unit....(ignoring the reaction of the main delta). The wave length of the oscillation I planned to tune by trying various different lengths of knicker elastic. Actually it works really well and RED is the best flyer.

ORANGE does away with the elbow after we observed the flight of YELLOW and RED. It was obvious after testing that the forward delta flaps as well, and is just out of phase with the tail by some number of degrees. They look like two points set apart on the sine wave. Launching is a bit tricky because it does not propel until it gets going. The tail flaps up and down by 15 degrees and the main delta is set at 15 degrees angle of attack. The net angle of attack is always between zero and 30 degrees. Winding anticlockwise makes all pisceopters turn in to the left. Clockwise winding makes them turn right from launch. The torque of the motor is completely contained within the stick and should not affect the pylon or crank mechanism. Tail tilt will cure a spiral dive BUT I DON'T KNOW WHY?

The thing is mad but really works. Still photos are impossible without the kind of thing used by David Attenborough for nature docs. Any poor pilot would have his spine turned to gelatine if he sat in it while it was going.

The spuds came up OK too.

Puzzled, but only for a while

on a visit to Sywell Aerodrome

In early September I had the chance to visit the Light Aircraft Association rally at Sywell in the company of Raymond Fella. Admiring some beautifully prepared aircraft such as this Luscombe Silvaire



immaculate Luscombe Silvaire

Further on we spotted a 'Spam Can' with an interesting detail that, at first we couldn't quite fathom.



here's the detail in close-up



After a while Raymond cracked it, "It's the rear peg for the rubber motor." Of course . . . and we drifted off to look at a Hornet Moth . . . no mistaking that as it had it printed clearly on the side!



Hornet Moth



Stick and Tissue

and a tip from Gotthelf



Gerald with 'Stick & Tissue'

I came up with this design about four or five years ago. Now on its second fuselage and fourth wing, the one I'm most comfortable with.

Flying it the other day I changed from a LiPo of 1300 mAh to one of 850 mAh while recharging the first. This accidental *like for like* comparison surprised me as, with the smaller battery pack, it wandered around and needed to be flown 'hands on'. What a couple of minutes earlier had been a directionally stable plane wasn't any more.

The follow morning I carefully found the position of the C of G with each pack 'up front' . . . the heavier pack places the C of G at 31% while, with the lighter one, it moves back at 38%

For some time now Gotthelf has been promoting the merits of having glass-headed pins inserted up into the wing so that you can feel the point of balance. I have to agree that a some method of quickly checking on the C of G makes a lot of sense.

Richard's take on C of G

Richard joins in the discussion, "*I find that the C of G is a variable (within limits of course) to suit the pilots aim. I favour a forward C of G to start with and slowly move it rearwards to get to a point where the aircraft just recovers from a 45 degree dive. Now that is fine for a thermal duration model where you are looking for as neutral a set-up as possible. I find this allows the model to react to lift more easily but means the model has to 'flown' all the time. This set-up gives little decalage and so very little difference in handling at different speeds such as when pushing for speed to leave poor air or using power to climb. With a sports model however I favour a more forward C of G as the model becomes more stable (hands off) and allows chatting time but, unless a fair amount of down-thrust is incorporated there will be a dramatic change in pitch when the motor is used owing to the increase in decalage required to achieve a glide..... as for 'guided free-flight'. Look at how many RC free flight conversions pitch up when the power is applied due to decalage for stability and increased speed of the airflow over the tailplane. This is when I find the trick is to mix down elevator to the throttle to compensate. Easier to do than having to change the thrust line which, with a spinner is a complete pain when the model is finished.*

To summarise I use the given C of G as a guide only, 'not the be

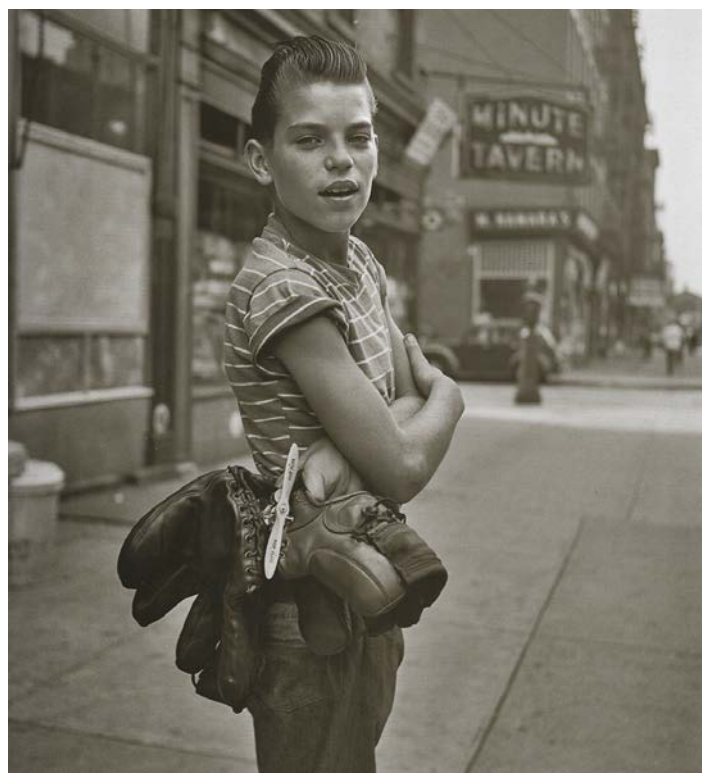
all and end all' as everyone's model will be subtly different so, finger tips for me every-time, purely as a 'guide' before flying."

Growing up in the US

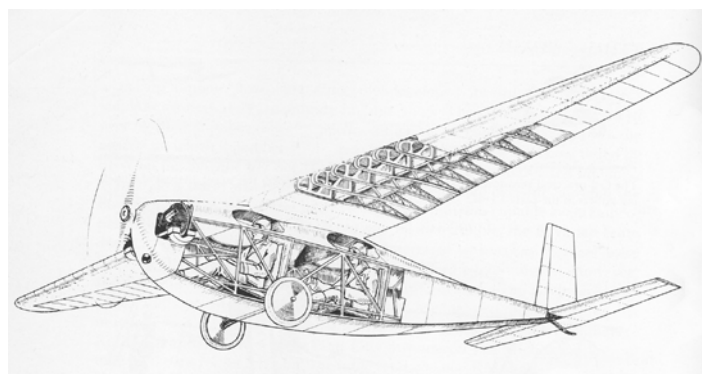
another time

Vivian Maier was an American street photographer who worked as a nanny, mostly in Chicago's North Shore, but her passion was photography. She is believed to have taken more than 150,000 photographs in New York, Chicago and Los Angeles but few saw the light of day during her lifetime.

I recently came across this stunning photo . . . boots, a catcher's glove and is that a Top Flite prop?



Vivian Maier



M 17

brick on a string

CL aerobatics by John Copsey

The following is a slightly Tongue in Cheek Day Diary of my participation in the replacement British Nationals CL Aerobatics Competition at Basildon on August Bank Holiday weekend 2016.

Day 1 – 27 August 2016

OK, the car is loaded up with everything I might need. Fuel for the model, fuel for me, Flight box, chair (for the boring waits between flights), spare props, spare underpants (you never know!). What have I forgotten, ah yes, the model. Underway now to the part of darkest Essex known as Baz Vegas. This feels appropriate because with the expected wind strength, there is a certain amount of gambling involved. I arrive just in time for the Pilots Briefing at 9.30am. Getting ready for the Line Pull test. The wind strength is not a major factor, but the horrible turbulence from the trees definitely is.

First Flight 10.15am

There are 2 competition circles and I am second on in Circle 1. Paul Winter precedes me and returns with dire warnings of impending balsa splintering if I am not very careful. I decide to be careful, but I am actually much more interested in whether the Supre Tigre will actually start. Low and Behold, it starts and keeps going. Oh well, off we jolly well go then. We get a sweet gently rising take off on the nicely cut grass and level flight is a little bumpy but not too bad. Sharply into the Reverse Wing Over (from directly up wind) and that's when you find out if your motor is on your side (or by your side). Not too bad, quite pleased with that but no time to cogitate as 2.75 seconds later you have to do the other half (pew). 2 laps level (well sort of, in the bumpy air) and into 3 Inside Loops, which are not done directly down-wind because then you have less acceleration (winding up), and then recover inverted for 6 laps followed by 3 Outside Loops. OK, now the Tricky stuff starts with 2 Square Loops followed 2 laps later by 2 Square Bunts. The Square Loops and Bunts involve diving vertically at the ground before recovering level at 1.5 metres (inverted for the Bunts). Normally this only involves slight tightening of the Anal Passage, but in this wind it's just terrifying. Done it! But no time to gloat, onto the Triangular Loops which involves 3 tight 60 degree turns. The last one from an inverted sloping dive to level flight at 1.5 metres. OK, now we have 2 Round Horizontal Eights done the awkward way and then (dread of dreads) 2 Square Horizontal Eights involving 18 right angle turns, all to be equal and superimposed on each other. In this wind? You must be joking, even if it is worth 180 points if done perfectly. Never mind, you still have your flying brick airborne, so it's into the Vertical Eights and then the dreaded Hour Glass (A sort of Vertical Eight made into a form of torture). Nearly there now with an upwind climb into the Overhead Eights. Easy to do but hard to do well (like flying a Tiger Moth, I am told!) and finally the Four Leaf Clover. All you have to worry about now is did you put the right amount of fuel in so that you can land within the allotted 7 minutes. There you are, see, that wasn't too bad was it. No time to faint; need to clear the circle for the next brave soul.

Second Flight - 1.30pm

Circle 2 this time, right under the trees and again I follow PW and again the dire warning, great! Well we are up and away again and we survive the winding up in the 3 Loops. The model is bouncing about all over the place in the highly turbulent air but we are just about coping until a sudden gust blows you right out of the Hour Glass. Where's the model gone, ah there it is diving straight for the ground with zero line tension. Wow, got it back at 2 metres from ground and recover. OK, don't panic Mr. Mainwaring, concentrate on the Overhead Eights. Actually not too bad and everyone is coming fairly low in the turbulent air anyway, so yours are no worse than the others. Dare I attempt the 4 Leaf Clover? Looks like we are already doing it, so decision made. A high Loop between 40 degrees and Vertical and then come across into a Bunt from 40 degrees to 1.5 Metres. Scary, but we did it (you are thinking 'who invents this stuff?'). Now a vertical climb to another Bunt from 90 degrees down to 40 for the final Loop, hopefully with enough height to complete it. Not pretty, but we made it. With luck my heart rate will eventually recover, so what about the score. An improvement of 50 points, not bad in exchange for an ageing of 10 years.

Day 2 - 28 August 2016.

We allow ourselves to arrive a little later than yesterday because we are not on until about 11.00am. Time for a nice cuppa at Dave Marquis's Motor Home. The day is a mixture of breezy sunny spells with the odd shower, but the wind is not coming across the close trees, so less turbulence (hooray). The same routine of preparation as yesterday. Carefully measure the fuel, inspect and connect up the lines & handle. Wave arms to get a line pull test. Check plug is drawing correct amount of current. Then wait, and wait and wait. Get thoroughly distracted by someone or something and then realise 'You're on' and panic to find a helper.

Day 2 - First flight 11.15am

First flight is in Circle 2 this time, Glen Alison is judging so I need to look good. Actually, it's pretty bumpy in this circle and the winds (both types) are a bit stronger, pardon me! Once again we battle through the Loops & the Bunts trying to do enough so that the judge can tell the difference between the rounds and the squares. Now into my third set of Round and then Square Eights of the weekend. We made it, and they didn't look too bad either, hope Glen is in a generous mood because I need a good score. First Vertical Eight, pleased with that considering the conditions and starting to relax a bit, but wait, we've come out low on the second one, panic panic, err, what to do? Head says "forget the score and climb up inverted". Unfortunately the email containing this vital piece of excellent advice gets lost between brain and right wrist, therefore only the UP bit gets through. Full up when inverted means full down (Derr! how long have you been flying CL?). It's quiet now, remarkably quiet. Shame that! Nothing left to do but quickly pick up as many bits as possible and clear the circle. All feelings are a mixture of incredulity, sadness and embarrassment at the stupidity of a split second decision which brought my best flight of the summer to a screeching, shuddering halt. Several friends & competitors, including all of the previous British Team, are offering consolation and are admitting that they had been there and done that. Did this make me feel better, not one bit! Oh well, there's always next year.

the Ultra Micro Radian Powered Glider

by Alan Paul

It all started rather by accident last July when my wife asked the really excellent question “would you like a new model plane for your birthday?” As everyone knows, the correct answer in a situation like this is “yes”, even if you don’t know what you want. This led me to have a look for something that would be fun, easy to fly, sensible for small spaces like the Village College and perhaps might even fly indoors.

There is certainly plenty of choice out there for small RC models, but after exhaustive research, I settled on the e-flite Ultra Micro Radian. Kings Lynn Models were offering this for £69 including free delivery so I quickly got the order form up on the screen and borrowed my wife’s credit card to do the order – I definitely find it’s better to strike whilst the iron is hot in situations like these!



Having ordered at lunchtime on a Thursday, it was a pleasant surprise when the large colourful box turned up before lunch on the Friday. With an excellent weather forecast, my challenge was to have it ready for the flying session at the college that evening. In the end this turned out to be something of a non challenge and the model was ready and in flying trim about 30 minutes after opening the box.

In fact, all the assembly required was sliding the wing through a slot in the fuselage and securing with a screw, then sticking on a few markings on the lower wing to aid orientation. Amazingly this little model comes with everything ready to fly – all you need is a reasonably modern Spektrum transmitter. Its 28 inch wingspan is packed with more hi-tech electronics than you would imagine – in fact someone from 10 years ago would definitely take on a Victor Meldrew stance “I don’t believe it”. As well as a motor with folding prop, a flight battery, USB battery charger and full 3 channel control on Rudder, Elevator and Throttle, it has a built in solid state “AS3X” gyro stabilisation system. This is not an autopilot, but a stability augmentation system that tends to keep the model steady and return it to its previous stable attitude. This is especially useful in gusty winds which would defeat lesser models. In practical terms you can just forget the stabilisation is there and fly it normally whilst getting a bit of invisible help. In fact if you get into trouble during a flight, you could just close the throttle and the model would probably land itself with no damage.

The micro Radian is an absolute delight and is definitely from the same pedigree as its big brother the 78 inch version that many will have seen. On its first outing at the club, several

people were impressed and had a go. The following week Richard had acquired one and a week later Chris had one too – all with their own unique underwing markings which proved useful at one of the last outdoor flying sessions where we had all 3 up in the air at the same time on a less than perfect wet and windy evening – all survived to fly another day. If there is no lift, a 15 second motor run will allow about a minutes gentle glide before having to power up again. The glide is very flat and it really comes down very slowly. When there is lift about, it can go up and up. I’ve had several 5 minute flights quite easily off one short motor run, and Richard had 25 minutes from 2 short motor runs the other day – in fact we have both had to dive or spiral the models down to get them back – amazing. You can of course also just fly the model around on low power and it makes a very good little trainer. For the more advanced it will actually loop and barrel roll – just watch the G force doesn’t pull the battery away from its Velcro mounting under the fuselage – I have had the battery dangling like an underslung load after a loop, but even then it landed safely.

In the event of an 'arrival' the Radian is fairly simple to repair with all spares being available. There are many guidance notes available on-line but it has been found that simple aliphatic works well on the fuselage as does epoxy, and that very hot water or steam will swell the foam and allow limited remoulding to shape. Do not apply direct heat, for example from a heat gun, as the foam melts very quickly. Blenderm tape (stretched so it goes clear) is a good substitute for the original very sticky adhesive tape that holds it all together.

Regarding flight batteries, I have found the Overlander 1S 175MAh batteries to be ideal – these cost £7.75 for a pack of 2. It’s quite important to have good batteries or the motor won’t be able to deliver a decent power output.

I’ve always believed that you get more fun from simple, uncomplicated (and cheap) models. The micro Radian embodies this and is a fantastic model that anyone can fly – beginner or expert and have great fun. Floating around on a calm evening (we did have a few this year) – what more could you want. Friendship, Flying and Fun.

x4 charger from HiTEC



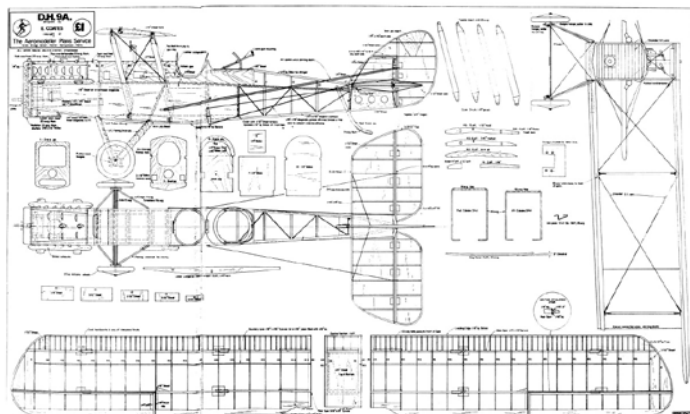
This versatile charger can handle up to four single cells at once and allows you to set the charging current individually. It comes with a whole bunch of accessory leads and can be operated from mains or battery – lead/acid for example. sells at £40 or thereabouts

Eric Coates has a lot to answer for
seems to have a lot to do with chickens . . . "Chicken!"



Hannah and Kate - circa 1982

This is a story about building the Eric Coates designed DH9a and it started a little before this photo of my girls was taken. For a long time I'd thought that the plan H and K were stood in front of was the DH9a, but then I don't think there was ever a version with elliptical wingtips.



Let it not be said that I haven't made *some* progress, but in my efforts to build the version in my head I've got a bit stuck. Well, not a bit stuck, a *lot* stuck.



as far as I've got to date

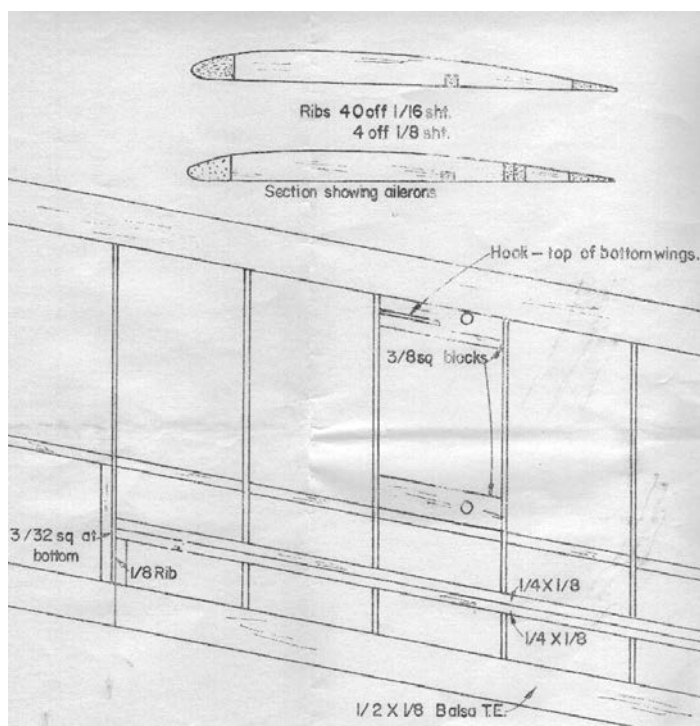
About a month ago I jumped at the chance to fly with Mark and David Miller in their Dragon Rapide from Duxford. More or less by chance, sharing the same hangar was a Bucker Jungmann, another aircraft which Eric had modelled for FF quite some time ago. I already had his plan and remember reading him saying in *Aeromodeller* that it didn't reflect his latest thinking, but had been a good flyer.



Jungmann owned by Pete Kynsey and Anna Walker

It was as though I'd been given permission to build one of Eric's designs without getting too caught up in building the 'perfect model'.

Studying the plan I could see what he was getting at:

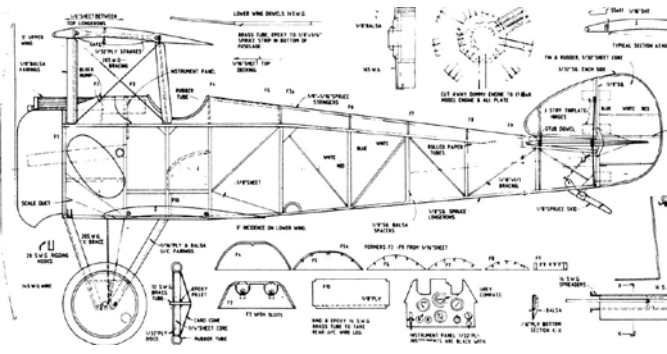


Jungmann plan detail

I'd given up building with a solid leading edge ever since discovering Jim Baguley's 'Asteroid' A1 glider in the '70s - a model I learnt a *lot* from.

The question occurred, so if the Jungmann was not as up to date as Eric's DH9a or his Martinsyde G192 'Elephant' then how had building techniques developed since then? I thought of Andrew Hewitt and his success in winning the Eddie Riding Trophy in 2005 with a DH4. If I could get hold of one his plans maybe that would be the thing. Except I couldn't find one on the interweb.

So, I emailed and asked where his plans were published and he replied right away saying his Camel plan appeared on Hip Pocket Aeronautics.



detail of Andrew Hewitt's Sopwith Camel F1 plan

But then he added, *"The Jungmann is a winner, no real need to alter anything, Bill Dennis has built a couple of them and they work a treat, very stable. If I were doing it the only alterations I would use, would be to use a Carbon rod T/E (1.5mm dia) stuck onto an 1/8 square balsa backing, then notch the 1/8 to accept the rib ends, this is simple to do and makes a very stiff T/E. You can also sand a very fine T/E section after. At the back end I would use Aluminium tube for the outline, instead of putting wood either side of the sheet surfaces (very boring thing to do). The tube makes a very sturdy outline and looks fantastic when covered, you will find that the Jungmann will need tail weight anyway.*

To stop the covering sticking to the sheet before the ali tube I rub the balsa with an old candle. Also when covering use thin dope and a hair dryer to dry it and shrink it fast off the sheet, also stick a pin through it and pull it up and use lots of foul language usually helps (shout chickens etc).

The wing interplane struts are dowels poking into holes, he did this to allow for the simulation of the leather boots that cover the fittings, the rubber band cross bracing keeps it all together. At the nose end I would use block balsa instead of fibre glass because I am rubbish at making FG stuff. So I would carve a wood one then epoxy on some glass cloth to toughen up the chin area.

The Jungmann is a fantastic subject and will fly very well, do not be afraid of it, just built as is, it could easily win today.

On the covering I am very old school using jap tissue then silk, still the best way to simulate fabric and it looks fantastic warts and all. I place the silk on the covered wing and dope through it to stick it on.

Good luck with it, let me know if you need any help."

Since I've been editing this newsletter I've been struck by just how generous people like Andrew Hewitt, Pete Iliffe and Dave Banks can be with their time. Always willing to share expertise.



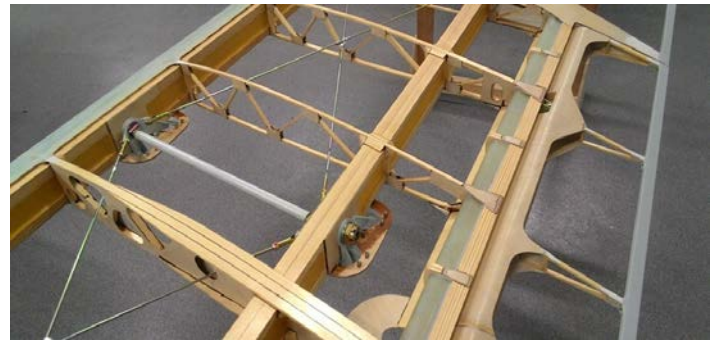
'test' panel with CF trailing edge

It's always been the thing in my family, *'if a jobs worth doing, it's worth doing badly'* in other words find out what the snags are before you begin in earnest. And so I built a 'test' wing panel with buried spruce spars, sheeted leading edge and CF trailing

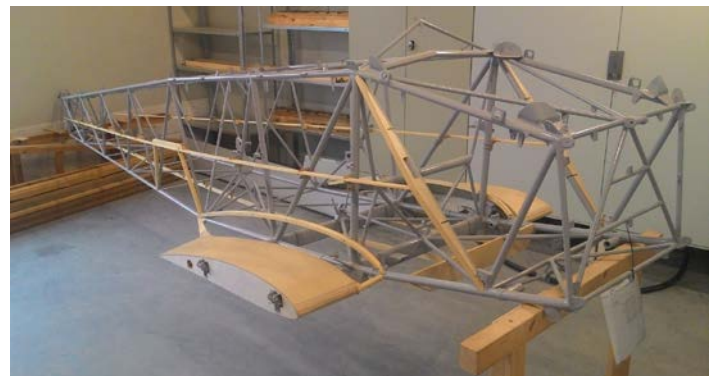
edge as Andrew had suggested. Later on it will come in useful when I practice covering and so on. One lesson I picked up was to leave a little extra 'meat' on the TE end of the ribs, to be sanded away later on.

For gluing the CF to the balsa I used two-part epoxy but speaking to Michael Marshall, who uses CF all the time, he suggested medium cyano. I've since tried this, first rubbing down the CF rod a bit with 'sandpaper' it goes slightly dull matt, then when you apply the cyano the wet/gloss returns and you can follow the wet bead of glue to judge how you're doing.

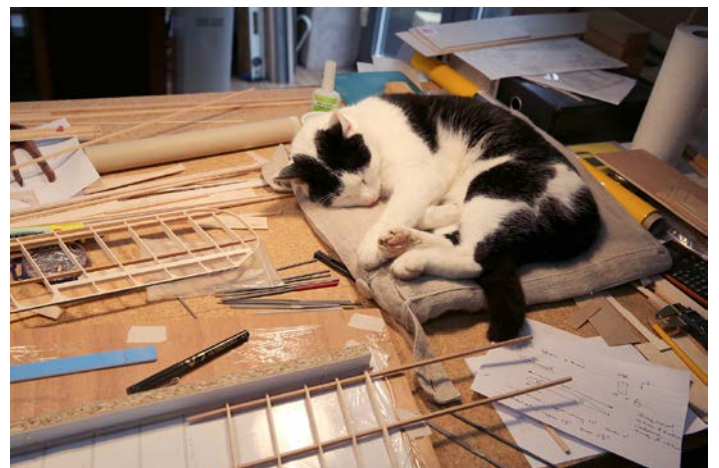
About this time John McIntyre emailed to say he'd found a company who still make the Bucker Jungmann. On their website they had a number of high quality images – just the thing to look beneath the skin and see how the thing is put together.



under the skin



Butters and I have decided to pace ourselves, but we're getting there.

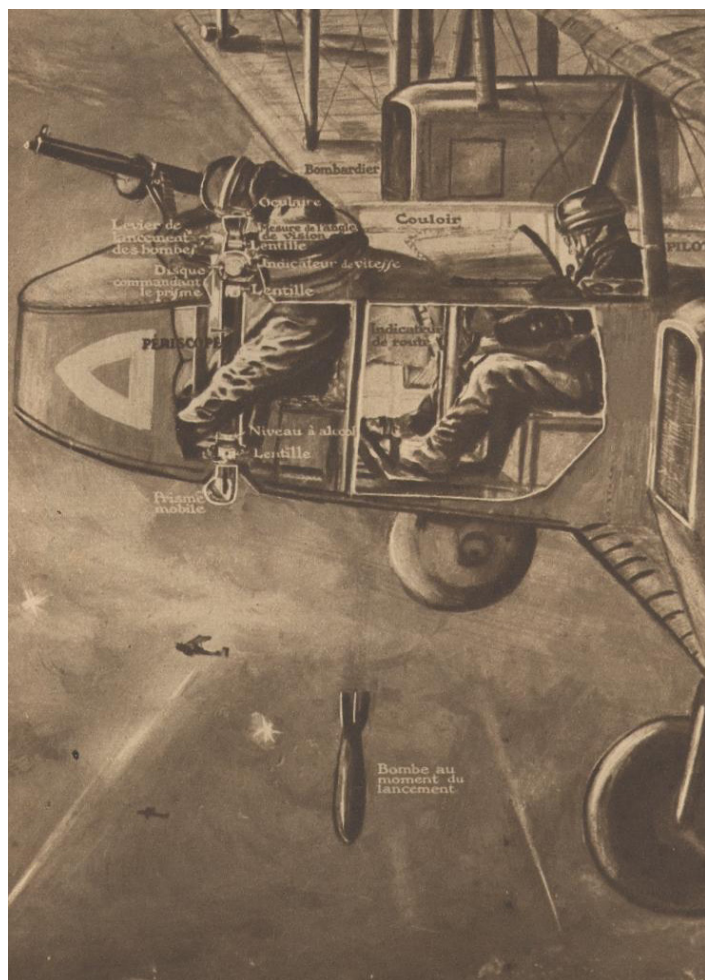


A lovely cat, just not ours.

Stow Maries

a Great War airfield preserved

Following on from Zeppelin raids, of which much has been written, Gotha heavy bombers were introduced. A Gotha raid of 22 aircraft was made on 7 July, resulting in 57 deaths and 193 injuries on the ground. One hundred sorties were flown against the formation, resulting in one Gotha shot down, three damaged and two fighters shot down. Felixstowe and Harwich were bombed on 22 July 1917 and Southend and Shoeburyness on 12 August, with the loss of one Gotha, four others crashing on landing.



Although the military effect of the raids was small, they caused widespread alarm, leading to the diversion of substantial resources from the Western Front and some disruption to industrial production. Concern about the conduct of defence against the raids, the responsibility for which was divided between the Admiralty and the Army, led to a parliamentary inquiry under Jan Smuts, whose report was to lead to the creation of the Royal Air Force on 1 April 1918. The defence organisation developed by the British was an important precursor of the fighter direction system that would prove vital in winning the Battle of Britain.

Part of the response was the building of Stow Maries aerodrome in 1916 to house Royal Flying Corps 'B' flight of 37(Home Defense) Squadron. By March 1919 the entire squadron moved to Biggin Hill in Kent, leaving Stow Maries aerodrome empty. The land reverted to farming and many of the original building remain to this day.

Stow Maries Great War Aerodrome is considered unique as no other near-complete Great War aerodrome remains in England. The aerodrome has the largest known surviving group of Royal Flying Corps buildings on a WW1 aerodrome anywhere in the country.

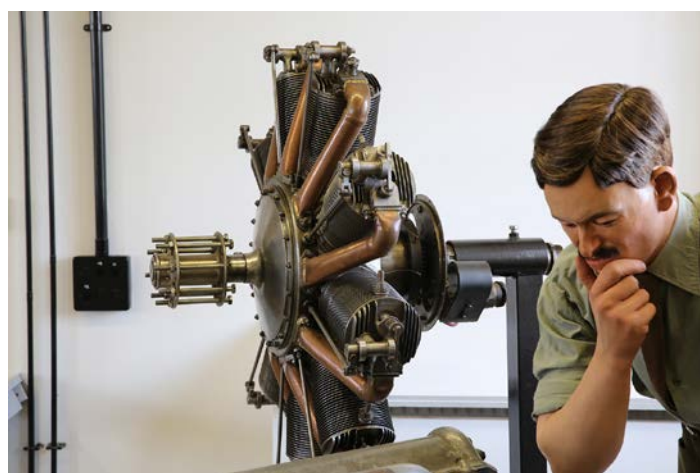
The individual building types are rare survivors; only two other RFC Officers' Messes are listed and there are no designated examples of some of the other building types remaining including the Pilots' Ready Room, Airmen's Mess, Reception Building and Squadron Headquarters.

The buildings at Stow Maries, like all wartime constructions, were functional, expected only to have a short life, and after 100 years there has therefore been some loss of historic fabric. However, unlike many other Great War aerodrome buildings, the structures at Stow Maries were not adapted for later military purposes.

They display good craftsmanship in their constructions; e.g. the roof structures are complex in their arrangement and well-made. Individual buildings retain many original fixtures and fittings.



Many of the buildings are being renovated, some provide areas for display.



Everywhere you turn there are volunteers itching to talk about the place and make sure you get the most from your visit. The display quality is very high and someone has gone to considerable trouble to research many of the IWM photos used and which, typically, were taken at this very aerodrome. For example, someone has discovered that a Clerget 9b as fitted to a Sopwith Camel, cost £907 [equivalent today £44,016] The original hangars were lost some time around 1940 when a raider spotted them and mistook the aerodrome for an active RAF base. In time they will be rebuilt.



A place such as Stow Maries has many friends and a temporary hangar contains some TVAL 'continuation' aircraft on loan but based here. TVAL stands for *The Vintage Aviator Ltd* a New Zealand based company who build new Great War aircraft and engines:

<http://thevintageaviator.co.nz/>



Royal Aircraft Factory BE2, Sopwith Snipe and Albert Ross

Getting there is a journey of 100 roundabouts, but don't let that put you off, just set your SatNav to CM3 6RJ and do what the nice lady says.

What do you need a map for?



Basically, beyond Chelmsford and in the middle of nowhere.

Right of reply

George Stringwell has the last word

I feel though that I just have to comment on Gotthelf's item on his very nice double size Frog Widgeon. He says that he does not particularly like my version which was published in RCMW because *"his design deviates from the original plan in several respects, resulting in a model that doesn't look quite authentic."*

I'm not trying to be picky, Gotthelf has produced a very nice rendition of the Widgeon which has obviously resulted, as has mine, in a very satisfactory sport R/C model, a tribute to the soundness of the original Frog design which I enjoyed flying in my youth, along with most of the other Senior Series models. I just don't think it is any more "authentic than my version!"



George's x2 Widgeon

There's quite a bit more of this correspondence on both sides. I've had to edit it down, but I'm going to give the last word to George who says, *"Anyone who builds his own models is fine with me - I just wish a few more did"* and I'm sure we can all agree with that.

Phil Haines captures the action

I went to the air show at Gransden on the 28th August. And the flying display was brilliant. Included in the show was an Extra 300 doing aerobatics and being accompanied by a RC model of an Extra 300 copying the manoeuvres. Half way through the display something went wrong and the model burst into flames and crashed to the ground.



Peter Fairbairn 1932 – 2016

Chris Hinson reflects

Following several years of illness, Peter Fairbairn died on the 7th of September. He had quite a large family, including thirteen great grandchildren, who remember him as always fun to be with. He even dressed up as Charlie Chaplin to amuse the family youngsters.



He was a man of many talents. During his National Service he was in the RAF based mainly at RAF Marham, working on B-29 Washingtons as an engine mechanic. When he came out of the RAF he went into the dental industry and was a 'rep' for the whole of East Anglia.

He had many interests during his lifetime, aviation was one of them. He had his first flight at the age of ten in a Tiger Moth for five shillings. Later on he learned to fly gliders and then Tiger Moths G-AHIZ and G-AOEI at Marshalls airport. His greatest achievement was a flight in Carolyn Grace's two-seat Spitfire. He was a good aeromodeller and for fun he used to wear a Fez when flying his little model which was in Egyptian markings! His other hobbies were motorcycle scrambling, fishing, shooting (when in the RAF he entered competitions at Bisley), rowing (he coached scouts who raced in the 'bumps' and came second), camping and caravanning, and lastly playing the trumpet. He will be greatly missed by many people.



Clever Dickery

maintaining Trexlers



The chances are that your dentist is just as keen on these little TePe brushes as mine, but that's not the end of the story. I've been running a pair of Trexler balloon wheels for something like five years. They may cost an arm and a leg but they're the *dog's bollocks*. My worry is that moisture will get into the inflation tube and the sides will stick together, then all you can do is throw the tyre away. So, before putting them away after flying, I've been introducing a bit of French chalk to dry them out. By now I feel sure you can see where this is heading as those little brushes not only hold the chalk but fit inside the inflation tubes a treat.



start out as you mean to carry on?

Scale Day
at Old Warden in 1975

turn to page 15 to see what
happened next . .



Not Much of an Engineer

reviewed by Alan Hunter – “a good read”

Our Newsletter Editor Bryan kindly loaned me a book he thought I might enjoy. The title is “Not Much of an Engineer “ and is an Autobiography of the working life of Sir Stanley Hooker.

Stanley spent all his working life with Aircraft engines, initially at Rolls Royce, then a spell in midlife with Bristols before being lured back to RR when the RB211 FanJet was in serious development trouble and RR was basically bust.

Hooker was a Mathematician via a degree from Imperial College and specialised in calculating Flows of both Liquids but more importantly for his future work with RR, Gasses.

After obtaining his Degree and a short spell in academia he joined RR in 1938, his first project was to improve the Supercharger fitted to the Merlin, this he certainly did such that by the early forties the Merlin had gone from delivering less than 1000hp originally to 2000hp partly thanks to the huge improvements made in the Blowers efficiency along with other mods made and to enable the Merlin to handle the much greater power.

Incidentally, Stanley says those rearward swept Exhaust Stubs on the Merlin are worth up to another 150hp in Exhaust Efflux thrust



He then became involved with early Jet development as Frank Whittles Power Jets company did not have the staff and resources to take the development forward at speed, hence the RR involvement and Stanley's deep understanding of compressed gas flows was obviously very important with a Jet Engine.

The book progresses with the development of the Welland Engine fitted to the Meteor through the other “River” named engines until he became somewhat disillusioned with the company nonsense and left RR for a spell at Bristols taking on the development of the Proteus, Olympus and the Pegasus for the Harrier.

He finally returned to RR to take over the RB211 Engine development program which was in serious trouble with problems on nearly every front, RR was broke. It is obvious that not only was Stanley Hooker extremely competent technically but he was also a first class manager in pulling that project together to make the great success the RB211 became.

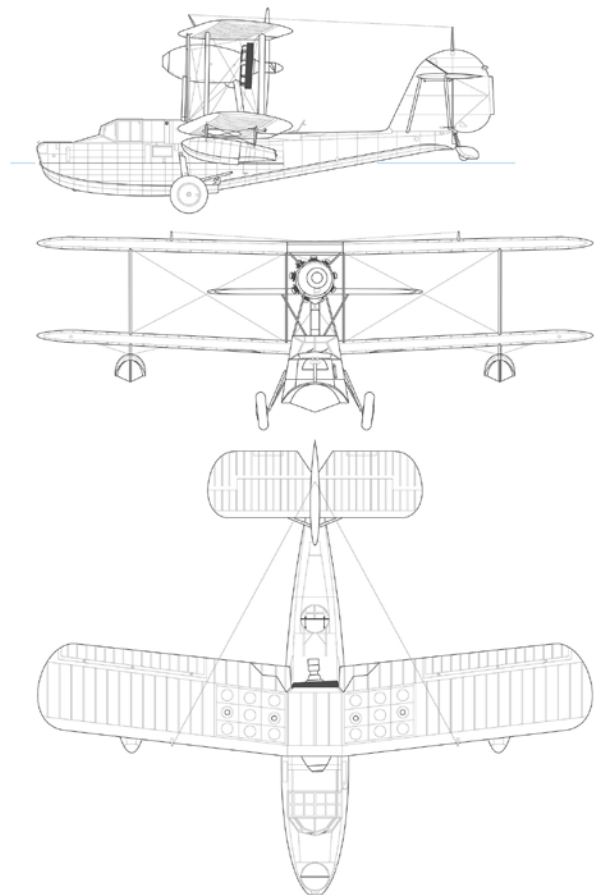
The book is an easy read mix of technology coupled with the day to day management infighting nonsense etc that seems to pervade all large companies and is written in a very entertaining way with a number of humorous anecdotes – Miss Shilling's Orifice comes to mind but you will need to read the book to discover more !! - I became so engrossed I abandoned my lounge refurbishment project and lost many Brownie Points in the process !!

And now for the Aeromodelling twist

At the RR Barnoldswick Jet Engine facility in the forties there were two Apprentice Toolmakers, one was named Hefin Davies, a fiery Welshman, the other was a Mr Charlton (first name unknown). On completion of their Apprenticeships they both left to form a Company to supply precision machined components to their former employer RR.

Thus was the Davies Charlton company born and they soon had a product of their own producing their first model diesel engine, the Wildcat. After absorbing the Albon engine designs they went on to produce all those DC Engines we knew and loved as kids (or maybe not) and they continued to produce engines right through to the mid-eighties when the company finally ceased to trade, by then DC was located in the IOM, probably for tax reasons !!!

The full story of DC is in one of the newsletters on the www.modelengineneers.org website. Although the site seems to be no longer updated there are many Model Engine related articles if you dig into the newsletter archive on the site plus a good number of model engine designs for you to make via the link to The Motor Boys International website. All good stuff for winter nights.....

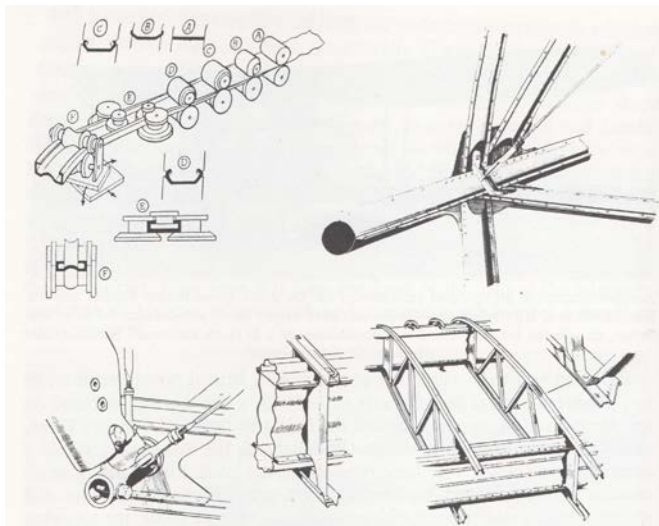


Moving away from wood

discovering drag dominates

Oswald Short's great experience of Duralumin construction of airships during WW1 had convinced him that this was the way to go. After fruitlessly trying to convince the metallurgists at the Air Ministry and at the Aeronautical Inspection Directorate that such a material could be made flawless and reliable, he set about designing an all Duralumin biplane, the Silver Streak. Believing this would be a great advance, he asked the Air Ministry to contribute to the cost. They refused but he went ahead anyway. Told that Dural would corrode, he exposed test specimens so that they were covered by the tide twice a day; steel soon rusted away but Dural was no problem. Registered G-EARQ the Streak was refused a C of A 'because we have no long-term knowledge of Duralumin primary structure'. Three years later the Air Ministry reluctantly admitted that the Streak had stood up to every test they could devise, had not corroded and was a fine machine, but clearly their heart wasn't in it.

When in 1924 the Air Ministry announced it would be buying no more wooden aircraft, the various chief designers merely repeated their old wooden structures in steel. They got very good at making wire-braced fabric covered biplanes with metal structures.



details of Bristol Boarhound construction

It required trial and error adjustment of dies and rolls to overcome the formed strip buckling into sinuous shape as it emerged. Sometimes the sample spar might prove 1/16in under or over the requisite dimension, and rather than make fresh tools to produce exactly the original calculated size, it was often preferable to amend the drawings to conform with the specimen!

There's a very well understood relationship between drag and speed. If you have a plane that can fly at 120mph with a 200hp engine but you'd like to give it a top speed of 240mph, then you're going to need a lot more power. In theory 1,600hp is required but a really big engine alone isn't going to do it for you.

In 1929 the Schneider trophy was won in the Supermarine S.6 with a 1,900 hp 'R' engine at 328.63 mph. Two years later when essentially the same aircraft was fitted with an uprated 'R'

engine of 2,350 hp the race was won at 340.08 mph. A 24% increase in power added just 3.5% to the speed.

To go fast you need to clean up the drag, and wire braced biplanes don't lend themselves to this.

In 1933 some engineers at Rolls Royce put a lot of effort into cleaning up an engine installation, with the aim of reducing drag from radiators and so on, and applied 'best practice' to a Hawker Horsley. On first reading you'd come away thinking this was a miserable failure as the top speed was increased by just 1 mph to 124.5 . . . but the guys at RR they twigged the underlying reason was that the Horsley flew so slowly and had so much parasitic drag that their efforts were lost in the noise - what to do?



Hawker Horsley

They looked around for a 'clean' airframe to work with, bought a German He 70 and installed a Rolls Royce Kestrel. They found it could reach 260 mph with six people on board . . . this at a time when the Hawker Fury frontline fighter, also Kestrel powered, flew no faster than 223 mph at best.



Heinkel He 70

Some lessons take time to learn

The first production version of the Gloster Gladiator, K6129 was formally accepted by the RAF on 4th March 1937. Described by some as an S.E.5a for WW2. A fixed wheel, wire braced biplane, it could reach 253 mph at 14,500 ft.

Introduced a year later the Mk 1A Spitfire could reach 367 mph at 18,600 ft.

DH. 89 Dragon Rapide

owned and flown by David and Mark Miller



As many of you know the heroic restoration of the Rapide by father and son, David and Mark Miller, took something like 27 years, but did you know that as well as being former IVCMA members both are keen newsletter readers. I'm used to seeing G-AGJG as in this photo, in the hangar at Duxford, and so when Mark offered a flight I was like the proverbial dog! [two tails]



looking over the pilot's shoulder

I've seen photos of the airframe mid-restoration but then seeing G-AGJG as she is now takes the biscuit. I struggled to reconcile the two images:



As so often happens, questions came to mind once I'd got home and I had to resort to email:

approach: My maxim that "60 kt plus a knot for each passenger" is a good guide for over the hedge speed. I maintain 70 kt for the final turn and then come back to the lower figure only once I have decided to commit to a landing.

cruise: we were cruising that day at about 95 kt, the Rapide is normally credited with being much faster than it is. The 152 kt VNE takes an unnerving angle of dive to achieve.

engines: A detail that most references misspell is the engine name: DH Gipsy Queen III, 200 HP each.

handling: The aircraft is nicely balanced, the ailerons have pronounced differential, but you still need to coordinate with the rudder.

As to how you manoeuvre a plane of that size in and out of the hangar:



QED

This little piece hardly scratches the surface I know, but many thanks to David and Mark

Caption needed



Alan Hunter supplied this photograph, commenting,

“Bryan, I see you have a Vertical Dipole and Reflector sprouting out of your head, is this for thought control RC !!!!”

You're invited to supply your own caption . .

I was actually thinking, *“must remember to wash my hands . .”*



Footnotes

LBJ tells it like it is

After reading a speech prepared for him by the eminent economist Kenneth J Galbraith, Lyndon Johnson asked: *“Did y’ever think, Ken, that making a speech on ee-conomics is a lot like pissing down your leg? It seems hot to you, but it never does to anyone else.”*

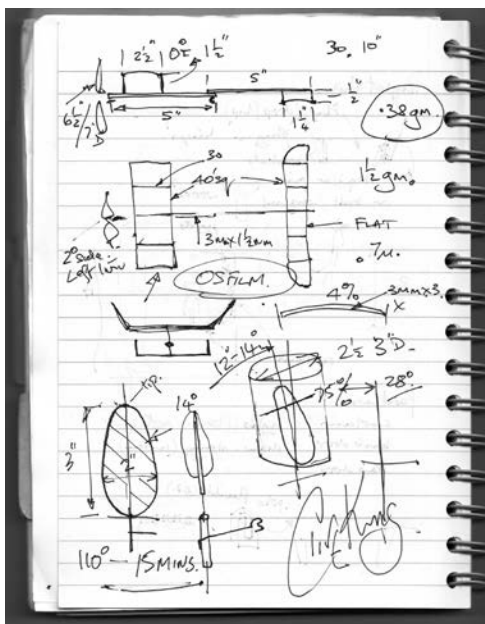
Well, I don’t know how hot you’ve found these newsletters but after three years [eighteen issues] we’ve reached the end.

I realise that I’m no Harald Penrose, but I’ve enjoyed trying to find something of interest, and not *just* to me.

Three articles stand out for me: **Carpe Diem** from July 2014, about talking to Clive King and being encouraged to build his mini-stick. The piece wrote itself.



nocal Cub



everything you need to know

The second stand out piece was Piper Cub nocal from March 2015. A copy of Clive’s it weighed just 1.2g and flew a treat.

The third and last stand out piece was **Specification 5/21** from November 2015 when I recalled the way Richard (“Dick”) Fairey had taken the bull by the horns and designed *his* idea of an aircraft (the Fairey Fox) rather than follow the Air Ministry spec. I hugely enjoyed researching and getting that down on paper.



As always, if you’ve contributed in any way, thank you.