Coventry Aeroplane Club
Est 1932

Members' Newsletter

The Newsletter of Coventry Aeroplane Club Issue 6, Spring 2020

THE G5 HAS LANDED!

Following a spate of Attitude Indicator failures over the past couple of years (with associated periods of "Day VFR Only" operations, protracted unserviceability and replacement/maintenance costs) your Committee decided that we would turn this problem into an opportunity!

A **Garmin G5**, set up as a replacement AI, has been fitted to COVA. COVC is due to follow within a short period. The instrument is more properly termed a Primary Flight Display (PFD) and, as you can see from the picture, presents a lot more information than the AI which it replaces. The airspeed tape and the altimeter tape are both fed from the aircraft pitot/static system (although the original, primary instruments remain) and there is a turn coordinator at the bottom of the display (again, the original primary instrument remains). The bank angle scale also displays the bank angle required for a rate 1 turn. Track and groundspeed are shown from the inbuilt GPS receiver. It has a backup battery, which provides about 4 hours endurance following an aircraft power failure. Altogether, a very capable and eminently usable instrument.

It is possible to fit a second G5 beneath the PFD, configured as a Horizontal Situation Indicator (HSI). That may or may not be an upgrade worth incorporating, and we will consider it once we have gathered experience of using this initial fit. Have a look at the User Handbook, available as a download on our website, and the Flight Manual Supplement, which is at the back of the Pilot's Operating Handbook.

www.covaero.com/downloads

2020 AGM – Your Club Needs You!

While formal notices will be issued later, the date of the next Club AGM is planned to be **Friday 24th April.** The Club is owned by its members and everyone is invited to the AGM at which the Café will be open and refreshments will be provided. This is your opportunity to hear about plans for the future and also to elect your Committee for the next year.

As many will know, we failed to make the required 50 member attendance to make the meeting quorate last year (twice!), so we hope that by giving early notice, you will be able to place a note in your diary and come along for what is as much a social as a business evening. **We look forward to seeing you!**

Up, Up and Away…

Congratulations to club members **Joel Wymer** and **Jack Ryan** who both recently notched up the highly coveted **Exercise 14, First Solo** in their log books; Jack managing it on his 16th birthday!

Well done both from all of us and good luck as you enter the next phase of your flight training.

Updated Flying School Ops Manual…

In line with our **DTO status** and various other changes, our Head of Training has updated our Operations Manual.

All users of the school aircraft are required to read the document and sign the form inside to say that this has been completed.

The updated manual is available at the club and it is also on our website in the downloads section:
www.covero.com/downloads

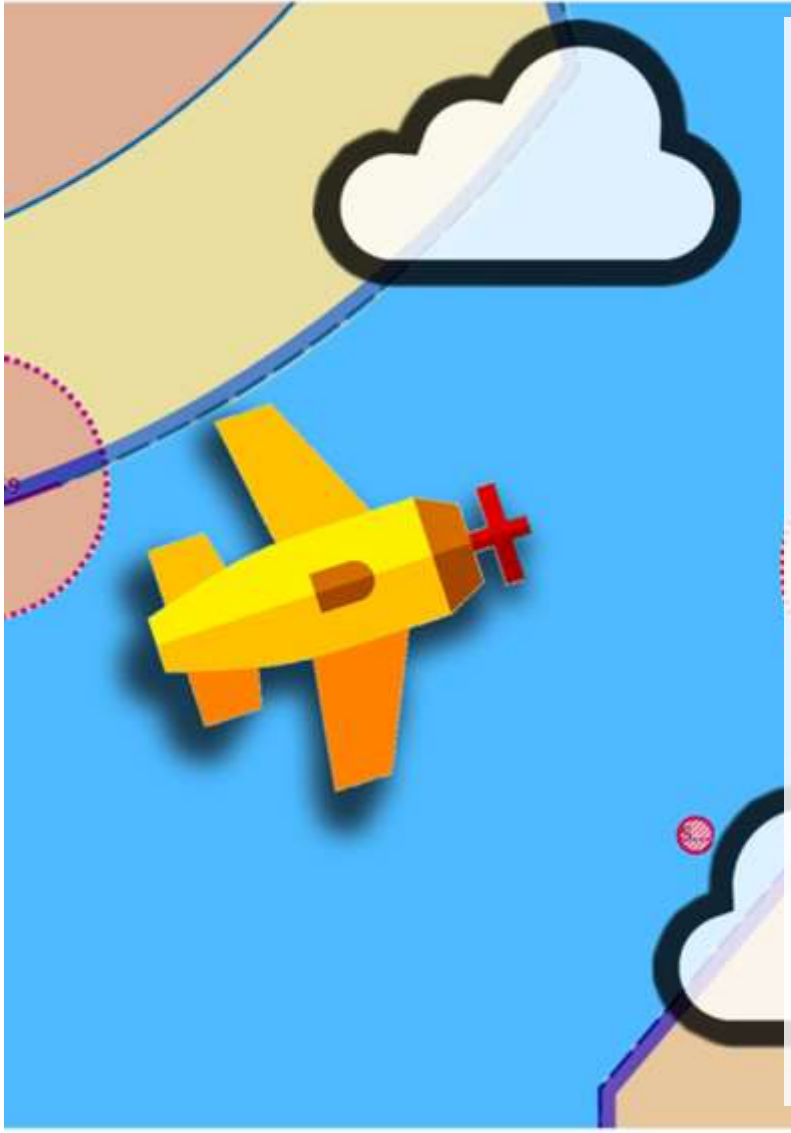
Your 2020 Membership Card Can't Wait to Meet You!

Most of you will already be in possession of your shiny new **Cov Aero 2020 ID card** which will see you through to the end of December 2020 (Christmas is just around the corner!)

If you have not yet received your card then it is probably waiting for you to collect it next time you are passing the Ops Desk at the club.

If you still find yourself without a membership card, and would like to have one, then present yourself to a committee member who will take your photo and organise a card. If you also need airside access then bring along 2 forms of ID. At least one form of ID must include a photo and at least one must include your address. A passport and driving licence are ideal documents.

For further information please email **security@covero.com** or chat to any of the committee members.



Save the Date:

Infringement Awareness Evening

Friday, 21st February 7:30 pm

In common with much of the UK, Coventry Airport is surrounded by areas of controlled airspace, the infringement of which can create safety risk and operational disruption over a wide area. The issue is taken very seriously by the authorities and is having increased consequences for pilots involved – both operationally and financially.

This evening will be an opportunity to hear from highly experienced pilots and air traffic controllers on the infringement issue and how to reduce your chances of featuring amongst the statistics.

You are warmly invited to this relaxed and informal evening, and you will find it useful to bring a chart and your favourite GPS moving map if you use one.

The Aviator Café will be open for drinks and snacks.

Safety at Heart

The new **Safety Policy** brought in at Coventry Aeroplane Club needs your support. The policy is now up and running but needs everyone to get behind it to ensure that safety is at the heart of all the club's flying activities. If you can think of **ANY** way in which safety can be improved, then please let us know by putting your ideas onto one of the Safety Issue Report Forms contained on page 12 of the document.

You can either print the form off yourself directly from the Safety Policy which is on the club's website or ask a Duty Member for a copy. Remember that we are all responsible for making the club as a safe a place to fly at as possible and any ideas you have could make a real difference.

The Safety Policy can be found on the website at **www.covaero.com/downloads**

Back to (Ground) School

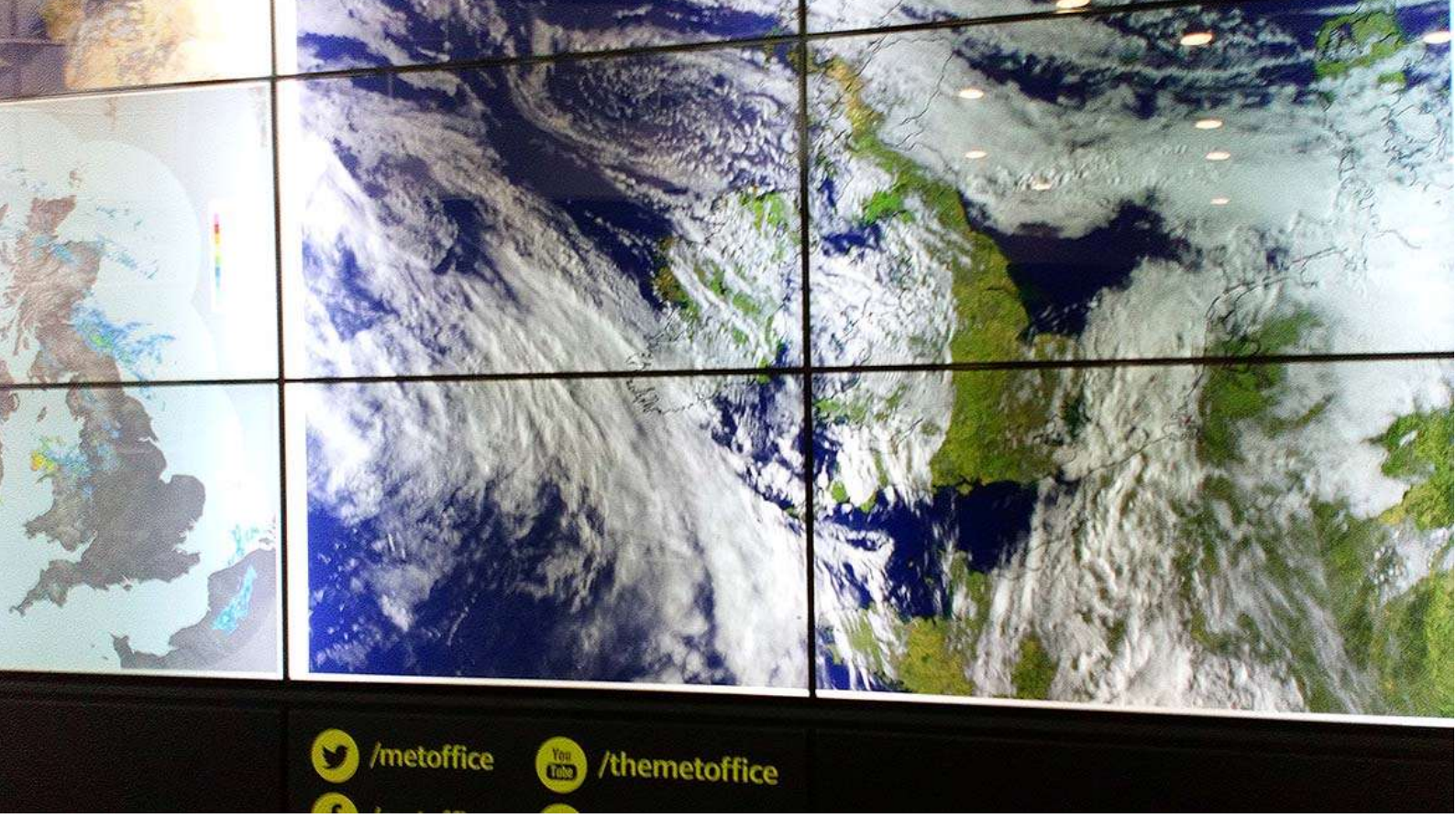
With nine written exams, one flight skills test and a practical radio test, gaining your PPL is no mean feat!

But don't forget that Cov Aero gives you free help in the form of **Ground School Mentoring** sessions.

The sessions take place at the clubhouse on weekday evenings in 6-week blocks covering all of the subjects on which you will be examined. They're also a great way to meet with your fellow students to trade notes and experiences.

Run by both our flight instructors and other club PPLs, the sessions cover a mix of technicalities which you will need along with real world advice to help your real world flying.

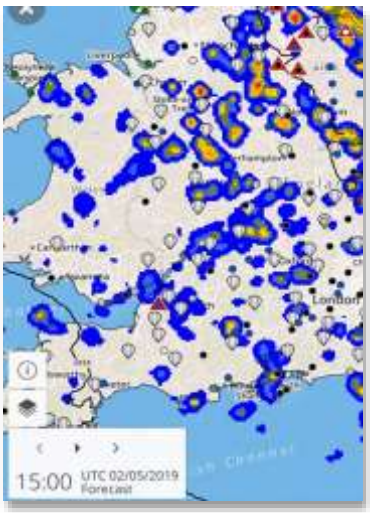
The current timetable is on the notice board at the club; get your name on there and come along armed with your questions, thoughts and anything else that might be puzzling you!



Red Sky at Night...

Are weather forecasts really just horoscopes with numbers or is there more to it? A day-trip to the Met Office hopes to uncover some of the answers.

We knew it was going to be a good day when there was free coffee available as we signed in and collected our visitors' badges. Like Mr Benn's shopkeeper, our host Darren appeared right on cue and whisked us up into a meeting room where we made ourselves comfortable. As every pilot knows, the Met Office headquarters is located just outside Exeter and we had all flown down there earlier that morning. We'd managed to muster three aircraft between us: a Cessna 172, a Piper Arrow and a SIAI-Marchetti SF260. A variety of routes were followed too – one IFR culminating in an instrument approach at Exeter and two VFR: one low-level to the west of the Bristol zone and the other higher-level to the east. The weather wasn't great with plenty of scattered cumulus and associated heavy showers. Everyone was prepared for the possibility of an overnight stay...just in case! Walking through the Met Office one couldn't help but notice the light, airy environment; plenty of glass and soft furnishings; break-out areas and a relaxed atmosphere. Dotted around were screens showing synoptics and satellite imagery of the current and forecast UK weather situation. Darren ran through a presentation which got us up to speed with a brief history of the Met Office detailing its humble beginnings in 1854 under Admiral Robert FitzRoy right up to the state of the art numerical weather modelling use the latest super-computing. Darren kindly gave it an aviation slant including a lament about how much more could be included in the METAR and TAF reports



TOP: monitor wall in the Met Office reception

ABOVE: The forecast for mid-afternoon showed heavy showers.

but the mandated formatting limits what can be included. Interesting stuff!

We filed outside to look at some actual weather sensing equipment. Not all of it was in active use; some of it was test equipment, some of it was from yesteryear but all of it was of interest. There were plenty of the familiar looking boxes on stilts with their Stevenson screens to help create that just-so atmosphere inside the box. In amongst the usual technology were some items that just don't need to be complicated: a funnel into a calibrated bucket to measure rainfall for instance! Beautiful in its simplicity! There was the expected scattering of Stevenson screen shelters up on pedestals housing their various thermometers, barometers and hygrometers. Some of the more unusual bits of kit included an example of a pyranometer to measure background radiation and the sensors used to measure plain old visibility. This consists of, perhaps unsurprisingly, a light source and a sensor pointed towards each other. Perhaps more surprising though was the short distance between the two which can't have been more than a metre. It prompted quite a few "are you sure?" comments from our group! (Pilots know best, right?)

Back inside, it was fascinating to see how closely linked the Met Office is with the TV presentation of its data.

BELOW: PilotAware coupled with SkyDemon shows the local traffic – including our group's SF260 going low level around Bristol.

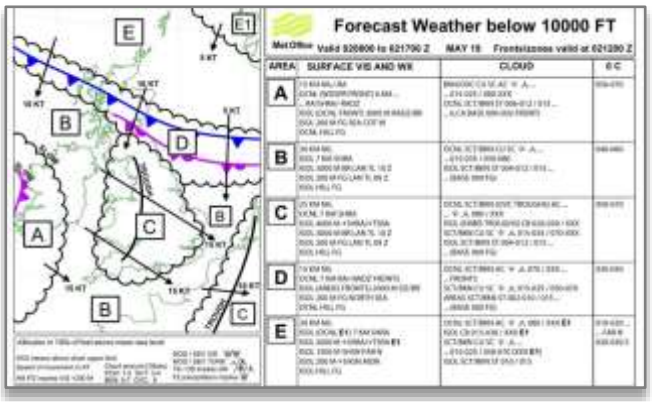
TOP: Short final in the Arrow for Exeter's runway 26.

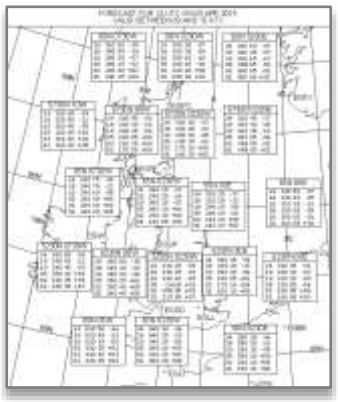
MIDDLE: The intrepid band of adventurers with a Twin Otter Skybus departing in the background.

ABOVE: Cov Aero gets the VIP treatment.

Aside from a TV studio (complete with obligatory RECORDING light) a crowd had gathered to watch one of the centre's meteorologists give a presentation about the weather for the next few days - this was a recurring theme which helps all of the Met Office staff become familiar with the weather "story" to be promulgated to its customers – including the MoD, ITV, C5 and, of course, us pilots via the CAA.

We were duly handed over to the captain of the nerve centre for the Met Office; the room where all of the incoming data is assessed and collated. For a description think "office workplace meets Mission Impossible: computers, monitors, phones and internet-streamed live data everywhere with yet another giant wall of





LEFT: The Met Office's F214 and F215 forms are well known to pilots

BELOW: Met Office HQ in Exeter

screens showing yet more synoptics. Of particular interest to us was meeting those responsible for our beloved F214 and F215 forms. Whilst it was somewhat humbling to meet the people who daily (and nightly!) pour all of their knowledge, interpretation and prediction skills into the data we use to fly it was also enjoyable to share a bit of banter about whether they could arrange gin-clear VMC for the journey home. (I'm sure they're frequently on the receiving end of that gag but they wore it very graciously!) Alas, the best they could offer was a confirmation of our own assessment: localised heavy showers along most of the route. Perhaps they could have offered us better with a bit more notice…

A short wrap-up presentation from Darren finished things off nicely. Here's some trivia for you: did you know that the various areas in the Met Office building are named after British lighthouses? Neither did we and a quick pictorial quiz confirmed that we also don't know our British lighthouses! Time to head for home and all thoughts turned to the weather. The forecast showed that the evening would gradually improve so after a relaxed snack we all headed to the airport and dodged showers all the way back to Coventry. Looks like they know what they're talking about after all.

WORDS: Anthony Ryan

PICTURES: Paul Baker, Richard Coton, Anthony Ryan

ABOVE & BELOW: Sunshine 'n' showers on the way home – pretty much what our hosts had predicted.

A School Ma'am with Attitude

An aircraft from a bygone age and a rocket from the space age come together by chance to create an experience never to be forgotten.

During my travels I have been fortunate enough to enjoy a number of flying experiences in the USA. One such was my introduction to the North American AT6/Texan family of advanced trainers.

The SNJ6 is just one of the variations of the AT6, or 'Harvard' as we Brits named it, that was used by many nations for the training of embryonic fighter pilots. The Harvard family first flew in 1937 and was still being remanufactured in 1956. In fact the South African Air Force only retired the last of their machines during the 1990s.

Several air forces including the USAF even flew them fitted with bombs, rockets and machine guns, using them on counter insurgency and target spotting operations.

It was while Rod Edwards and I were on a trip to Florida that we chanced upon this gem of aviation history, a meeting that I in particular was to benefit from many times over in the years to come. Standing gleaming in the early afternoon sun on the ramp at Titusville was an SNJ6, one of the versions operated by the US Navy and this one still had the very prominent deck landing arrestor hook below the rear fuselage. On closer inspection of the immaculate aeroplane, the tail wheel could also be seen to be fully castoring.

Across the ramp strolled a young man in a flight suit. He introduced himself as Dustin Duke and he flew the equally pristine Stearman that stood close by. We chatted for a while with the conversation inevitably centring on the two old trainers.

The SNJ6 was the more interesting of the two. It had served the US Navy at both Pensacola and San Diego during the Second World War and had continued in the service for many years after the War. On retirement from the Navy it became N101RF and it continues to be maintained in pristine condition.

Finding out that we were both Pilots, Dustin asked if we would like to fly the venerable lady? Rod was very keen indeed but yours truly actually needed to be encouraged! (Well I pretended to need encouragement anyway!)

Paul Souder, the Pilot of the SNJ6 was at lunch but a quick phone call from Dustin hastened his return to the field. Rod was first into the air and bearing in mind that he is firmly of the 'Blue Up, Green Down' persuasion, came back with a smile on his face and very happy to impart that they had been "Cavorting all over the sky in this wonderful machine".

My turn and as I strapped in, Dustin showed me round the roomy front cockpit. I immediately felt very much at home. The scene is dominated by quite a tall 'stick' with separate transmit and intercom switches mounted on top. The transmit button used to be the gun trigger! There are large adjustable rudder pedals and, surprisingly for a military aeroplane of that era, a cockpit floor. The latter is a great boon as it contributes to the avoidance of disappearing charts, pencils and other sundry items that could otherwise end up jammed in critical places.

The throttle, mixture and propeller controls are mounted on the left-hand cockpit wall below the canopy rail. Also on this side is the tail wheel-locking lever (Naval Versions only). The military radios would have been on the right hand sidewall but this now only contains ancillary switches. A more modern 'flip flop' radio occupies a slot centrally at the bottom of the instrument panel.

A short lever on the right hand side of the seat allows it to be raised and lowered, rather like that of the Spitfire. Engine priming is from the front cockpit only and it's very easy to get it wrong if you are not used to it. Priming completed, the 600hp-supercharged Pratt & Whitney R-1340-AN-1 radial engine rumbled effortlessly into life.

An interesting fact about the Harvard is that the propeller is driven directly from the engine and not via any form of gearbox. The effect of this is that when the propeller pitch is set fully fine and the pilot is using all of the power available from the big P&W, the propeller tips actually break the sound barrier! This results in a tearing rasping roar that instantly identifies the type of aeroplane to anyone on the ground, without the need to look up at all.

The tower cleared us to taxi and we set off down the taxiway. The nose is quite long and in true tail dragger fashion necessitates continual weaving to clear the forward view whilst on the ground.

Reaching the hold for runway 36 Paul recited, and I followed through on the checks. "Check Mags and On Both, Exercise Prop, Trims set, Throttle Friction Tight, Mixture Rich, Prop Pitch Fine, Fuel on the Correct (Right) Tank, Flaps (Not Selected). I was advised to close the canopy only as far as the last but one notch as it can get very warm under the 'Greenhouse', particularly in Florida.

Initially we lined up about ten degrees off the runway heading in order to get a good look along it, then straightened up, locked the tail wheel and opened the throttle far enough to give 20 inches of boost. The tail came up quite quickly with the absolute minimum application of forward stick and once the tail was up, the throttle was pushed further open to give 30 inches of boost. (Max Boost is 36") The aeroplane flies herself off at about 80 mph having used only a fraction of the 6001 feet of available runway. The undercarriage lever is to be found low down on the left-hand side of the seat and is operated by first pulling forward the large red knob at the front of it and then raising the lever. The two green lights on the panel went out simultaneously as the gear retracted.

The airspeed was allowed to build up to 100mph before we started the climb. I noted an initial 1700 ft per minute, which even allowing for the fact that the runway elevation is only 35ft amsl and that we were only carrying about half tanks, wasn't half bad for a then 62 year old lady!

The presence of other traffic prevented us doing the spectacular low turning departure that Rod had managed and so we turned crosswind as normal at 500ft, tracking initially out towards the coast.

Clearing the 'pattern' we then flew southeast, following the centre of the Indian River. This is the name given to that part of the inter coastal waterway running parallel to the Atlantic just inland from Cape Canaveral and Coco Beach. On our left could be seen the launch pads at the Cape and standing out quite clearly was the Atlas rocket that we hoped to see blast off that evening.

Following the river, Paul suggested a few clearing turns to check that nobody else was about. It was only then that I realised just how much sky the metalwork of the Greenhouse style canopy blocks out. Obviously, a very good look out was required.

A clearing turn to the left was followed by a gentle dive to build up sufficient speed above the 160 mph cruise for Paul to demonstrate a roll to the right. The aeroplane really did feel as if it was running on rails and the horizon just rotated in front of me. Paul kindly offered to let me try one to the left, bearing in mind the need for plenty of height to recover in the event of an inadvertent departure and me not being used to it, I did a very gentle, lazy roll.

We were now crossing Marcos Island we next did a diving turn to the right and a 200mph run over the sea parallel to Coco Beach. I found that the stick forces, whilst not as light as the average Cessna, were quite manageable in the cruise but as the speed built up the reason for such a tall stick became evident.

ABOVE: Tucking away the Dunlops after getting airborne.

Indeed I can understand why Harvard pilots have to be fairly strong to perform an aerobatic sequence. Pulling up we rapidly regained 1500ft and turned back across the Island to the river.

Flying back up the river I had a good view of the Shuttle runway at Kennedy Space centre. There was a time, prior to the attack on World Trade Centre, when anyone could do a low fly by along this famous three-mile strip of concrete, but alas not now. Paul told me that the authorities have promised that it will again be possible at some time in the future, but the locals aren't holding their breath!

Once more I marvelled at the gin clear visibility that always takes me by surprise when flying in the States, so good was it that I did not need to ask where our field was, because I don't think that we ever lost sight of it!

ATC advised us of a C152 joining the pattern on a left base just as we joined right base.
"This should be interesting." Commented Paul. "Can you see him?" I certainly could not but something made me look over my left shoulder, just in time to see a 152 disappearing under our tail. I told Paul and he twisted round to have a look.

Paul could not spot the other aeroplane, so he asked me to do a left hand orbit just to give us some room. Sure enough by the time I had got about half way round the turn, there he was in front of me. Paul saw him at the same time and read my thoughts. "Bet you wish that the old girl still had a live Machine Gun!"
She really did feel like a fighter and there was a dummy machine gun in place of the training one originally fitted but no sight!

We did another orbit to let the 152 in ahead and then prepared for landing. The checks were done as we curved from base to final. "Brakes Off, Gear Down please". The gear travelled quickly and I called, "Two Greens," I then checked the Plexiglas clear view panels set into the top of each wing centre section, just to visually check that the undercarriage locking pins were home and the gear was locked down, "and locked."

The checks continued, "Mixture Rich, Prop Fine, Fuel still on correct tank and sufficient. You still secure? (From Paul.) Flaps set".

Cleared to land, we were still quite high and Paul was muttering about the 152 pilot who was the cause of us staying so high for so long.

Nevertheless we had pegged a stable 90mph approach with 45° of flap and anticipating the stall at about 64mph, resulting in a firm but good three pointer.

The Harvard family all have a reputation for difficult ground handling, particularly on landing, but by anticipating the start of any swing and correcting it before it materialised, we taxied onto the apron in style.

My thoughts following this first flight in a Harvard (SNJ6) were that it was all that I have ever been told about. The controls are nicely harmonised, not too heavy but you are aware that it is not a light aeroplane. It gives a solid secure ride but I know that if you do not treat it with respect it will bite, especially if you get too slow in a turn and pull. It will then flick the other way and can easily enter a spin, which takes quite a lot of height to recover from. The famous Harvard 'noise' as the un-governed prop tips break the sound barrier at high power settings is not heard in the cockpit, in fact noise levels generally, when wearing a headset, are not too bad at all.

Having said all this, it was designed as a fighter trainer and was so successful that over 15,000 were built; some of them soldiered on with the military well into the jet age. The fact that it needs to be flown rather than 'driven' still makes it an excellent tutor and it has been called, not without reason, "A School Ma'am with Attitude." (A quote from one of our Colonial Cousins.)

That evening, the icing on the cake so to speak, was the fact that we had a grandstand view of the Atlas rocket launch, carrying a Japanese Superbird 6 Communications Satellite into orbit. This was the same Atlas rocket that we had observed from the air whilst passing by Cape Canaveral in the Harvard.

Both Rod and I walked away from our first flights in a Harvard wearing 'Silly Grins'. Guess where I went the next year?

ABOVE: Feeling quite at home in that roomy cockpit.

WORDS & PICTURES: Clifford Hill

Flyout season is nearly here...

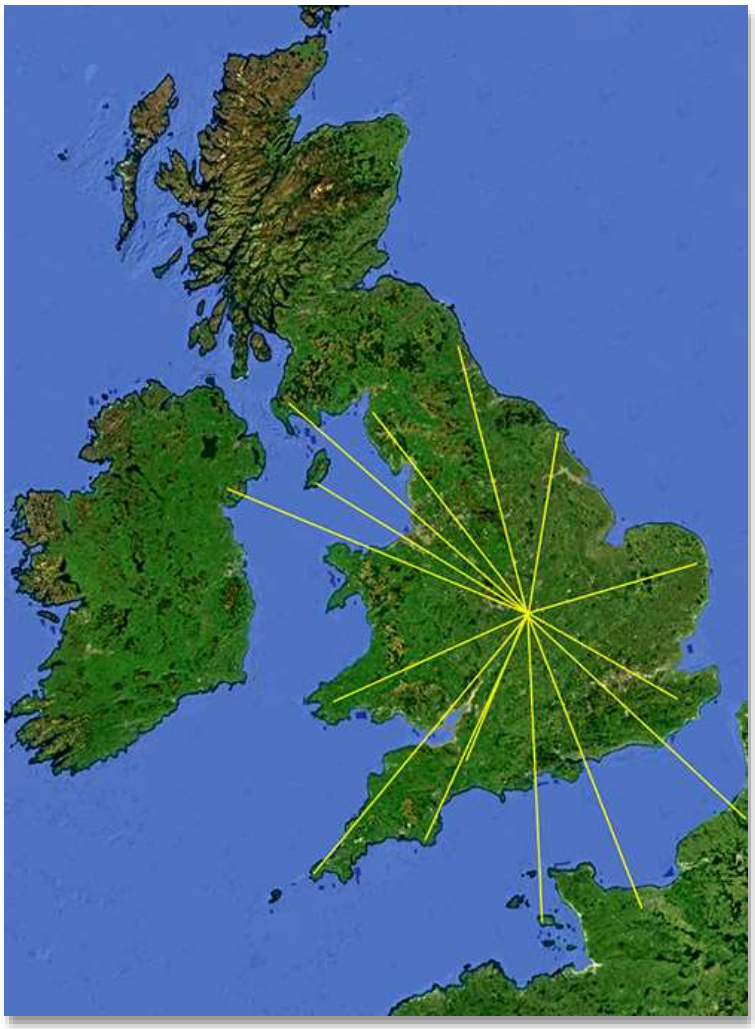
Some of you may have noticed a distinct difficulty in booking the club aircraft over the Easter Bank Holiday weekend. This is because there are plans afoot for a hirer's only **Flyout Weekend**, which will encompass Good Friday, Saturday and Easter Sunday (10th, 11th and 12th April).

Both club aircraft have been allocated to this and members who own their own aircraft are definitely encouraged to join in with the fun!

Initial plans are for three day trips which will be **BIG** trips, with a destination of around 2 hours flying time away. It is quite likely that the out of hours indemnity will be put to good use so participants will need to have read and signed up to this in advance.

Initially planning will account for a maximum of three persons per aircraft, with the pilot in command making the overall decision for their aircraft regarding how many passengers they are happy to carry. Destinations will be chosen carefully over the coming weeks and they will take into account weather, endurance, scenery amusements on arrival and general suitability.

If you are interested in joining in, either as a pilot flying, an aircraft owner or passenger, please email Claire at **leadbetter24@hotmail.com**



It's Your Committee...

Coventry Aeroplane Club is owned by its members and run by a General Committee elected at each AGM. The committee members are also directors of the two limited companies owned by the club.

Officers:
Chair: Claire Leadbetter
Vicechair: Vacant
Secretary: Rowan Smith
Treasurer: Neil Hedges

General Committee Members:
Peter Gibson, Richard Holland, David Penson, Stuart Robottom-Scott, Anthony Ryan, Lauren Tilsley, Alex Whyte, Stefan Winkvist

Head of Training/Chief Flight Instructor:
Mark Rawlings

Want to Join us?
Email us at committee@covaero.com

Safety
...is at the heart of everything that we do. If you want to discuss or report a safety issue, please email **safety@covaero.com**

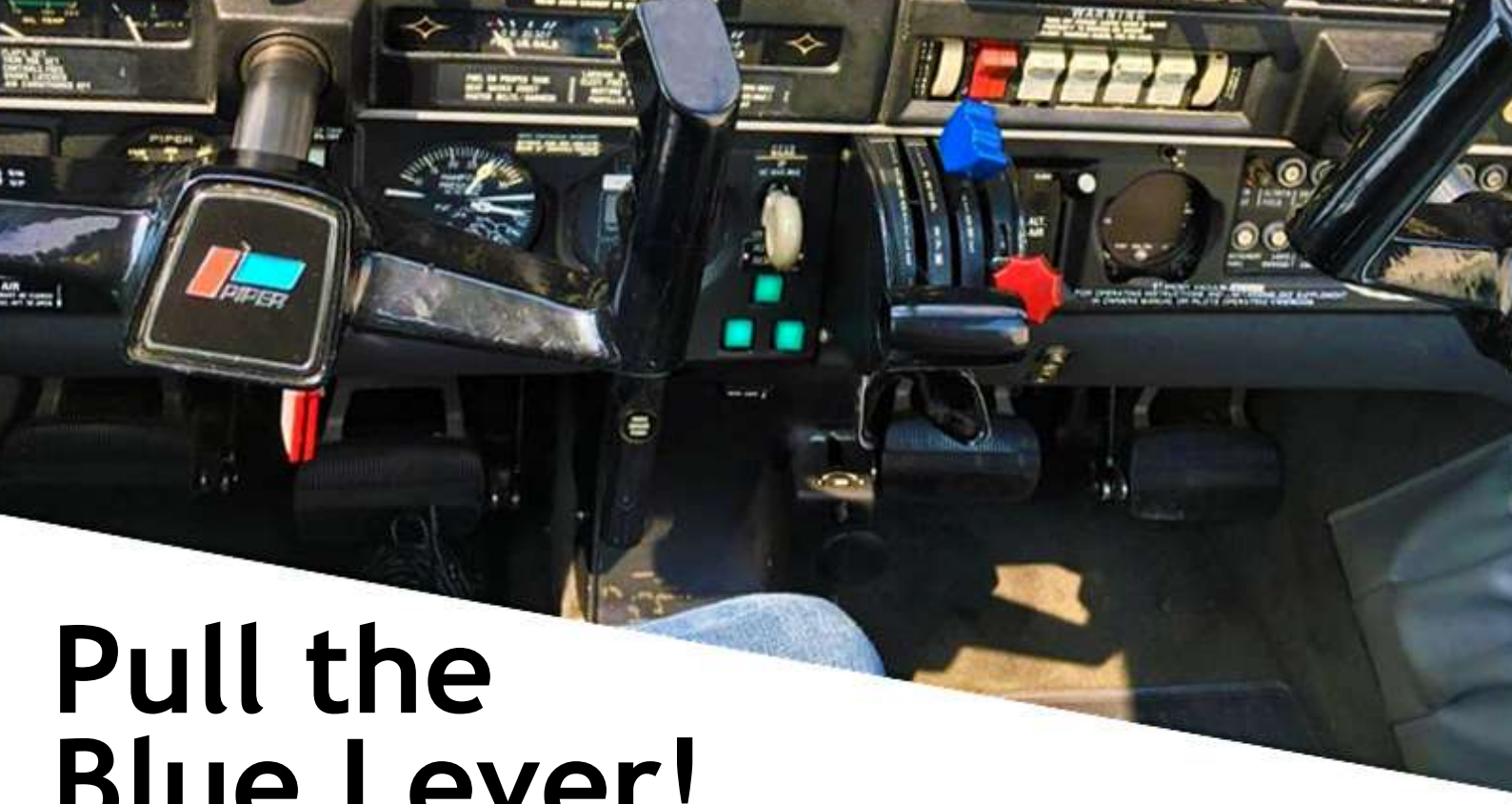
...and it's Your Newsletter

We hope you enjoy reading this newsletter – our aim is to produce them for Club members quarterly. What else would you like to see?

If you have enjoyed reading the flying features then remember that all of them have been written by club members just like you. Do you have a flying story that you would like to contribute? If so we would love to hear from you!

Get in touch with any committee member or email **committee@covaero.com**

Do you use Social Media?
Follow us on Facebook, Twitter and Instagram



Pull the Blue Lever!

So what is all this chit chat about 'complex' training?
One club pilot takes that first step away from flying club aircraft.

For those of you that don't know me, I joined the club back in the spring of 2017 with a view to gaining my PPL. I did all of my flight training in the club Warriors. I got my PPL licence in September 2018 and now have about 140 hours total flying time. I have also almost completed training for the IR(R) Instrument Rating.

In the summer of 2019 I had the opportunity to join a group which flies a Piper Arrow. Before being allowed to fly solo I had to complete what is called "complex training".

As the name suggests, the training is to teach you how to fly a more complicated single engine piston aircraft. The main differences between the club Warriors and an Arrow are retractable undercarriage, a variable pitch prop and a more powerful, fuel injected engine. This is my experience, as a relatively new pilot, of complex training compared to flying the club Warriors so other members wanting to do the same might have some idea of what is involved.

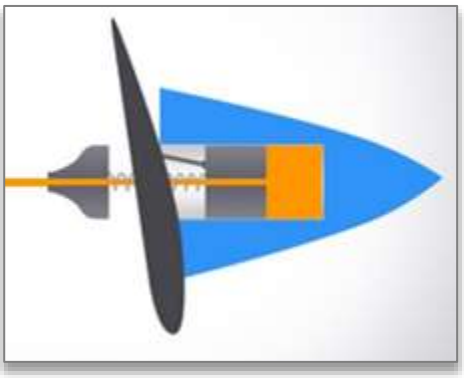
So starting with the A check, this is for the most part the same as the Warriors. The main differences are a thorough check of the undercarriage, linkages and wheel wells for obstructions which might prevent the undercarriage retracting is important. This also includes checking the undercarriage lights in the cockpit. All three should be lit. This is referred to as "three greens" and is a phrase you will commit to memory as it will be used on every flight when coming in to land.

In the cockpit from left to right, there is a gauge which displays manifold pressure in inches of mercury and fuel flow in gallons per hour. The undercarriage is extended (down) and retracted (up) using a small grey lever to the left of the throttle. Note the three green lights below the lever which refer to each of the three wheels of the tricycle gear. There is an extra blue lever between the throttle and mixture controls. This controls the pitch of the prop. Fully forward is fine and as the lever is pulled backward the pitch becomes more coarse. The Arrow doesn't have a carburettor so there is no concept of carb heating like the Warriors. The lever is in the same place but is called 'Alternate Air' and opens a flap to bypass the air filter should it become blocked due to ice for example.

Next I will discuss starting the engine which is different from the Warriors. Before starting the Arrow the throttle should be opened slightly, the blue prop pitch lever should be fully forward (fine) and the mixture set to idle cut off (ICO). There is no primer button in the Arrow. To prime the engine the mixture lever should be pushed forward slowly until fuel flow is observed on the fuel flow gauge at which point the mixture lever should be pulled back to ICO. The engine can now be cranked for starting. As the engine fires the mixture should be set to full rich for warm up checks at 1400 rpm.

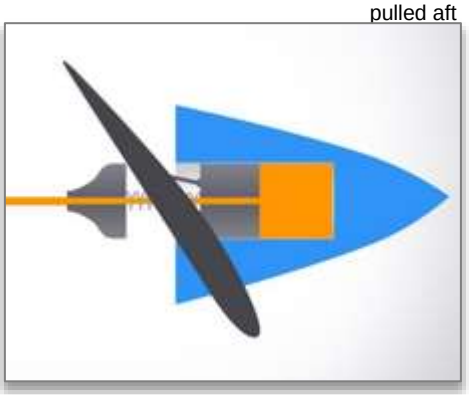
Once taxying, you will note that the Arrow needs more pressure

the pedals to turn and the turning circle is less than the club Warriors. Now you are at the hold and carrying out power checks. Again similar to the club Warriors apart from having to exercise the propeller pitch mechanism. This ensures it is working and that oil is flowing throughout the entire mechanism. While at 2000 RPM the blue prop lever should be pulled



ABOVE: Fine prop setting – Blue lever forward

BELOW: Coarse prop setting – Blue lever pulled aft



back slowly until the engine rpm drops and then the lever should be moved fully forward. This needs to be repeated three times. I think of the prop pitch mechanism as like car gear box which of course it isn't but it serves a similar purpose. When pulling away in a car where you need maximum power and of course speed, you would always select 1st gear. On the Arrow this is the same as having the pitch set fully forward (fine) for take-off. In the car, as your speed increases you work your way up through the gears until reaching your cruising speed on the motorway where you select 5th gear and as you slow down you select lower and lower gears. It the same in the plane. There is no concept of gears but once you reach your cruising altitude you set your pitch to coarse.

With power checks completed and permission to take off received you start your take off run. I like to have the stabilator trim set slightly back

ABOVE: New toys! From left to right - the combined manifold pressure gauge and fuel flow meter; the familiar RPM gauge; Landing gear lever and "3-greens"; Black throttle, blue prop and red mixture levers; Alternate air lever instead of the familiar carb heat; EGT gauge.

from neutral at take-off. The Arrow is a little heavier than the Warriors and it has a T tail so less prop wash over the stabilator. A little backward trim in this case means I need a little less back pressure on the yoke to get the Arrow off the ground.

The more powerful engine and prop means more torque so more rudder is required to keep the Arrow on the centre line as you continue your take off run. Once you are off the ground and there is no usable runway below you it's time to retract the undercarriage. This is done with the small grey level to the left of the throttle. Before retracting the undercarriage, you should dab the brakes to prevent centrifugal force effects of the spinning wheels as the gear retracts. Now you are climbing out, carrying out your after take-off checks and keeping out of Birmingham's class D at 1300 QNH if you just left on 23…just the same as the Warriors ☺.

Once you reach your cruising altitude you level off then need to think about manifold pressure, prop and mixture settings. At 4000ft 75% power (150 hp) is obtained with a manifold pressure of 25 inches, rpm of 2500 and fuel flow set to 9 gallons per hour according to the POH. So moving levers from left to right you would pull the throttle back slowly until the manifold pressure indicates 25 ", then pull the blue prop pitch lever back until the rpm settles at 2500 and do the same with the mixture lever until the gauge indicates 9 gallons per hour. Fortunately the table (see below) which covers all these settings is printed on the reverse of the sun visor in the plane. Keep an eye on your EGT gauge as well because if that starts creeping in to the red you have the mixture set too lean.

For cruise descent reducing the manifold pressure by one inch roughly equates to 100 ft per minute. So if you want to descend at 500ft per minute reduce the manifold pressure by 5 inches.
In flight the Arrow is faster than the Warriors (120-130 knots in the cruise) because the engine is more powerful, it has a variable pitch prop

BELOW: Manifold pressure and RPM selection table is printed on the sun visor

LYCOMING MODEL IO-360-C SERIES, 200 HP ENGINE AS INSTALLED IN PA-28RT-201

Press. Alt. Feet	Std. Alt. Temp. °C	110 HP - 55% POWER RPM AND MAN. PRESS. 2200	2500	130 HP - 65% POWER RPM AND MAN. PRESS. 2200	2500	150 HP - 75% POWER RPM AND MAN. PRESS. 2500	Press. Alt. Feet
S.L.	15	25.0	22.2	27.1	23.5	26.0	S.L.
1000	13	24.6	21.8	26.8	23.3	25.8	1000
2000	11	24.1	21.5	26.4	23.1	25.7	2000
3000	9	23.7	21.2	26.1	23.0	25.6	3000
4000	7	23.3	20.9	25.7	22.9	25.5	4000
5000	5	22.8	20.5	F.T.	22.8	F.T.	5000
6000	3	22.4	20.2		22.7		6000

and retractable undercarriage which reduces drag. However it is still a very stable platform when in flight. Stall and spin recovery is much like that of the Warrior. The aircraft gives you warning before a stall in terms of reduced aileron response, the stall horn and buffeting before it finally starts to drop of the sky.

One other thing you need to learn is how to deploy the undercarriage in the event of the power driven pump or hydraulics system failure. This is achieved by use of the emergency undercarriage lever which is located near the base of the flap lever. By pulling this lever it allows the undercarriage to drop and lock under the force of gravity. If you get “three greens” you’re are all set. We didn’t when we tried this; the left main gear light remained stubbornly out. If this happens the next thing to try is vigorously manoeuvring the aircraft in yaw to try to shake the gear in to the locked position. We tried this and that didn’t work either. Fortunately, when under power, not using the emergency lever, the undercarriage retracted and extended correctly with three greens. This turned out to be faulty micro switch sensor on the left main gear.

Finally, the Arrow has a warning system which is a red light and horn which sounds in the cockpit if the aircraft senses that you are in a landing configuration without the undercarriage deployed. This is 14” of manifold pressure or below with the landing gear switch not in the down position. The horn will persist until you increase the manifold pressure or move the landing gear switch to the down position. It’s a little scary when it first goes off but emphasises the importance of the U in BUMFARSL when configuring the aircraft for landing. You are taught to remember the undercarriage when landing in the Warriors even though theirs is fixed but in a complex aircraft you are glad that check is imprinted in your memory. I’ve also added a P now for “Prop” so it’s BUMPFARSL. On final the tower may ask if you have three greens but I find it is good practice to call “final for 23 - three greens” anyway.

So all of this took five hours to complete leaving me with another five hours needed for insurance purposes before I could be signed off as having completed my complex training. This was spent going over these things again, planning and flying a number of different routes.

This included Lydd on the south coast near Dover in foul weather, a flight to Gloucester and back, flight over Snowdon and one final flight to the east coast over the Fens and Lincoln Cathedral through RAF Conningsby and Scampton airspace, which was amazing.

Since getting my complex rating I’ve been to Le Touquet and Duxford for lunch and half a dozen pleasure flights with friends and family. I have Kemble, Cambridge, Norwich and Land’s End on my radar.

I do hope I haven’t gone in to too much detail or too little for those bookworms and particle physicists amongst you. If you have any questions, I will try to answer them for you if I can. If you would like to take a look at any of the things mentioned in this story, I am happy to show you round the aircraft.

ABOVE: Object of desire: Simon was training for conversion onto a PA-28 Arrow

WORDS: Simon Logan

PICTURES: Simon Logan, Anthony Ryan

BELOW: foreground – Simon’s retractable undercarriage, background – Le Touquet’s famous Control Tower