BRISBANE VALLEY FLYER

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BRISBANE VALLEY SPORT AVIATION CLUB INC

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Stits SA-6B Flut-R-Bug. *See page 7*

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Front cover image:
Stits SA-6B Flut-R-Bug, VH-ULA, as owned previously by BVSAC Flyer reader Steve Chapman.

From the Club

Hello all,

Well, another month has come and gone. In light of the social trials that beset us in these times, the executive hopes that all our members are staying safe and well.

From a flying perspective, it has been a little cooler this year, with the seasonal westerly winds that have been blowing and the rain events that we have had at the field. So, if going for a fly, best to get up early before the winds pick up.

The executive is considering alterations to the clubhouse and will be discussing the ideas at the next meeting. Please consider attending so we can get your thoughts on the idea.

Reminder:
The club house is for the use of all members, however, please remember to SIGN the attendance book located on the table in the club house whenever you visit. This is a legal requirement under the Covid-19 health rules and so is a Club responsibility to ensure compliance. There is also hand sanitizer available for all to use.

Hope to see you at the next meeting.

Peter.

Peter Ratcliffe
President BVSAC

Yaw is no Yawning Matter

By Rob Knight

Prompted by comments and requests generated by my piece on accurate rudder use in last month's issue of the Flyer, I have reproduced my previous article on inappropriate use of aileron to control yaw (first published in the Flyer in Issue 29, September 2015).

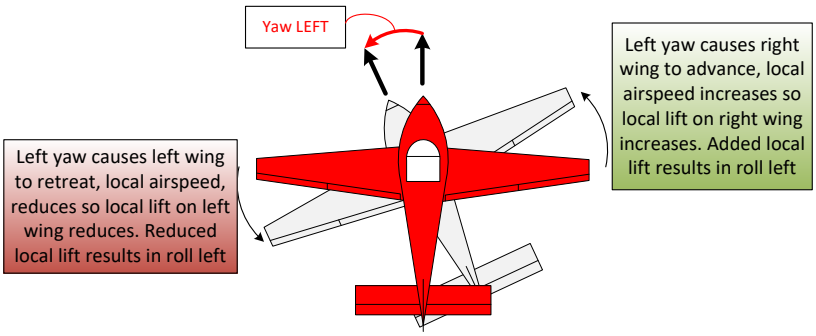
For nearly 45 years I have been teaching Effects of Controls, and for 15 years assessing other pilot's handling of aircraft. My observations over these periods leave me clearly recognising that too many pilots find flying in a straight line is a difficult manoeuvre. This is so broad across the pilot spectrum that it's a serious indictment on pilot training. While almost all would argue with this, the evidence is abundantly clear. So, what's the problem?

Essentially, it's one of human nature compounded by inadequate flight instruction. Humans naturally ignore yaw. In learning to walk we quickly found that leaning too far forward or backwards made us fall over and it hurt. We also learned that leaning excessively left or right caused a fall sideways and that hurt, too. However, we could stand and spin around and around and get dizzy: it was actually fun. Yaw was safe, but pitch and roll were punished with pain. This conditioning is life-long unless modified so, when pilots learn to fly, they MUST be taught to amend this conception. Too many pilots qualify whilst still lacking the necessary clear understanding of yaw and the true function of the aeroplane rudder because their instructors suffer the same conditioning shortcoming and are unable to see it in themselves. Pilot's carrying this fundamental misconception naturally place an excessive priority on monitoring pitch and roll to the detriment of discerning and controlling yaw.

Over the years, asking flight test candidates what the rudder was for, got me a virtually unanimous response, "To balance aileron drag". Further pressing may add, "Steering when taxiing". Both are correct but rudder function is much more than merely these.

Rudder controls yaw, either by causing it when input, or preventing it, or stopping it if it has already occurred. The Effects of Controls lesson provides details on further effects and these I will deal with in due course. Right now - understand that the rudder is the aeroplane's YAW control.

So, what is YAW? YAW is movement about the aeroplane's vertical (or normal) axis or, from the pilot's perspective, lateral movement of the nose. Exactly as was taught in Further Effects of Controls, yawing the aeroplane will subsequently promote roll. The reason is simple – if the aeroplane's nose, for example, is yawed left, whilst the yaw is occurring, the left wing will retreat compared to the right wing and the right wing will advance compared to the left wing. This creates an airspeed difference between the wings and, with a constant angle of attack, airspeed changes must result in lift changes. Therefore, differing local airspeeds cause differing local lift values and, after these forces have been applied, the aeroplane will subsequently roll in the direction in which it yawed even though the ailerons are central.



Further Effects of Controls - Yaw causes roll

So why the confusion with yaw? Because pilots don't perceive yaw since they are not looking for it - they still prioritise roll and pitch. If an aircraft yaws and then rolls, but the pilot doesn't see the yaw, they inevitably use aileron to resolve the roll symptom and not the yaw cause.

So, what other causes are there for yaw that the non-discerning pilot can miss? The list is longer, even for single engined aircraft, than most people realize. It's not just the rudder that instigates yaw so let's look just at the two most predominant causes.

First, and the one actually taught, aileron drag causing adverse yaw when entering or exiting turns. Ailerons deflect in opposing directions – when one is UP the other is DOWN and each produces a different drag signature when deflected. The up aileron enjoys relatively lower drag whilst the down aileron suffers relatively higher drag. Thus, and again, as taught in Further Effects of Controls, ailerons promote roll and then, fractionally later in time, subsequent yaw. It's important to note that the drag differential between the wings will produce YAW away from the direction of intended turn. Any time a pilot enters or exits a turn using aileron the aircraft will subsequently yaw (the wrong way) unless pilot corrected using rudder.

Second, and the one not regularly taught, the atmosphere. Turbulence and horizontal wind gusts both cause yaw. If turbulence lifts a wing the aeroplane slips away from the raised wing. The keel surface behind the centre of gravity causes weather-cocking so the aeroplane will YAW and then roll. Even more insidious are horizontal wind gusts which are most prevalent on approach, especially as height diminishes. Horizontal wind gusts also cause weather-cocking and result in --- YAW --- and then roll - and too many pilots don't recognise this. They tend to see only the resulting roll and correct that leaving the yaw uncorrected. Turbulence and gusts are perfectly natural occurrences and what the pilot does about them is the element that, in my experience, differentiates between pilots and aeroplane drivers.

The driver will use aileron to level the wings. That is what they're there for, isn't it? Well, yes and no: it depends on what else is happening at the same time. Remember that roll follows yaw. If the pilot only sees the roll and misses the yaw he is behind the aeroplane and using aileron alone will only aggravate the situation. The driver will then, after the aileron application, continue to try and get the nose back onto the reference point with his hand, tolerating the, hopefully, reducing swerves and wanderings of the nose. This can take from a few seconds or, on finals, take the entire leg and perhaps result in a go around because the aeroplane is too close to the runway edge for safety.

Pilots giving yaw recognition and yaw control a higher priority than roll or pitch will recognize the yaw before the roll occurs. They apply sufficient rudder to arrest any lateral nose movement and restore it to the original reference point. As roll is subsequent to yaw, if the pilot is quick and precise, the nose can be put back in place BEFORE roll has occurred. A pilot must FIRST keep the aircraft straight relative to the reference point ahead and only then use aileron, with appropriate rudder to balance, to level the wings. Otherwise, they have overlooked/missed/not seen, the yaw that needed to be arrested by the rudder a just a few milliseconds before…… ergo THEY ARE BEHIND THE AIRCRAFT! They are controlling the symptoms, not eliminating the cause.

While entering and exiting turns is a subject for another time, a view heard from other experienced pilots is that they prefer to lead with rudder when applying, adjusting, or controlling bank. I do not subscribe to this. Personally, except for turns of just a few degrees, I find this technique not to be universal, but more applicable to specific aeroplane types with particular aileron designs and longitudinal stability issues. This is especially so when using small aileron deflections necessary for gentle roll-ins. I use just sufficient rudder to counter any adverse yaw created. As I don't have adverse yaw before I use ailerons, there is no point is applying rudder before the aileron. It is really a case of recognizing the aeroplane characteristics of the machine that you are in.

However, when making an approach after setting the aeroplane up on finals on the extended centre-line, the situation requires a finer look. I have sat through an uncomfortably high number of qualified pilots making approaches that would do great justice to a ski-slope slalom. The cause – they under used the rudder to stop yaw and keep straight, and prioritize the aileron in an attempt to keep the wings level. If they kept the aeroplane straight with the rudder their wings will stay level without, or with only minor, aileron input.

On finals, keeping the highest priority on yaw will ease the pilot load because the aeroplane will be steadier and there will be no need to engage in combat with the controls. This will provide time to exercise better judgment so the approach will go easier and the flare and hold-off float will be easier to judge. This will make for better landings so confidence rises and so then will competence and expertise. All for the sake of applying a higher priority on yaw prevention and control.

Don't be an aeroplane driver, be a pilot – it's much more comfortable.

This same article has also been published by Australian Pilot, AOPA magazine in the USA and EAA Vintage magazine, also in the USA. AOPA USA also produced it as a video for instructional purposes.

Happy Flying

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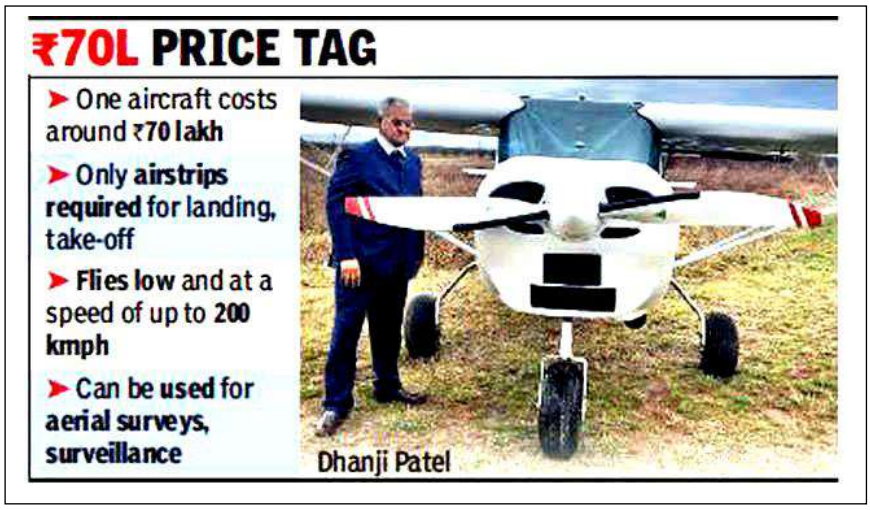
From The Times of India, December 2019

Aircraft manufacturing is all set to take wings in Gujarat. Dhanji Patel (Makson), promotor of Makson Group and known as India's "Candy Man", has plans to venture into making microlight aircraft near his home town Surendranagar.



The businessman turned politician, who makes confectionaries for several global chocolate brands, has recently tied up with companies in Serbia for technical support to make two-seater and four-seater aircraft, along with air ambulances.

Patel says that engines and blades for the aircraft will be imported while other parts will be sourced locally.

He added that these aircraft only require airstrip to operate from, and these can be made very fast from local farms. He anticipates producing 25 aircraft in the first year of production.

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The Stits Flut-R-Bug

The 65-year-old design that's still as cute as a bug

By Sparky Barnes (October 2016).

There doesn't seem to be a great number of Stits Flut-R-Bugs flitting about the skies today, but one did join the field of flying machines this past Labour Day at the Antique Airplane Association fly-in at Blakesburg, Iowa.

At age 85, owner/builder John Banes of Fairfax, Iowa, no longer flies, so his private pilot/homebuilder son, "JR" Banes of Toddville, Iowa, was flying the Flut-R-Bug. Father and son were both wiping dew from the Flut-R-Bug's wings one morning, and shared a little bit about N5479Y.

J.R. Bane, and his father, John, with the Flut-R-Bug at Antique Airfield. ((Photo by J. R. Bane).

"It was an attractive design to me," says John, a longstanding member of AAA and East Central Iowa's EAA Chapter 33, "and it looked inexpensive to build. There were a few of them flying a long time ago, and there was one within 50 miles of us. I saw that one before I started working on mine. It took me about a year in my spare time to finish the airplane, and I got it licensed in August 1997."

For a bit of History, Ray Stits of Riverside, California, designed and built many small airplanes after World War II, including the Playboy, Playmate, and Sky-Coupe. In 1955, he designed the Flut-R-Bug.

It was originally a single-place, mid-wing, nosewheel airplane and several variants followed. The first Flut-R-Bug was the Model SA-5A, followed by the SA-5B. Stits also designed tandem versions (SA-6A and SA-6B) and then the two-place, side-by-side SA-6C. The Flut-R-Bug was typically powered by either a small Continental or Lycoming engine.

A fly past by JR in his father's Flut-R-Bug.

While some Flut-R-Bugs were purely plans built, like John's, there was also a kit version. A brochure advertising the new two-place version described a

"pre-fabricated aircraft construction kit" with all welding completed, and listed features including longer range, a roomier cockpit, larger tail assembly, cleaner lines, and readily detachable wings for convenient storage at home.

A Stits Aircraft company ad from January 1960 touted the Flut-R-Bug's virtues: "Build and Fly Your Own High Performance Sport Plane — Beat the high cost of flying. Join the hundreds of other 'Homebuilders.' … Two place Flut-R-Bug, tandem, mid-wing, tri-gear. Very short take-off and landing, high altitude fields. Wings easily removed for towing."

Note the strut-braced, mid-wing design, with enclosed canopy and the very Piperish undercarriage.

Various mods have been made to Flut-R-Bugs through the years. Some Flut-R-Bugs are open cockpit, others have a canopy enclosure.

Some have a fully enclosed cowl, and others simply utilize Cub-style eyebrows over the exposed cylinders. And there was at least one conversion of the airframe from a nosewheel to a tailwheel configuration.

In building the 'Bug, John adopted a hands-on approach to aviation years ago, and was well-acquainted with aircraft restoration by the time he started working on his Flut-R-Bug.

Though he earned his commercial pilot certificate early on, he smiles and elaborates, "I always flew just for the enjoyment of it, and I had maybe 1,200 hours flying time when I started the Flut-R-Bug. I rebuilt several airplanes, including a Tri-Pacer, Clipper, J-2 Cub, and a Gullwing Stinson. It was fun. I'd rebuild one and fly it a while, then I'd sell it and get another one started in my spare time — I held a fulltime job during those years."

John's Flut-R-Bug was built from plans. The airplane project was initially started by "the late Fritz Davis, a well-known homebuilder from the Minneapolis-Saint Paul area, though he never finished it," recalls Brent Taylor, Antique Airplane Association President, adding, "it was stored here at Antique Airfield for several years."

"I bought it from Bob Taylor at Antique Airfield, and I suppose I had around $1,000 in materials needed to finish the airframe back in 1997. It was cheap and easy to work on; the plans were really pretty straightforward," recalls John, "but I didn't like the appearance of the nose, so I changed that and gave it a nice, rounded nose similar to a J-3 Cub, with the exposed cylinders."

"I covered the airframe using Ceconite and Poly-Fibre coatings," he continued. "The fuselage and tailfeathers are built of steel tubing, and the wings are built of wood spars and ribs with aluminium leading edges. The windshield is curved and the canopy enclosure consists of an aluminium framework with plastic panels that are slightly curved at the top of the canopy, while the sides are straight."

The 65 hp continental spins a warp drive adjustable prop.

He installed a 65-hp Continental engine (hand prop to start) and a ground-adjustable Warp Drive propeller on N5479Y.

An 11-gallon fuel tank is located just forward of the firewall, which gives him more than a two-hour range. The panel has basic instruments, including a turn and bank, airspeed, altimeter, tachometer, cylinder head temp, oil temp, and oil pressure gauges.

Exposed cylinders on the 65 hp Continental.

John's Flut-R-Bug (Model SA-6B, s/n P2060) is obviously short coupled, with a 24-foot wingspan and about an 18-foot fuselage. The wings can easily be removed for storage. Bungees are installed between the top of the main gear legs and the belly of the fuselage, which provide some cushioning effect for ground operations.

John installed aluminium wheels with hydraulic brakes and 600×4 tires. N5479Y weighs 600 pounds empty, and has an MTOW (gross weight) of 1,125 pounds.

The clean but unique lones of the Bug.

In Flying the 'Bug, John has logged a little more than 200 hours and says, "After mine was finished, it was flying; most of them end up being parked in the garage or under the wing of another airplane. My son has flown it quite a bit, and some of our friends have flown it. Basically, if you've flown a lighter, slower type of airplane, it's really no problem to fly this one — just don't land on the nose-wheel!"

He recalls that he was pleasantly surprised on his first Flut-R-Bug flight: "It got off the ground faster than I thought it would. It doesn't take much runway and it was extremely easy to fly!"

"My cruise speed was around 90 mph and the response on the controls was quite good," he continued. "It has a rudder bar instead of rudder pedals, and the airplane is very light on the controls. It has full span ailerons which are strictly push-tube operated and the rudder and elevators are cable controlled."

According to John, it climbs around 60 mph and lands a little under 40 mph and, with the tricycle gear, it feels comfortable in a crosswind.

The tailplane is similar to a Cub, where the leading edge of the horizontal stabilizer moves up and down for trim in the pitch axis.

The totally Piperish jackscrew arrangement to provide pitch trim by altering the longitudinal dihedral by changhing the tailplane incidence.

"There is also a mechanical adjustment for the ailerons, so if you landed in a very short field, you could adjust them to become flaperons and provide more lift," he said. "But that

change has to be done on the ground, not in flight." See image below.

Besides being an automatic "conversation starter," another nice feature about this homebuilt is that it's eligible to be flown by a sport pilot.

Succinctly summing it up, John pleasantly shares, "it's just a nice, easy plane to fly, that's for sure!"

Note: the aileron push-pull tubes emerge from the fuselage and can be mechanically adjusted (on the ground) to droop the ailerons to make flaperons.

The Piperish U/C.

The flagman at Antique Airfield gives the Flut-R-Bug a green flag for landing

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Yamaha Announces Partnership With ShinMaywa For Small Aircraft

By Janaki Jitchotvisut

One parallel twin to power them all.
A certain type of human has always loved the pursuit of flight. Whether it's flight via airplanes, feeling as though you're flying on motorcycles, or even pulling together the best of both worlds to develop a flying hoverbike prototype, it's a dream that humanity will seemingly never outgrow. That's honestly great, because why *should* we?

On June 29, 2021, Yamaha Motor Company formally announced that it signed an agreement with Japanese aeronautics company ShinMaywa Industries, Limited for 'joint research of next-generation small aircraft". It appears their goals, much like their twin-cylinder engines, are parallel.

Yamaha parallel twin engine

What will each partner bring to the table? Yamaha plans to bring its small engine technology along for the ride, and will be utilizing a parallel twin design to power the duo's first prototype aircraft. Meanwhile, ShinMaywa's long experience in aircraft engineering will serve to design concepts, build prototypes, and conduct tests, among other research facets.

There's no mention of any sort of timeline included with this announcement, so we have no idea of when we can expect to see the first fruits of this partnership. Developing and testing working prototypes is, of course, only part of the puzzle. After all, both Yamaha and ShinMaywa are businesses, so investigating the potential commercial applications of any creations they develop together will necessarily be a part of the process.

While you may know any one of the sprawling Yamaha family of companies for the wide variety of products produced under that name, it's not typically closely associated with aircraft. Conversion kits to transform four-stroke Yamaha snowmobile engines to power light aircraft have been around for some time, but they're offered by aftermarket specialists and not directly from Yamaha itself.

Back in January, 1982, Yamaha first announced that it intended to develop engines for small aviation pursuits, from motorized hang-gliders to unmanned helicopters, such as those used for remote control agricultural spraying. That's still significantly different than manned small aircraft, though. Pursuing this 2021 partnership with ShinMaywa, in this context, makes a lot of sense.

Does this mean that we're one step closer to Yamaha building its own flying motorcycle? Probably not, but no one can deny that it's been a weird couple of years. In any case, we look forward to seeing whatever it is the two companies do end up building together.

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How Flying Saved my Life

By Andrew Scattum

To be honest, flying didn't really save my life. It did, however, make me a better person, dad, husband and surgeon. Unlike many who grew up dreaming to fly, I didn't start in aviation until I was 30. I never really thought that it was a possibility for me to become a pilot. This all changed with a free hamburger at a hangar at a small airport.

I grew up looking at airplanes and airports as "hands-off" type of places. Much like visiting a museum, you can look but don't you dare touch. Only those with special security clearances and badges attached to their outermost garment were allowed beyond the tall, barbed-wire fences. In order to enter an airplane, one must be stripped, searched and violated. The cockpit is a high security zone for which a steel door separates the pilots from the passengers. Curiosity at the controls and avionics behind the steel door is deemed suspicious and subject to interrogation.

My first experience at a small airport flew in the face of what I thought about pilots, airplanes and airports. I found myself surrounded by pilots, standing in a hangar, surrounded by airplanes that I was encouraged to touch. Encouraged to walk around, sit in, ask questions about and to my surprise, take a ride in. The best part about my first airplane ride is we didn't ask anybody if we could do it. We never filed a flight plan, we didn't call the FAA for permission, and we didn't even have a radio. My first small airplane ride was in the plane that I would do my first 40 hours of primary flight training; a homebuilt, open-cockpit Pietenpol Aircamper.

A Pietenpol is one way to make sure flying stays fun.

This first event was one of many that I would go on to attend. The weekly Friday meeting was called "Hangin' at the Hangar" or "HATH" by the local EAA chapter that sponsored it. It was at this meeting where I would also meet my flight instructor and mentor, who offered to teach me how to fly basically for free. In exchange for every hour of flying that we did, I owed the chapter one hour of work. This work was everything from mowing around the hangar and the grass strip to picking up the shop and cleaning the airplane. The fee to rent the Pietenpol with an instructor was $30 an hour. Keep in mind this wasn't 30 years ago – this was in 2013.

Learning to fly is and has been the most frustrating and difficult thing that I have ever done. Nothing that you have ever done translates to flying skills. Just because you can drive a car has nothing to do with flying an airplane.

My first lessons were spent just trying to get that stubborn taildragger to the runway without veering side to side like a drunk monkey. This experience was amplified by watching one of my fellow students who was starting at the same time I was. For someone like me who had played college athletics, graduated medical school and was in a surgical residency, it was pretty difficult and awfully humbling to watch a 15-year-old girl without a driver's license excel while I seemingly couldn't get it.

I kept plugging away one hour at a time. I did my cross-country flights with no electrical system, no radio, just a whiskey compass and a map. My instructor, who I consider a mentor, didn't teach me how to get a pilot's license, he taught me how to fly an airplane. He taught me how to fly stick and rudder and how to land on grass. The most incredible feeling in the world is a forward slip in the Pietenpol on a warm Ohio summer evening.

While learning to fly, I also learned how to change the oil, change a tire (which always seemed to go flat when I was flying), rivet, weld, and a host of other skills. I also learned the importance of knuckleheads. Knuckleheads are those guys who always seem to just be hanging around the airport talking about aviation. I learned more ground school material from just being at the airport than I did from any book or instructional course.

A pre-flight on the car?

I found myself applying what I was learning about flying to my daily life. I found myself using checklists before surgery and during ICU rounds. I started pre-flighting the car before road trips. I was surrounded by pilots who loved to teach and were passionate about flying. If a 30,000-hour airline pilot can take me under his wing and teach me about flying, then I could certainly take the time to mentor a high school student about a career in medicine.

The point that I am making is that learning to fly made me a better person. It challenged me to do things I never thought possible and exposed me to a culture that is so important to our existence. I was incredibly lucky to have taken up that offer to go get a hamburger at the airport.

------ooOOoo ------

Two hunters got a pilot to fly them to the far west of NSW to hunt pigs where they shot six. As they started loading the plane for the return trip, the pilot said he could take only four, two would have to be left behind. The two lads objected strongly.

“Last year we shot six and the pilot let us put them all on board. He had the same plane as yours”.

Reluctantly, the pilot gave in and all six were loaded. However, struggling with full power, the overloaded plane staggered into the air and crashed a few moments after take-off.

Climbing out of the wreckage, Bruce said to Trevor, “Any idea where we are?”

“I think we’re pretty close to where we crashed last year”, replied Trevor.

Quotes:

- Airspeed, Altitude, and Brains: At least two of the three are required for safe flight.
- Death: nature’s way of telling you that you weren’t watching your airspeed.
- Speed is life. Altitude is life insurance.
- By Max Stanley (Test Pilot): “The Piper Cub is the safest airplane in the world. It can just barely kill you”.
- Instructor explaining the effects of controls to a student: "If you push the stick forward, the houses get bigger, if you pull the stick back, they get smaller. Unless you pull the stick too far back, then they get bigger again very quickly"

A Rusty Pilot Practice Plan

By Rob Knight

A short-but-sweet batch of manoeuvres that any pilot can use to brush up on their skills between those flight reviews.

Shake off any accumulated rust with this pilot practice plan.

So, your logbook's dusty, and your pilot's ticket is rusty, and you see that you have only a few months to run to your next BFR. You may be still current, and withing the required recent experience requirements, but you haven't been flying much lately. Your think back – when did I last do some serious flying? A month? Two months? Last spring? A year ago?

Successfully passing a BFR doesn't exactly make you a sharp pilot, it merely means that you been able to demonstrate to an examiner the minimum flying and knowledge standards required to continue holding your ticket. A couple of logbook entries listing training and assessment every second year may satisfy the regulations, but between BFRs you must satisfy your own standards of excellence. After all, you can' expect to be sloppy and still have a CFI sign you off on a flight review: it's his reputation that's on the line. Would it not be better, rather than to accept a deteriorated state, to take some personal steps to sharpen your skills to a finer edge when you go back into the air after a layoff?

As stated, ad nauseum, flying an aircraft is like riding a bike; we never really forget how it's done, but we can certainly get out of practice. We might be wobbly when we first pedal off down the road, but after two or three practices, we can play, "Look Mum, no hands", as much as we like, just like the old days. Nonetheless, we're still going to feel distinctly unrefined until the rust is gone.

As a human, it's is not that your brain has forgotten how to fly but your hands have. As a tangible endeavour, manipulating the controls to achieve precision in flight requires practice; the more recent the better. Being too proud to seek out assistance to rebuild your skills is unwise to say the least.

Everyone says that they know their own aeroplane, or the one they most regularly hire, fairly well. But familiarity with anything is the path to bad habits, and even with experienced pilots, bad habits can be hard to spot. So, before the BFR date, taking a trusted instructor or CFI to watch while you go through your rusty renewal manoeuvres will certainly accelerate you to improved performance and the reacquisition of any lacking basic skills to help when you do the BFR itself. But what happens for the two years following your successful BFR?

On a regular basis, after the BFR, go flying by yourself and run through the exercises you covered in the BFR. You'll get much more productive skill-building done when flying on your own and without the divided attention that is unavoidable with a shared cockpit. If you do want a buddy along, make sure they remain silent at critical moments during the flight. Also, take a sick bag or two, and be prepared to beat a hasty retreat. Better brief your buddy to give you plenty of warning.

Dedication to maintaining the standards is the key to retaining piloting skills. A good pilot that stops striving to retain the skills of a good pilot soon stops being one. My logbooks, filled with the BFRs I have carried out as an examiner speak volumes of good pilots at the time of their flight test, becoming too sloppy for comfort years later because they have become lazy over time. Too lazy to trim properly; too lazy to have a good lookout for aircraft on approach before lining up to take-off; too lazy to have a good lookout before entering a turn: the list is long but once a pilot starts down that slippery slope, it takes a serious effort to stop the rot and retrace the steps to proficiency again. Let's look at the process.

Airmanship

This is a very broad topic, indeed. The examiner is entitled to query your knowledge of theory including map legend symbols, and flight planning terminology as well as the calculation of drift, compass variation and the calculation of drift/wind correction angles, 1 in 60 rule calcs, fuel, and flight time calculations. Revision in this respect is easy and cost-free, but necessary. The examiner can also ask questions on weather forecasts and reports, such as validity times and the meanings of abbreviations. Also questions in regard to pilot-in-command duties and licence/certificate periods of validity. Ditto the VFRG and the rules and operating requirements it contains. These are easy to revise and cost nothing to revisit. In the interests of safety and proficiency, these should be kept up to date by pilots, anyway, as a matter of course, and as an investment towards their own longevity.

Straight and level.

In flight, a pilot revising their skills could look first at the Straight and Level exercise, generally when levelling off from a climb. The first skill to practice is to use gentle forward pressure on the stick/yoke to have the nose reach the level flight attitude simultaneously with the aeroplane reaching the desired level flight altitude. In most light aeroplanes this forward stick pressure will be noticeable because climb power is still applied and the airspeed has changed (it's accelerating) so the aeroplane is out of trim. After holding the nose attitude and checking that altitude is, indeed, being maintained, and after checking the airspeed is at least half way between the climb speed and the anticipated level flight speed, ease the throttle back to reduce the RPM to the desired cruise power setting. Only when the aeroplane is level, AND has attained the cruise speed should the trim be adjusted to hold the nose in that level flight attitude when all hand pressure on the stick/yoke is released.

> *From the Examiner (attitude and power):*
>
> *In my experience, this exercise, the first of the upper-air series, has stuffed up more BFR candidates than are countable. The most common fault is that the pilot tries to complete the levelling out process too quickly. They miss the required altitude (usually the nose is too high) and, whilst still fighting to get the altitude and the nose attitude sorted, draw the power back to cruise. The aeroplane has not reached its cruise speed and is now running on reduced power at below the cruise speed and trimmed? Rubbish – it's not going anywhere, – it's just wallowing around, very imprecise to fly, and doomed to get poor scoring on the examiner's flight test sheet. A pilot, taking the time to achieve each step accurately (attitude, then power, then, when speed rises, trim) will have a far easier road to impressing the examiner.*

It might be hard to believe, but to maintain continuing straight and level flight is also a stumbling block for many out-of-practice pilots. There are three principal reasons for their difficulties –

1. Forgetting to continue to keep a lookout for other aircraft, and/or
2. Misusing the controls when keeping the nose on the reference point on the horizon, and/or
3. Forgetting to select a reference point in the first place.

The lookout is mere practice and anyone that fails this item needs a swift boot up the jungle. However, the others are more subtle. Most people imagine that all turbulence is vertical when airborne. They see a sudden roll from turbulence as one wing being lifted by a vertical current. But very often it's not – that sudden roll is the result (further effect) of unchecked yaw caused by a horizontal gust of wind weathercocking the aeroplane, making it yaw about its normal axis. But many pilots fail to notice the yaw that caused the roll. Their brains are pre-wired to have a completely inappropriate priority of movement dangers. Although this should be trained out of student pilots by their instructors, with the passage of time, pilots tend to revert to their original toddler training and

they fail to see yaw because they accept it as safe, whilst roll is far more dangerous. Their brains, prioritising roll, see it but their brains ignore the yaw that caused the roll. So they apply aileron to fix the roll and level the wings instead of stopping the yaw with a stomping boot on the rudder pedal to prevent the nose escaping from that selected reference point.

A skilled pilot will see the yaw that caused the roll, and will use rudder alone to pull the nose back to the reference point. This is not turning with rudder, but, instead, doing as the instructor always said – it's keeping straight with the rudder - if the nose moves away from the point – rudder it back into its required position. With attention and practice, the nose won't sideways move much at all whilst the pilot's feet dance to the tune of the turbulence.

This brings to light another trap for the unpractised BFR candidate: keeping straight with changes in airspeed. Aeroplanes are set up so they fly straight at cruise speed and power, but at any other time, rudder may be necessary to keep the ball in the middle and stop flying with slip or skid. This is why rudder is usually necessary to keep the ball in the middle in the climb, and the cause of yaw when the pilot closes the throttle to enter a descent/glide.

From the Examiner (yaw control):

It's hard for an examiner, even one wanting to do the right thing by the pilot on his/her BFR, to let this one go. Surely the ability to fly a straight line is one of the most important skills a pilot MUST have. A pilot that can't fly straight has major troubles with cross-country flights and will be more prone to navigational issues. This is a simple exercise that I have failed BFR candidates on. If you can't keep straight, you aren't safe – it's fundamental, surely?

The process to avoid this problem is simple – go and fly in a straight line. Using rudder only, keep the aeroplane's nose on a selected reference point. Practice this - flying in a straight line with the rudder alone – no aileron. Be gentle, but quick, and stop any yaw and the aileron won't be needed.

Also, whilst practicing flying straight, from cruise, close the throttle and keep straight (nose on the reference point). Don't allow the nose to yaw as the airspeed changes. This should be automatic and done without thinking by any competent and practiced pilot.

Turning.

Before entering ANY turn, a pilot must ensure that he will not be in conflict with other aircraft. A thorough lookout is absolutely essential before any turn is commenced AND must be maintained during the turn. A failure to carry out an adequate lookout before, or in, the turn, may constitute a failure to get a sign-off on your BFR.

When turning, pilots need to maintain either, height in a level turn, or the correct airspeed in climbing or descending/gliding turns. To achieve this, the first priority is to maintain a constant angle of bank. If the bank angle changes during the turn, it's almost impossible to maintain either the desired height or airspeed respectively. As most aeroplanes exhibit a tendency to over bank, i.e., the angle of bank will naturally steepen during the turn, as explained previously in the Flyer, Issue 62, September 2018, this is caused by the difference in airspeed between the tip area of the inner wing and the tip area of the outer wing, caused by the differing arcs these areas are forced to travel. As the inner wing will travel the shorter arc, and vice-versa for the outer wing, roll into the turn will occur – the aeroplane will tend to over bank and the bank angle will naturally steepen. This tendency is controlled by out of turn aileron applied sufficiently to stop the bank angle increasing.

The second, and the most recognised issue with turns, is maintaining balance during the entry to, and the exit from, the turn. The word balance in this case refers to balancing, with rudder, the adverse yaw created by aileron drag. As the drag is aileron induced, it will occur with every application of aileron. So, as we use aileron to roll into the banked attitude to turn, we will require

rudder as we apply the aileron. Also, as we use aileron to roll out of the turn, we'll need rudder to balance that aileron drag as we exit the turn. If we move the stick to the left to roll into a left turn, we'll need left rudder to balance the adverse right yaw we'll encounter. And vice versa as we exit the turn. To regain a lost skill, try rolling left and right with the nose on a point on the horizon, ensuring the nose stays on the point with rudder. Use the controls gently and it will become easy to see how much rudder you will need to balance each roll rate. Remember, the faster the roll rate the more aileron that must be used and, with more aileron deflection, so will more adverse yaw be created.. Get some practice and you'll surprise yourself how quickly you get to keep that ball in the middle.

From the Examiner (turning):

To enter a turn (to around 30° bank) the process is simple.

1. *LOOKOUT, all around the aeroplane, above, at the same level, and below, insofar as you are able.*
2. *Note the current reference point and roll in with aileron whilst balancing with rudder.*
3. *STOP THE BANK (at the 30°) by centralising the aileron, simultaneously centralizing the rudder.*
4. *Check bank angle is constant (keep constant by holding a little out of bank aileron along with rudder to balance the adverse yaw).*
5. *Check ball centred. (if not – step on the ball).*
6. *Check height constant OR airspeed constant in climbing/descending turns).*
7. *Re-affirm LOOKOUT.*
8. *Repeat from item 4 above until ready to exit the turn.*

To return to straight (wings level) flight:

1. *LOOKOUT, all around the aeroplane, above, at the same level, and below insofar as you are able.*
2. *Roll OUT with aileron whilst balancing with rudder.*
3. *STOP THE ROLL when the wings are level (centralise stick and rudder).*
4. *Check, height/airspeed being maintained.*
5. *Check ball centred.*
6. *Check/select next reference point on the horizon to fly towards.*
7. *LOOKOUT.*

Remember, you are trying to acquire finesse in your flying, not just experience the exhilaration of banking and yanking.

For sign-off purposes, the examiner will be considering your lookout before entering and during the turn, and before the exit. He/she will also be watching your balance co-ordination (ball in/close to the middle) throughout the entry, the turn, and the exit from the turn, as well as height/airspeed control

Stalling

Unfortunately, and alarmingly, too many pilots are overly concerned about stalling. They believe that the exercise contains hidden, inherent dangers that give risk to one's very imminent survival. I completely understand because I can still vividly recall having my shirt stick to my ribs when the instructor checking me out for a C172 rating in 1965 said, "Now I want to see a real wing-drop, not that piss-arsed thing you just gave me". At that time my opinion of stalling was mostly formed by

dastardly near-fatal stories in the bar at the Aero Club. My avid listening to these tall tales served me no good purpose. I now look back 57 years and see that these barflies were better drinkers than pilots, and knew less about stalling than I did! Even then.

For the BFR, Initially, we are looking at basic stalls, with slow deceleration, in straight and level flight, aiming the aeroplane at a selected reference point. Post HASEL checks, the power is reduced at cruise speed and configuration, while level height is maintained by easing the stick back as the airspeed decays and, at this unstalled stage, the wings are levelled with aileron. As the airspeed decays with the power OFF, the lift reduces and, to prevent the aeroplane sinking as the lift reduces, the stick is drawn back just sufficiently to increase the angle of attack to maintain height. When the angle of attack exceeds the critical angle (the stalling angle of attack), the stall occurs.

Note that, as the airspeed diminishes after the power is reduced AND before the stall occurs, two things are likely to occur.

1. The nose will naturally yaw and this yaw must be noticed and corrected by the pilot using rudder.
2. AND, as the airspeed falls, so will the trim change causing the stick or yoke pressures to change. **DO NOT RE-TRIM**

The pilot must be able to control the aeroplane about its three axes during the approach to the stall to be deemed proficient for a BFR sign-off. A hidden aspect of this exercise is that, during this process, the examiner is watching a demonstration of your ability to control the aeroplane in yaw, pitch, and roll whilst the airspeed is changing.

The symptoms of the approaching stall are several. As the airspeed decays there is a decrease in noise (although expensive headsets can negate this), the airspeed indicator needle retreats to lower indications, and the controls become noticeably lighter and less responsive. If the aircraft is fitted with an audible or visual stall warning, it should sound, or light up at this time.

A buffet will begin, its magnitude determined by the aeroplane type and its rigging. The buffet will tend to deepen and, as the stall breaks, the nose will sag down and the aeroplane may or may not roll a little. The nose sag is caused by the centre of pressure moving aft along the chord line at the break-away of the streamlined flow over the wing with the stall so it's a sure indicator that the stall has occurred. As this is a simple stall, with no power or flap applied, there should be very little tendency for a wing to drop markedly and the aircraft to roll subsequently. But the aeroplane will begin to sink quickly.

To recover:

1. Stick forward (just sufficient to reduce the angle of attack to below the critical angle), and, at the same time,
2. STOP any yaw with rudder (don't let it yaw any further from the selected reference point), and
3. Apply full power to minimise the height loss using further rudder as necessary to keep straight as the application of power will also cause nose swing (just as it did on take-off).

HINT: Don't worry about wings level until after the recovery, and, even then, use aileron judiciously to prevent a subsequent secondary stall. Over-use of the aileron on the wing that you are trying to pick up may cause an even more savage wing drop and a control reversal. If the wing that you are trying to lift stalls yet again, the stall will be deeper and the aircraft response will be more savage and this increases the roll rate and the yaw towards it. DON'T USE AILERON until after the angle of attack has been reduced

When loaded correctly (with its Centre of Gravity within its limits), light aeroplanes that are correctly rigged are easily recoverable from a simple stall with an altitude loss generally of 200 feet or less. Of

course, panicked and/or mis-used controls can magnify this many times over which is why wise pilots only carry out stalling exercises at a safe altitude.

When feeling up to it, the second stall type may be practiced. This is the power-on stall, the same basic stall except leaving some power applied (perhaps up to 3000 RPM for Rotax 4 strokes, or 1500 RPM for fixed pitch Continentals or Lycomings).

Entry to the stall is via the same process, as will be the recovery. Note that, with the added power, deceleration will be slower and you will notice it takes longer from the time of set-up to achieve the nose sag at the stall. Also, the nose will most likely be higher at the point of the nose sag.

Try some and when you're comfortable with these, try a stall without power but using some flap. In this case the deceleration will be quicker so there will be likely less time from the set-up to the stall nose sag.

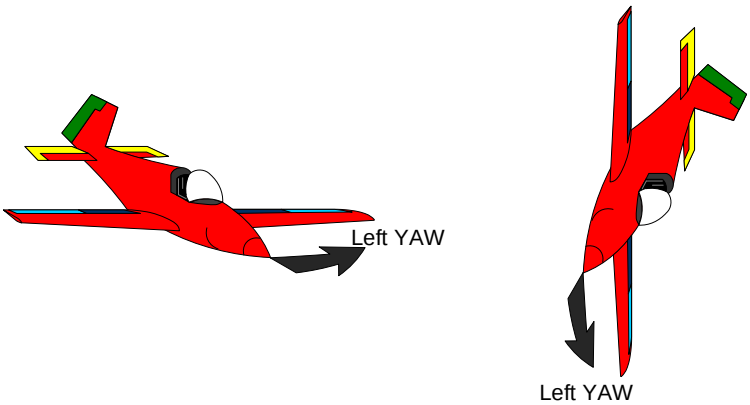
Then try a combination, a stall with both power and flap. Not full power and not full flap, just a bit of each. There should be no surprises in this, either.

Lastly, and the pinnacle of the stalling exercises, is the fully developed stall with a wing drop. Nowadays this is a bit of a misnomer because many light aeroplanes refuse to drop a wing in a stall unless they are deliberately mishandled. If the aeroplane that you are flying is reluctant to drop a wing in a fully developed stall, you should consider seeking assistance from an instructor rather than try to induce a wing drop stall yourself. Also, if you lack experience relating to this type of stall specifically, from a danger point of view (best practice policy), assistance will give peace of mind as well.

A wing drop stall is simply a stall where one wing stalls before the other. At, and after, the critical angle is exceeded two very important attributes of any wing are deeply affected.

1. The lift provided by that wing diminishes very dramatically, and
2. The drag on that wing rises exponentially.

So, when both wings stall at, or very close to, the same time, the lift reduction affects both wings by a similar amount (and the aeroplane remains pretty much wings-level), and the drag increase is also even on both sides of the aeroplane and there is no great tendency for the nose to yaw or wing to drop. When only one wing stalls, that wing has a savage loss of lift (inducing roll towards that wing) and the monstrous increase in drag yanks the nose sideways. However, because the aircraft has rolled (or is rolling) that yaw, about the normal axis, wrenches the nose below the horizon. Herein lies the autorotation and the incipient spin. It's all caused by one wing being more stalled than the other.



As discussed above, the stalled wing will drop and the aeroplane will roll towards that stalled wing while the nose will also yaw towards that wing. These two actions were not initiated by the pilot and therein lies primary cause of the disquiet that many low-time pilots have of stalling – the fact that the aircraft may begin a motion not instigated or controlled by them. To them, this is frightening as they perceive this to mean that the aircraft is out of control. Of course, it is not. It's no more out of control than squealing the tyres when taking off from an intersection in a car. Its cause is not a mystery, its

danger level is zero, its recovery is easy, and quick, and only requires a modicum of presence of mind, namely, “break the stall on the stalled wing and stop any yaw with rudder”. In other words, stick/yoke forward (just enough) and push the rudder pedal on the up-wing side just enough to stop any yaw. Bring in full power to minimise height loss and it’s all over. There is no issue, no danger, nothing to fear except fear itself. Mind you, I have remonstrated with instructors with whom I have been doing instructor renewals when they have pattered that they are “regaining control” as they recover from the stall. This is absolutely false as control was never lost in the first place. All the wing drop stall has done is to set the aeroplane up so an unusual aeroplane response comes from control inputs. If there is a critical action in stall recovery in modern aeroplanes, it’s to prioritize the unstalling of the wing BEFORE aileron is used to level the wings. Who cares if the aircraft has rolled 50°? Time is plentiful, there’s no hurry, really, to level the wings. After all, you should have 3000 feet plus beneath you.

Hint: Set in your mind that:

1. We get the stick forward just enough to unstall.
2. We apply just enough rudder to STOP any yaw towards the down-going wing.
3. We add full power to minimise height loss in the recovery process
4. We ease out of any dive with gentle back stick lest we re-exceed the stalling angle

With practice, the first three steps can be carried out virtually simultaneously, only leaving the dive recovery to complete to return to level, unstalled flight.

An examiner carrying out a BFR can also ask you to demonstrate a stall in a turn. Again, this is a simple exercise and not to be feared.

For a stall in a level turn, just roll into the turn at cruise power and speed, and allow the bank angle to increase whilst maintain height. The usual expected recovery is to unstall as above (stick/yoke forward to reduce the angle of attack on the wings, rudder stop any yaw and finishing by abandoning the turn and rolling out to level flight. If such an examiner was to ask to remain in the turn, just ensure that, after the recovery you continue the turn with normal power for cruise and about 45° of bank applied. Variations in this exercise are to stall and recover in a climbing turn, or stall and recover in a gliding (or descending) turn. If asked to demonstrate one of these, check for exactly what the examiner is requiring.

Forced landing exercise

There are several ways this exercise can be asked for by the BFR examiner. It can be carried out on your return to your departure airfield, or somewhere away from there, into an area not normally used for aircraft landings. Usually, the examiner will set up a complete engine failure, so a glide approach into the selected field along with the appropriate checks and drills pertaining to this exercise will be required. However, they could also set up a partial failure to check on how you would handle the extra decisions such an even would necessitate.

For the usual version, into a selected non-airfield, here are some hints.

The aeroplane must be flown within 5 knots of the correct airspeed at all times.

The aircraft must be trimmed.

Carburettor heat must be applied (where fitted).

Lookout must be maintained at all times – during a straight glide as well as before and during turns.

Engine warming every 500 feet must be maintained.

Aim to land with full flap (where flap is fitted), 1/3 into the selected field (in a real one, it would be better to go through the far fence at taxi speed than the near fence at flying speed).

Returning To Base

The return to base (when the forced landing has been carried out elsewhere) is the opportunity for the examiner to review your circuit joining procedures and, in particular, your circuit leg entry and radio usage. The usual downwind checks must not be forgotten, and all approach airspeeds and procedures such as carburettor heat OFF on short finals be carried out. You may be required to do demonstrate a cross-wind landing/take-off, and a short landing using full flap, if the wind conditions allow. In a taildragger, you can expect to be asked to demonstrate a wheeler landing as well as a three-pointer.

If you haven't flown for a significant amount of time, you might feel more comfortable taking an instructor with you, or at least invite an experienced current-in-type pilot to ride along to offer critiques while you practice. But then, ensure that you put in some solo time. Be hard on yourself, but remember that the examiner is not looking for perfection, merely a good, workmanlike demonstration of your ability to carry out the prescribed exercises in the prescribed manner.

Just like it is with bicycling, the ability will still be there, it's just hidden under layers of rust. All you need is to take up the challenge and refresh your skills to regain your past levels of expertise. Don't fear a BFR. Instead, revel in the opportunity revise and, perhaps even, learn something new.

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FLY-INS Looming

10 October 2021	Murgon (Angelfield) (ALA)	Burnett Flyers Breakfast Fly-in
16th – 17th October 2021	Brisbane Airshow (YWSG)	Watts Bridge Memorial Airfield

Invitation

An invitation is extended to pilots in the South East Queensland area to affiliate with a group promoting Fly-Outs (as opposed to Fly-Ins which are promoted by the hosts) to country community areas to assist in fostering business in such areas. Note that all qualified pilots are welcome, regardless of experience, and there is no current intention to limit the potential destinations that could be entertained under this scheme

Such trips would include day trips to outlying places (within adequate range, of course) for lunches, or, for destinations further afield, overnight stays which would require accommodation. Advertising and planning for overnight trips would be made prior to departure so no-one need sleep under their wings unless it is by choice.

Planning has begun for a day trip to Boonah for a picnic lunch under your wing, or a visit to Boonah's highly recommended Dugandan Pub, about 1700 metres down the road towards Boonah town. Negotiations are underway seeking access to a courtesy car to assist with transport as the walk down there might be OK, but, after one of their lunches, the walk back might be taxing.

A date for this trip is pending and will be advised by email to all interested parties.

To be advised of the date, interested parties should contact:

Geoff Norwood on 0411 436 327, or Rob Knight on 0400 89 3632, or email Rob at kni.rob@bigpond.com

FORD TRIMOTORS IN AUSTRALIA

Compiled by Geoff Goodall

Four of these legendary pre-war transport aircraft were imported by Australian companies for freight use in New Guinea

Ford Trimotors VH-UTB and VH-USX about to depart Port Moresby, Papua New Guinea during the 1930s. A crew member is closing a roof hatch on the rear Ford. (Photo: Civil Aviation Historical Society)

Four legendary Ford Trimotors were imported by Australian companies for freight operations in Australian-administered New Guinea.

These rugged all-metal transport aircraft gave sterling airline service to the mountainous goldfields until the outbreak of the Pacific Theatre of World War II. Only weeks after Pearl Harbor, Japanese forces invaded New Britain and New Guinea, ending civil aviation in January 1942 as the Allied military authorities took over.

The early desperate defence of New Guinea resulted in the swansong for the two remaining Fords, which had been evacuated to the Australian mainland. They were immediately impressed by the Australian Government for RAAF use back in New Guinea. However, both were lost after short military careers.

A total of 199 Ford Trimotors were built at Detroit between 1926-1933 in a variety of models. Two variants were used in New Guinea:

The Ford 4-AT-E with three 330hp Wright Whirlwind J.6 radials and carried up to 9 passengers, and

The Ford 5-AT-C using three 420hp P&W Wasp radials. These had enlarged airframes to carry up to 17 passengers.

Guinea Airways Ltd, the largest pre-war New Guinea operator purchased two Ford 5-AT-Cs VH-UBI and VH-UTB to supplement their three big Junkers G.31 trimotor freighters. Their main competitor at

the time, Holden's Air Transport Service Ltd, imported two smaller model 4-AT-Es VH-USX and VH-UDY. All four Fords were second-hand machines purchased from England with current British Certificates of Airworthiness. This circumvented the Australian Civil Aviation Branch (predecessor of Department of Civil Aviation) policy to refuse certification for aircraft imported directly from countries which were not members of ICAN, the forerunner of ICAO.

Nevertheless, the CAB made its point regarding non ICAN-compliant standards. Guinea Airways ordered its two Fords 5-AT-Cs at the same time in late 1934 but CAB delayed approval for the second Ford VH-UBI for a year while it reviewed the design and construction against ICAN airworthiness standards. Approval included mandatory modifications including an emergency exit from the passenger cabin and a stainless-steel fireproof wall to be installed behind the nose engine.

Holden's Air Transport Service Ltd amalgamated with Guinea Airways Ltd in April 1937 after Guinea Airways had earlier purchased a controlling shareholding but left HATS to continue as a separate company. Guinea Airways was now the clear owner of all four Ford Trimotors.

In New Guinea service the Ford Trimotors were an immediate success. James Sinclair, a former New Guinea patrol officer wrote in his book "Wings of Gold - How the Aeroplane Developed New Guinea": He writes:

"The Guinea Airways Ford received an enthusiastic welcome from the public, who appreciated the 14 comfortable upholstered seats in the spacious cabin and also the company pilots. The Junkers fleet all had open cockpits and the blast from the radial engines was severe and unpleasant. The Junkers G.31 trimotors were particularly noisy. Their Hornet engines were fitted with stub exhausts and in flight the noise from the two wing engines was so tremendous that pilot and co-pilot found it impossible to converse. In the Ford Trimotor the pilots' cabin was fully enclosed and comfortably fitted."

However, the cabin seats were usually removed for the primary role of all four New Guinea Fords, which was heavy freight lifting. They played a big part in the 1930s air cargo statistics that resulted in more air freight carried annually in New Guinea than the rest of the world combined. Rarely mentioned is the use of a Ford as back-up aircraft in the early days of Guinea Airways' mainland Lockheed 10 Electra airline services Adelaide-Darwin and Adelaide-Sydney. VH-UTB with passenger seats installed was deployed from New Guinea to Adelaide several times during 1937. It also flew freight charters Adelaide-Darwin, Guinea Airways advertising reduced freight rates in the Territory newspapers and, as an indication of a very different airline era, offered to purchase fresh fruit and vegetables, wines and spirits if orders were placed with its agents.

Ford 5-AT-C - c/n 5-AT-68 - VH-UTB

.29	Built at Dearborn, Michigan by Stout Metal Airplane Division of Ford Motor Company, Detroit. Production model 5-AT-C, three 420hp Pratt & Whitney Wasp C radials
3.8.29	First flight Dearborn, test flights until 13.8.29
8.29	Registered **NC409H** Ford Motor Company, Stout Metal Airplane Division, Detroit Michigan Company demonstrator

Cont. Over……

14.10.30	Registered **G-ABFF** Harold S. Cooper, 88 Regent Street, London W1 Cooper was British sales agent for Ford Motor Company UK Ltd.
15.10.30	British CofA issued, 14 passenger seats
7.1.31	Reregistered at owner's request to **G-ABHF** to include Henry Ford's initials
10.34	Sold to Guinea Airways Ltd through aircraft dealers W.S.Shackleton Ltd, London
11.34	Arrived at Lae by ship from England packed in three large wooden crates
11.34	Assembled at Lae by Guinea Airways. Cabin roof was modified to install a large removeable roof hatch to allow loading of large items, similar to the Guinea Airways Junkers G.31 trimotors.
10.12.34	Registered **VH-UTB** Guinea Airways Ltd, Lae, New Guinea
10.12.34	Australian CofA issued. 14 upholstered seats.
10.12.34	First revenue flight, a charter from Lae to Port Moresby still painted as G-ABHF, pilot Bob Gurney.
23.2.37	VH-UTB arrived at Parafield Aerodrome, Adelaide from New Guinea as back-up aircraft for the Guinea Airways Lockheed 10 scheduled airline service Adelaide-Darwin. The Ford had been flown Wau-Brisbane-Sydney by A.A.Koch where he handed the aircraft over to an Adelaide-based Guinea Airways crew. Koch returned to New Guinea by coastal shipping
26.4.37	Departed Adelaide for Darwin carrying a replacement propeller for a Guinea Airways Lockheed 10 operating the Adelaide-Darwin airline service
21.5.37	Departed Adelaide for Darwin on a freight charter. On its return fight it carried a Territory Administration freight consignment Darwin-Tennant Creek
11.6.37	VH-UTB flew Townsville-Cairns on its ferry flight back to New Guinea, to Port Moresby next morning, pilot Turner
29.8.37	A Guinea Airways Ford flew a charter Port Moresby to Townsville carrying a geologist party, pilot Les Ross. Next day returned Townsville-Cairns-Wau
9.37	VH-UTB at Parafield
15.7.41	Damaged when swung heavily on landing Bulolo wth a full load of timber, pilot Ian J.Hosie minor injuries
.41	Moved overland to Lae for repair
10.41	Rebuild completed at Lae, CofA renewed
23.10.41	**Crashed on take-off Wau, New Guinea**. Loaded with 1,452 lbs (660 Kg) of sawn timber, pilot Ian Hosie commenced his take-off roll down the steeply sloping runway. Starboard engine failed to develop full power and aircraft swung sharply to the right, rolled over the edge of the airfield down a deep gully into Little Wau Creek. Aircraft wrecked; pilot received minor injuries.

For the full article, a very interesting piece of pre-war TPNG Aviation history, see
https://www.goodall.com.au/australian-aviation/ford-trimotor/fordtrimotor.html

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Keeping up with the Play (Test yourself – how good are you, really?)

1. A pilot is practicing wing drop stall. Right up to the stall the aircraft ball has been centered but when the port wing drops, he notices there is substantial yaw to the left in spite of there having been no rudder input. What has caused the yaw towards the dropping wing?
   A. Propeller torque.
   B. The rising wing enjoys more lift than the dropping wing.
   C. The dropping wing suffers greater drag than the rising wing.
   D. The link between the position of the Centre of Gravity and the center of pressure.

2. Which of the following will provide the best rate of climb for an aeroplane at its MTOW and without slip or skid?
   A. Climbing at Vy.
   B. Climbing at Vx.
   C. Climbing at Vs.
   D. Climbing at Vc.

3. Why does the stall speed of an aeroplane increase in a climbing turn?
   A. The loading increases.
   B. The wings are not level.
   C. Because the lift when turning is required to both support the aircraft AND to turn it?
   D. A and C are both correct.

4. Comparing the lift required from the wings on an aeroplane in a straight climb to the lift required in that same aeroplane in level flight, which has the greater lift requirement?
   A. The lift in the climb must be greater than that required for level flight.
   B. The lift in level flight will be greater than in the climb.
   C. They are the same because the weight doesn't change.
   D. It depends in the G loading imposed on the aircraft in the climb.

5. The legend on a aeronautical chart advises that the scale is 1:500,000. This means that…..?
   A. 1cm measured on the chart will represent 500,000cm ground distance on that chart.
   B. 1cm measured on the chart will represent 1nm ground distance on that chart.
   C. 1cm measured on that chart will represent 500,000 metres ground distance on that chart.
   D. 1cm measured on that chart will represent 500,000 feet ground distance on that chart.

See answers and explanations overleaf

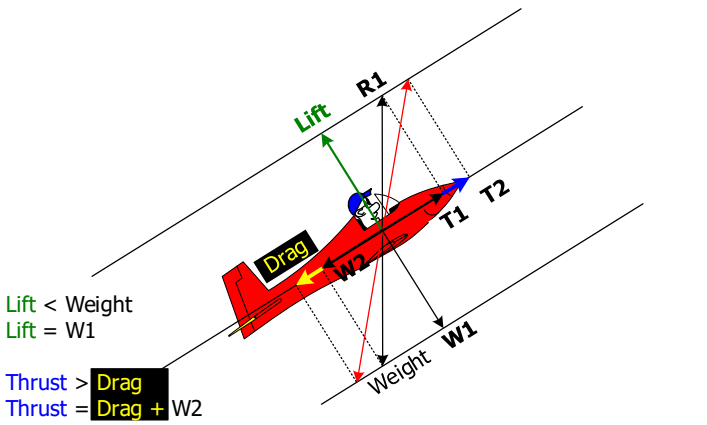
If you have any problems with these questions, See Notes below or call me (in the evening) and let's discuss them. Rob Knight: 0400 89 3632 (International +64 400 89 3632), or email me at kni.rob@bigpond.com.

1. C is correct.
   The stall on an aerofoil creates a serious loss of lift and a major rise in drag. When one wing stalls before the other (as in a wing drop stall), the aeroplane rolls towards the stalled wing (caused by the lift imbalance between the wings), and also yaws towards the stalled wing (caused by the substantially higher drag on that wing compared to the unstalled or lesser stalled) other wing.
   See: https://coeleveld.com/spin-stall/

2. A is correct. Option A (Vy) indicates the airspeed for the best rate of climb. Option B, Vx), is the best angle of climb speed so the aeroplane will not make its best rate of climb. Option C, Vs, is the stalling speed and the aeroplane will not climb at its stalling speed. Option D, Vc, relates to the design cruise speed and this will not provide much of a rate of climb, either.
   See: https://en.wikipedia.org/wiki/V_speeds

3. D is correct. In a climbing turn, as in all turns, more lift is required than that required for a straight climb. This is because the lift must increase in the turn so it can still support the weight, as well as provide the force to turn the aircraft.
   See https://www.experimentalaircraft.info/flight-planning/aircraft-stall-speed-1.php

4. B is correct.
   This is quite correct – the wings provide less lift in a climb than in level flight because, in the climb, the thrust is inclined and therefore supports a portion of the weight. The lift from the wings only supports some of the weight. *Note that adjacent sketch is not to scale.*



However:
The resultant of all upward forces = the resultant of all downward forces
So equilibrium is established

See that the lift generated by the wings = W1 which is less than Weight

5. A is correct. The representative fraction, 1:500,000, indicates that 1 unit, being mm, or cm, or inches etc, represents 500,000 of those same units along the ground the chart represents.
   See http://geokov.com/education/map-scale.aspx

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Aircraft Books, Parts, and Tools etc.

Parts and Tools

Item	Condition	Price
VDO Volt Readout instrument	Brand New	**$70.00**
Altimeter. Simple – single hand	As new	**$50.00**
Oil Pressure indicator, (gauge and sender)	New – still in box	**$80.00**
Flight bag. 3 section (2 x zips and 1 x locking flap)	Used but good	**$100.00**

Tow Bars

Tailwheel tow bars. Now only two available	Good condition	**$50.00 EA**

Headsets

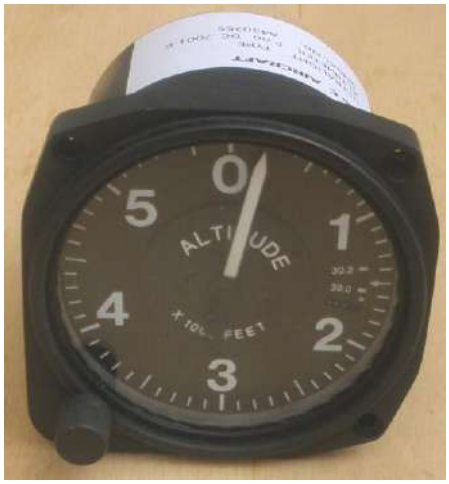
AvCom headset. Functions perfectly	Excellent	**$150.00**

Propeller Parts

Propeller spacers, Assorted depths, all to fit Rotax 912 UL/ULS propeller flanges	Excellent	**$100.00 each**
Spinner and propeller backing plate to suit a Kiev, 3 blade propeller, on a Rotax 912 engine flange.	Excellent	**100.00**

Contact Rob Knight via either kni.rob@bigpond.com, or **0400 89 3632**.

Altimeter for Sale



This simple altimeter I purchased at Oshkosh is now surplus to my requirements and I am seeking a new home for it.

Its face is absolutely clear, it has never been used, and the subscale is provided in "HG.

It is in as-new condition and certificated. For a copy of the certificate, and/or further details, contact

Colin Thorpe. Tel: LL **(07) 3200 1442**, or

Mob: **0419 758 125**

$120.00

Aircraft for Sale

¾ scale replica Spitfire

$55,000 neg

This aircraft is airworthy, flown regularly, and always hangared. Registered 19-1993, it is powered by a 6-cylinder Jabiru engine (number 33a-23) with 300 hours TTIS. The airframe has logged a mere 320 hours TTIS. This delightful aircraft has recently been fitted with new mounting rubber, a new alternator and regulator, a new fuel pump, and jack stands

It handles superbly and is available for immediate collection or delivery by arrangement.

Kept at Kentville in the Lockyer Valley, interested parties should contact either:

Kev Walters on Tel. **0488540011** or

William Watson on Tel., **0447 186 336**

Aircraft for Sale

$ Make Me an Offer$

Cobham Cobra

An opportunity to buy a unique aircraft.

I now have a Foxbat, and can't to afford to keep 2 aircraft. The Cobra was advertised for about a year in Sport Pilot, with many enquiries, but no resulting sale. Rather than continuing to spend on hangarage and advertising I decided to de-register it, remove the wings, and trailer it home to my shed. I don't intend to ever fly it again so, make me an offer. It provides very cheap and enjoyable flying.

It is a one-off design, a single seater with a fully enclosed cockpit. It has a 24-foot wing-span, and is powered by a VW engine that provides sporty performance and superb handling. The airframe has logged 653 hours and the engine 553 since installation. It is easy to start, but requires hand-propping.

To see it in action, go to
https://www.youtube.com/watch?v=V5Qx4csNw_A&list=PLpBv2A6hk66Tg9DiCsjEtt4o4o8ygcTju&index=1&t=22s

It cruises at around 80 knots at 11-12 litres/hr. The tanks hold 48 litres so it has a very reasonable range. For my approaches I use 50 knots on my initial approach down to 40 knots on short final. You will want a fair bit of tailwheel time.

For further details contact Tony Meggs on (02) 66891009 or tonymeggs@fastmail.fm

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Slipstream Genesis for Sale **$14,000.00**

Imported and built 2001. Two seats side by side, powered by 80 hp 912UL Rotax, driving a Warp Drive 3 bladed prop. Cruise 70-75 knots. Empty weight 304kg, MTOW 544 kg, Payload 240 kg. Fuel tanks hold 78 litres. With fuel burn averaging 16 litres/hr, still air endurance (nil reserve) is theoretically 5 hours, or 350 nm. Aircraft always hangared. It has been set up for stock control/ mustering or photography, and is not fitted with doors. Registered until 13 October 2021, currently flying, and ready to fly away.

Total Hours Airframe: 144.6. Current, up-to-date, logbook.

Total Hours Engine: 1673.9. Annuals/100 hourly inspection done 01/09/20. Sprag clutch replaced January 2020, gearbox overhauled January 2020.Just undergone ignition system overhaul. One CDI Ignition unit replaced PLUS brand-new spare unit included in sale. Easy aircraft to maintain - everything is in the open. Comes with spare main undercarriage legs, spare main wheel, and nosewheel with other assorted spare parts included.

Fabric good, seats are good, interior is tidy. Fitted with XCOM radio/intercom. Basic VFR panel with appropriate engine instruments, and compass.

An article on this aircraft was published in Sport Pilot, June 2019 issue. See front cover and pilot report within.

Must sell: two aeroplanes are one too many. Quick sale - Fly it away for $14,000.

Contact **Rob Knight tel. 0400 89 3632**, **or email** kni.rob@bigpond.com for details and POH.

Aircraft Engine for Sale

ROTAX 582 motor. Ex flying school, TTIS 600 hours, and running faultlessly when removed from aircraft for compulsory replacement.

No gearbox, but one may be negotiated by separate sale if required.

Interested parties should call…..

Kev Walters on Tel. 0488540011

Aircraft Hangarage Available

Hangarage is available at Blenheim airfield (YBHN) in the Lockyer Valley. The Hangar is modern with a concrete floor and electricity available.

Contact Justin on Mob. **0403161484**, or email **justingibb@hotmail.com**

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