BRISBANE VALLEY FLYER

April 2024

BRISBANE VALLEY SPORT AVIATION CLUB INC

Watts Bridge Memorial Airfield, Cressbrook-Caboonbah Road, Toogoolawah, Q'ld 4313.

Rob Knight (Editor) Tel: 0400 89 3632, Email kni.rob@bigpond.com

The Blunt end of a Bristol Type 170 Freighter.- See page 18

Peter Ratcliffe (Pres.)	0418 159 429	Ian Ratcliffe (Treasurer)	0418 728 328
John Innes (Vice Pres.)	0417 643610	Acting Secretary	0418 159 429

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Our website - **bvsac.com.au**

Greetings Members,

The March meeting was well attended and all that attended had a great day.

Ian attended his first Airfield meeting as our representative and he gave a short talk about the meeting.

The Watts for breakfast was held on the Sunday after our last meeting and we had 3 members that help out. There was a very large turn out as we served over 170 breakfast. We were thanked for our help on the day.

Our next meeting is coming up on the 6 April and i hope you all can attend. Also, we would wish you all the best for Easter stay safe if you are traveling

Best wishes

Peter Ratcliffe
President BVSAC

Don't be a Casual Swinger

By Rob Knight M22-037

I have loved instructing, ever since the day I qualified under the sharp, droll, discerning eye of Bruce James, my favourite Flight-Testing Officer. Over the intervening 45 years I have instructed on everything with a single engine, wings, and wheels, whether it had a nose-wheel or tail-wheel. Of the two, I preferred tail-wheels because, at least in part, the student didn't have to take my word for swing issues – all those mentions of nose swing caused by propeller thrust and torque actually happen in a tail wheeler, and the aeroplane honestly depicts what nose-wheeled aircraft only hint at. Over time, because of my delight in teaching tail-wheel (mostly as conversion training from nose-wheel), I began to regard my tail-wheel students as a bit of a cut above the rest. I reached the point where I felt that I could relax more when I was in an aircraft with a wheel at the back instead of the front. Herein I didn't have to deliberately provoke student distraction to check on their ability to recover from an unintended swerve on the landing roll. Tail-wheeled aircraft do this admirably, frequently, and without Instructor assistance, so the student learns to control the aeroplane instead of reacting to the instructor. Yes, all those causes of nose-swing that I painstakingly I covered in briefings would rise up and bite savagely with me as a mere concerned observer, but ever-poised, and ever-ready to correct if necessary.

But complacency is dangerous. I knew it and heartily subscribed to it, but still it caught me out and could have easily ended my career if not my life.

A bright summer's day can turn in an instant to something darker. One blue sky'd day, when I was doing a third conversion flight for a young woman PPL holder, such a change occurred to me. Her PPL training had been done at Canterbury Aero Club in a Piper Cherokee 140 and she was a recently new Waitemata Aero Club member at Ardmore, in Auckland, New Zealand. She had hired our Cherokee 140 ZK-CEQ several times and this desired rating to a PA-18 100 hp Cub ZK-BKW was her first conversion to another aircraft type.

"Daisy", I'll call her that so she can't sue me, had already raised my concerns when, on the day of her first flight in the Cub, I had briefed her on ground handling with tail-wheels, and she had gone to the flight line to pre-flight the aircraft (which was blue and white) and, instead, checked out the orange and white Cessna 172D beside it. She had a university background – holding a degree in medicine and worked as a doctor in a local Hospital. I made my first mistake in being more impressed with her qualifications than her performance, and not watching her more carefully in her activities with aeroplanes. after then pre-flighting the correct aeroplane, we departed for a Familiarization on-Type.

PA-18, ZK-BKW.

This flight was the instrument of my blue-sky day turning to rain. This time "Daisy" had pre-flighted the right aircraft and had strapped herself into the front seat as I got out to the flight line. I climbed into the back seat and hauled my straps inside and suggested that she started up to save time. The switches clicked and she pressed the button and pulled the solenoid handle under the control panel. The prop groaned over, too slow to start.

I reminded "Daisy" to ensure she had pulled the solenoid out to its stop before pressing the starter. After a brief indefinite mutter, the motor groaned again, this time the solenoid rattled.

“Mags off, master off, I’ll have to swing it”, I called, as I dumped my straps to the side and climbed out. I reached across her and, yes, she had turned everything off as I had asked. I set the mixture to full lean, and opened the throttle wide. The brake park knob was full out in its park position. As I walked around the end of the strut I gently pushed and pulled the attachment point and, yes, the brakes were parked. After asking her to hold the stick fully back, I pulled the prop through eight compressions to clear any over-prime fuel, and set the prop coming up to the next compression. I placed my left-hand fingers behind the blade trailing edge near the tip and balanced my weight forward on my feet.

“Mixture full rich, Throttle set, Mags on left”, I called slowly and distinctly.

“Throttle set, mags on left, mixture rich she read back in reverse.

I stepped forward and smoothly pulled the prop through its lower arc. However, just as I was releasing the blade, there was a loud crack as the engine back fired and smacked my hand with the sharp, cutting edge of the corner of the blade tip.

I was already walking away in the normal fashion as it happened so, even had the engine started, I was out of the danger zone but my left shoulder felt numb and partially paralysed and detached and as though my finger-tips were AWOL.

Daisy, her medical training obviously rising to the occasion, slid the window and asked if I was OK. Unable to speak, I was holding my hand expecting to see a Niagara of blood and bone cascading onto the tarmac. But no red waterfall, just waves of excruciating pain. After walking around a couple or three circles, I arrived at the open door and peered around at the mag switch. In front of me, in clear view, was the mag switch set to “BOTH”.

Momentarily forgetting pain for anger, still holding my damaged hand in the other, I glared at her. What is the mag switch set to?” I heard myself say, in a far more pleasant tone than I felt. This woman was a current and practicing PPL!

“On both”, was her innocent reply.

“I said left mag, and you read left mag back to me”, I said in a tight voice.

“I thought you were saying, left because the mag switch is on the left side of the cockpit”!

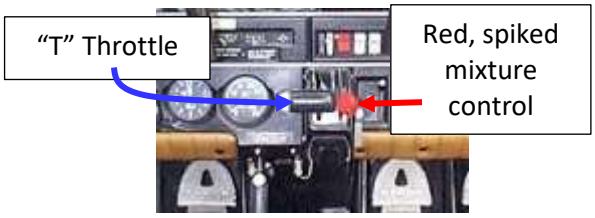
“You know that we start this Cub on the left mag”, I whispered in anguish. “You did that on the last two flights. It has a left mag start, just like CEQ”.

“But CEQ has a key for the mags, not a switch like this one”, was her clipped reply. “How am I supposed to know!”

I gave up, too traumatised to remind her of other past briefings and flights. She had a natural penchant for incompetence so why bother to remind her of her two previous starts, and the time that I had spent with her, showing her how to work the mags, the carburettor heat control, and the trim, all of which were located on the left sidewall of the front cockpit below the sill-mounted throttle. As far as I was concerned, from this point, this woman lacked the necessary awareness and aptitude to be a pilot in command.

Pleading the need for first aid on my now bloodied fingers, I cancelled the flight and reported the incident, before attending the first aid box. Four fingers were badly cut and grazed by the trailing edge of the prop, but no stitches were needed and it was all healed in about a week.

"Daisy" never did complete her Cub rating with us, no instructors were available when she called. I later heard that she drove 250 miles south to a small country Aero Club and finished her Cub rating there. However, she drew more serious attention to herself a few months after getting her ticket to fly a Cub when she taxied another Cherokee 140 into a drain at full throttle. Apparently, she confused the black "T" bar throttle with the red spiked wheel mixture control and pushed the throttle full forward during taxi thinking she was pushing the mixture control to "full rich". The damage to the engine and airframe was severe. Subsequent rumour had it that she refused to pay the owners' insurance excess, a condition of hire. I recall that it was to go to court but the final outcome is lost to me in the deepening mists of time.



PA28 Cherokee (with quadrant throttle).

If you are the pilot in command, NEVER take someone else's word for anything. You may pay a penalty for someone-else's ignorance, arrogance or abject stupidity. Just because this woman had a medical degree was no reason to trust her, especially when her past performance was so inadequate. I should never have trusted her. Also, propellers are like salt water crocodiles – never to be trusted. Even removed and leaning against a hangar wall a propeller is waiting to jump out and fall on you.

Unless you have satisfactorily been checked out for prop swinging, I recommend that you DON'T TRY THIS EXERCISE cold turkey. Run through it with an instructor before you attempt it on your own for the first time. Twice in my life I have been acquainted with ex pilots that have been attacked by their propellers when attempting to swing-start the engine. Neither can ever fly again. I also know of others what were killed attempting it. In this day and age, except when operating vintage aeroplanes, a prop swing to start is an emergency exercise only. GET SOME DUAL is the BEST RULE.

Note: The importance for starting some aircraft engines on the left magneto lies in the use of an impulse coupling. Fitted to just one magneto, the engine drives this coupling which, when the engine is stopped, winds up a powerful spring. When triggered as the engine it turning for start, the spring spins the magneto considerably more quickly than normal engine cranking speed, producing a far hotter spark. Also, because the spring winds as the engine turns, the spark timing is retarded and the engine starts easier. At the idling RPM, the impulse coupling is automatically disengaged.

Starting an engine equipped on BOTH mags when one mag has an impulse coupling, sees the right magneto too far advanced and the piston is still rising towards top dead centre at the time of ignition spark. This often results in the engine back firing and, if being hand propped, can severely injure the swinger hanging onto the propeller.

Now, at 75, I seldom swing props, but should I so do, it will be ME that checks the mag (magneto) switch position before I take a hold on that blade to pull it through to start.

An extremely good video on this topic is: https://www.youtube.com/watch?v=qCqPtqvU9mg

Happy Flying

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Windy Canyon Dangers

By Peter Garrison. Published in Flying Magazine, March 13, 2023

Canyons draw adventurous pilots in—but they hold hidden hazards.

Flying through canyons has seemed to be a supreme test of airmanship. [Credit: Adobe Stock]

Ever since Luke Skywalker plunged into the mesial groove of the Death Star, flying through canyons has seemed to be a supreme test of airmanship. Military pilots practicing terrain following love to thread the so-called "Star Wars Canyon" into Death Valley at 500 knots. When the new Top Gun instalment came out, it was all about negotiating canyons, both geological and interpersonal.

It's fun, and it's dangerous. In fact, it's fun because it's dangerous.

And that's why three ex-Air Force pilots set off on a December morning in three Van's Aircraft taildraggers to practice flying through a canyon in southern Colorado.

The flight leader, 70, who had been a captain with United Airlines after leaving the military, had 20,000 hours. He was flying a tandem two-seat RV-4. The two other airplanes were an RV-8, which is a slightly enlarged redesign of the RV-4, and a single-seat RV-3. As they neared the canyon, the flight leader descended and called for a change from echelon to trail formation. The airplanes moved into single file, several hundred feet apart.

The RV-3 was in the last position and remained above the canyon rim. From that vantage point, the pilot could observe the No. 2 airplane ahead of and slightly below him, and the leader's RV-4 descending north-eastward into the canyon. After a few seconds, they encountered one of the challenges that make canyon flying exciting: an S-turn requiring a 120-degree heading change to the right immediately followed by a 180-degree turn to the left, both within a space about 1,300 feet wide.

The leader's RV-4 was completing the second turn in a steep bank at high speed when its left wingtip snagged the scree below the canyon's eastern wall. The airplane cartwheeled and disintegrated—the pilot must have died instantly.

If this accident had involved a 100-hour pilot in a Piper Cherokee 140, we could write it off to ignorance and rashness. But the pilot was of the highest calibre and qualifications and most likely had flown this canyon or ones like it before, and so it is worth pondering why this outing ended the way it did.

(For readers who use Google Earth and wish to better understand what happened, a view of the canyon is helpful. The wreckage came to rest at latitude 37.792822,longitude -104.57616; the first impact occurred a few hundred feet south of that point. And "left wing tip" is not a misprint. Although the crash occurred on the right side of the canyon, it was the steeply-banked airplane left wing that first struck the ground.)

In the portion of the S-turn leading up to the accident site, the rims of the canyon are about 500 feet apart and the canyon bottom is 200 feet below the surrounding plain. The second turn, the 180-

degree one, must be completed with a radius of about 400 feet. The radius of the first turn is a little smaller—about 350 feet—but it's not a full 180 degrees.

Turn radius in still air is a function solely of true airspeed and bank angle. This is true for every airplane, Piper J-3 through SR-71. Bank angle is limited by the G tolerance of the airplane and the pilot. The RV-4 is a 6-G airplane, corresponding to an 80-degree bank angle, but the greatest G loading an airplane can maintain continuously—without losing altitude—depends on the power available. In the case of a 200 hp RV-4 at, say, 1,300 pounds, it would be around 3.5 G or 73 degrees of bank. The required turn radius of 400 feet could be achieved at 120 knots. But, of course, the speed can change during the turn. You could enter at 160 knots with a 6-G, 80-degree bank, and, if you haven't greyed out, gradually reduce the bank angle.

The skilled pilot, like an outfielder judging where the pop fly will fall, uses the instinctive calculus that millions of years have bred into us to solve this problem in many variables. The slower you go, the easier it is, but the fun is in going as fast as possible. At high speed, however, small errors in timing, bank angle, and path selection nibble away at the slender margins of safety that are the spice of the exercise.

There is one additional element that is invisible and defies intuitive calculation: the wind.

Traveling at 120 knots, the RV-4 makes a 180-degree, 3.5-G turn in about seven seconds. During those seven seconds, a 20-knot wind blowing across its track carries it 210 feet downwind; 30 knots, 315 feet. So much for the calculated turning radius.

The RV-3 pilot and the leader had discussed the wind before taking off. Strong winds and a possibility of moderate to severe turbulence were forecast for the area. The leader was not concerned. Nearing the canyon, the RV-3 pilot's EFIS reported a 30-knot, south-southwest wind 2,000 feet above the surface; its direction was such that an airplane emerging from the S-turn would have been pushed toward the right canyon wall. But there was no way to know how the wind would behave down inside the canyon. The canyon itself might provide some shelter. On the other hand, it added the risk of up- and downdrafts, and its meandering topography could produce unexpected changes of wind direction and velocity.

Something in the situation must have made the second and third pilots reluctant to descend below the canyon rim, despite the cultural tendency to stay with the flight lead. Perhaps they had not flown this canyon before and intended to watch the leader fly it before doing so themselves. The statements they provided to accident investigators did not touch on their own motivations, beyond the RV-3 pilot stating that he remained above the rim "to assess potential turbulence." The leader alone went deep into the canyon. It was the RV-8 pilot following him through the turns in second position, who reported that the lead aircraft was flying at "high speed" when he clipped the talus slope.

The most likely explanation for the accident is that the southwest wind poured into the portion of the canyon aligned with it and carried the RV-4 toward the eastern rim. The fact that the airplane was steeply banked at a point where it should have been rolling out of the turn, and when most of the energy available from excess speed would have been used up, suggests a desperate attempt to remedy a miscalculation. It almost succeeded.

Because many people perceive it as dangerous, aviation is obsessed with safety. It is practically obligatory, after an accident like this, to deplore the pilot's decision-making. The NTSB does. But aviation can also be an extreme sport. The pilot knew what he was doing, and how to do it. He made a mistake, and paid the highest price. Let's leave it at that.

This article is based on the National Transportation Safety Board's report of the accident and is intended to bring the issues raised to our readers' attention. It is not intended to judge or to reach

any definitive conclusions about the ability or capacity of any person, living or dead, or any aircraft or accessory.

This article was originally published in the December 2022/January 2023 Issue 933 of FLYING.

Peter Garrison

Peter Garrison taught himself to use a slide rule and tin snips, built an airplane in his backyard, and flew it to Japan. He began contributing to FLYING in 1968, and he continues to share his columns, "Technicalities" and "Aftermath," with FLYING readers.

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The Bristol Freighter

By Rob Knight M24-164

The Bristol Type 170 Freighter was a British twin-engine aircraft designed and built by the Bristol Aeroplane Company as both a freighter and airliner. Its best-known use was as an air ferry to carry cars and their passengers over relatively short distances.

ZK-CPT, a SAFE AIR[1] Mk 31E Bristol Type 170 Freighter, at Omaka, New Zealand.

Built in their Filton factory at Bristol, UK, G-AGPV, the first Bristol Freighter prototype, began test-flying on 2 December 1945. The first production entered service with Channel Islands Airways the following year - in April 1946. It was a variant known as a Wayfarer, fitted with seats and primarily carried passengers.

UK airline Silver City Airways also quickly saw the Type 170s unique potential for short-haul operations, and began carrying large containers and motor vehicles up to the size of a 3-ton truck, as well as passengers. The Company soon became one of its largest and most significant operators and put the fleet onto on short-haul flights servicing the UK and close European countries. The design was eminently suited to provide an 'air ferry' service across the Channel, flying first between Lympne Airport in the UK (a former military airport) and Le Touquet in France. By 1954, Silver City Airways was accumulating 2,970 landings and take-offs per aircraft (according to recollections from BAE Systems) per year.

The type 170 was specifically designed as a multi-purpose aircraft, for use in either military roles carrying bulky weapons and military vehicle, or civilian service delivering bulky freight, vehicles and/or passengers, over very short operating sectors at low operating altitudes. The result was a very visually distinctive aircraft. The fuselage was boxy, and its nose was, to some, grotesquely large and rounded. The cockpit, mounted above the nose, required a vertical ladder from the cargo floor to reach the crew seating positions.

In order to maximise the fiscal performance of the Freighter, design compromises resulted in a relatively low cruising speed. As the aircraft was intended to be operated mostly in the lower reaches of the atmosphere, and over very short distances, the cruising speed limitation was considered to be of lesser economic significance than the fast turn-around times made possible by the large-nose design, and the 170s exceptional payload carrying capacity, The operating economics of the Freighter were judged, according to the writers of Flight aviation magazine, to have been be a major factor in its market appeal, as well as the wider monetary situation of the UK in the immediate post-war period of the time.

Being flown at the low speeds and short ranges for which the aircraft was intended, the potential fuel economy advantages achieved by fitting a retractable undercarriage was heavily outweighed by the resulting increase in structural weight and maintenance complexity it was therefore decided to fit a simple fixed undercarriage. This had a flow-on effect in reducing both production and maintenance costs.

[1] *SAFE—Straits Air Freight Express, a New Zealand Regional Airline in the day.*

Structurally, the lower parts of the Freighter's nose comprised two large clamshell doors for easy access to the main hold. This arrangement was hardly airtight and the unpressurised fuselage was therefore somewhat well-ventilated during flight. The doors, which opened outwards, exposed the entire front end of the main hold which had a capacity of 2,020 cu ft. The hold's solidly built floor carried the heavy payloads with ease and to aid loading and to minimise turnaround times, a built-in hoist was installed on the fixed upper surface of the nose, which made the aircraft self-sufficient and thus independent of airport-based infrastructure. Fixed restraining points to secure payloads were fitted throughout the internal space. Some aircraft, fitted throughout with seats so no bulky freight was carried, were named Wayfarers, and the nose-mounted doors were replaced by a fixed shell; the area immediately behind being available either as a small forward freight hold or galley.

A Silver City Airways Freighter disgorging an Austin A40 Devon in 1952.

The flight deck, positioned in an elevated position immediately above the clamshell doors, provided both a good all-round view for the flight crew, and kept the flight deck clear of the loading activity below. Flight magazine wrote of the cockpit: "The control and instrument layout is quite the best we have seen in any Bristol aircraft". The major controls are typically comfortable and smooth, while each pilot is provided with a standard instrument flying panel. Instrumentation fittings differed dependent upon customer specification, but a Sperry Corporation-built autopilot would typically be installed. The flight deck was typically operated by a two-man crew, a first pilot and second pilot or radio operator; in addition, space was provided at the rear for a third crew member.

Bristol Type 170, captain's position, instrument panel, and controls.

The Bristol Hercules 734 radial engines, as well as all the Freighter's other major items and subsystems such as cowlings, oil tank, cooler and control cables, were easily detached for servicing; an entire engine could be removed and replaced by three engineers in as little as 65 minutes. The fuel system was simple, AVGAS being contained in a 300-gallon fuel tank positioned inboard, between the spars of each wing, between the fuselage and the engine. Hydraulic systems were only necessary for the operation of the clam-shell nose doors and the flaps. The electrically controlled carburation system had three different intakes, each suited to starting the engine under different pre-set atmospheric conditions – hot, sub-zero, and temperate climates.

The airframe itself is deliberately simple in construction. The use of maintenance-intensive components was kept to an absolute minimum and, where necessary, these were made as accessible and readily serviceable as possible. Manufacturing of the Freighter was eased by many components being standardised and identical where feasible; this ideology was also applied to elements of the internal structure, such as the longerons, frames, and skin. The floor of the main hold was planked by wooden panels designed to be easily replaceable in the event of damage. Another ease-of-maintenance feature in the design was the use of control cables for the flight control system (where practical), while all flight control surfaces themselves were fabric covered, giving lightness, and ease of repair or replacement.

The Type 170 Mk 31 differed from the Mk 21, by being fitted with Bristol Hercules engines of 1980 BHP, a dorsal fillet, engine spinners and pneumatic toe brakes. The pre-flight inspection was

standard and straight forward, but noteworthy would be the inevitable and copious runnels of engine oil coursing down the undercarriage legs and onto the tyres under each engine. External control locks had to be removed from the rudder and elevator and these were stored behind a small seat at the rear of the cargo hold.

Entry to the aircraft was via a small hatch under the nose. Turning the handle, the hatch hung down, suspended from the rear. Inside of the hatch, toe holes permitted the co-pilot to climb inside the nose area (known as compartment “A”) to check the heavy, over-centre locks holding shut the clam shell doors, and ensure the wire gates isolating the cargo compartment were locked in place. After a quick check for attachment and security of the cargo nets, it was then time to climb the vertical ladder on the starboard fuselage wall and enter the cockpit through the hatch in the cockpit floor. The pre-flighting pilot then took the special wooden dip stick, stored in the cockpit, and climb, yet again, through another hatch in the cockpit roof behind the co-pilot’s seat and onto the wing to check the oil.

The oil tanks, fitted directly aft of the engine, inside its nacelle, each had a capacity of 20 gallons. Considering that each engine used about 3 gallons of oil an hour, the task was to ensure there was sufficient oil in each engine tank for the proposed flight PLUS the required oil reserve. There were hazards attached to this part of the inspection. Apart from falling off the oily-slippery wing, to check the oil in the other engine it was necessary to duck under the radio aerial wire extending from the top of the mast above the cockpit to the fin to the tail fin. At this point, the wire was about face height and easy to forget when pre-flighting in a hurry and in the dark. With the oil checked and the roof hatch locked again, the pre-flight checks were complete.

Like most English cockpits of this era, the design and layout left much to be desired, with most of the Navigational Aids attached as add-ons fixed across the top of the instrument panel. The pilot’s control yokes/wheels resembled that of the DC3 but were much larger, and the large Sperry autopilot formed the centrepiece of the panel complete with a lever, similar to an undercarriage retract/lower lever, marked “ON” and “OFF”. Three large tuning knobs allowed the auto pilot to be trimmed in roll, pitch and yaw prior to engagement. The tall angle-handled throttles were coloured red for port and green for starboard as were the pitch levers and friction nuts. The 170s had a much-favoured automatic mixture control system and, in place of these controls, were carburettor shut off valves, marked OFF and RUN for stopping and starting and the engines respectively. Both pilots had the standard pitot/static flying panel and two large feather buttons were positioned just above the Auto-Pilot. The primers and starters were on a small panel to the left of the captain’s left knee.

Engaging the starter the pilot counted out aloud the number of blades passing the cockpit window. Primer buttons hit, ignition on, and the engine fired up as only a large radial can - with dense clouds of blue/grey smoke and noise. The Hercules engine ran very smoothly with a distinct crackle from the stub exhausts. Power changes were prompt with cautious throttle movement, and a definite asset when taxiing due to the delay in the action of the pneumatic brake system. Applications of judicious asymmetric power were necessary to contain the frequent directional overswings, and taxiing in stiff crosswinds was a challenge.

Another quaint and very English system was the electric tail wheel lock. To operate, first the aircraft had to be taxiing very straight, then an electric toggle switch at the rear of the console activated without the pilot looking down and back to find it. When activated, a red light illuminated to indicate the solenoid had dropped the lock pin into the two aligned holes but this would only remain so for a 5-minute period before it automatically dropped back into its unlocked state. If a long taxi exceeded the time limit, the device would inevitable drop out just as a severe gust caught the tail, and red faces would ensue before the aircraft’s directional control could be re-established.

Due to the automatic mixture control system, the throttle quadrant was marked with the ECB range (Economic Cruise Boost). During take-off, it was not permitted to pause at this setting and the

throttles had to be pushed smoothly, without pause, through to the full take-off power setting. This sometimes resulted in an early swing developing and care had to be taken to keep it straight, especially when the tail came up which made take-offs intimidating to low time pilots. The noise on take-off could only be described as painful. It did in fact physically hurt and communication was only possible through the intercom. Once airborne, the aircraft climbed with the strange sensation of a lift with the nose "nodding" in any turbulence. The control feel was heavy compared with many lighter twin engined aircraft.

Overall, the 170 was generally easy to fly but needed coarse control movements for general control. However, the landing was another matter. With solid rubber blocks in the oleos, any back pressure held at an early initial touchdown meant the aircraft bounced and returned to the air, with subsequent skips requiring a careful application of forward stick to pin the aircraft onto the runway. Generally, most pilots wheeled it on, and applied forward stick pressure to keep it there. As the tail slowly came down, as in all taildraggers, the feet became the priority appendages to keep straight and remain on the runway.

Another unique feature of the aircraft was an electrically operated automatic anti-swing system using a series of pitot-type probes on each wing leading edge - one in the free air, and one behind each prop disc. Any loss of power would be sensed immediately by the air pressure disparity between the tubes and the offending propellor automatically sent into course pitch. This imaginative device made handling an engine failure situation rather simple.

There was great caution in regard to flying these aircraft at night or under IFR, as it was vital to keep the aircraft out of known icing conditions. The aircraft had no de-icing or anti-icing devices and to be down to 1500' the lowest safe operating altitude was not uncommon and crossing water with heaving swells and white caps visible even at night, was disconcerting. At these times another unique oddity of the aircraft also came into play - every now and then one engine would miss a beat with both the change in sound being an alarm, and the thump felt in the airframe. No explanation of this could be found.

An Australian National Airways Freighter swallows a damaged Percival Procter aircraft being returned to workshops for repair. Cambridge Airport, Hobart, 1954

Having a payload of 4 tons, the aircraft carried one ton of freight more than a DC3, at only slightly slower speed and a quicker turn-around time. For example, opening the large nose door was quick, using the hand crank fitted to the right side of the fuselage, and loading a car onto the parallel ramps only required checking the tire width with the strategically hidden broom handle before the car was then driven on and chained to the floor. With the doors wide open, trucks could be backed right up to the front edge of the doors, and pallets, boxes, cartons etc quickly located to their desired floor areas and netted down. SAFE AIR, in New Zealand, modified their 170s to accommodate their in-house designed CARGON system. This was a wheeled metal pallet and transfer system using modified railway flatcars to allow trucked loads to be transferred directly into the nose doorway of the aircraft. This reduced the turn-around time of flights to about 15 minutes, a time far less than any other freight or cargo-carrying aircraft of the time.

According to wikipedia.org, Bristol Type 170 Freighters were purchased and provided excellent service with the air forces of Argentina, Australia, Burma, Canada, Iraq, Pakistan and New Zealand. In some cases, when declared obsolete by the air forces, they were purchased by civilian operators and returned to civil operations where they continued to provide their unique and exquisite services on cost-effective operation.

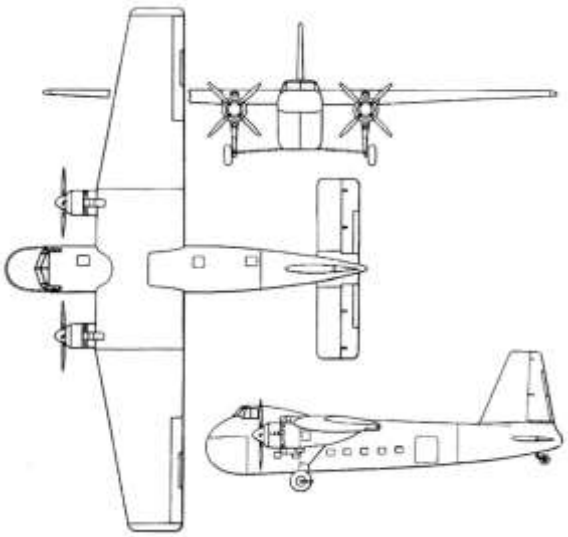
In 1953, a stretched version of the Type 170, the Mk32 Superfreighter, was developed. With a longer nose, and a MTOW increased to 44000 lb (19958 kg), a special slide-in capsule was developed to carry passengers in greater comfort, but, alas, at no greater cruise speeds.

The Type 170, Mk 32 Superfreighter.

The ultimate downfall of the type was primarily the engines. The rising costs of maintenance and the particularly short life of radial piston engines causing major blow-outs in operating and maintenance costs, and exponential rises in the cost of AVGAS, made the aircraft inoperable from a business point of view. This was compounded when a fire in the UK engine parts storage facility destroyed the world's primary source of engine spares, particularly the unique sleeve valves, and Freighters were withdrawn from service across the world. Now, examples remain in museums in Canada, Australia and New Zealand, some still able to have the engines run and to be taxied.

SPECIFICATIONS AND PERFORMANCE TYPE 170, MK 31):

Powerplants:	2 X 1980 hp Bristol Hercules 734 14-cylinder twin-row radial engines.
Wing span:	108 ft (32.91 m).
Maximum Take-off Weight:	42000 lb (19050 kg).
Payload:	Typically, 44 seats (passengers only), 16 passengers and 5000 lb (2268 kg) freight for mixed payload, or vehicles, pallets, general cargo to fit and be tied down in hold and still remain within MTOW limits.
Range:	820 nm.
VNE (Never exceed airspeed):	165 knots.
Cruise speed:	141 knots.
Number manufactured:	214 (all variants).



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

NASA's X-59 (It goes so fast it can't have a windshield)

By Rob Verger

'Gear up, camera up, is going to be our checklist', say the pilots.

Today NASA is officially trotting out the finished version of an experimental aircraft that looks like a stretched-out arrowhead. Painted in red, white, and blue, the plane is called the X-59, and it has a lofty goal: to fly faster than the speed of sound over land, but do so in a quiet enough way that no one below is startled by a sonic boom.

The X-59. [Image: Lockheed Martin/NASA].

The aircraft's most noticeable feature is a nose that measures 38 feet long, which represents more than one-third of its total length of 99 feet and 7 inches. Tucked into a compartment behind that nose will be space for one pilot. But because the cockpit sits totally flush with the top surface of the aircraft—it's embedded in the body of the plane—there is no forward windshield for the test pilot to look out of when they fly. Instead, they'll fly using a camera system and a screen inside the cockpit to reveal what's in front of them.

But the two NASA test pilots who will operate the X-59, which is made by Lockheed Martin, appear to be unfazed by the fact that they'll be looking at a 4K monitor in front of them in lieu of a glass windshield. One reason for that is that the aircraft does have traditional windows in it—they just don't provide a view directly forward. A glass canopy surrounds the pilot, allowing them to look up or side to side. And the plane does feature two other windows that could theoretically provide the pilot with a glimpse looking forward, although their view is blocked by a wing assembly in front of them called a canard. "We jokingly asked Lockheed if we could get the Wonder Woman mod," says David Nils Larson, the lead test pilot, referring to Wonder Woman's fictional invisible jet and the idea of a see-through metal canard. "They said yeah, 'You don't have that kind of money.'"

X-59 airborne. [Image: Lockheed Martin].

The pilots say they're not worried about relying on the new external vision system, even if it were to malfunction. On the plane's exterior are actually two different camera systems to send imagery to

the screen in front of the pilot. One is a high-definition camera on top of the plane, which peers forward. The other is a retractable, lower-definition camera on the bottom that will look downwards and give the pilot a view of the runway as they land. If that camera protruded off the bottom of the plane for the entire flight, "that would affect the sonic boom that reaches the ground," explains Jim Less, the other test pilot. So, when the plane speeds up, the pilot also retracts the camera so it sits flush with the bottom of the plane. "Gear up, camera up, is going to be our checklist," Less says, referring to raising the landing gear after takeoff.

The reason for all of these unique design features—the cameras and absence of a forward windshield, the long nose, and other elements—is to ideally result in a jet that can slice through the atmosphere at supersonic speeds without producing much of a sonic boom below. Indeed, the aircraft went through multiple design iterations to reach its current form. When an aircraft breaks the sound barrier—which is around 660 miles per hour in an altitude range spanning around 36,000 feet to 65,600 feet—shockwaves form from air hitting the various physical points of a jet. Those shockwaves can combine to form two waves, one coming from the jet's front, and the other its tail. The result for people on the ground is that they hear either a double sonic boom or just one, if the jet is small. Either way, nobody enjoys being startled by a loud boom, which is why supersonic flight for commercial aircraft isn't allowed over land in the U.S., and hasn't been for more than 50 years.

Shockwave visualisation. Image: James C. Jensen/NASA]

NASA hopes to begin to change that with the X-59, which will fly at speeds of about 925 miles per hour at an altitude of about 55,000 feet. The goal is for the jet to not produce a sharp booming sound, but instead just a "thump" sound, the space agency says. It will ideally accomplish that because the shockwaves emanating from the jet *(see the visualization above right)* will not combine in a dramatic way. "That 38-foot nose that we have means that there's a pretty good space in between that initial nose shock, and the next shock that's going to be created," says Nils Larson.

The aircraft is officially rolling out today, but it's not going to take to the air until later this year. The pilots don't yet know exactly how it will perform when it's actually in the sky. "It's not a great handling aircraft," says Less, based on what it's been like to fly in the simulator. "It doesn't need to be—it's good enough for what we're going to do." Indeed, what they're going to do is cool enough.

About the Author:
Rob Verger
Rob Verger covers aviation, transportation, and military tech. his work has also appeared in Popular Science, Newsweek, The Daily Beast, Vice News, The Boston Globe, GJR, and other publications. he once flew as a passenger in the back seat of an f-16 and survived to tell the tale.

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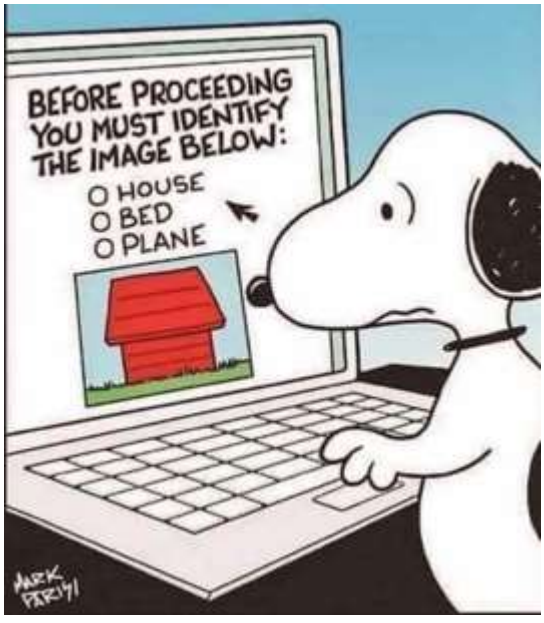
FLY-IN Invites Looming

WHERE	EVENT	WHEN
Murgon (Angelfield) (YMRG)	Burnett Flyers Breakfast Fly-in	**See website for next planned event".** **Confirm details at:** **http://www.burnettflyers.org/?p=508**

Screwdrivers, Drills Now Permitted On Boeing Flights, To Allow Passengers To Help With Maintenance



Remember when we had to smack the TV when it refused to act right, well I now get the same feelings when I see politicians on the screen

The Days of Our Lives (From a Flying Instructor's perspective).

By Rob Knight

Amand (not his real name) booked me to start his CPL training when I was the deputy CFI at the Waitemata Aero Club at Ardmore, New Zealand. A Lebanese, he told me, he was in New Zealand to get his CPL and instrument rating before returning to the Lebanon where he had an aviation career waiting. We sat in a briefing room and I looked through his logbook and set up a plan for him to progress through both the theory exams, of which he had, as yet, passed none, and a program to take him through the flight syllabus so he was ready for the test as he passed his last theory exam.

He sat and failed, and sat and failed the theory exams. We stopped his flying training to let him concentrate on his theory, but he still managed to snatch a "fail" from every potential "pass". Just before I left Waitemata, he called in and told me that he was enrolling in a full-time theory course so would get the one-on-one attention that he thought was needed.

I became the CFI at the Rukuhia Flying Club in Hamilton, New Zealand. Several months later Amand arrived out of the blue (in a car) and chatted for a while. Then, to my dismay and in front of everybody present, he offered me NZD$1000 for every CPL theory exam that I would sit and pass for him. Obviously, his full-time course had not been the benefit that he'd hoped.

I could see that he was serious so I made it into a joke and said how good it would be if we could all do that – it would make it so easy, and then I excused myself. He was upset at my refusal and left abruptly after making some unfortunate comments – unfortunate for him, too, as it happened, he 'd made himself and his conversation rather memorable.

Nearly a year later, I got a phone call from a close friend of mine in Auckland – Bruce James. Bruce was one of the two Auckland based NZCAA salaried Flight-Testing Officers, and he asked if he could ask a favour of me. Of course – and he told me that he was to appear in Court in Auckland charged with racism as he had refused to pass a candidate named Amand XXXXX for his CPL flight test. Bruce explained that Amand simply wasn't up to par with his handling skills, so he'd had no alternative except to fail him. Now Amand was suing Bruce and NZCAA for refusing him a license based on race, claiming he'd met all the handling skill demonstrations with ease on the test but a failure had been engineered because he was Lebanese and coloured.

With some amusement I gave Bruce the details of Amand's last conversation with me and added that there were plenty of witnesses. Within 24 hours Bruce's solicitor contacted me asking me to repeat what I had told Bruce. He then requested that I attend a Solicitor's office in Hamilton and swear an affidavit to the effect of my statement just passed to him. I attended, I did so swear, and it was quickly passed back to the defence Lawyer in Auckland.

When the prosecuting lawyer was passed the affidavit, the case was immediately dropped, but Amand had been warned and had hurriedly left New Zealand. Enquiries found that Amand had indeed paid for a stand-in to sit and pass his theory exams, and that person was now being charged with fraud and had seen his own CPL cancelled, with further action being taken. I.C.A.O. was advised of the situation and it's unlikely Amand has ever completed his CPL, anywhere, unless he did it under a different name.

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

WTF - The World's Worst Aircraft –

The Hafner "Rotabuggy" 1943

By Rob Knight

Designed by Austrian Raoul Hafner of the British Airborne Forces Experimental Establishment, the Rotabuggy was essentially a jeep converted into an autogiro as a way of giving airborne forces some ground transport. Initial flight trials, with the Rotabuggy towed behind a Whitley bomber, proved exhausting to the pilot who had to hang on to the control column which thrashed continuously around the cockpit. On flights where the tow cable remained attached there were some scary moments as the Rotabuggy, on the edge of a stall, touched down after the tow plane left and the driver took over. Development of vehicle-carrying gliders provided a safer and more efficient way of getting jeeps with more equipment (such as towed light guns) to the battlefield and the Rotabuggy never saw service.

Raoul Hafner, had enjoyed some success in developing the so-called Rotachute (the idea of using a rotor rather than a parachute as a means of pinpoint landing troops in enemy territory), and this led to the suggestion that the principle could be applied to larger loads. This prompted Hafner to propose the Rotabuggy, a rotor-equipped Jeep, and the Rotatank, a similarly-equipped Valentine tank. A contract to develop the former was placed with the ML Aviation Company at White Waltham in 1942, this being covered by specification 10/42.

The first trials connected with the development of the Rotabuggy consisted of loading a Jeep or, more formally, a Willys Truck 4x4 model MB, with concrete and dropping it from heights up to 2.35m to ascertain the amount of g that could be absorbed without incurring damage. It was found that 11g could safely be accepted, and a two-bladed rotor with a dimeter of 12.40m was the fitted, and a streamlined tail fairing, tailplane and twin fins (no rudders) were applied, together with a "hanging" control column, a rotor tachometer and glider navigational instruments. The Rotabuggy was first towed along the runway at high speed behind a 4.5 litre supercharged Bentley, eventually attaining towed airborne speeds up to 105kph IAS, the Rotabuggy becoming airborne for the first time on 16 November 1943. These trials took place at Sherburn-in-Elmet, near Leeds, where, eventually, the Rotabuggy was towed into the air behind a Whitley. The initial test behind the Whitley allegedly left much to be desired, the "hanging" control column threshing about and the "pilot" having to exert all his strength to maintain control. The initial problems were progressively ironed out, and the general handling and flying qualities of the Rotabuggy were eventually described officially as "highly satisfactory", but the availability of vehicle-carrying gliders rendered further development unnecessary.

The Rotabuggy had a gross weight of 1411 kg of which 964 kg was the empty weight of the Jeep and 249kg the weight of the rotor unit and tail. The design max speed was 130 knots, and estimated rates of descent ranged from 900 to 1950 fpm. The minimum take-off and landing speed was 32 knots, and basic and max sea level rotor speeds were 230 and 260 rpm.

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

The ~~Paper~~ Piper Glider.

The WWII story of Piper's entry into the field of gliders with their TG-8.

By Rob Knight M24-161

If you need to quickly train thousands of glider pilots, literally overnight, why not put them into Piper Cubs, Aeroncas and Taylorcraft and make them practice gliding and landing with power off? Then they can graduate into training gliders made from these same Cubs but without engines. That's what the U.S. did in WW II, and, guess what? It really worked!

The Germans surprised the rest of the world's military powers in using troop-carrying gliders in early in World War II. Allied powers, seeing the advantages this mode of troop transport gave to the German troops, began crash - programs to develop military gliders of their own.

In the USA, while troop-and other military asset carrying designs were being developed, the question of glider-pilot training was also raised. This resulted in the US Army Air Corps ordering several hundred examples of certificated two-seater training-type gliders and sailplanes that were already in production with the glider and sailplane manufacturers. They also contracted Schweizer, the high-performance glider manufacturers, to develop a new design designated as the TG-series and ultimately 153 examples of the mid-winged, TG-3A sailplane were produced. This was a new two-seater design, specifically produced for military training. However, due to the necessary lead-in time to get an adequate number of these aircraft produced, the military powers also bought up a large number of civilian owned single- and two-seat sailplanes.

The TGs were found to be perfectly adequate training sailplanes, but the goal of the training was in error – the end pilot-products were fancy-trained pilots with soaring skills, lacking the necessary dash-and crash, single, military type operations, where the aircraft were towed to the drop-zones and then cast adrift to land as best they could to begin their military action. These military troop and cargo carrying gliders were little more than crude aerial trailers and certainly didn't handle like dainty and available sensitive sailplane trainers used initially as trainers.

By early 1942, the shortage of glider-pilot training aircraft was obvious and, now convinced that the training gliders should handle more like the cargo types, the Army changed its methods. It arranged for Aeronca, Piper, and Taylorcraft, to remove the engines and conventional landing gear from their standard low horsepower, two-seat training light planes, and add a longer glider-type nose with an extra seat in it to maintain the balance. With no propeller necessitating the original undercarriage, these converted light aeroplanes were modified to have main wheels fitted right under the lower longerons to provide a ground-stable undercarriage similar to that used by the cargo gliders, instead of the single-wheel type used by conventional gliders and sailplanes. Three prototypes were ordered from each manufacture and, after testing, further orders for 250 production models from each we made: TG-5s from Aeronca, TG-6s from Taylorcraft, and TG-8s from Piper. When their limitations for the desired training of pilots was ascertained, these glider types were soon declared surplus and placed into storage until war ended.

TG-5, by Aeronca.

TG-6, by Taylorcraft.

However, the converted light aircraft also suffered performance drawbacks as glider-pilot training platforms, so the program was reoriented to give most of the initial glider training in powered

versions of these light aircraft where the aircraft were used as self-launching gliders – taking off and climbing, to then have the engine shut down, and finish the flight as a glider.

In Piper's case, to develop their TG-8, they took the military version of the J-3 Cub (the L4 Grasshopper) and, after removing its 65 hp Continental engine, converted it to a glider. This required the removal of its undercarriage and the retro-fitting of two mainwheels directly under the lower fuselage frame, and a third seat fitted forward of the previous front seat to compensate for the removed weight of the engine.

Piper's TG-8. The cabin doors can be seen, as well as the classic Piper main wheels – merely re-fitted, and original wing struts.

The now engineless fuselage was simply fitted with a rounded nose ahead of the new and forwardmost front seat, for streamlining. Note from the factory photo (left) that the original, horizontally-opening entry doors remain as do the struts and main wheels. In fact, apart from the addition of the spoiler system and the necessary new front cockpit canopy entrance, very few other changes were made to the basic, originally engine-powered airframe

Piper's TG-8 was the favourite because so much of the glider was design because it retained so much of the familiar L-birds. By utilizing cost-cutting exercises as using rudder pedal springs for the spoiler return springs and other techniques, the cost of the TG-8 came in well under the other TGs at $2108 per glider, considerable below either of the other two manufacturers competing for the Army, and now US Navy, orders. The US Navy, in keen competition with the US Army, were hell-bent on equipping their Marines with glider-borne attack troops, too.

TG-8 in flight – solo from the front seat

In the right is a Piper TG-8. Glider. These were so close in manufacture to the L4 Grasshopper and the J-3 series that many were re-fitted with the design's original engines and converted back into Cubs after the war.

One special feature that had been added to the glider versions of these aircraft was a wing mounted lift-spoiler system. Pilots with experience in using similar devices fitted to some of the Army liaison planes thought they were very advantageous for steep approaches and STOL operations, but the FAA demanded they be deactivated when the gliders returned to being powered became civilian aircraft. Note that the key word is "deactivated," not "removed," and it is interesting to note how many of those allegedly deactivated spoilers later managed to pop open at very convenient times.

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

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

1. A pilot notices that they have to maintain a small amount of left rudder applied to keep straight when cruising at normal cruise RPM. No other axes are affected so they decide to adjust the fixed trim tab on the trailing edge of the rudder. The pilot will adjust the trailing edge of the fixed trim tab by a small amount in which of the following directions?
   A. To the left.
   B. Up.
   C. To the right.
   D. Down.

2. When an aeroplane turns, its loading increases. Which of the options below most correctly describes why?
   A. Because the aeroplane's mass increases.
   B. Because, even though the aeroplane might be at a constant airspeed, it is accelerating.
   C. Because the aeroplane's weight increases.
   D. Because the weight of the pilot and any passengers increases.

3. Which of the following correctly depicts a veering wind?
   A. Wind blows from 170/20 and swings to blow from 150/28.
   B. Wind blows from 150/28 and changes to 150/15 knots.
   C. Wind blows from 170/20 and changes to 170/15 knots.
   D. Wind blows from 150/28 and swings to blow from 170/20.

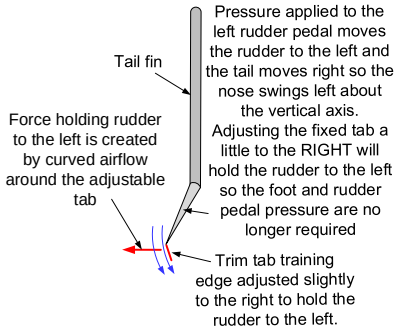
4. A text book states that, "In a climbing aeroplane, Lift < Weight. What allows it to climb, then?
   A. Because it has a high nose attitude.
   B. Because the pilot has the throttle fully open.
   C. Because the total aerodynamic reaction has a rearward component.
   D. Because the aeroplane has surplus thrust after equaling drag.

5. If a pilot sets the altimeter subscale to read 1013 hPa, what will the hands read?
   A. The current pressure altitude.
   B. The current density altitude.
   C. The current altitude of the instrument.
   D. Nothing specific unless the QNH happens to be 1013 hPa.

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 +61 4 0089 3632), or email me at kni.rob@bigpond.com.

1. A is correct.



The trailing edge of the fixed trim tab must be moved a little to the left to hold the tail to the right and thus the nose to the left.

2. B is correct.

Any object that is changing its movement path is turning and it therefore is accelerating towards the centre of that turn. The acceleration causes loading, so the tighter the turn the greater will be the loading.

3. D is correct.

A ***veering*** wind means the direction from which the wind is blowing changes in a clockwise direction around the compass. I.E. from 360 initially, and then from 010, is a veering wind.
A wind change going anticlockwise is known as a ***backing*** wind.

4. D is correct.

To climb, an aeroplane requires surplus horsepower, i.e., power over and above that required merely to offset the drag being generated.

5. A is correct.

If a pilot sets the altimeter subscale on 1013, the hands will read the pressure altitude of the aeroplane at that time.
Should the QNH ALSO be 1013, then the hands will also read the height of the aeroplane above mean sea-level.

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

Clyde Cessna's first aeroplane, the "Silverwing", being test flown in 1911.
Is this the real beginnings of a Citation VII?

Aircraft Books, Parts, and Tools etc.

Contact Rob on mobile – 0400 89 3632

Tow Bars

Item	Condition	Price
Tailwheel tow bar.	Good condition	**$50.00**

Aircraft Magnetic Compass (Selling on behalf)

Item		Price
Magnetic compass: Top panel mount, needs topping up with baby oil.		**$45.00**

Propeller Parts

Item	Condition	Price
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**

For all items, Contact me - on mobile – 0400 89 3632

Or email me at:

kni.rob@bigpond.com

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- All instruments including,
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- A Powermate rectifier regulator,
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A very comprehensive kit of materials

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Or Mob: 0419 758 125

Thruster T85 Single Seater for sale.

$9,750.00 NEG

Beautiful classic ultralight single seater taildragger Thruster for sale; to good Pilot. Built in 1984, this is a reluctant sale as I inherited Skyranger V Max and two aeroplanes are too many for me.

The aircraft at Kentville

New Engine Rotax 503 Dual Ignition has only 10

Fuel tank

Instrument panel

Details

Built - 1991	Serial Number - 312
Model - Thruster 85 SG	Rego Number – 10-1312
TTIS Airframe - 638	Original logbooks - YES
Engine - *NEW* Rotax 503 DIUL	Next Annuals due – 05/11/2023
TTIS Engine – 10 hours	Propeller – Sweetapple, Wood, 2 Blades (as new)

Instruments - RPM, IAS, VSI, ALT, Hobbs meter, New Compass, CHTs, EGTs, Voltmeter & fuel pressure gauge

Avionics - Dittel Radio 720C and new David Clark H10-30

Aircraft is fitted with Hydraulic Brakes. Elevator Trim. Landing Light. Strobe Beacon. Auxiliary Electric Fuel Pump.is in excellent mechanical condition and the skins are “as new”.

Offers considered. Call Tony on 0412 784 01

Sky Dart Single Seat Ultralight for Sale.

$4,500.00 NEG

A single seat, ultralight, Taildragger. Built in 1987, this aircraft has had a single owner for the past 18 years, and is only now I am regretfully releasing it again for sale. I also have a Teenie II and am building another ultralight so I need the space.

The landed Sky Dart III rolling through at YFRH Forest Hill

TTIS airframe is 311 hours, and the engine, TTIS 312 – is just 1 hour more. Up-to-date logbooks available. 2 X 20 litres tank capacity. To be sold with new annuals completed.

It is easy to fly (for a taildragger), and a great way to accumulate cheap flying hours.

Call me to view, Bob Hyam, Telephone mobile 0418 786 496 or Landline – 07 5426 8983, or Email: bobhyam@gmail.com

Landed at McMaster Field after my flight back from Cooma just West of Canberra. In the cockpit with me is GeeBee, my dog

Single Seat T84 Thruster, disassembled and ready for rebuild.

I have a T84 single seat Thruster project in my hanger at Watts bridge.

The fuselage is on its undercarriage, the wing assemblies are folded up and the skins are with them.

Included is a fully rebuilt Rotax 503 dual ignition engine and propeller.

And, most importantly – the aircraft logbook!

Asking price $5000.00

Contact John Innes on **0417 643 610**

Slipstream Genesis for Sale

Slipstream Genesis. 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 or mustering, and is not fitted with doors.

Registered until 13 October 2024, currently flying, and ready to fly away

Total Hours Airframe: 149.7. Current, up-to-date, logbook. Aircraft flying so these figures will change

Total Hours Engine: 1673.9. Annuals/100 hourly inspection due 07/06/2024. 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. Sale also includes spare engine ready to fit (logbook available).

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 $10,000 including spare engine.

Contact **Rob Knight tel. +61 4 0089 3632**, **or email** kni.rob@bigpond.com for details and POH.

Aircraft Engines for Sale

Continental O200 D1B aircraft engine

Currently inhibited but complete with all accessories including,

- Magneto's,
- Carburettor,
- Alternator,
- Starter motor,
- Baffles and Exhaust system, and
- Engine mounting bolts and rubbers.

$POA

Total time 944.8 hours. Continental log book and engine log are included.

Phone John on 0417 643 610

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