

REC WINGS

THE MAGAZINE OF THE CANTERBURY RECREATIONAL AIRCRAFT CLUB



- THE SOUTHERN ALPS IN RGB
- TURNING UP THE HEAT ON CARBICING
- WINTER FLYING ALBUM
- CLASSIC FIGHTERS OMAKA PART 2
- CHATHAMS FLIGHT?

JULY-AUGUST 2019



RECWINGS

is produced by a keen group of individuals within the **Canterbury Recreational Aircraft Club**.

To subscribe to the e-mailed edition please contact editor@crac.co.nz.

For back issues, head to www.crac.co.nz/magazines

Contributions for the next edition are due by September 12th. We invite contributions from all, with editorial discretion being final.

Brian Greenwood
editor@crac.co.nz

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Cover, our RGB at Omarama on June 2nd.

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CONTENTS

The Southern Alps in RGB	3
Turning up the heat on Carb Icing	7
Classic Fighters Omaka 2019 – Part Two	8
Winter Flying Album	14
Lake Coleridge and Omarama in November and December	15
Wings Over New Zealand Forum Meet	16
Chathams Flight?	18
Wingnut Wings 1/32 Sopwith Camels	20
Celebrating our successes	22
Committee Notes June-July 2019	23
Upcoming Events	24
New Members	24
Congratulations	24

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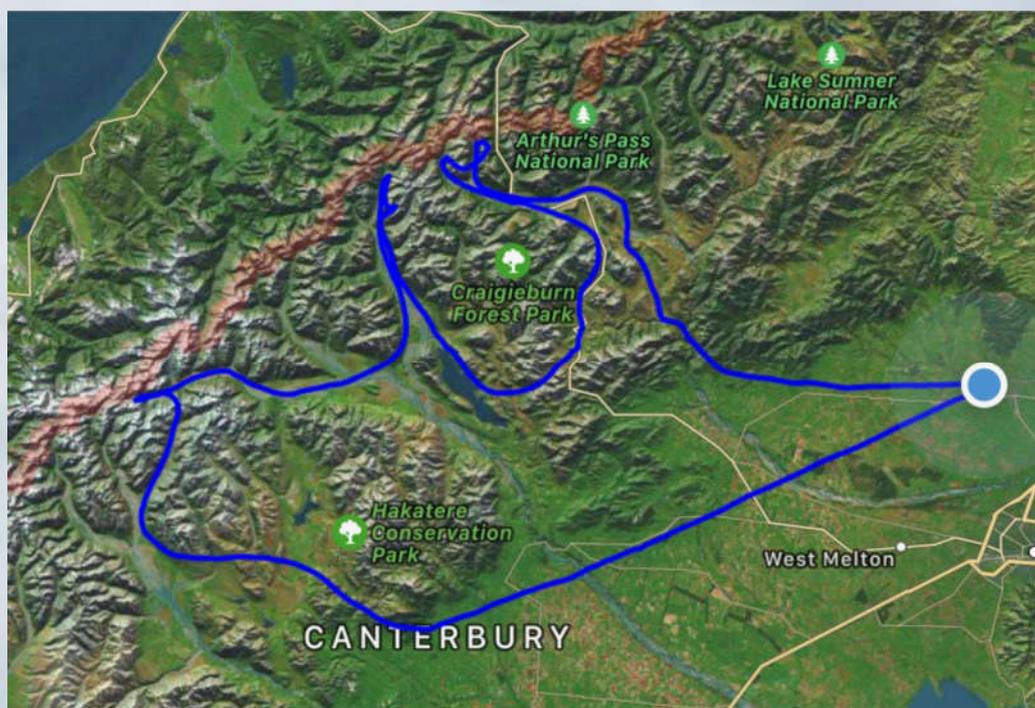
THE SOUTHERN ALPS IN RGB

PHOTOS AND PILOTS: TIM WILLIAMS AND WILL AITKEN

On Sunday, May 5, 2019, Will Aitken and Tim Williams did a Southern Alps "Tiki Tour" in the club Tecnam ZK-RGB.

They followed the Waimakariri, Rakaia and Rangitata rivers up to Mt Rolleston, Mt Murchison and Mt Whitcombe. Apparently, there was not a breath of wind and no bumps at 7,000 feet! They flew back across Butler Saddle (6135ft).

They had some very nice views of Lake Pearson and Castle Hill on the way round which they have kindly shared with us. The total flight time was 3.3 hours.





Left, Mount Whitcombe has greeted many pilots on the way to the West Coast



Below, Castle Hill Village on the way to Arthurs Pass.



Below, Castle Hill and Car Park. The Paddocks just off the bottom of this image were used as an airfield during the AOPA fly in last year.





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Above, Lake Pearson and State Highway 73, slightly out of order – this is prior to the Castle Hill photos.

A very popular lake for Salmon and Trout fishing.

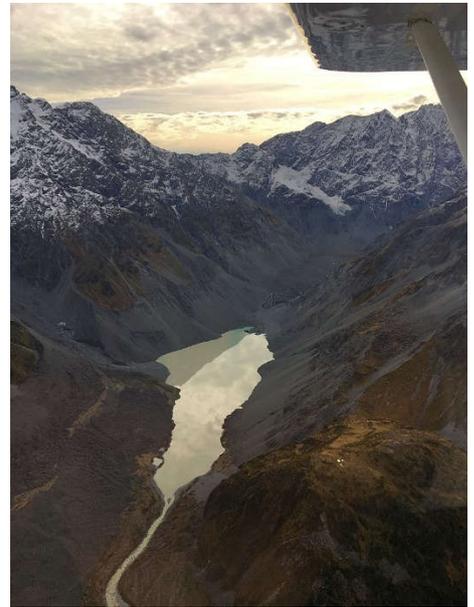
Left, the Waimakariri Gorge

Right, one of the many Ski fields – probably Porters.





Right, That's Mount Whitcombe in the right-hand background, and the unnamed lake (-43.271S,170.913E)



Heartfelt appreciation to Will Aitken and Tim Williams for supporting the club by supplying the photos and articles.



TURNING UP THE HEAT ON CARB ICING

GLENN MARTIN

Carb icing is the build-up of ice in the carb, usually in the throttle body, and it can block airflow into the engine. This can cause rough running, loss of power and even an engine stoppage.

Carb heat is a system that adds heat to the intake to melt the ice or heat the intake air and reduce the chance of ice forming. Carb heat is usually only applied when necessary because Internal Combustion engines produce more power with cooler intake air. The standard temperature that an engine is tested at is 15 degrees C, our Rotax 100HP will produce 100HP. However, at an inlet temp of 30 degrees this drops to 95HP and at 40 degrees to 93HP. So a small drop but it is a drop.

There is a quite a bit of information about carb icing and the use of carb heat, and many of us have had time in the older GA aircraft and have been taught "their way". Because of this some feel that the way we use carb heat in a Tecnam, or on a Rotax engine should be the same as what we did on a Piper, or Cessna 20 years ago.

However there are some differences. To add confusion to this Rotax does not have a standard carb heat process and lets the airframe Manufacturer decide the "rules". *From the Rotax 912UL manual:*

Icing in the air intake system

Icing due to humidity.

Carburettor icing due to humidity may occur on the venturi and on the throttle valve due to fuel evaporation and leads to performance loss and change in mixture.

Remedy •

Intake air pre-heating is the only effective remedy. See Flight Manual supplied by the aircraft manufacturer

If you have a POH from the Airframe Manufacturer you should follow their recommendations (NOT what you were taught in another Aircraft). I have reviewed a few of these and they are all pretty vague or different to the traditional engines.

Many Rotax powered Aircraft and Rotax Installations do not come with Carb heat as standard. There is some logic to this, without getting too technical, the Constant velocity Carb and the Carb positioning on a Rotax means that Rotax engines are less likely to experience carb ice than a Lycoming or Continental. Secondly, as we do not fly in cloud and IFR, we are less likely to be in extreme icing conditions.

Please note that "less likely" does not mean you will never experience carb icing, it is just not common. The old Club aircraft (Rans S6) never had carb heat, and it took two years before we experienced a carb icing issue in the club Tecnams so decided to add the carb heat system.

So what do we recommend for the Tecnams ? The POH does not say much...

Tecnam P92 Eaglet LSA Manual

1.7.6 Carburetor Heat

Carburetor heat control knob is located just to the right of the center throttle control. When the knob is pulled fully outward from the instrument panel, carburetors receive maximum hot air. During normal operation, the knob is OFF

We are fortunate to actually have an airbox temperature gauge, in addition unlike the old systems we can have the carb heat off, fully on or in-between. Many Rotax powered aircraft suggest maintaining a temperature "range" The Savannah S says a minimum of 18 and a maximum of 35 degrees, however our personal experience would suggest that 18 is too low and you can have carb icing at that temperature ...just ask Vanessa!

For the club aircraft we suggest maintaining about 30-40 degrees which should mean you are well in the safe range.

At 35 degrees you will only lose 5 HP in a Rotax 80 HP.

Therefore the carb heat "on" during descent is only relevant IF the airbox is less than 30 degrees, and again the carb heat "off" on final is not part of the checklist.

The only instruction is to maintain a minimum of 30 degrees in the airbox at all times.

CLASSIC FIGHTERS OMAKA 2019 – PART TWO

PHOTOS AND WORDS: BRIAN GREENWOOD

This year's theme was "Women in Aviation", with a salute to some of the pioneering women aviators and also those of more recent times.

It was good to hear the wonderful **Pam Collings** reminisce about her aviation experiences, especially her Aerobatic performances. As a youth I had a poster of her aircraft, a Pitts Special, adorning the wall and encouraging me to try harder to get flying. I'm pretty sure these posters were sold to help finance her to the World Aerobatic Championships in Kiev in 1976.

Pam made it to Europe but a weather diversion and comms issues kept her away from Kiev until after the event. She had to wait another four years to compete at the next event at Oshkosh.

Back in New Zealand she was a major driver for the establishment of the New Zealand Precision Flying Team, and coached it to the World Championships in Florida in 1985. New Zealand even hosted the event in 1999.

She became an Aviation Safety Educator for the CAA, and retired in 2006 having made "an inestimable contribution to flight safety" according to the Director of Civil Aviation at the time. In 2001 she was made a Member of the New Zealand Order of Merit for services to aviation.

Pam commentated during the Pitts Special display by **Andrew Love**, who introduced quite a few of our club members to aerobatics in the last year or so (photos, the red Pitts on this page and next).



ZK-FRJ wasn't the only Pitts displaying at Omaka, ZK-PIG was flown by Noel Kruse (**Right**). Noel's a pretty amazing pilot, an ex-RAAF man with over 18,000 hours. He displayed his beautiful Ryan STM S2 at the show as well (**below**).

ZK-PIG is an ex- Royal Jordanian Air Force aircraft, it was part of their "Falcons" formation aerobatic team. Noel Kruse has written a series of books on the technical side of aviation and practical ways to stay safe, which are downloadable from www.flybetter.co.nz (with an optional Paypal contribution if you would like to support him).

The fabulous art work produced for the airshow (**below right**) featured a poster of Harriet Quimby, who was the first American woman to earn a pilot's licence (and the second in the world, after French woman Elise Deroche).

The original poster is owned by the Smithsonian Institute and shows Harriet Quimby standing in front of a Bleriot XI aircraft.



A shout out to the media contingent, including Rachael Brown, Gavin Conroy, Geoff Soper, Rob Hynes, John McCaw, Barrie Collins, James Kightly, Ross Stirton, Allan Udy, Wendy Wilson, Stewart Wilson, Steve Zimmermann, Dave Holmwood... who have I missed?!



Other Women in aviation who were honoured at the show were Liz Needham, Amelia Earhart, Jean Batten, Louise Thaden, Jackie Cochran, Pancho Barnes, the WAAFS and ATA, Hannah Reitsch, Countess Melitta von Stauffenberg, Lilya Litvyak, the USSR's 588th Night Bomber Regiment (the "Night Witches"), and "Rosie the Riveter". The latter represents the many women who worked in U.S. Aircraft factories, but really should be seen as the women in the workforce on all sides, remembering that this started in World War One.



Another aspect of the airshow is the Friday evening "Twilight" show. This year was no exception with plenty of entertainment after the flying ceased, including two wonderful witches-on-broomsticks (below). These were radio controlled models with the cape acting as a wing (similar in plan view to a hang glider) and

the propeller, well, let's say "just in front of the cat"! A truly worthy fireworks display finished the evening off in fine style.



Classic Fighters Omaka fundraises for the superb Omaka Aviation Heritage Centre. It can't have been easy for the show organisers, having been affected by the Kaikoura Earthquakes and predictions of bad weather this year, plus the absence of The Vintage Aviator collection.

The organisers pulled off a top-notch event with everything from a Bleriot through to F-18's. Truly world-class entertainment! I hope this year's event brought them the success they deserve.

A personal opinion...

When I think of the civil aviation heroes of my youth (Tait, Clouston, Earhart, Johnson, Batten, Henshaw, Collings – those that I can remember) around half of them were women aviators. Although I never really noticed at the time, I am sure this kind of subconscious role modelling had a major positive influence on an impressionable mind. I grew up knowing that gender made no difference to what an individual may achieve in their life.

Which does pose the question, why don't we have more women aviators? I can (barely) understand that not everyone is interested in being a pilot, but I suspect that the real reason is that it's just not seen as an obvious option for many women.

Whatever the real reason is (I'm a bloke, pretty sure I am 90% wrong about everything!), in my opinion we need to support all budding aviators, but perhaps with a little more encouragement to those sectors sorely under-represented in the current aviation community. Send your positive suggestions to the committee, please.

Finally, a quick shout-out to, and an appreciation of, those women in our club who have continued the tradition of demonstrating that the skies are truly equal. I'd also like to acknowledge the good work of the NZ Association of Women in Aviation (formerly the NZ Airwomen's Association) in this field.

Thank you to Classic Fighters Omaka for such a worthy and honourable theme. To quote one of the airshow commentators (I think it was Graham Orphan) – "It's so obvious, I'm not sure why we didn't think of it earlier!"

Right, one very historic aircraft – Bill Reid’s Lockheed Hudson NZ2049 was the first RNZAF to see combat in the South Pacific against the Japanese. It survived its first combat, an 18 minute duel against three Mitsubishi Zeroes. Post-war it was purchased by John Smith at Mapua who sold it on to Bill Reid in 2007.



Below, Graham Cooper has noticed a similarity between a late version Junkers Ju-87 Stuka and a Zlin



topdresser. So he's making a Stuka replica out of a Zlin!

Below, the Yak 52's did their magnificent display, it's a real treat to see large formations of aircraft performing together (and sometimes opposing), these guys are a credit to aviation.



Bottom, it may not be an aeroplane, but it definitely has wings! This, and a few others of its ilk were part of the "South American Supply drop" scenario.





Frank Parker brings the Chariots of Fire Fighter Collection's Spitfire XIV in for a perfect landing on a slightly damp Sunday morning. Thanks to **Barrie Collins** for giving me a camera rain cover and making this photograph possible. © 2019 Brian Greenwood

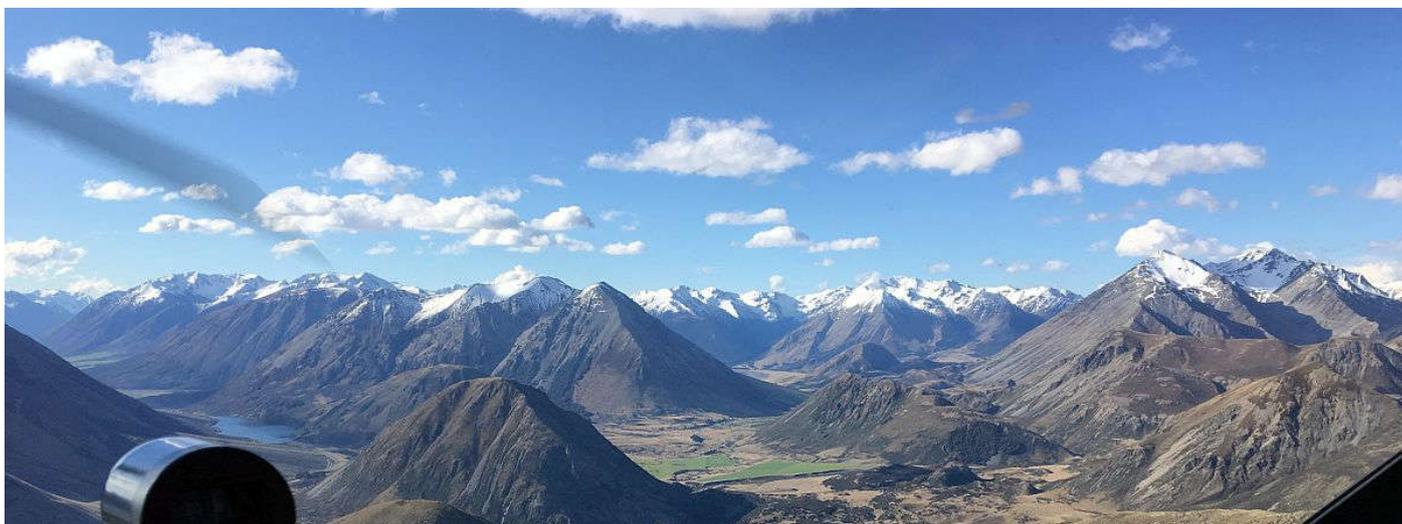
WINTER FLYING ALBUM

WILL AITKEN



Will Aitken and some of his mates have been travelling around the South Island in the club aircraft and has sent in quite a few gorgeous photos of it all. The photos on this page are all from the Ashburton lakes to Kaikoura flight on June 3 and left is RGB at Omarama on June 2nd.





LAKE COLERIDGE AND OMARAMA IN NOVEMBER AND DECEMBER

WILL AITKEN

A November late afternoon flight to Lake Coleridge with just enough snow on the mountain tops to make the photos look good. It was 6pm when we were nearing Lake Lyndon and there was still tonnes of daylight left! No one should be at home watching tv on days like this, they should all be out flying the Tecnam. Lucky that I got a booking! Great views along the valleys up towards Castle Hill and Lake Pearson. Some more places to tick off on a future flight.

One of the next flights on the list was Omarama, which we did in December. Flying over Twizel was spectacular. There was some canoe racing going on, too many to count but they were there in their hundreds. Camped out.



The things you see that you don't expect when you're drawing your lines on the map, makes it all worth doing.

We landed at Omarama - hadn't even got the door open and I was being offered a cup of tea over at the gliding club. This is alright, I thought, I must be in the right place. Turns out they even had some home-made biscuits.

Must have had something to do with 'Canterbury Recreational Aircraft Club' being painted on the side. The club

must have a good reputation, thanks for that everyone.



There was quite a bit of activity going on with the gliders and there was a big briefing about to start just before I left. Perfect chance to take off. Climbed a bit higher on the way back hoping to catch the tailwinds that were forecast. We managed 125 knots ground

speed at 7500' before having to come down under the control steps. Not bad for the Tecnam and it was smooth sailing all the way. NZRT-Lake Coleridge-Rakaia Gorge-NZRT was 1.6 hrs and Omarama return was 3.6 hrs on the hour meter in RGA (1.4 back in the tailwind). Great flights.



Above and right, the tracks of the two flights mentioned in the article.

Below, not a bad view out the window...



WINGS OVER NEW ZEALAND FORUM MEET BRIAN GREENWOOD

Regular readers (both of you) may recall that I was lucky enough to attend the Wings Over New Zealand forum meet at Wigram in July last year.

The event is being held again in Christchurch on Sunday September 1st at 10:30am (Fathers Day). It is once more being held at the Air Force Museum of New Zealand's Theatre in Wigram.

As always, it is hosted by Dave Holmwood (Historian, Journalist, and Editor of Sport Flying Magazine). Guest speakers (and there's some great ones!) are announced here:

<http://rnzaf.proboards.com/thread/27670/force-museum-zealand-forum-meet>

Tickets are only \$20 and there are a few left – I highly recommend this enjoyable day, e-mail dave_daasnz@hotmail.com to purchase tickets. See advert on page 23.



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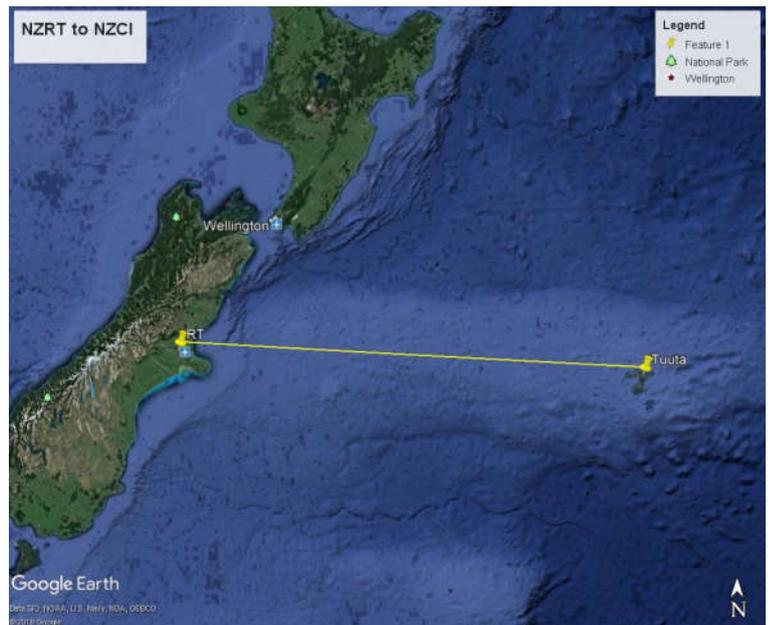
CHATHAMS FLIGHT?

GLENN MARTIN

Stretching my legs...and a request for some help.

One of my dreams about flying was going beyond the confines of the mainland, so when I was looking at getting a plane I added wing tanks and a few features that may help. My “gung ho” days are long gone so I wanted to build up my skills with planning, navigation, weather, and flying to “new places”. I also needed to build confidence in the plane - could I trust it?

Well 560 hr on the Sting and it never missed a beat. I have flown, so far, to 99 AIP airfields and many Ag strips, I have over 900 hr now and done flights over 7 hr. So, I think it is time to start planning.



People have asked why? is it not just sitting on your bum for five hours listening for an unusual noise in the engine? Well I will definitely be doing that, but I enjoy investigating things and there is a lot of planning and preparation for the “what if” ...

I may in fact hate the whole thing, that is why I am starting with “only the Chathams”.

I know there is a huge amount of experience within the club and the wider community, and as I do not know what I do not know I am asking for advice now before the trip. If you have some experience or sage advice, please call me. Also, if you want to come along?

The plan so far...

The Basics

NZRT to NZCI is 480 nm or 889 km. It is on a heading of 83 degrees mag so almost exactly due east. The islands are about 45 nm from North to South.

Navigation

Therefore, if using a compass, you need to stay within +/- 2.5 degrees for five hours - something I have not managed to do in practice. Clearly Lindbergh was a better navigator, then again, he was aiming for Paris and hit Ireland!

After the sextant/compass/watch era, nav instruments came in including VOR/DME/NDB etc then GPS. Many of these are closing and many planes now do not have the instruments anyway. The Chathams still have an NDB but I do not have an ADF and cannot seem to find a portable one to use.

So, I am left with the GPS and “dead reckoning” as a backup. The GPS is good, and I will have at least three in the cockpit, but what if Donald Trump has a tizzy and turns off the system?

Dead reckoning is actually a technique, on top of what we teach, and I will study it some more, it worked for Amelia...most of the time.

I have “spidertracks” in the cockpit and will probably take a “Spot”...no, not the puppy.

AvPlan will help, although there is a “glitch” in that the map does not work for RT to CI. Bevan Anderson, the AvPlan founder, promises me he will fix it before I go.

My plane has a Garmin which seems to be OK with the plan.

Fuel

The Sting is reasonably efficient, after 560 hrs I know that it burns 15-16 L an hour at 100 kt IAS. I have $(77+22+22-7= 114L)$ and the flight should be $(4.8*16=77L)$ plus 45 min reserve= 89 L. So 25 litres to spare. But what if I get there and cannot land due to bad weather? I would need enough to come back. Therefore, I am looking to borrow or buy an extra fuel bladder of at least 60 L.

Oil

The Rotax 912IS manual says an oil burn of up to 60 ml per hour, so a 10-hour flight would use 600ml. In my experience the IS engine uses far less than that, perhaps 300ml in 100 hr. It should be OK just top up before leaving.

Toileting

Well, go before you go, and I have some inflight facilities - hopefully will not need them.

IAS/TAS and GS

The Sting can go faster, but 100kt “indicated airspeed” is pretty fuel efficient. Going high where the air is less dense helps and I often do that on long trips. 100kt IAS at 10,000 ft is actually 120 kt “true airspeed” now if I only could get up to 30,000!

Under NZ CAA rules without oxygen you can only fly at 10,000, whereas the FAA says 12,500 and of course some young, fit, and acclimatised people climb Everest (26,500) without oxygen. So how high can I personally go? Everyone is different and being older does not help. There is a way of measuring your O2 status using a clever little device

<https://www.avweb.com/flight-safety/recommended-use-of-pulse-oximetry-in-aviation/>

The problem with Hypoxia is that you lose your smarts first, and I am already limited there anyway. One way to test yourself is the “long division test”. Basically every 30 minutes you do three preset long division equations on paper, get two wrong and you are losing it - time to go lower!

Some Garmins have an “are you awake” alarm, asking you questions every 20 min if you have not moved the controls, no answer and the autopilot will descend to a pre-set height, very clever.

So, assuming we can do 120kt TAS should not the equation be even better? The 4.8 hr flight becomes a 4-hour flight. Well of course there is “ground speed”, or in this case “water speed”, if I am lucky I may have a tailwind, but a 20kt headwind is also very possible, especially coming back, our weather comes from the west. Those of us whom believe the earth is a globe, a diminishing number, would need it to spin the other way, just for a day.

Swimming

The worst case is of course that after 600hr of smooth running the engine decides to take a holiday. That means 20 minutes of gliding and a big swim. The standard options include a drysuit to help keep warm, I will need to buy/rent/borrow a liferaft and the ELT and PLB will come into good use. I am useless at fishing, so a couple of snacks seem to be in



order. Then just hope Vanessa is not out in the Savannah and wants to call the RCC!

Chathams

The runway at Chathams is, of course, huge so should be easy for any microlight type aircraft. I know a microlight group flew there a few years ago so it will only be a new experience for me personally. I need to check on the availability of fuel (95 or Avgas) and some accommodation and take time to look around.

Coming home

That will probably be against a head wind, but at least finding the South Island should be much easier.

When

Well, having longer days would be a good thing so perhaps this summer. Work and other stuff often gets in the way, so it is not certain.

Should you want to come along, give advice, persuade me against it please feel free to have a chat.

Glenn

WINGNUT WINGS 1/32 SOPWITH CAMELS

BRIAN GREENWOOD



Why not build two models at once, thought your intrepid editor – surely it will be a lot quicker than building them separately? I'm not so sure now – it still took 7 months of "free" time to knock these out.

Wingnut Wings released these kits in February 2017 to much acclaim – and surprise. Generally WnW will not release a kit where there is another acceptable model available from another manufacturer. However the second-runner up (The Academy kit, I believe) is not that flash and can be hard to get.

These kits come in several flavours, namely the Le Rhone, BR.1 (Bentley-engined), Clerget, USAS, and Ship's Camel editions. My builds are the Le Rhone (aluminium cowling, *right*) and the BR.1 (red cowling) versions. Pleasingly, these kits haven't yet sold out, they're still available.



As always, construction begins in the cockpit. Re-creating the wood grain on this type of aircraft is one of the fun

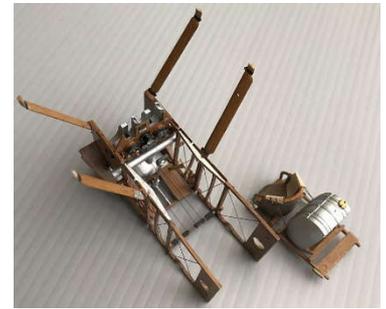
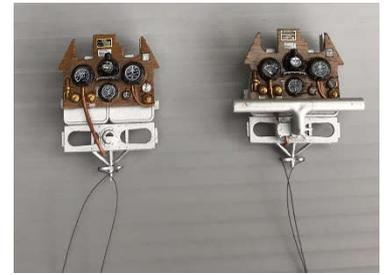
jobs that I find quite therapeutic. I follow the tips on the WnW web site, spraying the parts with Tamiya XF-59 Desert Yellow, then gloss coating them, and overlaying with different shades of artist's oil paints with a stiff brush.

I have seen other modellers use water colours, and a few are now using wood-grain stencils and simply spraying over the top. There are some wood-grain decals available too, but obviously they're only suitable for flat panels. Some just paint the parts a suitable brown – whatever floats your boat is fine.

Tip right, the "Instrument boards" ready to install. The aluminium cross pipe on the right-hand one is the carburettor air intake which extends through the fuselage sides. The cables are for the rudders which connect to the small "T" piece at the bottom of the board, which are connected to the rudder pedals.

Photo four – these are quite complex kits, I needed two hands to hold the firewall flat and another to apply the Tamiya Super-thin cement.

Below left and right, I found some white metal "Gary Hunt" brand 1/32 RFC figures very cheap on Trademe - obviously I am still a learner when it comes to figure painting.



These are not kits for beginners because of their complex engineering but they build beautifully, like all Wingnut Wings models.

I have also changed my rigging technique from invisible cotton to the WnW-recommended method of using EZ-Line elastic thread. It seems to be OK.

The Bentley-engined aircraft is in the markings of Captain Arthur Roy Brown (who was originally credited with downing the Red Baron), and the Le Rhone-engined one is of F.M. Ohrt's aircraft, a USAS pilot flying with 54 Squadron RFC.

As always, these superbly accurate museum-quality kits are a joy to build and are recommended for anyone with a little experience. 10/10



CELEBRATING OUR SUCCESSES

Right, Tim Williams and Instructor Dave Mitchell training in the Karatoo on May 6th (operated by Southern Taildraggers, contact them if you're interested!). Will Aitken likewise did some training with Dave.



Left – top to bottom, Mark Cummins soloed on May 26th

Oonagh Day Soloed on July 2nd

John Camp Soloed on July 7th.

Congratulations to you all on your fantastic achievement!



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The Air Force Museum of New Zealand
Harvard Avenue, Wigram
10.30am, Sunday 1st of September 2019

Featuring Guest Speakers

Buck Harrison - RNZAF Helicopter Crewman
Paul Harrison - 35 Years in the RNZAF
Louisa Hormann - The Guinea Pig Club
Barry Lennox - The Atomic Bombs That Ended WWII
Alex Liggett - Ferrymead's Mosquito Restoration
Andrew Love Competition Aerobatics
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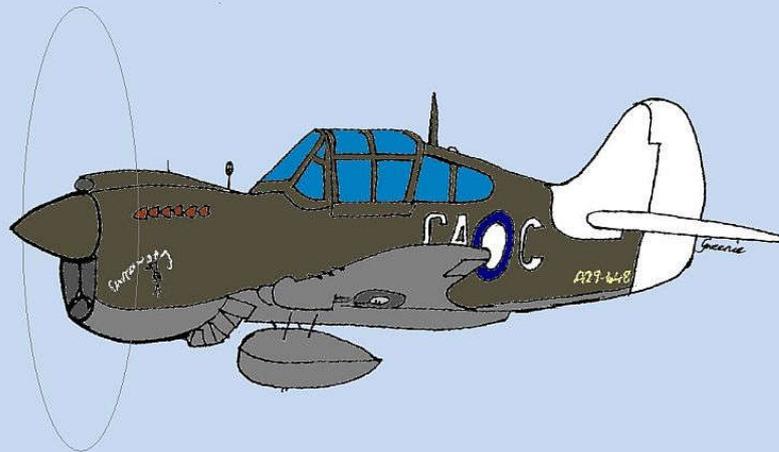


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COMMITTEE NOTES JUNE-JULY 2019

- Balance paid on RGC (June), Expect that loan will be paid off quite quickly
- Aircraft Use/Hire agreement updated
- "Currency" (BFR/Meds/membership) tick box may be incorporated into booking system
- June: RGA 36 Hours, RGB 36 Hours
- July: RGA 41 Hours, RGB 47 Hours
- Spare nose wheel tyre inner tubes being purchased as spares – hard to get and need replacing regularly
- New LED strobes to be purchased for both A/C
- Club Safety Management document updated
- Air Conditioning in Club house repaired
- CRAC Open day set for November 2nd. Sub Committee to be formed.
- Submission to Rotax for Gearbox claim drafted
- Aircraft Hire rates and Hangar rentals being held at current levels, reviewed later after WDC increases
- Replacement fuel cap for club A/C ordered after one was lost!
- RGC Insurance due this month
- RGB Due 100 Hour service
- RAAENZ Part 103 "On Condition" engine life extension program is to become operational. Appointed IA's are currently Colin Alexander, Wayne Lindebaum, and Peter Kempthorne. More expected to apply.
- Safety matter (Rejoin incident) at NZRT reported to CAA
- Test fit of three Tecnams into the club hangar area being staged in anticipation of RGC's arrival
- First Aid kits and thermal blankets in both Aircraft being updated.
- Dehumidifiers for guest bedrooms at club house now considered unnecessary
- Video advertising through "Giggle" now operational.
- Potential new club instructor introduced



LIZ NEEDHAM AND P-40N-1 "CURRAWONG"

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WHATSAPP

CRAC Drop Of The Hat
CRAC Revolution (for chat)

FACEBOOK

www.facebook.com/flyCRAC



Interested in joining us?

E-mail secretary@crac.co.nz or use the online application form.

We can send you an information pack which includes membership details, costs, and joining forms. Membership enrolls you for the magazine, too.

UPCOMING EVENTS

July - Club Fly away to Culverden and Kaikoura (subject to availability of event organizer)

August - Springs Junction/Hokitika

September - Precision Landing with glide

October - Poker run and BBQ

November - Oamaru Steam Punk Museum

January - Time Trial & BBQ

February - Stephen Fields BBQ

Keep your eye out for weekly club e-mails (the CRAC Rap), join the **CRAC Drop Of The Hat** WhatsApp group for informal group fly-aways. Join **CRAC Revolutionary** for general chat and good-natured banter.

COOL LINKS

www.flybetter.co.nz - free/donationware books on safer aviating and technical instruction - recommended reading.

www.raanz.org.nz

nzcivair.blogspot.com

rnzaf.proboards.com

CONTRIBUTIONS AND ATTRIBUTIONS

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Disclaimer: This magazine is prepared by dedicated enthusiasts; the opinions expressed herein are not to be taken as official club policy, nor do they necessarily reflect the views of our sponsors or advertisers.

NEW MEMBERS

Welcome aboard to:

Kenneth Mitchell

Mark Jones

Brian Eney

David Wells

Richard Martin

Max Robertson

Gary Cotterell

Brian Pentecost

Damien Hemingway-Mills

Hamish England

Please make our new friends feel welcome.

CONGRATULATIONS

Steven Wollenweber, Adv. Local

Pietro Zugnoni, Adv. National

(Thanks to RAANZ's RecPilot e-zine)

NEXT NEWSLETTER

Contributions for the next edition are requested, publishing deadline September 12th, 2019 ("ish").

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Brian Greenwood, Editor

(editor@crac.co.nz)

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