



# HAWERA AERO CLUB NEWSLETTER

IT'S YOUR ATTITUDE THAT COUNTS

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**Instructor Cell Phone:**  
Amelia— 027 699 0947

**Email:**  
[secretary@haweraaeroclub.org.nz](mailto:secretary@haweraaeroclub.org.nz)

**Website:**  
[www.haweraaeroclub.org.nz](http://www.haweraaeroclub.org.nz)

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**PH: 06 278 6301  
FAX: 06 278 6301**

**STATE HIGHWAY 3  
PO BOX 316  
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From the President.

Last month I wrote about the Patea Aero Club scholarships and I would endeavour to get a little background on when and how the scholarships got started. The Patea Aero Club was formed in 1963 and operated for many years from the Simpsons property at Whanakura. My association with the club began in 1967 when I would often travel with Hawera's instructor, Harry Scott, on a Saturday morning to Patea where he would instruct in their Piper Cub PA18, BQV, A year or so later as a new PPL I did a type rating in BQV and so began my interest in and liking for the Cub, one of the nicest aeroplanes there is for the pure enjoyment of flying. I again met up with BQV in 1998 when on my way to Warbirds over Wanaka flying in our Cub BRY, met up at Palmerston North and really travelled together to the Wanaka airshow and back.

Earlier this year when flying home from up north in EOS decided to land at Raglan for a coffee stop. Well, landing just ahead of us was BQV, also stopping in for a coffee. We parked along each other and it was really good to catch up with that elderly cub looking every bit as good as it did in 1967, over 40 years ago.

Now back to the Patea aero club. After selling the cub the Club bought a C172 CEY, which I also flew from time to time. The Club sold CEY in 1990 and resolved to wind up the flying side and put the sale proceeds into a trust and use some of the interest earned for flying scholarships to be run through the our Club. There have been several who have benefited from these scholarships so many thanks to the trustees who administer this trust. As a matter of interest there was also an Aero Club at Waverley for many years.

I was also going to write about some of the school students who have visited the club recently including 13 who did trial flights but that will have to wait until next month.

Ralph Gibson



# NEW MEMBERS

We have a number of new members this month. We at Hawera Aero Club would like to welcome and introduce —

**Iain Taylor**  
**David Finer**



[www.flyingnz.co.nz](http://www.flyingnz.co.nz)

Congratulations to Ben Dickie  
First Solo May 12th 2008

See our Newsletter  
online on FlyingNZ  
website.

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Thank you to Tony Muller for cutting down the trees on the entrance way to the aero club. All the truckie drivers and tractor drivers are thanking you.

If we are to get the club competitions underway, we will need to do that soon, so if there are enough people at the club on any day, probably Sunday we may try and do some of the competitions.

## The Frogley Cup.

We on the West Coast of the North Island compete for the Scotts Trophy, which was named after a Stratford aviation identity, this landing and bombing competition is currently fought between the New Plymouth, Hawera and Wanganui Aero Clubs.

On the East Coast of the North Island a similar battle has been raging for a number of years as well, this landing competition called The Frogley Cup named after a well known East Coast Aviation identity. The Hawkes Bay & East Coast Aero Club at Hastings, The Central Hawkes Bay Aero Club from Waipukurau and the Dannevirke Flying club compete for this Cup during their annual Breakfast Fly-Ins.

The rules differ slightly for The Frogley Cup. Its open to those Clubs members and they can fly their own aircraft, the PPL's don't require an instructor and as mentioned above it is a Landing Competition only.

The most recent encounter was at Waipukurau, see Club Captain Julie's report elsewhere in this Newsletter, 27 competitors enjoying the conditions, with CHB Aero Club narrowly winning over the Dannevirke Flying Club.



# Last date to send in articles for next months newsletter is **Thursday 26th June**

## UNB's Ancestor

**VH-UNB de Havilland D.H.60M  
Moth (c/n 1408)**

This aircraft was first registered to Qantas on 22 December 1929. It seems that shortly after they acquired it, the aircraft was being piloted by Captain Lester Brain when he evidently ran into mechanical problems. An emergency landing was made in a paddock at Farnborough, near Yeppoon, Queensland. The above image, from the John Oxley Library, State Library of Queensland collection shows it shortly after that landing had been accomplished. On 8 March 1930 ownership of the aircraft was transferred to a Mr A.E. Johnson of Yeppoon. Sadly, a month after that title transfer, on 24 April 1930, VH-UNB crashed at Ayr, Queensland. Whether Mr. Johnson was flying it at that time, or what injuries/fatalities were sustained has not been established. In any event, the aircraft was a complete write off.



## ✈ AIRCRAFT PROFILE ✈

### **Postscript to ALM flight through Hawera**

After departure from Hawera we made our way up the coast as planned, finding reducing headwinds as we progressed and with 7:00pm imminent found ourselves on short final to Raglan. That was all according to plan but how long did we have for the final leg to Ardmore and could we reach it before Civil Twilight? We agreed it would probably take us 45 minutes to reach Ardmore and by the time we had shut down it had slipped past 7:00pm. We decided we had to be airborne by 7:15 calculating a need to be at Ardmore just before 8:00pm. That meant we had less than 10 minutes to put in our 20 litres, get ALM started again and be lined up for departure. Tiger Moth operators will know this would be no ordinary achievement. However, we agreed this was the plan so got cracking. ALM fired up on the first pull and we achieved lift off precisely at 7:15pm and headed direct for Ardmore. It was all down hill from there and after an uneventful 30 minutes we found Ardmore and landed at 7:44pm, which I know is the right time because Ardmore's landing fee account

confirmed it. Greeting us on arrival with a cold beer was Lindsay King our co owner who, we discovered, had been patiently waiting for us since 4:30. Please pass on our best wishes to all at Hawera who were so helpful and helped make this memorable experience for us. We shall certainly be looking forward to returning and making a more leisurely visit to one of our favourite Tiger destinations. We may even have a few more Tigers with us.

Regards,  
Eddie and Paul Doherty



## Waipukurau (NZYP) Dawn Raid

In the lead up to the 18th of May, EOS was booked and Graeme Bycroft and I were planning to fly to the first of the annual dawn raids of winter. But a number of things did not work in our favour, with us both being due to complete our Biannual Flight Review (BFR) a trip was needed to New Plymouth. Then there was the issue of Graeme not being rated on any of our planes. We have high wings on the west, strangely on the east they fly low wings, maybe its something to do with the sun rising there first!

But there was sunlight at the end of the tunnel, rumour of a bored B Cat wondering the area looking for additional work, well maybe not looking for it but it found him. Julian Wicky was taking a day off work from Massey University flight training to be in Hawera. So a on Monday, Graeme and I both sneaked of the Fonterra site (at different times) to go flying with Julian. But again our plans didn't go to plan, I never finished my BFR, and Graeme did but not the paperwork, so still both unable to fly.

We still had 6 days until the fly in so I booked my part two of my BFR in at New Plymouth on Saturday, with the flight the next day I wasn't holding my breath.

Again the world worked against us and on Friday during busy flight training, UNB broke down and Amelia resorted to using EOS and after this realised that the aircraft was out of hours and that put an end to us taking it to Waipuk.



But ... I finally had some good luck, I finalised my BFR and then that night got a text from Howard Smith,

President of Wanganui Aero Club asking if I was going and within a few texts I found they had a spare seat and I was "booked" on it, needing to be at the club ready to go by daybreak.

Leaving Hawera at 5.30am (not so hard for Fonterra employee) I made tracks. The day was very very cold, that I was pleased about, as cold meant frost and frost meant fine



weather, and waking so early was worth it. We set of from Wanganui after the Maule in Wanganui's

172xp. Stu Ashby flying Howard navigation David Walsh relaxing and I taking advantage of the view



photographing and airstrip spotting.

Getting closer to Waipukurau there was fog on the ground and a good frost. We

were looking forward to a good breakfast by now, and we were not disappointed, the club goes all out with a mug of soup on arrival and breakfast soon after.

As we were tucking into you breakie, we heard more planes coming, but these sounded different and were in formation, and what we saw when we jumped off our seats amazed us a Dragon Rapide followed by a Fokker triplane, a Tiger Moth and bringing up the rear a ... 172.

When they landed the triplane was instantly surrounded by people, so a photo opportunity was difficult. But later achieved. There were a large number that turned up and I'm not going to embarrass myself by underestimating the numbers.

So besides the few set backs (that you get in aviation) it was a great day and I would to the same trouble to do it again.

Julie Ingram



## CLUB CAPTAIN'S CORNER

### What's Coming up!

**June 15**

**Dawn Fly-In  
Dannevirke Flying Club**

**June 27-29**

**FlyingNZ Annual Conference 2008  
New Plymouth**

**July**

**Dawn Raid  
FoxPine/Pinepark**

**July 20**

**Scott's Trophy in Wanganui  
(date likely to change if date coincides  
with FoxPine Dawn raid)**

**August 1-3**

**Brass Monkey FlyIn  
Nelson Lakes (NZLE)  
Registrations close 4th July**

**October 18-19**

**Tiger Moth Club annual Spring Fly-In  
Taurarunui**

**Labour Weekend**

**October 25-26**

**New Plymouth Aero Club 80th  
Anniversary Celebrations**

**November 1-2**

**Red Bull Air Race in  
Perth Australia**

**November 15-16**

**Regionals In Tauranga**

**January 17-18**

**Wings over Wairarapa 2009  
Masterton**

Well I guess first I should apologise for this newsletter being late, this has been a very busy month for me. I have changed jobs and I am now working at Taranaki Veterinary Centre as one of the Veterinary Nurses.

I have also been away on a couple of flights. One of the flights is on the opposite page and the other I hope to write and will get into the next months newsletter. But before I could do those flights I had to get my very first BFR, what a scary thing. I was not too sure what to expect and it also crept up on me and so it expired while I was too busy to renew it. I know we have a few members that have let their BFRs expire and it is harder without a B cat in Hawera, but you can practice with Amelia and when you're ready you can book it in in New Plymouth, the longer you leave it the harder it will be.

A new regular feature of the club is a weekly get together at the clubhouse on a Friday afternoons after work for catch ups and a bit of socializing.

There is another Dawn raid in this month and that's the Dannevirke flying club's raid with a spot landing on arrival. Dannevirke has a very generous runway that was once used for DC3's. Graeme and I have EOS booked but if you'd like to occupy the other two seats get in touch with me. Dawn means dawn, leaving at first light and heading off there for breakfast and could be home late morning.

The next Scott's trophy date has been re-set due to the first date falling on the Waipukurau dawn raid. This Scott's trophy will take place in Wanganui due to a mix up. If you would like to be part of the team, get in touch with me or Amelia. Also if you would like to go as a spectator we should have room in the planes for that too.

Keep in mind the Scott's after this one will be in Hawera and we will need volunteers to help with the marking grid and cooking breakfast, everyone that's available would be appreciated.

**BRASS MONKEY** I have one confirmed person and that is John Veldthuis and two others that have registered their interest. We maybe able to take more than one club plane and if Wanganui aero club has any spare seats in their planes some Hawera members may be able to travel with them. Less than a month till registrations close!

If you would like to suggest a club trip or event let us know and we can arrange it, it doesn't matter if you are only a student, we can utilize the clubs PPLs or even instructor?!?

If you would like to contact me, you can email or ring me.

**Email** ja.ingram@gmail.com

**Cellphone** 021 150 2351

Julie



## The evolution of aircraft engines—Guy Oakley

I have been a member of Hawera Aero Club for just over a year but I have been interested in aircraft and engines for most of my life. This article is going to be based around piston operated engines.

Automobile engines are continuing to undergo evolution to improve power and reliability whereas current aircraft engines appear to be stuck in a time warp. The basic flat four pushrod aircooled engine while tried and proven seems rather primitive in comparison to modern automobile engines.

Piston engines come in three types, Two Stroke, Four Stroke and Rotary (which could be considered a kind of Two Stroke engine.)

A number of criteria are important for aircraft engines.

- They must be light weight
- Powerful
- Reliable
- Small frontal area (Streamlined)
- Easily serviced

The first dedicated aircraft engines were manufactured probably at similar times by both the Wright Brothers in the USA and Richard Pearse in NZ. The petrol engines at that time were too heavy and lacked power for the application that both the Wrights and Pearse wanted. So both set out to build their own engines. The Wrights used aluminium for the block which was advanced for the time and it was a four cylinder engine developing 28 horsepower at 1,300 rpm. It had an innovative fuel delivery device that was a little like an early variety of fuel injection.

Little is known of Richard Pearse's engine but it was believed to develop 15 hp.

As aircraft engines were manufactured specifically for that purpose a number of design features emerged.

The cylinder arrangements could be in line, horizontally opposed, or radially arranged. For simplicity most were air cooled but in the search for horsepower some were liquid cooled.

As WW1 approached lightweight power plants were required for the first war that would be fought in the air. One of the standout engines was the Rhone rotary engine. This engine had a number of design disadvantages but did develop 80 hp and powered a number of aircraft, the most noteworthy being the Sopwith Camel. This single seater biplane was one of the success stories for the allies during the war but ironically the Oberus engine that powered Baron von Richtofen's triplane was a direct copy of the Rhone rotary engine.

Some of the unusual design features of the Rhone engine were, because of the low operating rpm of the engines of the time (1,200) they often required a large and heavy flywheel to keep the engine going at low revs. The rotary engine overcame that by allowing the whole engine to rotate (which became the flywheel) and the propeller was simply bolted to the front of the crankcase. This gave a

formidable torque reaction. It allowed very slow turns to the right but lightning turns to the left.

The very rich fuel mixture was introduced into the hollow crankshaft where it travelled to the crankcase. There was a single exhaust valve (monosoupage) on the top of the cylinder which stayed open well into the induction stroke allowing fresh air to mix with the charge from the crankcase which was admitted into the cylinder through a valve in the centre of the piston.

Oil was supplied to the engine via the fuel as in two strokes. Castor oil was the preferred lubricant as inferior oils would result in engine seizure. The cowlings seen on the aircraft of the day were designed to keep some of this oil exiting in the exhaust off the pilot. This was only partially successful as most were covered with a fine spray of oil.

The engine had no throttle control so it was either full power or off. While taxiing pilots would turn the ignition on and off to get some form of control. The considerable rotating mass of the engine would prevent stalling.

Later models of the rotary engine used transfer ports (again like two strokes) to conduct the charge from the crankcase to the combustion chamber. This was in response to engine explosions from stuck inlet valves in the piston where the igniting charge was free to travel down into the crankcase.

Like radial engines the rotary engines had odd numbers of cylinders to allow even power strokes. Development of the engine saw up to two rows of cylinders but the considerable rotating mass meant that this design was doomed to extinction.



**The Rhone Rotary engine**

In line liquid cooled engines

During WW1 there were a number of in line liquid cooled engines. One of the more successful designs was the Benz engine in the Albatros which developed 150 bhp.

It was the liquid cooled engine that saw considerable development in the years leading up to and during WW2. The small frontal area and superior cooling meant that increasing amounts of horsepower could be extracted from these engines. Features found on these 70 to 80 year old engines are only just being introduced to automobile engines today.

Four valves per cylinder and double overhead camshafts coupled with turbo charging gave these engines formidable performance



One of the most memorable engines of that era was the Rolls Royce Merlin. This engine began its life as the Eagle which was two 6 cylinder car engines welded together in V configuration originally built in 1915. It produced 225 Hp in its initial form. The Eagle was developed into the Kestrel which displaced 21 litres and produced 520 hp with the aid of a supercharger.

The R type engine was developed for the Schneider Trophy aircraft, the most famous of these was the Supermarine S.6B. It developed 2,783 hp at 3,400 rpm.

The initial Merlin engines (Merlin being a type of hawk, not the magician ) were built as private venture by RR. These proved to be most versatile engines and were found on the Hurricane, Spitfire, Lancaster, Mosquito but to mention a few. The Merlin 61 engine displaced 27 litres and developed 1565hp at 3,000 rpm

Engines were run at full power on test beds to determine which components would fail. These weak areas were remedied so that the Merlin became a most reliable powerplant.

The Merlin was built in the USA under licence by the Packard Motor Company. These engines powered the famous P51 Mustang.

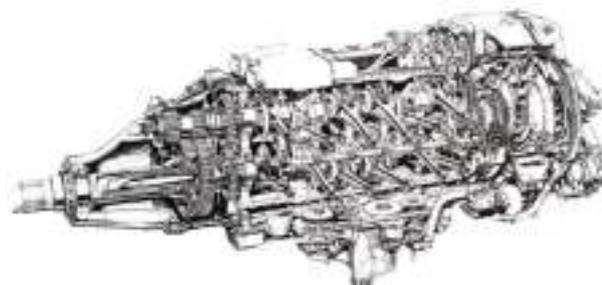


**The Rolls-Royce Merlin engine**

The search for more horsepower led to the development of more complex engines. One of the most notable was the Napier Sabre engine. This was a 22.4 litre, 24 cylinder with 4 banks of 6 cylinders in an 'H' pattern. This engine employed the use of sleeve valves instead of conventional valves. These sleeves moved up and down driven by a cam opening and closing ports in the wall of the cylinder, not unlike two strokes. Sleeve valves at that time gave better performance than conventional ( poppet ) valves due to greater volumetric efficiency, and the combustion chamber shape was not constrained by valve placement. These engines developed up to 5,500 hp at 4,500 rpm and powered the Hawker Typhoon and Tempest. These aircraft were the only ones capable of catching the jet powered V1 flying bombs.

These engines were incredibly complex. They featured liquid cooling, two stage supercharging with intercooling,

two crankshafts and reduction gear for the propellers. Needless to say following the end of the war development of these engines ceased.



**The Napier Sabre engine**

Radial engines.

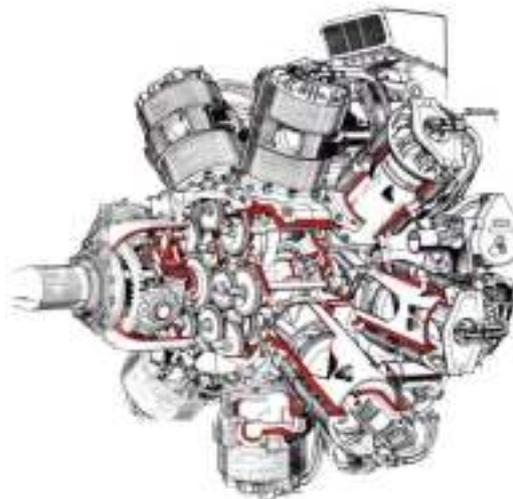
Radial engines while superficially similar to the rotary engines featured a fixed crankcase and cylinders with the crankshaft driving the propeller.

However like the rotary engines the cylinders were arranged in odd numbers. The radial engines had the cylinders out in the airflow allowing for good cooling.

Development of the radial engine began in 1917 when the British navy required an air cooled radial engine. The outcome of this was the Bristol Jupiter engine. This was a single row 9 cylinder engine with pushrod operated valves. Bristol then began development of the sleeve valve radial engine. These became very dependable powerplants and became the Perseus, and Taurus engines. The two row, 14 cylinder Hercules engine with two speed superchargers gave up to 1,800 hp.

In America Wright and Pratt and Whitney started a horsepower race in radial engine development. Wright had the 2 row 14 cylinder Cyclone engine that produced 1,500 hp. They then built a 7 row 42 cylinder engine and Pratt and Whitney countered with the 4 row 28 cylinder engine.

The emergence of the jet engine meant that the development of these engines ceased for long distance transport.



**Continued next month....**



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