SLIPSTREAM

BULLETIN OF THE AUCKLAND MODEL AERO CLUB INC. EST. 1928

February 2018

Paul Evans had his Henderson Longster flying nicely in F4A Power Scale at the recent Carterton Nationals.

NZ REGISTERED MAGAZINE

& Tomboy Texaco

Tomboy and 1/2A Texaco will be flown as a monthly competition at either the AMAC field at Karaka or the Tuakau Club field.
Contact Keith Trillo for confirmation of site and possible postponement, Mobile: 027 460 7180.

AMAC placings count to event Club points.

Open Rubber

Put in flight times for this year's Open Rubber competition at either Karaka or Hoteo.

Editorial – 2018

For those who attended the Nationals, this was a great start to the aeromodelling year. It's safe to say that those of us who make an annual journey form an overall impression of the experience – a windy Nats, a poorly supported Nats, a fun Nats and so on. This year's Nats was a wet Nats for a number of days and contest directors were challenged to get events flown around weather conditions. It was a Nats of weather extremes, from hot humid days at the start to storm conditions half way through. It was also a well-supported Nats, in fact a better supported Carterton Nats than for about five years and Nats management are to be congratulated on the organisation and hours put in to making it a success. Club members had notable successes and I have resisted listing them in the bulletin as they can be easily found by going the Model Flying New Zealand website [www. http://modelflyingnz.org/nats/?q=node/65]

At club level there are a number flying events to focus on for the year. Tomboy and Texaco events will continue throughout the year and it would be good to see some times handed to Keith Trillo, the recording officer, for open rubber as well. Karaka days are a great opportunity for trimming models for various classes. I refer to Cloud Tramp – the Peterborough Challenge looms later in the year - and also aggie models for the Richmond scramble day.

The Morrinsville stadium is now booked for Sunday October 7, Put this date in your diary. Indoor evening trimming at Drury and support for monthly contests there will help to prepare models for the October day.

NDC events at Hoteo are listed in the contest calendar on p.27. This flying site has excellent retrieval for free-flight flying and if you fly these classes, it is a great site to use. Those using Hoteo tend to do a ring around close to the day on which they wish to fly. Contact the steward or those who regularly appear in the write-ups on Hoteo, if you wish to join those flying there.

All in all, I am optimistic about a great year's model flying ahead.

A special thank you this month for all contributors. Your news of model building and processes is always of great interest to Slipstream readers!

Stan Mauger

Slipstream contributions

Contributions of photos and information about latest projects are very welcome for the Building Board section of the bulletin. Field reports and articles are too!
Please just send them in.

Deadline for articles for the March Slipstream is February 23

Photo credits
Unless otherwise noted, all photographs are by the authors of each article.

Monthly Club Night - Mike Fairgray

4-12-17

Present were Ricky Bould, Guy Clapshaw, Paul Evans, Mike Fairgray, Angus Macdonald, Stan Mauger, Bill McGarvey, Brendon Neilson, Geoff Northmore, Bryan Spencer, Don Spray, John Swales, Keith Trillo, Stephen Wade, Charles Warren, and new member Harold McGrath.

The theme for the night was rubber powered models.
Guy Clapshaw had a very much loved and flown Seafire, made a long time ago from a West Wings Kit. Guy said that it was a pleasure to build and the reason for the massive wing dihedral was due to the pilot taking rather violent evasion action.

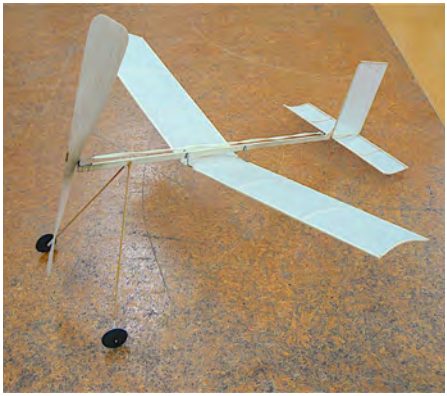
Keith Trillo had a Modelair Sportster and a Cloud Tramp. The Cloud Tramp was flown in the Competition with the Peterborough Club and had a best flight of 1 minute 22 seconds. Not a bad result for a simple model! He used 40 thou rubber 1.5 times the length of the fuselage and used a carved balsa propeller. Also on the table was his Kiwi Trainer with a reversed tailplane and bamboo undercarriage, from the Trevor Martin collection.

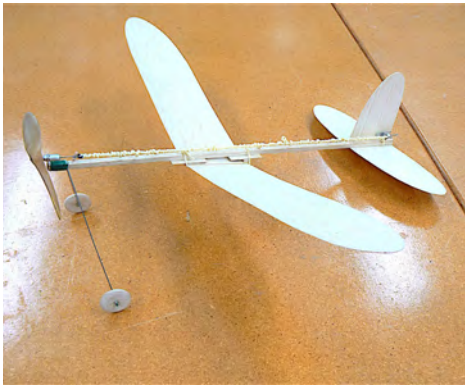
Don Spray has progressed well with his 36 inch rubber powered Fairchild R24 now covered in tissue. It looked stunning sitting on the table. He had sorted out the complicated undercarriage which went through the wing strut. A simple hook arrangement allowed it to be separated from the strut to facilitate the removal of the wing. The model was from a SIG Kit. Bill McGarvey had a very interesting seaplane. The model called Moses, is from an APS plan designed by W.I.Barret. It is for .5 to .8 (.049) engines mounted on the front of the wing pylon. Bill's model was powered by a .55cc PAW. The model had been flown off water and a deflector fitted under the Keel improved the take-off.

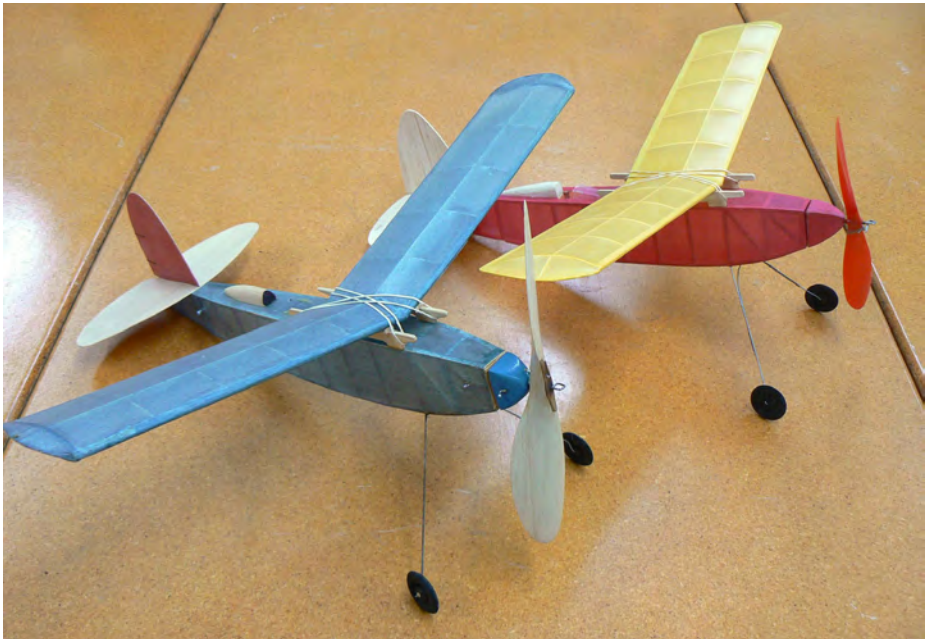
Angus Macdonald's offering was a very small scaled down version of the Modelair Hornet, which he proceeded to wind and launch into the air. To the amazement of all it flew very well inside the club room.

Mike Fairgray had two models. The first being a Jimmie Allen Skokie which had been build for the Jimmie Allen comp that the Club ran some time ago. The 24 inch wingspan model was designed in 1938 by Speed Robinson and the plan can be found on Outerzone. He said that in his opinion this was the most attractive of the Jimmie Allen models. There were a number of other models in the Jimmie Allen series, the most popular being the BA Cabin, BA Parasol and the Bluebird.

The second model was the Flying Aces Moth. Mike had built one some years ago from the Peck kit and was impressed with its "flew right off the building board" performance. The original having been lost, he decided to scratch build another one from a plan found on Outerzone. This was the original plan which differed slightly from the Peck plan. The model was covered in red and yellow and looked stunning. With the club starting an open rubber contest next year the Moth would make an excellent model for this event. Mike had several copies of the plan and instructions, which had disappeared by the end of the night so perhaps there will be a "swarm" of Moths emerging from their cocoons and becoming airborne next year.







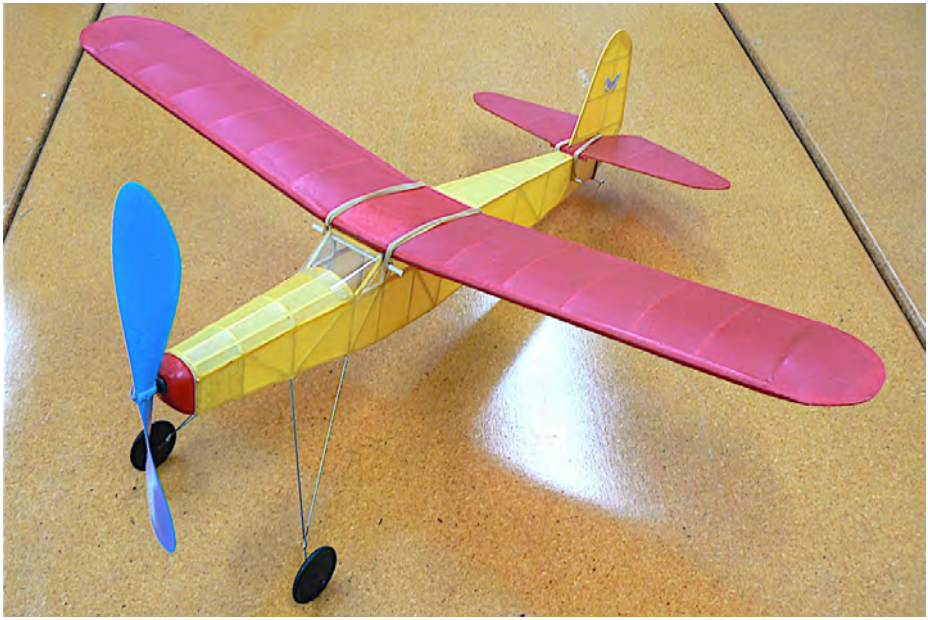
Upper: Keith Trillo's Kiwi Trainer identifiable by the tailplane under-camber on the top surface.

Centre: Modelair Sportsters brought by Keith and also Stan Mauger.

Above: Stan's Sportster lends scale to Angus Macdonald's half size Modelair Hornet. Angus was also the designer of the Sportster and Hornet.

With a little space left I plucked this article about Jimmie Allen, from the Internet, which I found interesting. It is an except from the June 2003 Issue of 'Flight Plug,' the newsletter of the Southern California Ignition Flyers. Jimmy Allen was a fictional character popular in the 1930s during the "Golden Age of Aviation" in America. Many oil companies Skelly, Richfield, Pocahontas, British American in Canada, and other companies ran Jimmy Allen radio features. Kits for rubber powered Jimmy Allen airplanes were available for sale, or as prizes, in company locations. Dudley Field, the Chief Pilot for Richfield Oil Company, occasionally made public appearances as "Jimmy Allen" in California in the 1930s.

For a full history of the Jimmy Allen story got to
https://en.wikipedia.org/wiki/The_Air_Adventures_of_Jimmie_Allen



Rubber powered models by Mike Fairgray including his Flying Aces Moth ***Upper,*** (see build article on p.16) and Jimmy Allen Skokie ***Right*.**

Upper: Bill McGarvey's APS Moses has been successfully ROW'd.

Above: Looking very trim, Don Spray's SIG Fairchild nearing test flying.

Left: Guy Clapshaw's much loved West Wings Seafire.

Hoteo Diary - Paul Evans

Above: Martin Evans's new Simmons Gas Champ brought for testing.

Don Spray was first to arrive and picked our normal place, at the front of the farm away from the cows, as the place to fly. The wind was at a low speed initially but increased as the morning went on. Martin Evans was keen to test his new electric RC model, the Simmons Gas Champ. The first flight was safe, but with a little trimming it was soon going well and more flights were put in.

Don had a good day with his Puss Moth which always goes well. He had his Curtiss Robin flying well too. Next was his Bellanca Skyrocket, from which a steady flight was recorded. His CO2 Piper Pacer put up a good flight although it was really too windy for it. The Zlin Akrobat was also tested but needed some right thrust. Overall, he had a good day.

Ricky Bould flew his Curtiss Robin CO2, but he thinks it needs some more trimming. The Waco SRE is starting to fly while his KK Bantam with a DC Dart just needs a trim tab to fly well.

The next to try a new model was Paul Evans with his free flight power scale Longster. A few low power tests were followed by a good flight with just a little stall. The model then did the standard thing and hit the fence, but only the prop was damaged.

Martin flew his Meadow Lark electric RC model. This always gives him a good flight. Next up was Paul's Krumpler Corsair electric RC flying boat. This had been flown before, but when built, Paul had put in left thrust, so it hit a fence. This corrected, Martin test flew it and it was much better to handle.

By this time the wind had become stronger, so it was time to meet the farmer to thank him for the use of the farm and to give him a Christmas box of gifts. It was also noted that the farm may be up for sale next June. This is what I was told by the farmer when I rang him to thank him for the use of the farm. We could not find him on the farm so had left the gifts box at the house and rang him later in the day. So for the time being, keep coming to Hoteo.

Opposite page
Martin Evans's new Electric RC Simmons Gas Champ off on a test flight.

Above:
Don Spray's Red Fin powered Curtiss Robin from the Flyline plan getting away from the launch. The Zlin Akrobat gaining height.

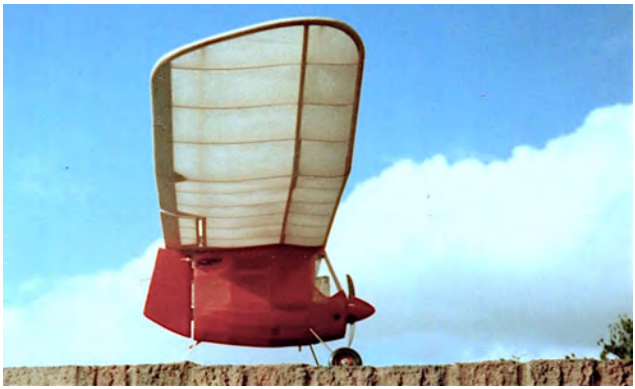
Left:
Don tuning the Mills .75 in his Zlin. ***Inset:*** flying off on a trimming flight.

The Ludd Bug - Geoff Northmore

It all began around twenty five or so years ago when I was living in the UK. Having been a keen vintage modeller plus a radio convert, I decided to modify a couple of free flight tailless models for a new challenge. The models were my Powawing and Chad2. I used diesel power for both with three channel radio. After a few incidents, i.e. rebuilds after prangs, I managed to get both flying quite well. I plucked up courage and flew them at Old Warden days. Having done some homework on C of G position, I decided to have a go at own design. The Ludd Bug was the result of using an inverted Mills 1.3 for power and making the shortest possible fuselage. The wing had an own designed undercambered rib plus dihedral tips.

Right:
The Ludd Bug with 3 channel RC, before enlarging the rudder.

Below:
The model with enlarged rudder and the addition of a steel spinner.



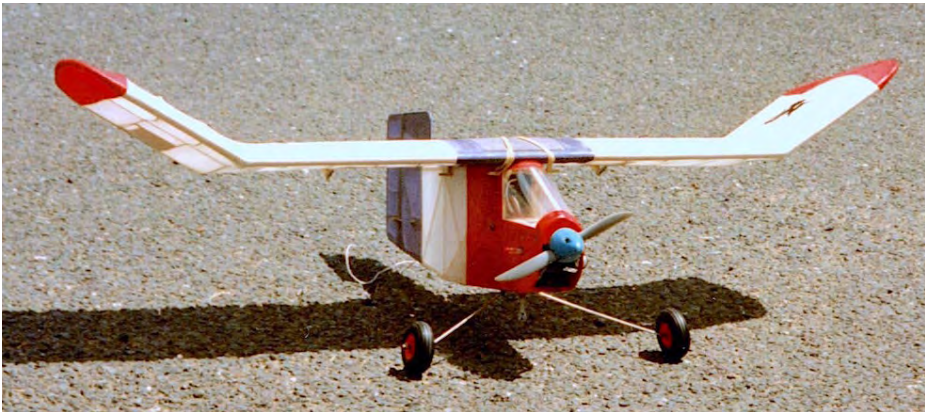
Came the great day of firing up the Mills, I hand-launched the model. The pitch control seemed OK but roll control was a disaster. The slightest rudder input led to a very quick roll and arrival on the ground. I tried to limit rudder movement and reduced its area, with no improvement.

Back in the hangar a rethink made me decide to lengthen rudder height and breadth. This made for an aft C of G. A friend turned up a solid steel spinner that corrected the

problem. The pitch was OK but the roll was diabolical on the next outing. I also discovered that trying to adjust the Mills compression lever whilst holding an oily fuselage allowed my left thumb into the edge of the propellor disk.

Back to the drawing board and a new longer fuselage using a glow motor and retaining the original wing produced the Ludd Bug 3.

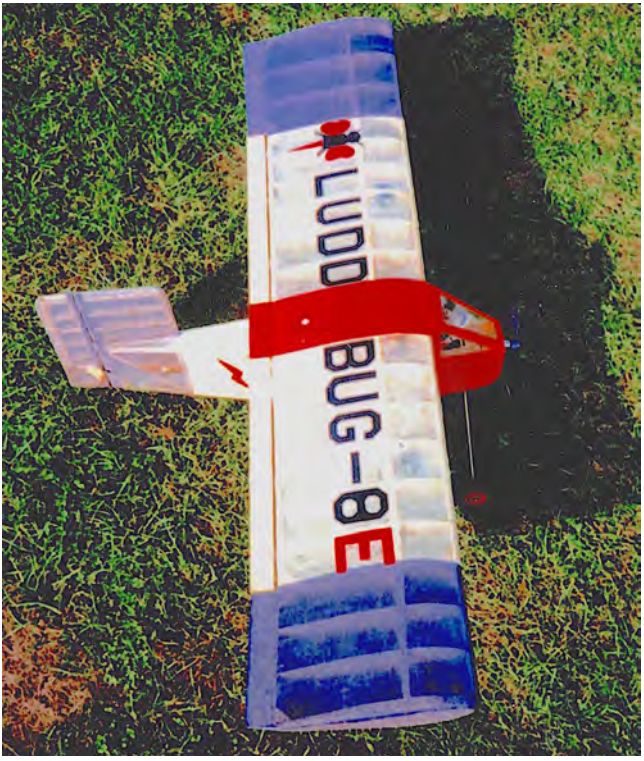
The first flight from a take-off was interesting. With full power applied and after a very short run the model went up and over in a loop just missing my head and landing at my



feet! Less power next time and Ludd Bug flew, but was still very twitchy in a roll. Then I happened on an article that stated that most free flight conversions for radio nearly always required reduced dihedral. I sawed off the wing tips and glued them back with less dihedral. Further flying showed normal rudder response – Hurray! An electric Ludd Bug was developed in more than one size. I still have a four channel aerobatic Ludd Bug. Finally the basic fuselage was used for a small biplane and high wing monoplane with flaps and leading edge slots. The biplane still exists in a tatty state, but the monoplane wing gave up the battle, flying very slowly and more or less looping in its own length.

Upper:
The model before reducing tip dihedral.

Left:
The Ludd Bug fuselage with flaps slots and tailplane added.



Above:
The fuselage developed into a biplane model.

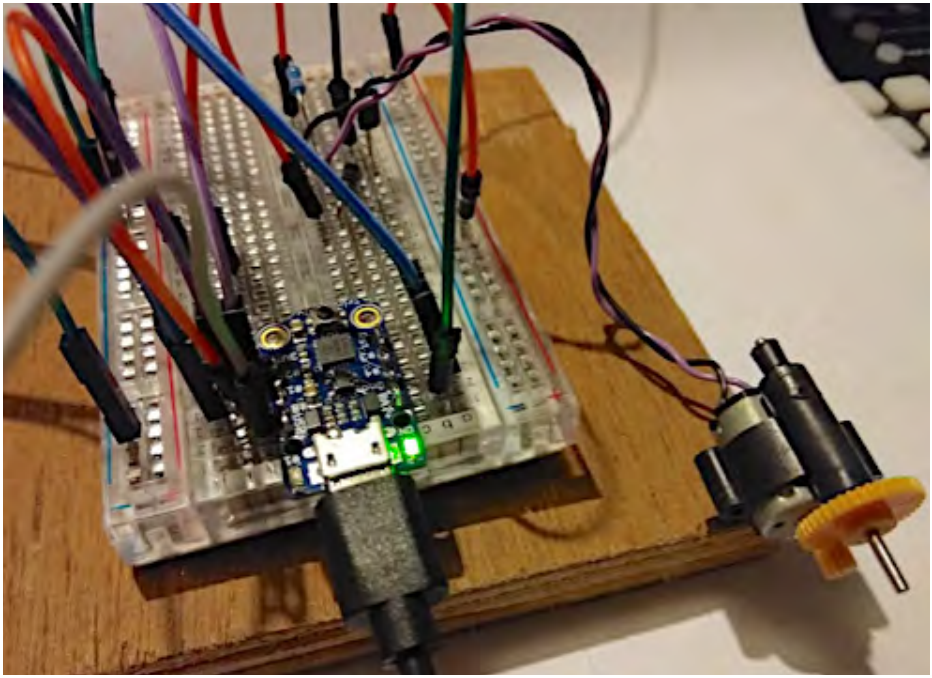
Left:
Ludd Bug No8 with electric power.

DIY small motor controller Part 1 - Mike Stoodley

I've had an interest in electric free flight since the Mabuchi A1 came out in the early eighties. A KP01 followed soon after, then a variety of small nicad powered brushed motors over the years. With these setups the maximum motor speed is usually set with a resistor or trimpot, and the duration with careful timing of the charge - charge for 2 minutes, fly for 30 seconds, charge for 3 minutes, fly for 40 seconds etc. The Peterborough timer and its variants gave a little more flexibility, with a simple circuit of a few components letting one set both max speed and flight time.

In the last 15 years some micro controller based 'flight profilers' have appeared. There is a DIY version called the Birdbrain (https://www.rcgroups.com/forums/showthread.php?931213-Electric-timer-almost-ready-to-roll/page2&highlight=birdbrain) if you are comfortable with PIC and tiny surface mount devices. More well known is the Atomic Workshop Zombie (http://www.atomicworkshop.co.uk/catalogue/index.php?main_page=index&cPath=66), seen in many youtube videos such as https://www.youtube.com/watch?v=K0RK66VyHNs .

The Zombie lets you set 2 power/time phases and weighs all of 1.25 grams. Importantly for lipos, it has a low voltage detector, but no fuse or shutdown if overloaded - so I'm not sure what would happen if the prop was stalled by well known hazards like chair legs (indoors) or long grass (outdoors). My guess is something would burn out.



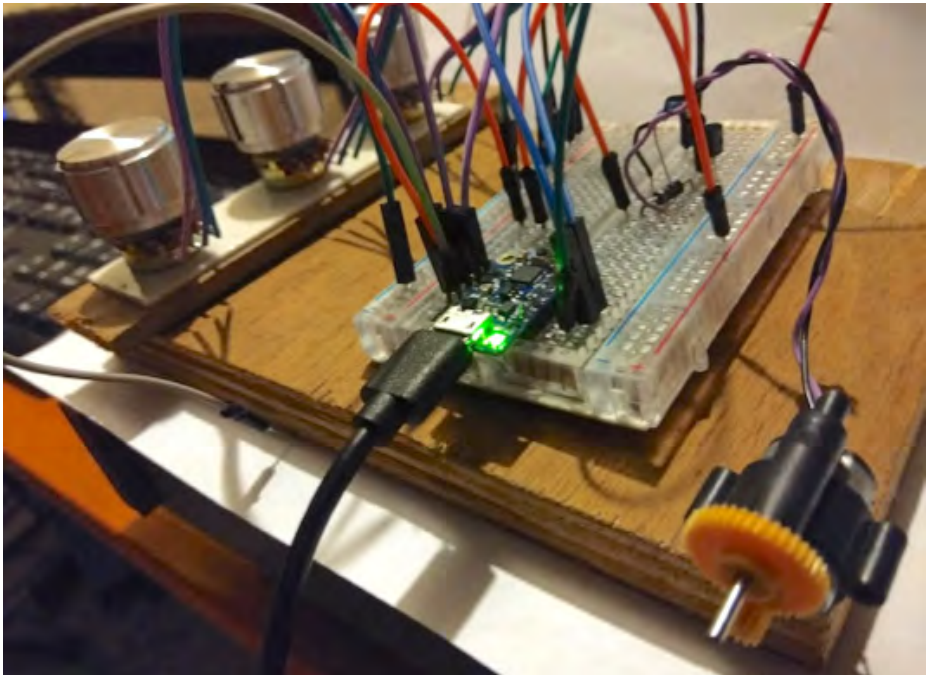
Above: An Adafruit Trinket on a prototyping board and a small motor that might power a 24" FF model.

It seems like the Zombie is a great product, but there are a couple of downsides. It is 25 English pounds + 5 pounds P&P - about NZ$55, so a bit expensive if you want to get a few over here. It is also a 'closed' solution - other than tweaking the trimpots, you can't alter how the device functions.

The arrival of Arduino's has brought the world of microprocessor programming to relative idiots such as myself, and in particular an Arduino variant called the Adafruit Trinket uses the same microprocessor as the Birdbrain mentioned above. What the Trinket does is make that processor sort-of easy to program, without having to write code in assembly language and understand hexadecimal. And as a bonus, it costs all of NZ$11 from https://nicegear.nz/.

After a bit of research on the web, I thought an 'open' source, DIY flight profiler using the Adafruit Trinket was worth pursuing. With a few components from Jaycar, a bit of soldering, and the source code, anyone can build this, and if you want to, change the code to change how it works. If that's not for you, go for the Zombie, or similar products by Knight & Pridham and I think there are some from the US as well.

My v1 - a proof of concept - has 3 trimpots, which set a 'ramp' time, a maximum motor speed, and a cruise time. When you start it, the motor takes the ramp time to go from stopped to the maximum speed. Once at maximum speed, it stays there for the cruise time. When the cruise time is finished, it takes the ramp time to slow down to a stop. In the code, you can set a sensible maximum time for ramp and cruise, i.e. you might want to be able to vary the cruise time between 0 and 30 seconds, or 0 and 5 minutes.

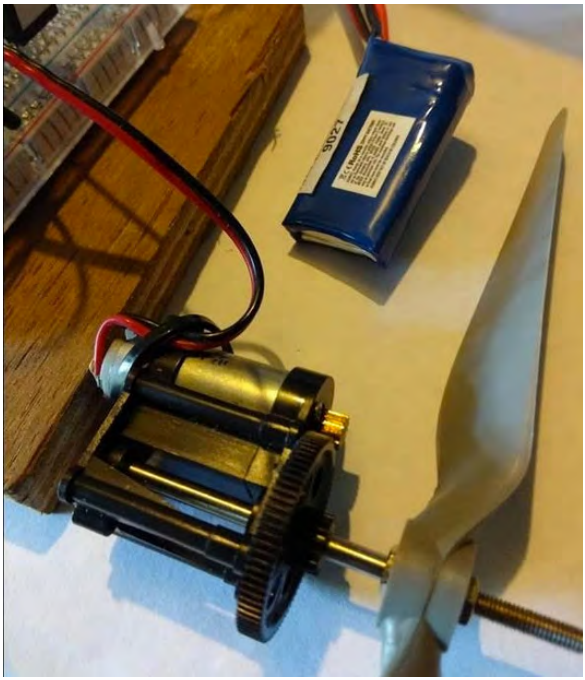


Entirely up to you - just change those values in the code and upload it to the Trinket. At the moment, I have a set maximum ramp time of 20 seconds and a maximum cruise time of 30 seconds, so if I set both those pots to full, I'll get 20" powerup/takeoff, 30" cruise and 20" power down/descent. If I set those pots about half way, I'll get 10" power up, 15" cruise, 10" descent. The speed pot just delivers up to whatever voltage your battery pack has.

So far I've been running this with the Trinket powered by my computer's USB connection, and a small dc motor powered by a 6v drycell battery pack. Next I'll try some different motor/battery combinations, some different mosfets (the component that actually delivers power to the motor), and running the whole thing off a lipo as it would in a model. As a note, because the power to the motor is delivered by the mosfet and not the Trinket, the same concept should work equally well with bigger motors and battery packs, it is just a question of selecting the right mosfet for the job.

In the photos of the prototype all the temporary wiring makes it looks a lot more complicated than it actually is. The Trinket itself is only 31mm x 15.5 x 5mm and weighs 1.85 grams. Trinket information can be found here
https://www.adafruit.com/product/1501

I've now had my proof of concept running standalone, not connected to the computer at all, off both a 1S & a 2S lipo, powering a much bigger motor (I think this is from the early GWS tiger moths). So far so good . . . Part 2 to follow.



Opposite page: the large knobs at the rear for ramp, speed and cruisetime will be replaced with tiny trimpots.

Left: The 2Slipo here is powering both the trinket and a much bigger motor.

Building Board

Mike Fairgray's Flying Aces Moth 24in span Rubber Cabin model

The original design of the Moth was by Herb Spatz from a 1941 Flying Aces. I have chosen to build J H Watter's redrawn plan for this free flight model as it includes some modifications.

With the Club holding an open rubber contest this year the Moth was the perfect model. I downloaded a copy of the plan from Outerzone where there are two versions, the original and the slightly modified version as published in Aeromodeller. A set of building instructions is also available to download.

Building the Flying Aces Moth

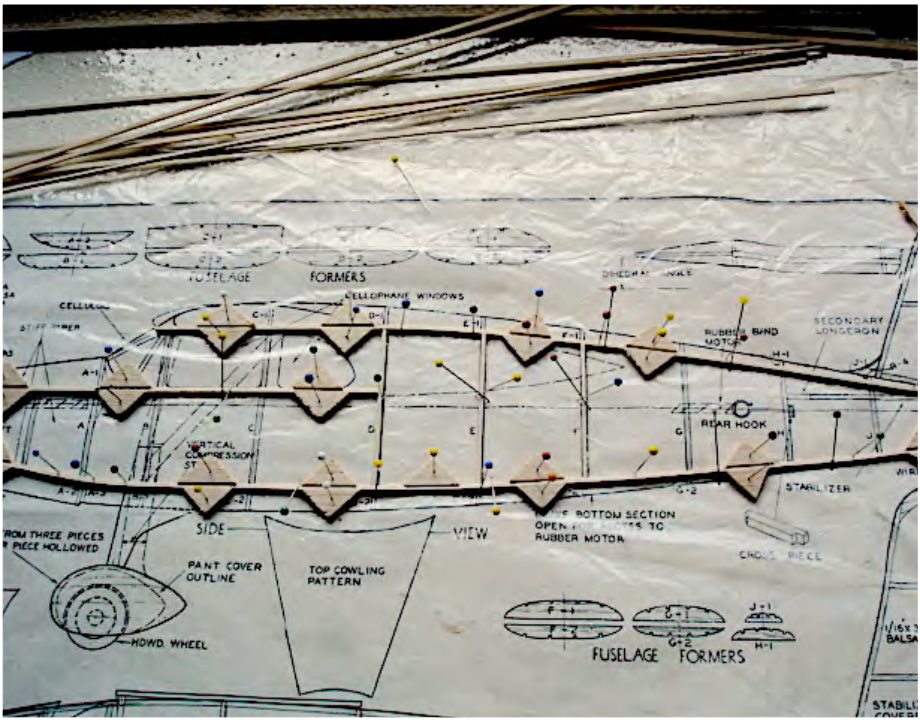
I first built this model fifteen years ago from a Peck Kit. It had its first flight at Karaka and flew right off the building board. The Peck design deviated from the original by having a balsa covered centre wing section, fill inserts in the fuselage behind the nose and the tail mounting on the fuselage was built up so that the correct amount of incidence was built in, whereas the original had a 1/16" block cemented to the rear of the fuselage at the tail mounting point. In addition, the tail was glued to the fuselage. The original was held in place by rubber bands. I decided adopt the wing and nose modifications in my build.

The Build

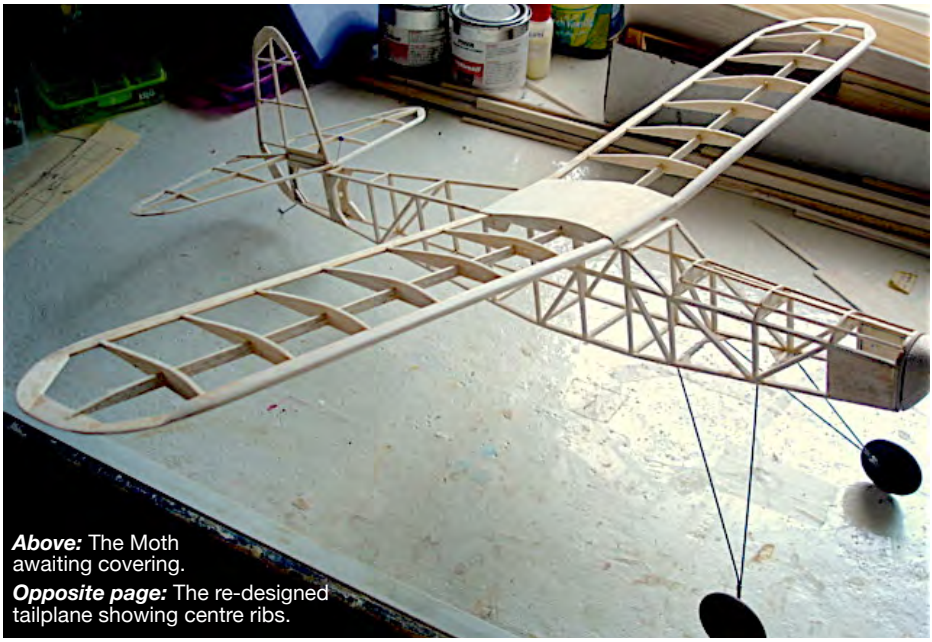
Fuselage

The fuselage is straightforward, two sides being joined by cross pieces ending with a box like structure. I cut all the fuselage strips to 1.5 x 2.0mm with the 2.0mm facing up. This allowed me to sand the structure without going below the 1.5mm square size as stipulated on the plan. I tend to do this for all my models as when producing strips, the thicknesses can vary depending on the density of the balsa as the striping blade passes through. Marking the 1.5mm side with a marker makes sure that I choose the correct size to face upwards.

I do not build the sides on top of each other. To get the correct alignment I use triangular pieces of balsa pined on each side of the strip so when I lift the first side the correct



Upper: The jig fuselage framing method used here for a SIG Cabinaire.
Above: The framed-up fuselage.



Above: The Moth awaiting covering.

Opposite page: The re-designed tailplane showing centre ribs.

alignment is not lost as it is just a matter of placing the strips between the triangles. Once the sides are joined I fill in between the sides at the tail to produce a mounting plate set at the correct incidence for the tail to sit on. Using the Peck modification infill, 1.5mm sheet is fitted behind the nose. The rear rubber attachment point is increased in width 1.5 x 2mm as the original was a bit narrow, gussets fitted and a hole drilled to fit a 3mm aluminium tube. Finally, a strip of 2.5 x 3mm balsa is cemented to the fuselage in front of the tail position for the tail to rest against when rubber banded in place.

The nose block is carved from a block of Balsa and locating strips fitted for a snug fit in the front of the fuselage.

Tail and Fin.

The tail and fin are made as per the plan with the exception of adding an additional centre rib and spacing these apart 1.5mm to produce a space along the centre line of the tail. An additional 1.5mm x 2mm strip is fitted to the bottom of the Fin to slot into the space made in the tail. This makes for a strong joint for the fin and makes it easier to set the fin vertical without pinning and the addition of the added strip fitted to the fin ensures the fin sits at the correct height. There is now a rib on each side of the Fin to attach the covering to when covering the tail *(See opposite)*.

Wings

On to the wings. The plan calls for a butt joint between the rib and the trailing edge. I have never liked this method and either cut slots in the trailing edge to accommodate the rib or glue 1.5mm strips between each rib where it meets the trailing edge. I chose to fit the strip as the rib section is very small at the trailing edge. The plan calls for the wing

to be built flat and to achieve the correct dihedral crack the wing at the correct position and raise each wing to the correct dihedral. I do not like this method as it makes for a weak joint. The method that I use is to build the wings flat as per instructions and then cut the leading, trailing edge and spars at the indicated crack point and fit an extra rib angled to achieve the correct dihedral. The new ribs are fitted with gussets. There are now two wing halves and a centre section. The centre section is then covered with 1.5mm sheet as per the Peck modification. The two wing halves are now joined to the centre section.

Undercarriage

The design of the undercarriage allows for thin wire to be used. This is made from 1mm wire and bound to the attachment points which have been reinforced with gussets.

Covering

Now the fun part, covering. I chose to use tissue which has one side shiny. My method of covering is to coat the structure where the tissue needs to be affixed with two coats of strong dope. Cut the tissue to size and attach the shiny side out using weak dope pulling the tissue as tight as possible. Once the model is covered a spray with water tightens the tissue further. Next a final application of weak dope, pinning down the tail, fin and wing to keep them true.

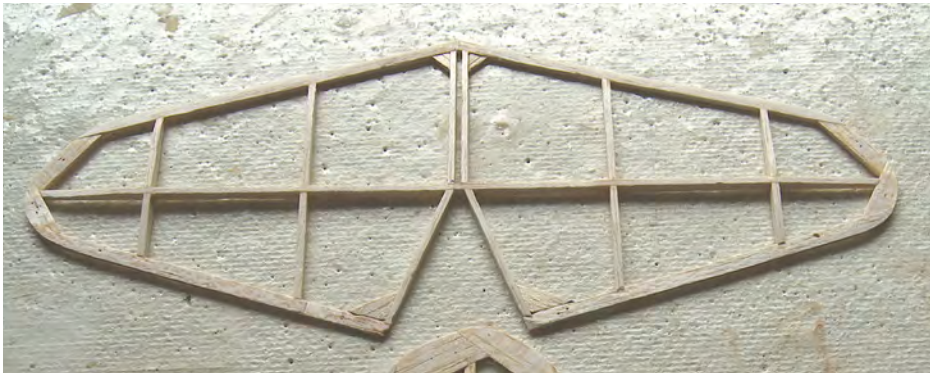
The tail and wings are attached with rubber bands. Using bands on the tail allows for any trim changes that may be required.

Summary

This is an easy model to build for the open rubber competition.

Modifications

- 1.5mm Infill behind nose.
- Additional rib in the tail to provide a slot to accommodate the fin locating strip.
- 1.5 x 2mm locating strip cemented to the bottom of the fin.
- Increase the motor peg mounting to 1.5mm x 3mm and use 2mm diameter tubing.
- 1.5 mm balsa covering on the top of wing centre section.
- 2 x additional wing ribs for the wings, set to the correct dihedral angle.
- Plastic Propeller.
- Use 2.0mm x 1.5mm strip (sand to 1.5mm after fuselage sides have been constructed).



Stan Mauger's Kit Scale KK Cessna

Some models represent milestones in flying experience. The Keil Kraft Cessna took me through my first attempts at flying and trimming indoor models and was the first model to bring me any success in indoor. As has often been noted, it is satisfying to build the old 3/6D models and get them to fly. As this model is reasonably light, I was able to learn to trim it fairly easily and it has been very regularly flown, even as a standby when other models are not performing.

Although I would not have said it back in the 1950s when I knew nothing about selecting a suitable propellor or installing enough rubber to fly the model properly, I can now say that like the Auster Arrow that I have also found to be a great flier, the Cessna is a well-designed kit scale model. Albert Hatful really did design models that can be made to fly.

My second Cessna appeared in a Building Board report in May 2016 and is now completed. This has been built with the Kit Scale rules in mind. One of the main limitations, if demerit points are to be avoided, is to adopt a colour scheme that can be translated into available tissue or paper covering.

I chose to model G–BUJM, a UK aircraft, which has the challenge of replicating starbursts on wings, tail and fuselage. This has been a bit challenging to achieve in red tissue over the main cream-coloured tissue. Starbursts were added by carefully applying a glue stick to the reverse of each and then nursing the pointed end on the blade of a scalpel, to position it. Once they were in the desired position on the model,

The Keil Kraft Cessna, simplified by Albert Hatful called for arbitrary decisions when adapting starbursts of the fullsize subject with rounded fuselage cross-sections to this slabsided design.

they could then be rubbed down to attach them permanently. I used a slip-sheet interleaved between the starburst and the covered model to ease the task of positioning glued tissue that has a tendency to grab before it is positioned. Waxed (silicone I think) coated paper works well for this as nothing sticks to it. However, I resorted to floating the black tissue registration on to pre-doped panels on the fuselage.

The two tissue colours used in this model are both domestic grade. The cream was found at a local florist's and the red is just supermarket gift wrap. I went to great pains to keep the balsa as light as possible and have just had to accept the slight weight penalty of the non-Japanese tissue used. I saved a couple of grammes weight over my previous model even allowing for the double tissue where starbursts are applied over the cream tissue. The covering received just two coats of thinned dope.

I have also included the few model details included on the Keil Kraft plan. The engine exhausts are of a smaller tube diameter than any drinking straws that I could find, so I made them by coating typing paper with diluted Aliphatic resin then rolling the paper around a dowel of the right diameter. It is surprising how strong these tubes become when they dry. The steps on the fuselage side were more straightforward, although the plan was short on details of how to attach them so that they don't knock off.

Having built the model a couple of grammes lighter, I have found that it is showing slower flying speed outdoors than my first model. Now comes the indoor trimming!

The front End (continued) - Mike Mulholland

Bearing

The bearing, bush or nose button supports the prop shaft in side load. The important thing is that the shaft is supported for as much as possible of its length and that any slop is minimised. The usual approaches are nose buttons, brass tubes or cartridge bearings.

In small models thrust loads are carried usually by either a drilled bead or 2 small brass or Teflon washers designed to minimise friction. In larger models a better approach is a ball-raced thrust bearing. These are available on-line from specialist free flight suppliers or if you talk nicely to some of the more senior modellers they're likely to have a stash from back in the day!

It's important to remember that thrust adjustments (the crucial trimming element) are ultimately transmitted to the prop through the nose bearing. Many times I have seen a modeller struggling with a power stall despite the masses of down thrust he thinks he is packing behind the noseblock, only to find that his downthrust is simply straightening itself out under tension due to the slop in the nose bearing and/or the entire nose button shifting in the nose block. For small rubber powered models moulded plastic, delrin or nylon nose buttons are the most common approach. Some are OK and some are not. Things to consider with nose buttons are:

The material – Nylon and Delrin are unlikely to show appreciable wear during the life of a model but plastic will. In my opinion plastic nose buttons are not suitable for larger models or applications where due to downthrust requirements or the internal structure of the fuselage you don't have a straight line and there is side load on the bearing. Plastic will wear quite quickly.

How much of the shaft is being supported? The most common fault of commercial nose buttons is that they can be quite short in relation to their diameter, meaning that you have a long section of unsupported shaft extending from the rear of the nose button out to the hook. It's a simple matter of leverage and it doesn't take much imagination to see that the result is likely to be a flexing prop shaft, excessive wear on the bearing and the entire nose button becoming loose in the nose block.

The photo on p.20 opposite, shows a range of commonly available nose buttons. On the left we have a white Tern Aero/Hi Flier nose button These are delrin and are a good unit for small models. Next to it is the Peck item. These come drilled in 2 sizes and are a very nice plain bearing. A particular strength of the Peck bearing is its length in relation to its diameter. A peck bearing is unlikely to shift in its noseblock. Peck bearings are a very hard sort of nylon. Moving across to the right are the old Modelair and Avetek plastic buttons. These are OK but do wear out and suffer from being quite short in relation to their diameter unless mounted in a very hard noseblock.

In the foreground is another great use of a Peck bearing – one in each end of a length of aluminium tube provides great support for the shaft, and this is often my approach nowadays on bigger models. Care needs to be taken to drill through both ends of the completed item as I have found that the holes are not always as central in the bearing as we would hope.

A contemporary approach is the 3-D printed bearing block developed by Avetek in different combinations of side and down thrust. The one pictured here has 1.5 degrees right and 2 degrees of down. The shaft hole is printed in and is designed to be a perfect fit for their commercially produced reverse S-hooks. (*See below)*

So far we have only talked about carrying the shaft and supporting the side loads that might arise but what about the tension of the rubber motor and inherent friction.
In smaller models the approach is generally that the prop bears directly on the front of the nose bearing or has a drilled bead or Teflon washers to help reduce friction. On the whole this approach combined with a bit of oil works well enough.

A better approach is a ball-raced thrust bearing. Back in the day these were produced cheaply by Jasco and other manufacturers. Modern versions are available from various free flight specialty businesses on line. Pictured overleaf are examples of some of the types that were produced and can still be found in many senior modellers workshops . . .

The use of a thrust bearing to take the rubber load also simplifies the eventual free-wheel device as there is never load on the prop, which in turn means that a braided motor can be used without fear of the residual tension preventing the prop from free-wheeling.

The prop shaft and rubber hook

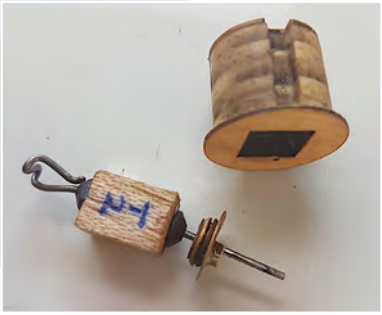
The next photo shows a range of prop shafts that are commonly supplied pre-bent in kits or drawn and described in kit plans. On the right is an example of a reverse S-hook.

The great advantage of an S-hook is that the rubber motor locks itself into the 2 nodes of the reverse S and prevents the rubber from climbing up the shaft causing imbalance and ultimately falling off the hook altogether.

For rubber powered models the reverse S-Hook is arguably the best all-round solution. The only real disadvantage is that there is a bit a knack to bending them, particularly for larger models. The good news is that S-Hooks suitable for models up to around 25” wingspan are available pre-bent in NZ from Avetek.

The following picture shows how it all goes together. This is the bearing block for my Avetek Pilatus PC9. The block is pre-drilled to incorporate the expected amount of side and down thrust. Further adjustments are made by shaving the block as required and packing the opposite side. The bearing block in turn slides into a recess in the nose block. The bearing is a cartridge type, made with 2 Peck bearings. Rubber load is taken by a Jasco ball race sandwiched between 2 brass discs. The front disc is soldered firmly to the shaft and takes the rubber load.

On this model the front disc has a second function - it also carries the prop driver, which is the little nub soldered out at the edge of the disc. I'll describe how this works in the next instalment but the reason is that this model has a scale spinner and it was necessary to place the freewheel device behind the prop rather than in front of it.
The shaft has a reverse S-hook and it will be noted that it is of a heavier than expected gauge, following my maxim that everything in the front end has to be bulletproof and beyond reproach.



Helium diesels - Stan Mauger

The Helium diesel was not in fact run on Helium, but a particularly attractive early diesel of that name. Australian modeller, John Goodwin has aptly remarked on its design: *The Helium is just about unique as both an engine and art form, I don't think there is another engine that shares anything like its concepts of vertical fins. So elegant, Art Deco in a model engine and never ever likely to be seen again in a commercial design. Wonderful. I always thought they were unique among the vast quantity of other model diesel engines. The most handsome of engines!"*

I have not been able to find when they were originally manufactured, but in his article on another vintage engine the Moar 43, in Slipstream in the 1990s, Maurice Poletti mentioned in correspondence that he had had with Emidio Gattafoni, that the latter had been manufacturing replica Helium engines in the 1990s. To quote:

If you look at the attached photo you will see that the engine has the cooling fins vertical. This engine is the 6.3cc Helium C6 We have done a run of 90 Helium replicas already, and they have sold very quickly, because it was a very beautiful engine, and also because of its complex construction. - Emidio Gattafoni

Photo posted by Reginald on RCG 6-7-14. Refer
https://www.rcgroups.com/forums/showthread.php?1054975-Model-Diesel-Engines/page474

Calendar February

For information about the location of club fields and cancellations or postponement of flying, contact the field stewards.

KARAKA

Sundays	**Tomboy Extravaganza** *(for Club points)* Flying can take place between 10am and 2pm (9am to 3pm for gliders and other silent models)
NDC RC Vintage events	1/2A Texaco, E Rubber Texaco, RC Classic IC Duration **(also see Hoteo FF list).** Aggregate model trimming, Cloud Tramp trimming
Karaka Steward	Keith Trillo 09 298 4161 027 4607180 careith@hotmail.com

HOTEO

	Call the field steward if you would like to go up and do some free flight and vintage flying there.
NDC FF Vintage events	1/2A Power, FF Open Rubber, Open Power, FAI F1A Glider, P30, Vintage Power Duration, Nostalgia Power Duration, Classic Rubber Duration **(also see Karaka RC list).**
Hoteo Steward	Paul Evans 479-6378 ziply@xtra.co.nz

AKA AKA

Saturdays & Sundays	Intending fliers should phone Lloyd Hull to confirm that there will be flying.
Instructor	Brett Naysmith
Aka Aka Steward	Lloyd Hull 09 235 2890

CONTROL LINE

As advised	Intending fliers should phone Stan Mauger to confirm where and whether there will be flying.
C/L Steward	Stan Mauger 575 7971 stanm09c4@gmail.com

INDOOR EVENTS

Ellerslie Tuesday February **13**	**Michael Park School Hall** Indoor radio flying (7.00-10pm)
Drury February **19**	**Drury School Hall** Hangar Rat (7.30 - 10pm)
Indoor Steward	Bryan Spencer 570-5506 bspencer@xtra.co.nz
Morrinsville Sunday October **7**	**Westpac Stadium** Free flight scale & indoor free flight classes (10.00-4pm)

OFFICERS OF AUCKLAND MODEL AERO CLUB INC.

Patron	Angus Macdonald	575 7232	angusmac@xtra.co.nz
President	Ricky Bould	478 8949	unimec@ihug.co.nz
Secretary	Mike Fairgray	636 8439	amacsecretary@outlook.com
Treasurer	Mike Fairgray	636 8439	amacsecretary@outlook.com
Recording Officer	Keith Trillo	298 4161	careith@hotmail.com
Bulletin Editor	Stan Mauger	575 7971	stanm09c4@gmail.com
Committee	Paul Evans	479 6378	ziply@xtra.co.nz
	Brendon Neilson	09 239 3204	2neilsons@gmail.com,
	Don Spray	828 4892	drlmspray@xtra.co.nz
	Charles Warren	09 238 9430	cpwarren@ps.gen.nz

Club subscriptions

NZMAA Affiliation is mandatory for Club flying
Senior $50 (+$75 NZMAA) **Family** $55 (+$75 NZMAA)
Junior $10 (+$20 NZMAA) **Social** $40

Intending members with current NZMAA affiliation pay only the AMAC sub

Please make payments to

The Treasurer Auckland Model Aero Club
Mike Fairgray,
3 Kanohi Tce Mangere Bridge 2022, Auckland

NEXT CLUB MEETING AND NATTER NIGHT

Monthly club meeting
7:30 PM

Monday February 5, 2018
ASME Clubrooms, Peterson Reserve, Panmure.

Theme - Survivors from the Nats
Bill McGarvey - talk on setting up rubber motors

Your current projects, models, plans, engines and photographs are also welcomed for the table

Trading table:
Buy, swap and sell

Visitors or intending members welcome