**Newsletter of THE PALMERSTON NORTH MODEL ENGINEERING CLUB INC**
Managers of the **"MARRINER RESERVE RAILWAY"**
Please address all correspondence to **:- 22b Haydon St, Palmerston North.**

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**September 2008 No 338**

# THE GENERATOR

**PNMEC Home Page** www.pnmec.org.nz
**Email:-** pnmec@trains.net.nz

**TRACK RUNNING**

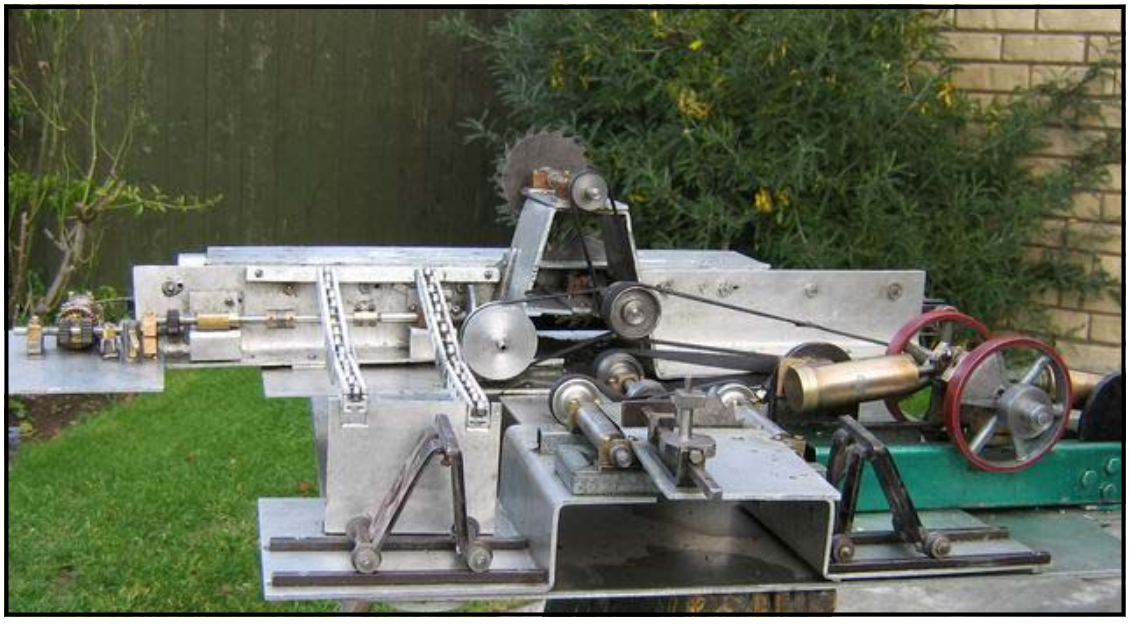
This is held on the FIRST and THIRD Sunday of each month, from 1 pm to 4 pm Summer and 1 pm to 3 pm during the Winter. All club members are welcome to attend and help out with loco coaling, watering and passenger marshalling - none of the tasks being at all onerous.

Visiting club members are always welcome at the track, at the monthly meeting, or if just visiting and wishing to make contact with members, please phone one of the above office bearers.

Sender:- PNMEC
22b Haydon St,
Palmerston North

Place stamp here

## This Months Featured Model



# REPORT on the August Meeting.

**Richard Lockett** gave a talk on the steels and irons model engineers are likely to come across during the building of their models. He spoke of the properties of free cutting, commercial quality, medium tensile, case hardening steel, silver steel and gauge plate. He warned of the problems found when some of these materials are welded.
He told of the difference between ordinary cast iron and SG iron. SG iron being preferable for locomotive wheels as it has a better wearing life although with the heavier and larger 7¼" gauge models steel tyres are required due to excessive wear in a relatively short time.
On the table were some examples of members efforts.
**Ian Stephens** displayed the Stuart Turner No 8 horizontal engine that he has just completed. He acquired the incomplete, partially machined casting set from Doug Chambers and with the aid of some drawing from Bruce Geange, completed the engine which runs very well.
**Ian McLellan** had a vertical engine with an unusual boiler. The boiler was probably meths-fired and the engine was double-acting, non-reversing.
**Laurie Perkins** told us that his wife Pat had bought a kitset doll's house in the UK during a holiday there. The doll's house is being completed in Georgian style, and Pat found that she needed skirting boards for all the rooms. The miniature skirting board is available ex UK at a very high price per metre and 22 metres were required. Laurie made a fly-cutter with the end shaped to produce the desired shape for the form of the skirting board. He showed us the fly-cutter and an example of the completed skirting board. Just shows how adaptable model engineers are!!!!!!
**Bruce Geange** has spent some time repairing O gauge locomotives but has not had any way of running them to test for faults except on a length of track which is not really desirable. He has built up a test bed so that the loco runs on rollers and can be watched for faults as it sits in one place. Bruce also had a NZR type guards van he has made up, complete with working tail lights.
**Robert Edwards** had some useful plastic containers to give away.

**Chris Morton** demonstrated a torch having a multitude of LEDS instead of a single bulb. Plenty of light!!!!.

## September Club Night

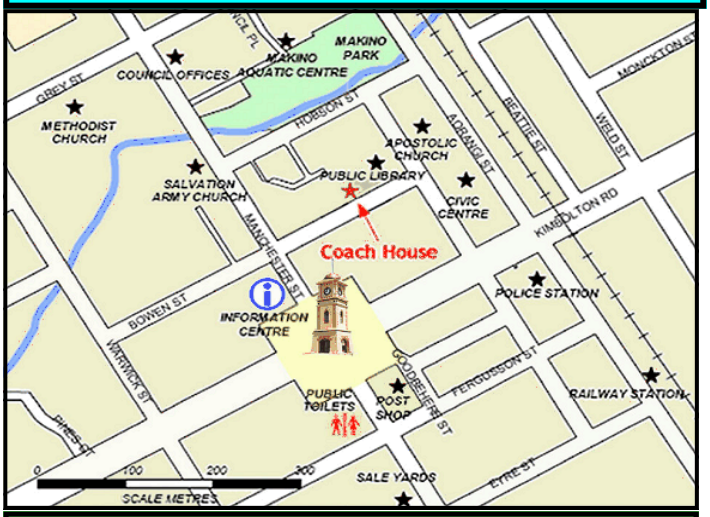
7:30pm, Thursday 25 September 2008
The Coach House Museum
Manawatu Historic Vehicle Collection Trust
40 Bowen Street, Feilding

### A visit to the Horse-Drawn Vehicle Collection

The Coach House Museum is New Zealand's premier collection of horse-drawn vehicles and agricultural equipment. They have more than 50 vehicles includes gigs, landaus, phaetons, carts, drays, coaches and farm equipment; as well as a superb display of local historical photographs.

http://www.coachhousemuseum.org

We will assemble at the Museum shortly before 7:30pm. There will be a short introduction and volunteers will be available throughout the evening to answer questions.




# COMING EVENTS

## Mid Week Run at Marriner Reserve Railway

23rd Sept between 10.00 am and 2 pm
28th Oct between 10.00 am and 2 pm
Please contact Doug Chambers beforehand.

## Track running at Marriner Reserve Railway

October 5th from 1pm to 3pm
October 19th from 1pm to 3pm

## Open Weekends

Labour Weekend New Plymouth SMEE
Labour Weekend Havelock North LS&A

The closing date for the next issue of The Generator is Friday 10th October

# THIS MONTH'S FEATURED MODEL.

By Ian Stephens

At a very early age I saw my first sawmill. It was at Manunui, owned by Ellis and Burnand. My memory is of big whirring circular saws and pulleys with big flapping belts. When I got my first lathe and was learning to use it, I decided to have a go at building a model sawmill.

First was the breast bench, the feed and idle rollers, shafts, saw spindles and pulleys. Lining up the pulleys in such a confined space was not easy. The saws came from bandsaw blades. Then came the breaking down bench. I built the tower for the two saws to be mounted in, it looks easy now but it wasn't easy to line everything up. To get the drive to the breaking down winch was a problem due to the amount of cogs required.

All the cogs were made on a home-made mill for the lathe and fitted with a Dremel grinder. All the cogs were cut on this device.

The winch for the breaking down saw bench is driven from the breaking down saw spindles through a right angle drive to the left and back through a right-angle drive to the winch. The log carriage runs on ball races to make it easier on the engine to move backwards and forwards.

Initially a single-cylinder oscillating engine was tried to power the mill but was lacking in power. A two cylinder oscillating engine was made 7/8" bore 2 1/8" stroke. This runs the sawmill on about 15psi air pressure. This model has brought a lot of surprised looks and wonderment from a lot of people.

# LETTER FROM ENGLAND

By Stan Compton

Standing behind my display at a Steam Rally it is interesting to observe how the public view the items on show, something that took a few years of dedicated work such as a steam locomotive, hardly warrants a second glance. Maybe because it is too complex to understand, but I did have a woman ask how the "marble hot-air engine" worked, a simple process but difficult to explain. I spent hours trying to get my example to run reliably, yet other men can, we know that friction is the killer of hot-air engines and even a minor leak between the base of the power cylinder and the mounting will kill them, I did read that joining an O ring seal is a leak point causing pressure loss.

One man saw my new "Gordon Smith" design of boiler test – pump mounted in a stainless saucepan and told me that he had just completed a coal fired vertical boiler and that he used 6" nails with equal spaces for firebars and would that be all right? The project was intended to drive a horizontal steam engine he had acquired, so I asked what the gauge of copper was that he had used to build his boiler. He replied "I am a gas-fitter and I acquired this old hot water cylinder." He was so keen I would have gladly given him surplus 10 gauge copper but gently explained he must never raise more than a few pounds of steam pressure and that the boiler should have a boiler test first. I asked if he had a safety valve fitted and he told me that he had and it would release if he blew through it.

Away he went and I hope no-one else fits a regular safety valve to obtain more power.

I was able to make one boy happy, some time ago I made a couple of simple steam turbines mounted on tin cans and after having a clean out I put them on display with the drawing. The boy luckily with his father showed an interest, so I gave them to him and the pleasure he showed repaid the effort I put in making them.

Someone else approached one of our members to ask if it was possible to get a locomotive boiler tested? The engine had been built, tested on air and put in a glass case years ago. The people new nothing about steam engines and were prepared to pay the club, so it was arranged for me to do the test. A few days later the owners brought a 3½" gauge 'Royal Scot' along. It had been built to drawings by Henry Greenly for 'Bonds of Euston road, London' so that gives an idea of the age.

It must have been a first attempt, the boiler design was by LBSC and the original drawings were produced for me to examine.

I tried to find the boiler blow-down valve before filling with water. No blow-down had been fitted!!!!! None was shown on the drawing which surprised me. It was obvious that the engine had never been steamed. It had all the steam pipes for the three cylinders but there was a big hole in the bottom.!!!

The quartering was so bad all the coupling rod bushes had been opened up to allow the wheels to revolve!!

This was the families pride and joy and they had been told it was worth a lot of money. It was hard for me to explain that it was only suitable for display and someone might buy it for a reasonable sum, no point in trying to give it a boiler test.

Another visitor to the Steam Rally asked what material I had used to make the fly-cutters mounted on the clock-wheel cutting-frame on display being

used to cut the escape-wheel for the turret clock being described in “Engineering in Miniature.” I told him I used gauge plate, but being oil-hardening it is difficult without a muffle furnace to get up to the ideal temperature. He agreed and told me that he had success using kerosene as a quench. We both agreed that high carbon steel gives better results using a water quench, but again tempering was very critical to obtain the dead hard cutting edge.
I could have bought a set of clock gears but the challenge is to make my own from brass CZ 120, sometimes called engraving brass.
One of the money spinners at our regular running days are birthday parties. We charge much less than a conjurer and the child gets his, usually boys name on the smokebox of the train engine. The parents bring their own food, we provide a gazebo permanently mounted on a concrete slabbed base with tables and chairs. A number of tickets are provided for rides and to see about eighteen happy faces on the train is worthwhile. Not just the party children but the mums as well make up the train load and all really enjoy the ride.
Two parties are normal, last run a family asked if they could bring their own gazebo and set it up at 12.00, staying all afternoon enjoying themselves watching the train running. Some people simply buy a number of tickets and picnic on the grass, luckily the weather has improved lately after a wet spring.
We live close to the border of Wales where many of the properties were built of oak frames with plaster in-fill, with age the oak is now nearly black. This created a tourist route called ‘The Black and White Trail’ . Recently we visited one of these villages called Eardisley for a craft and flower show.
We had a meal in an old pub called “The Tram” located on the main route into Wales. In the 18th century this was the end of the tramway, crude wagons drawn by horses on iron plateways across fields all the way from South Wales carrying coal. Twenty years ago there was a sample of the original track of the tramway flush with the tarseal outside the “The Tram” but now it has disappeared under the seal. A pity that another part of history has gone.
We took Jim Mann to see the canal basins at Stourport, built at the start of the canal era to take goods from and to the River Severn into the Industrial Midlands. Jim was most impressed with how what had been neglected in the fifties is now being restored to better than original. There is a very deep lock basin on the way inland from the river called a gauging lock. It is exactly 7 feet wide. This means that if your boat is any wider then you will not be able to take it inland.
One day someone approached the lock from inland with a fancy new narrow-boat. It was all nicely painted so he left his rubber fenders hanging over the side to protect the paint.
Now this lock is about twelve feet deep and as the water started to drain out the boat got caught up and hung in mid-air jammed on its fenders. Quick thinking was called for to drop the lower paddles and open the upper ones to let the water back in to raise the boat up again so that the fenders could be hauled inboard before trying again.!!

**Did you know the PNMEC has a website?**
**www.pnmec.org.nz**

Do you know the **secretary’s** email address
**pnmec_secretary@trains.net.nz**

Do you know the **treasurer’s** email address
**pnmec_treasurer@trains.net.nz**

Do you know the **editor's** email address
**pnmec_editor@trains.net.nz**

Do you know the **PNMEC’s** email address
**pnmec@trains.net.nz**

Newsletter copy can be sent to the Editor. Large attachments to
**pnmec@trains.net.nz**

If you need to contact any of the above offices, don't hesitate to flick us an email.

**Club secretary’s please note the above addresses**

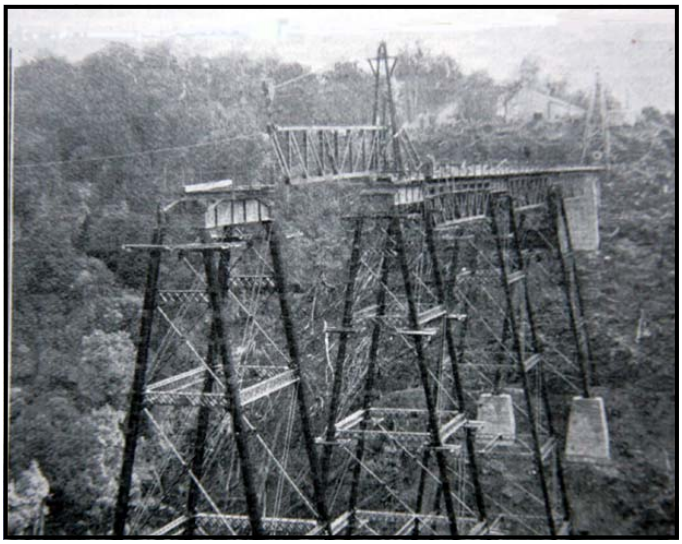
# The Makatote Viaduct

Bruce Geange

## The Original

The viaduct was designed by Peter Seton Hay and Andersons of Christchurch were awarded


the contract in mid 1905 to construct the Makatote viaduct.



A workshop was constructed on the northern end of the gully to fabricate the steel sections. A cableway known as the Blondin was erected across the gully with a traveller and crane on it being driven by a steam winch. Down by the stream was a fluming for water to drive a turbine that drove the crusher and the concrete mixer. On top of the fluming was a small tramway where metal was carted from the quarry to the crusher. All material for the viaduct came by rail from Auckland to Oio and then hauled by horses and wagons to Makatote. The viaduct was completed in July 1908 taking just over three years to build.

## The Model

I was asked recently if I would make a model of the Makatote viaduct as being constructed with the Blondin over the top for a display in the Ohakune area.

Original drawings and photos were obtained. The drawings were scaled to suit meccano parts and worked out at about 1:77. The first pair of towers and a girder span that were built and assembled looked nothing like they should. Two new towers were built along with a longer span and when assembled had a pleasing look to the eye.

Old Meccano parts were cleaned and painted grey. Round head bolts and nuts were all painted a brass colour.

When the five towers were built embroidery cotton was used for the diagonal bracing The main spans were assembled with no problems as well as the five short spans. The concrete

piles (26) the towers and spans sit on were cut out of wood and painted with a grey primer.

The 50 channel sections that support the deck were cut and folded from coffee tins with holes punched as required. These were $3^1/_2$” long and when fitted to the viaduct the decking looked too wide. The channel pieces were removed and cut to a length of 3” and new holes punched.

The top decking was made from flat girders and painted brown.

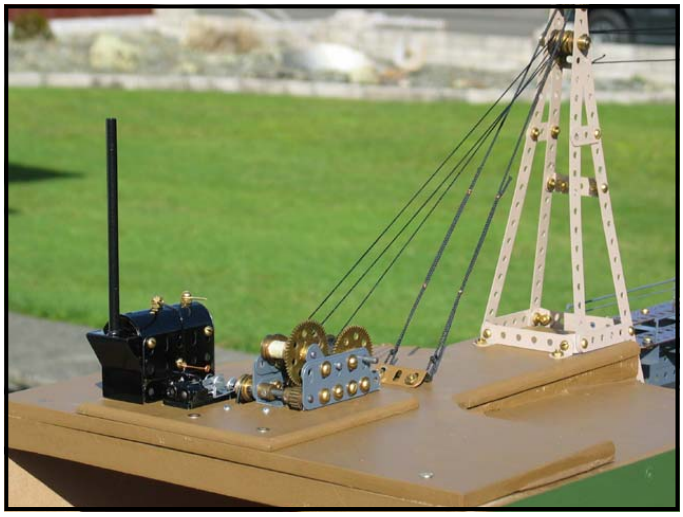
A gully was constructed from custom wood at our daughter's home where the wood working

gear is. The total length is 4 meters and 360mm wide and breaks down to four sections for transport. The side pieces were cut from 5mm sheet that was screwed to a base and strengthened as required. With the gully made up a string line was run across the top to give us the height of the viaduct and the towers and piles were secured in place. The short spans were added to either end of the towers. The covering between the sides is polystyrene glued in and shaped to suit the contour. The side panels were painted green and the fill in sections painted brown. The stream was then painted in at the base of the model along with the road at the southern end.

The hand rail posts were made from $^{1}/_{16}$" brass rod and bolted to the top deck with brass rod and copper wire soldered to the posts to form the railing. These were done in sections to allow dismantling of the viaduct into sections for transporting.

The blondin (cable way) was constructed on separate pieces of custom wood to allow removal for transport.

The south end has a tower and adjustable anchor for the main support ropes. The north end has a heavier tower and the anchor for the ropes. A winch, boiler and steam engine are



also at this end. The winches are driven by motors through Tamiya gearboxes mounted under the base. A plug in remote control operates each winch. On the two tight support ropes that span the gully a trolley runs along them with a crane hook hanging from the trolley. The trolley and crane are operated from the winches.

The model was dismantled and set up outside on the only fine day for photographing before loading onto the trailer ready for the journey to Ohakune.

The model was on display at the Ohakune Railway Station for the Parliamentary Special Train on Thursday 7th August 2008.

**Well done Bruce (Ed)**