



Newsletter of **THE PALMERSTON NORTH MODEL ENGINEERING CLUB INC**

Managers of the "MARRINER RESERVE RAILWAY"

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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

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

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This Months Featured Model



REPORT on the AUGUST Meeting.

Richard Lockett started off the evening by giving a talk (illustrated with slides) on the perils of turning steel down to very small diameters (1.5mm) and less, in the lathe. He explained how the use of collets were likely to produce a truer diameter than a three jaw chuck. He told of the method used by many of us, just having a short length protruding out of the lathe chuck, turning down to size and then pulling a little bit more out of the chuck and turning down a bit more.

Richard then explained the benefits of using a fixed or travelling steady for larger work and the use of a tail-stock centre to hold the work while setting up the steady.

Once again there were quite a few examples of members work on 'The Table'.

Fred Kent showed us an HO locomotive, carriages and track that he has bought recently.

Ian Stephens had his recently completed 'Upside Down' stationary steam engine. Very nicely finished.

John Tweedie displayed the two crankshafts he has made for his 'Shay' locomotive. The first was to establish the machining required to make a three-throw crank with the three sets of eccentrics all turned out of the solid. The second crankshaft is now under construction.

Warick Leslie told us that he has acquired a battery powered scooter which he intends to use as the power unit for a 7¼" gauge tram.

Richard Lockett showed us the hot air engine (Stirling type) that he has built. As yet it has refused to run but Richard has a few avenues to try.

Bruce Geange brought along the model Caterpillar RD 8 showing good progress since last seen. With its electric motors connected to a power source the chassis was induced to climb over various obstacles.

Chris Morton had recently dismantled an automatic gearbox and he brought along the valve block to show us. The oil galleries can be compared to a printed circuit in appearance.

September Club Night

7:30pm, Thursday 23 September 2010
Hearing Association Rooms
Church Street, Palmerston North

Your committee has been thinking hard, or at least as hard as their combined brains are capable of doing, about September club night.

In this electronic age there are many members with an interesting collection of digitally stored photos and pictures.

Please bring along, on a USB stick, up to ten recent pictures to show and share with the rest of the club. Something you have done or seen in the last year. We will have the equipment on hand to show these on the big screen. You can then amaze and baffle us with what you have been up to.

COMING EVENTS

Mid Week Run at Marriner Reserve Railway

28th September between 10.00 am and 2 pm
26th October between 10.00 am and 2 pm
Please contact Doug Chambers beforehand.

Track running at Marriner Reserve Railway

September	19 th	from 1pm to 3pm
October	3 rd	from 1pm to 4pm
October	17 th	from 1pm to 4pm

Open Weekends

New Plymouth	Labour Weekend 23-25 October
Keiranga Gardens	Labour Weekend 22-25 October
Rotorua	4 th & 5 th December 2010

The closing date for the next issue of The Generator is Friday 15th October

★ Club End of Year Dinner ★

RSA
200 Broadway Avenue

♦♦ Palmerston North ♦♦

Thursday 25 November 2010

Drinks 6pm
Dinner 7pm

The cost is \$25.50 per person for a full carvery meal including desert. Pay on the night as you arrive. We have a designated section set aside for us which will be clearly marked.

We need to give the restaurant an idea of numbers. Please let us know if you plan to attend and how many there will be in your party.
Dave, 027-457-6175, Newstead@clear.net.nz
Cynthia, 354-7100, Cynthia@trains.net.nz
Murray 355-7000, engineer@inspire.net.nz

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THIS MONTH'S FEATURED MODEL.

By Graeme Hall

Atkinson Differential Engine

Invented by Englishman James Atkinson and patented in 1886. Atkinson, a gas engine builder, designed his engine to by-pass patents of 'Otto 4 Stroke Cycle' which carried heavy royalties between 1876 and 1890. The engine has the ability to complete all 4 strokes (intake, compression, power and exhaust) in a single revolution of the crankshaft, with the whole operation taking place in 1 cylinder. Atkinson's opinion was that the two main sources of wasted energy were the exhaust and the water jacket. He attempted to reduce these losses by arranging the connection between the piston and the crank so as to give different lengths of stroke. He reasoned that if the piston travels more quickly there is less time for the heat to be carried off by the jacket, and if a longer expansion stroke is obtained, the heat and pressure of the gases have more time to get in doing useful work on the pistons before the exhaust opens. The Differential Engine was offered for sale in the 1, 4 and 8 horse power sizes with over

1,000 units being sold between 1886 and 1890 when Otto's patents expired and competition put the company out of business in 1893. The building of this engine was relatively simple, using fabrication with scrap aluminium plate, a rejected cast iron flywheel, cap screws and items from the scrap bin. Once completed and painted an ignition system was constructed. The difficult part then begun, getting it to run!! After making 2 more pistons and two sets of piston rings, plus a number of hours of driving with an electric motor, a short run was obtained. More perseverance and longer runs were needed and it will now run for extended periods of time or until I tire of watching it!! The fuel is petrol/oil two stroke mixture.

LETTER from ENGLAND

By Stan Compton.

Once I was able to organise a day out on the Severn Valley Railway for a visitor from New Zealand. Just by co-incidence when we arrived at Bewdley, the first stop for the train from Kidderminster, I discovered that our train engine was the 'City of Truro'. This is the restored locomotive that is reputed to be the first engine in Britain to achieve 100 mph. It is possibly true knowing how drivers of years ago were prepared to take risks unknown today. Now there is an additional attraction on the Severn Valley Line known as 'The Engine House' at Highley just twenty minutes up the line, or is it down? In this country once all railway traffic was termed as 'up' to London, disregarding if the journey was from Scotland! Up the line from Bewdley, where car parking is free, so taking a Club Member this time, we caught the 10.39 to 'Bridgenorth', and spent an hour looking at the full-size locomotives on display in the Engine House. We caught the next train on our journey, after an hour at Highley, leaving us nearly an hour to get a cooked meal, a good one, in the yard at 'Bridgenorth'. My walking is limited these days so we missed the Funicular Railway to 'High Town' from 'Low Town' in Bridgenorth and caught the next train back to Bewdley. Why is it that a woman past middle age, of well endowed proportions, will wear an upper garment of the latest fashion that is very revealing ? One such person on our train, and sitting opposite us made me feel uncomfortable

although Terry, my driver for the day out, took a different view!!!!

Back at Bewdley by 2.30pm gave us time to drive to Stourport only three miles away where we found the car park down by the river, and we were able to watch the narrow Boats working through the locks inland into the restored canal basin where once goods were transhipped from wide barges to narrow, seven foot wide ones, used to move goods to and from the Midlands. Why use such narrow boats you may ask ? It was all to do with saving water, especially in the summer months, every lock-full has to be pumped back up to the reservoir at the top of the flight of locks. My description and place names may confuse you, but looking at a map of the area should help.

In the Museum at Bewdley, in the main street, there was once a working foundry who made castings for my 'Locomotion', but now it is just a static display. The operator told me that he had to stop demonstrating his craft due to "Health and Safety" grounds !! Yet at 'Iron Bridge Gorge Museum' not too far away, they make iron castings every week; you need a whole day there.

At our track-site we have a lot of grass to cut weekly and the City Council gave us financial help to purchase a decent 'ride-on' mower that collects the grass cuttings, leaving a very smart result. One large area has to be left to go to seed because it contains wildflowers dating back to the days when this was the property of the Cathedral as grazing for their stock.

We are supposed to cut and remove the grass as hay, but nobody wants it. Also there are no small pick up balers available these days suitable for baling a couple of acres. One of our members will cut it with his John Deere tractor but the hay must be removed, a 'matchbox' would be the easy way but that is against the law here.

The 'tractor man' has completed a 5" gauge 'Railmotor' locomotive, a credit to a man with an agricultural business, working late when possible on the farms. The loco has had a test run on the track and sounded good but the springs are too soft. I looked through my stock of springs and found some I made years ago with spring wire from a firm in Palmerston North. A firm that was so helpful that I sent him a liquid gift in return!!!! Another of our members, who made a lovely job of the clock-case for my second clock, brought along a boiler to show me. He had bought the

boiler that was new but it had been fitted with stainless steel stays. This is not recommended so he drilled them out and replaced them. The boiler appeared to be commercially made but these boilers usually have copper rivets brazed in place in the firebox. The boiler appears to be made for the 7¼" gauge 'Holmside', it will be interesting to see what Wally does with it.

We have a new boiler regulation that does not allow non-captive steam valves to be fitted, including those drawn by 'LBSC' to blow-down the gauge-glass. I modified one such valve by fitting an 8 BA screw into the valve body to trap the spindle, but a new valve with a tapered plug would be better.

I have resigned as one of the Club's boiler inspectors, one reason was age catching up with me, but mainly because many members do not prepare boilers for testing with all the outlets plugged-off and a test pressure applied before-hand. The excuses given are so varied even though I bend the rules by testing a boiler that has been in use but needs a small modification, and then the same fault appears at the next test as the owner never did the minor work required.

Further too

The current Marriner Reserve Railway project of piping and back filling of the low bridge had been planned for some time just waiting for the various components to come together. A large plastic pipe and about 10 cubic metres of fill to cover it up were required before we could start. Malcolm Stewart of Tree Trim and Earthworks/ In Pipe Logistics of Kaimanawa Street kindly donated a 6 metre length of 300mm dia. pipe and was to supply the fill material but we took the opportunity to divert two truck loads of fill which were passing our site on their way from the bowling club to the old landfill site courtesy of Higgins Contractors.

Looking back at the development of our railway, what we have would not have been possible without the support of various local civil engineering contractors over the past 30 years.

Richard Lockett

RAILROADING IN THE ANDES

By Doug Chambers

The Railways of Chile and to a lesser extent, those of Peru are built through some of the most difficult, mountainous country in the World. The lines, a mixture of standard and narrow gauge were built largely to handle ore and nitrate from mines up in the Andes Mountains. The trains were always fully loaded on the descent from as high as 15,800 feet above sea level. The grades were so steep that 'zig zags' were a way of life for the enginemen. Passengers ascending to the towns of La Paz, Galera, La Cima and Chaucha often suffered from 'altitude sickness' and oxygen would be administered by a 'medic' travelling on the train.



On some of the lines there were many tunnels and the smoke and steam in the cabs of the slowly climbing steam locomotives meant that oxygen was carried in the engine cabs to revive the crews.

Descending the steep grades with loaded trains was always a worrying challenge to the drivers even though Westinghouse Braking systems had been adopted at a very early stage. Wet rail affected the ability of the steel wheels to slow the trains. Excessive use of the brakes when the train had started to get up to undesirable speeds led to the brake shoes heating the tyres on the wheels and eventually the tyres would begin slipping on the wheels. On one occasion a brake inspector was carrying out an oral examination of a driver. This driver was from the USA as many of the train crews were British, American or Europeans as it was many years before the local men were trained up to the standards required.

"What would you do if your train started running too fast on the grade?"

"I'd make a service application with the automatic," was the reply.

"And if the train continued to run too fast?"

"I'd make a heavier application."

"Suppose nothing happened and speed was increasing—what would you do?"

The driver pondered for a bit and said: "Why, darn it, I'd make an emergency application."

"And suppose nothing happened?"

"For the love of Pete, man, I'd hoss that Johnson Bar back! Then I'd slam the brake valve into full release and charge up again, and then I'd big hole her and wipe the clock."

"And suppose she kept on running—what would you do?"

"I'll tell you what I would do," observed the driver with great deliberation. "I would take all them damn Westinghouse instruction manuals out from under my seat and throw the whole bloody lot into the firebox!!"

Another hazard was the slips and rock falls on to the track. Trains descending would come round a curve to find the track blocked, but would be unable to stop before crashing into the boulders. Trains ascending stood a better chance of stopping.

Many of the locomotives were oil-fired. They must have been well liked, but the coal fired engines must have been hard-work at altitude. It was not uncommon for the hard-working fireman to collapse from lack of oxygen.

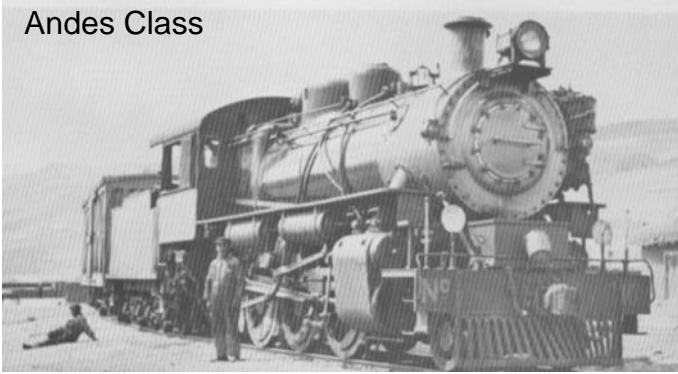
As you can imagine, running trains under these conditions led to many disasters. Runaways on steep downhill grades, locomotives hitting boulders on the track and being derailed to topple hundreds of feet down into gorges.

The locomotives too suffered. Boiler feed-water in some places contained various impurities causing the boiler to prime. Long uphill grades meant that the crew battled to keep the water level up and also the boiler pressure.

Sometimes the boiler level dropped too far with a resulting explosion.

Varied types of wheel arrangement were tried out with locomotives supplied by American and British companies. Surprisingly the most popular were the Rogers built 4 -8 -0 s which became known as the 'Andes' engines. They had six foot driving wheels and a relatively short boiler; it was found that smaller diameter driving wheels tended to make the engines 'slippery' on the grades. The short boiler meant

Andes Class



that the level of water in the gauge glass did not vary so much as that in a longer boiler when the engine changed from a downhill grade to an uphill grade.

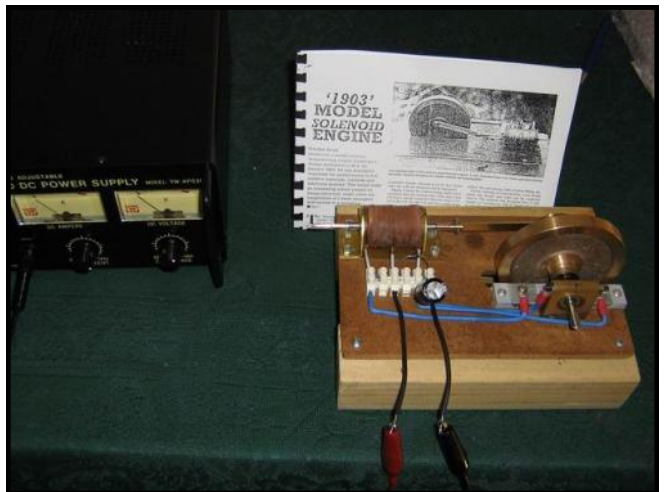
There was a considerable delay in replacing the steam engines with diesels. When diesels were trialled it was found that they were unable to handle the change of altitude from sea-level to 15,000 feet. After some work the diesels were capable of getting from sea-level to 8,000 feet. Others that had received different engine modifications were able to run from 8,000 feet to 15,800 feet. Much later they were able to get the diesels to run from sea-level to 15,800 feet.



This steam powered launch is being built by Paul Dodge of Wellington. Your editor made the boiler and some of the fittings. Paul has made a lovely job of the hull. After a few minor teething problems are overcome, the boat will be ready for trials in the water.



A few months ago Martin Wall called on me looking for some issues of Model Engineer so that he could build a model of a '1903 Solenoid Engine'. Brian Leslie was able to help with the 'Model Engineer's' and within a couple of months Martin was back with the completed model which he ran on our kitchen table. Those of you who get the 'Australian Model Engineering' magazine will find an article on a 'Solenoid Engine' built many years ago.



FOR SALE

A Lux drill mill. It has eight speeds, and a three morse taper. It comes with a stand, 13mm chuck. The table length is 20 ¼", width 6 ½". Sideways travel 13" and fore and aft travel 6". It has a 1hp motor, colour is light green. Asking Price \$1,100 ono. David Neilsen 06 3551520

FOR SALE

Eccentrics, straps and links for a Stuart Turner No 4 steam engine. A small horizontal boiler 50mm diameter by 150mm long. Meths fired, Smithies type. No boiler certificate. Graeme Hall 06 344 2495