May 2012
No 378

THE GENERATOR

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
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Palmerston North

Place stamp here

This Months Featured Model

Report on the April Annual General Meeting.

Now the Annual General Meeting 2012 is 'done and dusted' and the new Officers and Committee can prepare to meet the challenges of the next twelve months. The Minutes of the 2011 AGM were read and confirmed and the various reports were read and accepted and the following Officers and Committee were elected to lead us through the next financial year.

President Robert Edwards
Vice-President Murray Bold
Secretary Stuart Anderson
Treasurer John Tweedie
Committee Cynthia Cooper, Richard Lockett
Fin Mason, Chris Morton, Dave Newstead
Editor Doug Chambers
Librarian Doug Chambers
Track Convenor Richard Lockett

The Boiler Committee are appointed (not elected) and the three current members are happy to continue for another year. They are Doug Chambers, Richard Lockett and Ken Neilsen.

The out-going Treasurer noted that the Club had made a reasonable profit during the year and he saw that there was no reason to increase the subscriptions, this was seconded and carried. Therefore the subs remain at $30 for Full Members and $15 for Country and Junior Members.

The out-going Officers and Committee were thanked for their efforts through the past year and the Track Convenor thanked the members who run their engines and those members who come down to assist on Track Running Days, also the volunteers who work hard at keeping the Track and grounds at Marriner Reserve tidy.
After the AGM voting was held on the recipient for the 'Clubman of the Year Trophy' and the holder of the Shield for the next year is John Tweedie.

On The Table

Richard Lockett showed us the bogie for the NZR U class locomotive that he has under way.
Fred Kent showed us the results of some experimenting with Plaster of Paris – polystyrene mixture to create features for an HO model railway.
John Tweedie showed us some wheels he has been turning for his driving trolley.

May Club Night

7:30pm, Thursday 24 May 2012
Hearing Association Rooms
Church Street, Palmerston North

Members are invited to bring along a Mystery Object, preferably model engineering related for their peers to try and identify.

COMING EVENTS

Track running at Marriner Reserve Railway

May 20th from 1pm to 3pm
June 3rd from 1pm to 3pm
June 17th from 1pm to 3pm

Open Weekends

Hawkes Bay Model Engineers,
50th Reunion 6th – 7th October.

New Plymouth Model Engineers
60th Birthday Bash
Labour Weekend 20th- 22nd of October.

Any PNME members thinking of attending either of these events should contact the Editor, Doug as he has information flyers regarding registration, catering etc.

RAFFLE

The committee has been given a set of Telescoping Gauges for measuring internal bores etc. There will be 50 tickets available @ $1.00 each. They will only be sold at the next club meeting. May 24. Bring your spare $$

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

THIS MONTH'S FEATURED MODEL

By Doug Chambers

All the models featured in 'This Month's Featured Model' have been recently completed by mainly Palmerston North model engineers.
The Heisler Bush Locomotive on the front page was built by Bob Walters (the driver) in the early 1990s. After being idle for many years Bob has recently had the boiler retested and the Heisler is now back in steam.
I first met Bob about 1979 when I was building my first locomotive (Simplex) and he helped me a lot with advice, passing on knowledge he had gained by practical experience. Bob built a variety of engines, Speedy, Torquay Manor, Evening Star, Koppel, a 5" Virginia, Lucky Seven, NZR 'S' class Fairlie (later completed by the Editor) and the Heisler.
The Heisler is a 5" gauge version of the one drawn up in 3 ½" gauge by Kozo Hiraoka.
At one time or another I had been invited to drive all of Bob's engines except the Heisler. I never seemed to get to Wellington on the day it was in steam. They all went particularly well and when Bob had completed a lap of the Marriner Reserve Railway after the boiler test he offered me a spell at the throttle which I very quickly accepted. Of course being a geared locomotive it is not fast, after all the full-size prototype would not exceed 10 – 15 kph over lightly laid bush tramway lines and the 5" model seems happy at about 3-4kph.
What did surprise me was how steadily it rode the rails. All the drive being between the frames and therefore between the rails, there is no shouldering effect as you get on an engine with outside cylinders. The engine just trundles along like an electric locomotive.
The 1: 70 grade was ascended without a change of noise at the funnel although the fire brightened and the safety valves lifted at the top even though the pump was busy replenishing the boiler with cold water.

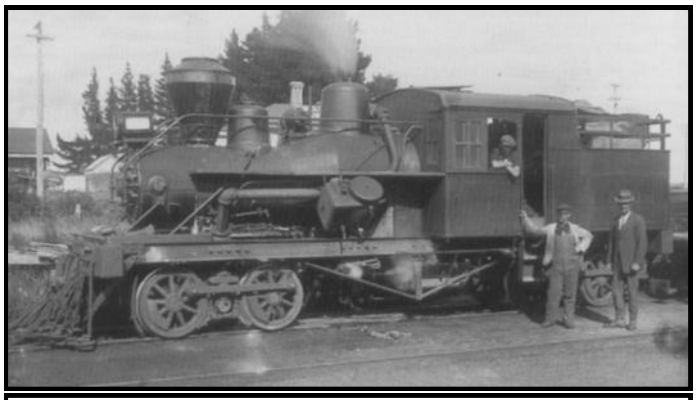
Bob Walters has recently sold the Heisler to Robert Edwards (the new PNMEC President) and I am sure Robert will get a lot of pleasure steaming it.

THE HEISLER BUSH LOKEY

By Doug Chambers

Bush Lokeys lead a far from glamorous life deep in the bush and generally out of sight. However they served a real purpose and the different design features of the three main American builders show totally different engineering approaches to overcoming the problems of building a locomotive to work on lightly laid rail in native forests.
The 'Shay' design featured a boiler off-set to the left of the engine and a two or three cylindered engine below the cab. Off each end of the crankshaft a driveshaft led to the bogies driving the axles through bevel gears.
The 'Climax' had inclined cylinders driving a jackshaft and the two bogies were driven by drive shafts and skew bevel gears.
The 'Heisler' was somewhat different. Designed by Charles Heisler, a college trained engineer working for Brooks Locomotive Works, they were the last of the three companies to build bush locomotives.
They built an estimated 591 between 1894-1939. Charles Heisler's patent was registered in 1897.
The Heisler was less complicated than their two main competitors. The two cylinders were set at right angles between the frames.
The cylinders protrude out from each side of the boiler barrel and the crankshaft had a single throw. A driveshaft transmitted power to the leading axle of the front bogie and to the trailing axle of the rear bogie where uncomplicated straight bevel gears were fitted in an enclosed gear housing on the axle itself rather than on the bogie frames. The gear reduction was 2.33 : 1 making the locomotive slightly faster than the 'Climax'.
The 'Heisler' then had several advantages over the 'Climax'. The crankshaft was part of the transmission shaft thus eliminating a set of gears and a source of vibration.
The shafts powered one axle of each bogie and the second axle was driven by simple side rods which meant that a further set of bevel gears was unnecessary. The bevel gears were enclosed in a housing which excluded dirt and water and the oil enclosed provided positive lubrication. Heislers were slightly faster than their competitors and rode very well particularly after 1915 when a more flexible truck design was introduced. In the 1920s eleven models were available, eight two truck models ranging from 24 – 65 tons. Three further models covered the range from 70 – 90 tons and these were fitted with three trucks. In 1925 superheating and piston valves were introduced on models of 50 tons and upwards.
There were seven Heislers imported into New

Zealand through the agent Richardson McCabe of Wellington. The first was a 17 ton model and it entered service on Brownlee and Co s' tramway at Havelock in November 1903.
Taupo Totara Timber Company owned four Heislers. They were two 1904 20 ton models and two 1921 32 ton models. This last pair were the most powerful to operate in New Zealand. Another was imported for Bartholomew L&T Co and another for Camerons Midland Sawmilling Co. By 1939 the future of bush lokeys was nearly over. Heislers were voluntarily wound up in 1940-1.



The photo is of one of Taupo Totara Timber Company's 32 ton Heislers. The weights are quoted in US tons equalling 28 Imperial tons.

The Demise of the Bush Lokey

By Doug Chambers

By 1925 various designs of 'Rail Tractor' were appearing on the bush tramways.
Often converted from old cars but increasingly built from Fordson tractors. Their advantages over the Bush Lokey were several. Their lightweight (about three tons) and short wheelbase meant they were able to handle loads over very lightly laid rail, negotiate very tight curves and were economical. They didn't require a driver with a steam ticket nor a fireman. It was a lot easier to supply petrol or kerosene in cans than dry wood cut to firebox length or coal. Purchase price was also obviously a factor.
But by 1935 a new sound was being heard in bush, a diesel engine and rattling and squealing crawler tracks. Caterpillar tractors were moving in to where the log hauler had reigned supreme. The log haulers were a steam powered winch that once firmly anchored in place could haul out the felled logs to the skids where the logs were loaded on to the bogies ready for the Bush Lokey or the Rail Tractor to haul to the sawmill. The log hauler required a team of four or five men to operate and usually needed water and dry wood brought to it meaning that more labour was required.
Gough, Gough and Hamer, the Caterpillar agents, set up a contract with the Ellis and Burnand sawmill at Mangapehi. Goughs would supply their own felling team, a Caterpillar Diesel 75 and a Caterpillar Twenty.

Ellis and Burnand's Caterpillar 75 in about 1938. Driver and mate hooking up another log.

A Union Foundries, Stratford, tractor showing tight curves and steep grades while working for Cashmore Brothers at Wau Wau in 1948.

The Twenty was used at the loading skids to roll the logs onto the tram bogies. The gang was to supply a total of 11 million feet of timber to the sawmill in a period of eight months.
The sawmillers were sure that the Caterpillar would not be able to fill the contract, but after a month or two of the contract had passed, the mill manager was embarrassed by the amount of logs in the mill sidings, the sawmill could not cut the logs quickly enough and there was no more room to store the incoming logs at the sawmill. The Mill manager tried every trick in the book to delay the arrival at the sawmill of more logs. The track needed repair, the locomotive

needed repair, there had to be alterations to the sawmill but the contract said that he had to accept the logs and he did.
Although there was resistance from the sawmillers at first they could not argue against the obvious financial benefits and the Caterpillars moved into the bush.
Logging trucks had been used from the early 1920s but they had been restricted to existing roads. By the late 1930s more powerful trucks were available and a caterpillar tractor with a blade on was easily able to force miles of road through the bush allowing trucks to be loaded at the skids where once the Bush Lokey bogies had been loaded. No longer was it necessary to lay tracks through the bush for rail transport of the logs. Now that there was a viable alternative to the bush Lokey, the Forest Services changes to policy on Fire Protection meant that by 1955 virtually all steam locomotives were out of service and left to rust away.

A Petrol engine Mack truck leaves Top Skids for Owhango about 1955.

Letter from England

By Stan Compton

Last month I told you about problems with large vehicles and our narrow back roads, well as this country is part of Europe foreign drivers have free access but they cannot read our road signs. So if their 'Sat-Nav' tells them to take a route that is signed "Unsuitable for Heavy Traffic". They carry on and find the route is so narrow they cannot go forwards or backwards with a large semi-trailer. I saw a clip on TV where a heavy crane had to be brought in to lift the vehicle out of its predicament.
The problem is caused by the use of old maps to program the 'Sat-Nav'. What an awkward job it must have been to lift the semi-trailer from such a tight spot.
Recently I was walking past a sale-room in town and saw a farm tractor and trailer being unloaded of timber. This was hardwood that had been cut and seasoned for the furniture trade. A week later I went to view what had been put into the advertised sale looking for a wood- lathe for someone and found the timber stood on end around the sale-room. Even short lengths of branches of trees that I guess would suit a wood-turner.
The newspaper advertisement stated that there was a Myford Lathe and a locomotive chassis on sale. The ML 7 was old but had seen little use, even a Myford dividing head was included, someone might get a good deal.
The locomotive chassis was a 'Juliet' and there was a construction book for 'Mona' one of the LBSC engine designs, all part of a deceased estate. One day I might hear what happened to this material, the 'Juliet' chassis was well-made with no slop in the valve gear. I hope it goes to a good home being an ideal project to start on.
There were many 'lots' of woodwork tools displayed, planes, wood chisels etc., about six wood lathes but none of interest to my acquaintance.
A local clock builder bought a restored Myford ML 7, it looked very tidy but made an odd clicking sound on high speed direct drive.
I traced this to a worn main spindle vee pulley. The lathe had been used a lot on top speed and the vee pulley had worn leaving a ridge protruding near the root of the vee. The new belt fitted was riding-up onto the ridge. To save stripping the lathe down to machine the ridge off the pulley vee I looked for something to make a hand held turning tool out of and found a worn butcher's 'steel' bought when we married sixty years ago. Good carbon steel, just the right length, I ground three flats on the end, tried it out on my lathe pulley and it cut the alloy easily, so that 'steel' has a new lease of life.
I have a young friend who acquired a locomotive with a new boiler, an unusual model in 5" gauge, an 0 -4 -4 with outside cylinders and fitted with Stephenson Link Valve Gear.
It has engraved nameplates fitted 'Silver Bell', but difficult to trace the history of the engine.
The new copper boiler, built by a professional has an odd shaped firebox, being tapered instead of parallel to fit between the frames causing some difficulty on installation.
We assume the boiler constructor used an odd-shaped flanging plate to save making a

new one. Once completed this well built engine should be very useful out on the track hauling passengers. But why is it that a pair of overweight grandparents see no problem for a driver on a steeply graded track with this family on board, the grandchild weighs very little but add the grandparents and !!!

I may have mentioned Gloucester Docks previously, the old warehouses have been restored, and one is now the 'Waterways Museum' with displays of canal life which were the main method of freight movement before the Railways arrived. Recently we had lunch in the café provided that was once the blacksmiths shop. Some of the original equipment was on display, even a container with various sizes of flat, blunt-nosed iron nails still in this sectioned box with the sizes painted on, 2", 2 ½" 3" etc. Anywhere else these would have been dumped.

Now a new shopping mall has been built as is the fashion these days, but what interested me is the antique centre, one section has a display by a local clock restorer all showing high quality workmanship. He caters for a limited market, no one needs to buy an antique clock to tell them the time these days, what would have been an important household item is now a luxury item displaying good taste.

Does anyone remember the boiler attendant at Wall's Ice Cream Plant in Palmerston North years ago? It was an automatic boiler but regulations demanded a certified person be on site even though he had little to do. This man did not just sit there reading the paper all day; he built a large model of the 'Queen Mary', the pre war Cunard Company liner. When he wrote to the builders to obtain working drawings they replied telling him that the drawings weighed four tons, but they sent an address in America of a supplier of suitable size simplified drawings.

I have just read a newspaper article about a local man of 75 who has built, from scratch, an 11 foot long model of the RMS 'Titanic'. It took him five years to build and he often wondered "How the Hell am I going to carry on making this!"

Alex Dickson

In December last Alex Dickson died. Alex was introduced to the Club by his Massey University work colleague and early member, Stan Compton in the early 1980s. Throughout his time with the Club, Alex generously shared his wide technical knowledge with his fellow members be it Club meeting nights or from his home on Park Road.

Alex began his working career with the New Zealand Railways at their Hillside workshops in Dunedin where he gained a wide knowledge of all the aspects of heavy mechanical engineering that NZR were able to offer at that time.

War service with the RNZAF disrupted this course and after demobilisation he moved to Palmerston North and in time began a new career with what was then Massey Agriculture faculty of Massey University where he was a Reader, lecturing in all mechanical aspects of agricultural engineering.

He applied his fascination with computers to other hobbies – ham radio expanded to monitoring transmissions from satellites by means of a programmed moving antenna, and Photoshop added new dimensions to his photography. Always the teacher Alex became involved in bringing computing to seniors at the senior Citizens club.

An early modelling project was the Stuart Turner 'Sirius', a high speed vertical twin cylinder steam engine. Alex saw this as the ideal power plant for a launch and this led to the construction of a 'Yarrow' type Marine boiler. Now if the launch were to be controlled remotely, automatic control of gas firing and boiler water feed would be required. And so it was. Having solved all these problems, the need for a hull was set aside and all the components were assembled to a baseplate. The assembly is now on display at Colin Stevenson's Museum at Tokomaru.

The next project was the 'Mastiff' petrol engine, a flat four, water-cooled unit. Though castings were available from England, patterns were fabricated and after some trial and error, castings were produced in the home foundry. These proved satisfactory and a running engine resulted. Alex then embarked on the radial engine 'Heinan 5' machined from bar stock. This was largely completed before the ever increasing interest in computers brought the project to a halt. This was by no means the end of workshop activity. Tool-making continued as did the manufacture of jigs and fixtures for friends in radio who may have spotted some bit of kit that Alex had designed for his own use.

Alex has been a great friend to members of the Club and we will miss his clear descriptions of the way all manner of mechanical contrivances function, and we will miss his ever cheerful and helpful presence amongst us.

By Finley Mason