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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
22b Haydon St,
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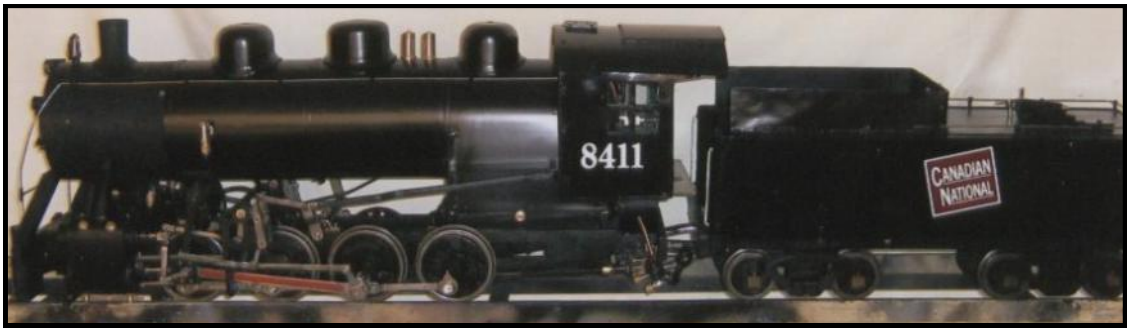
Place stamp here

This Months Featured Model



REPORT on the August Meeting.

Richard Lockett spoke on the manufacture of piston rod glands from leaded gunmetal.
He explained that a mandrel held in a collet is desirable as the metal is soft and the bore for the piston rod can easily be distorted if held in a chuck. He went on to explain how the angles for the diamond shape are worked out and how machining is done on a rotary table under the mill. All very technical and correct for trained fitter and turners. Several other members offered up alternative options. I knew that Richard had been making new glands for the 'Wren' that he is overhauling prior to its sale.
I thought back to 15 years ago when I made the original glands and I knew that the diamond shape was produced by the use of a hacksaw and a file !!!!!!!!!!

'Bits and Pieces'

Fred Kent showed us a very nice metal and plastic kitset of a 1928 Mercedes Benz SSK sports car. The original had a 7 litre engine and was capable of 250 kph. He had bought a similar kit for a friend who is very ill and Fred hoped it would raise his spirit, during its assembly.
Ian Stephens showed us the almost completed stationary steam engine that he has been working on. It is actually the last engine that Clem Parker was working on when he gave up model engineering. It was unclear to Ian what form the engine was to take and he suspects that Clem never intended it to be a horizontally-opposed layout. Never mind it had been running on air during the afternoon before the meeting, and it ran very well until the power went off.
Doug Chambers had a wheel set for the Hunslet now fitted with steel tyres over the cast iron disc wheels.
Murray Bold had a micro controller fitted into a Gauge 1 wagon. The controller will measure the length of a track that the train is running on and will be altered to record the speed of the train as well. It was first demonstrated at the Masterton Model Train Show held recently.
Brian Avery showed us the Stuart Turner 10V and the Sirius engines he had bought off Trade Me recently. The Sirius is missing some valve gear components but Brian will have little trouble making them. Long term plan is to use the Sirius to power a generator.
John Tweedie has been making the 'Grasshopper' engine described in the Australian Model Engineering magazine. The 10" diameter disc, 1" thick that he acquired for the flywheel was too big to swing in his lathe so he machined it under the milling machine. It must have taken some time but the flywheel complete with spokes, all machined out of the solid is now very nearly finished. John admitted that the job hadn't been without problems.

SEPTEMBER CLUB NIGHT

The September Meeting will be held on the 24th September, at 7.30pm, in the Hearing Association Rooms, Church Street, Palmerston North.
A guest speaker has been organised, **Laurence Brooshooft** will talk to us on various milling techniques. Laurence is a very skilled tool-room engineer so this is a good chance to learn how to get a better result from your milling machines.

COMING EVENTS

Mid Week Run at Marriner Reserve Railway

22nd September between 10.00 am and 2 pm
27th October between 10.00 am and 2 pm
Please contact Doug Chambers beforehand.

Track running at Marriner Reserve Railway

4th October from 1pm to 3pm
18th October from 1pm to 3pm

Open Weekends

Auckland 50th Celebrations
2nd –4th October 2009

Havelock North
24th –26th October Labour Weekend

New Plymouth
24th—26th October Labour Weekend

Tauranga Miniature Railway
7th & 8th November 2009.

The closing date for the next issue of The Generator is Friday 9th October

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

A **Morgan Mill Drill**
Apply to Bernie Coyne Phone 06 753 4528

A Combination Folder, Roller and Guillotine machine. Suitable for lighter gauges of metal.
Apply to Don Dudley Phone 06 368 6120

THIS MONTH'S FEATURED MODEL.

By Doug Chambers

A locomotive that has always interested me, 'Caribou', the Canadian National Railway 0-8-0 heavy shunting engine. No way could it be considered a 'handsome' engine but it has a very purposeful look about it. The full-sized engine was designed for assembling and breaking up trains of about 3000 – 4000 tons in the shunting yards.
This particular model arrived at my home in several cardboard boxes. In the boxes were, a new boiler that had been made many years ago, a chassis, four cylinders, two complete sets of driving wheels, two pony trucks, two sets of Baker valve gear, a tender that had seen use, a set of well used superheater elements and a burnt out grate made of mild steel. Who the original builder was remains a mystery.
It is believed to have come from the Petone area and I have confirmation that in the early seventies a 'Buffalo', the 2 -8 -0 version of Martin Evans' 'Caribou' was running on their raised track.
Why a lot of the parts are duplicated, and why there is a brand new boiler, I don't know. Petone Club member Ron Blackwood had bought the assorted parts at a Club auction and eventually they were handed on to me to see if I could complete the engine.
I decided to complete the engine as a 'Caribou' 0-8-0 tender engine so the first job was to carry out a hydraulic test on the boiler. It passed the 180psi test with no problems at all so I set it aside and looked at the chassis. I had to shorten the chassis by an inch and a quarter, remember it had originally been built as the 2-8-0 version. I had to make new boiler fittings, cylinder drains, pistons and piston rings and new piston valves. The hand and axle pumps had to be overhauled and a new stainless steel grate and ashpan were made. Much of the cab had to be rebuilt and a new smokebox had to be made as the original was too big in diameter. All the boiler mountings had to be made.
The boiler has passed the steam accumulation test and now I am keen to see how it goes on the track. It will not be a fast mover on those small wheels but I expect that it will be capable of hauling a good load for its size.

SOME NOTES ON THE CANADIAN NATIONAL CLASS 5

By Doug Chambers

The first of the class 5 Canadian National switchers were built by Baldwin's in 1927. These numbered from 8342 to 8349. Further batches were built by Canadian National Railway in 1929, 1930 and 1931 and there were eventually 73 engines in the class. Driving wheels were 51" diameter. Bore 22" and Stroke 28". Boiler Pressure was 220psi and tractive effort was 49600 lbs. Compare this figure with the 34000 lbs tractive effort of a NZR Ka.
The frames were of the Bar type and the four axles were all compensated. There was no need for pony or trailing trucks as the engines were to be used for switching duties within the confines of the yard where speeds would not exceed 20mph.
The idea of 0-8-0 tender locomotives for switching duties was not just for Canadian National Railways. All the major American Railways used 0-8-0's and because their freight trains were even heavier the size and power of their switchers was even greater. One of the biggest was a class built by ALCO for the Indiana Harbor Belt Railway. These engines had three cylinders, and were fitted with a booster engine driving the front bogie wheels of the tender. Tractive effort of the engine was 75700 lbs and the booster delivered another 13800 lbs.
Baldwin, ALCO, USRA and Lima all built 0-8-0 tender switching engines, the basic design varying only a little to suit the requirements of the purchasing Railway Company.
Like most of the switching class locomotives, the Canadian National Railway class 5's seem to have been camera shy. Enthusiasts seemed to have ignored them in favour of the express and heavy freight locos. I have only been able to find a couple of photos of them at work.
One thing that I found odd was the use of Baker valve gear. The NZR used Baker valve gear on the 'J', 'Ja' and 'Jb' classes and the last two 'Ka's' were fitted with Baker valve gear instead of Walscharet's gear.
The NZR and the crews were able to compare the performance of the two valve gears on locomotives

of the same class and on the same tracks under similar working conditions. It was found that the Baker valve gear allowed for very free running on the flats around Shannon but was not so good on the steep grades around Taihape to National Park. The 'Ka's' fitted with Walscharets valve gear slogged up the grades easier but were not so free running on the flat. The Canadian National Railway P 5s were only going to be slogging up and down a marshalling yard so why use a valve gear known for free running?
I visited Mike Barnes recently and over a cup of coffee in their nice warm kitchen Mike and I pondered the question and finally came up with what we feel are two plausible reasons.
One, the Americans after years of using Stephenson valve gear (designed by an Englishman) or Walscharets gear (designed by a Belgian) were keen to use a 'homegrown' valve gear as Abner Baker was an American.
Or **Two**, Baker valve gear was chosen because it consists of a number of straight links and pins. There are no curved expansion links which would take time to re-machine. This meant that when the valve gear had become worn it would be a simple and quick job in the repair shops to dismantle the gear, fit new bearings to the links and new pins which would have been pre-made ready for when the loco was brought in. Both of us agreed that it was probably the ease of servicing that saw Baker valve gear chosen as efficiency for a switching engine was not as important as engine availability!

LETTER FROM ENGLAND

by Stan Compton

Thirty years ago we were given a 400 day clock, it had a pretty enamelled face and a set of four brass balls that rotated on a flat suspension spring. It was a waste of space and never did go properly. When we left New Zealand that clock was put into our garage sale and was sold to a woman who told me that she would get a quartz unit fitted to drive it, now why didn't I think of that ?
Which brings me to progress on my turret clock which is now keeping good time and driving the wands on the exterior dial, but at one stage I contemplated using a quartz unit to drive the exterior unit.!!! To recap, when I first completed my clock after much grief trying to index from a rotary table to cut the gears, with a temporary weight fitted, directly driving the cable drum.
So far so good; a gentle push on the pendulum rod and to my surprise the clock began to tick, adjusting the "back lock" evened the beat and success or so I thought. It ran like that for weeks while I got onto building the exterior drive unit. This has a copper tube, bushed each end to carry the 16mm stainless tube that carries the hour hand. This tub is also bushed to carry the 8mm drive rod for the minute hand. This rod is stainless steel to withstand the rain etc and is drilled and reamed for a shorter silver steel rod, Loctited into place, to accept the drive from a pair of bevel gears. It also carries a spur gear to drive a reduction gear wheel to the second pair of gears driving the hour hand tube. It sounds complicated but is quite simple really. Once completed and fitted through the hole in my 11" thick outer wall and coupled up my problems really started. The clock kept stopping.
Why did it keep stopping under this extra load? It must be friction somewhere and it seemed to be the bushes supporting the ¼" drive rod. I had already given these the taper from both sides as all clock bushes are treated, later on, after heating the drive pinion to break the Loctite bond, I was able to fit the 8mm stainless rod into a collet in my lathe and found my problem. After drilling and reaming and Loctiting the ¼" rod in place I had assumed it would be true, I know, never assume.!!!! The ¼" rod had 8 thou eccentric, not much I admit, but enough to create friction. Once straightened out and reassembled that unit works well.
Now back to the clock, by now set up on its stand being driven by the 17 kg weight with a triple fall to run for seven days. I found that the screwed arbour below the main drum could do with an extension with a square filled on it. This would be a great help to adjust the pitch in relation to the drum carrying the 1/16" bronze cord.
It took a long time for me to grasp that the tips of the escape wheel push the pallets on their polished angled ends, putting the energy into the pendulum!!
The construction articles by Peter Heiman in the Engineering in Miniature did explain this, also that the back faces of each pallet have to 'lock' onto the escape wheel at each beat causing the wheel to pause and gaining maximum travel down the pallet face. If you look at the seconds hand on a long case clock, a grandfather clock to you and I, you will see this pause taking place.
Now try as I might I could not get enough "swing" on my pendulum to get this lock, I was ready to give up on it when I had a word with our local clock repairer, who just happens to be a member of the Hereford MES and who keeps our steelwork painted. He asked me ,"What oil are you using"? I replied that it was clock oil that I had acquired from someone who had disposed of his long-case clock and the bottle of oil

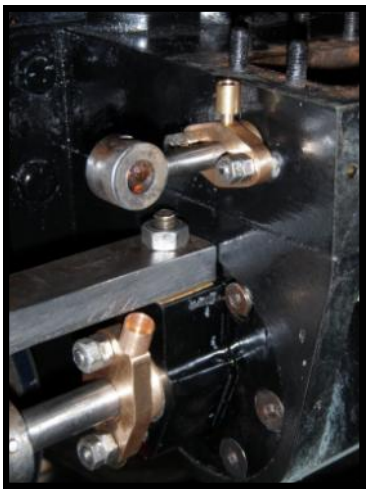
had got left behind. “That’s no good” says Peter, “It is too thin for your heavy drive weight, I use 20/50 engine oil on long-case clocks, have done for years with no trouble.”
I had some ‘spindle oil” by me, a pure oil with no additives, this was applied to the heavy arbour bearings and guess what? The throw on the pendulum nearly doubled!! After months of struggle now I had a good “lock” and of course power.
Such a simple answer; I could kick myself.

After the saga of my turret clock I will tell you now about three locomotives that were at our tracksite recently. First Brian brought his ‘Maid of Kent’ to test on the elevated track, a man of retired age and his first attempt. It ran very well with good valve beats. Just a few details to attend to, such as reducing the lift of the check valve balls in the pump to obtain a better flow rate. About one sixth the diameter of the ball is the correct lift for a pump and one third the diameter of the ball is the correct lift for the injector check valve. Brian was so pleased with the engine’s performance, he told me that when he started, he never thought that he would see it run.
The second locomotive was a ‘freelance’ 5” gauge ‘Atlantic’ based on GWR practice. Very well built with a nice open cab for easy access. The owner, who had bought it from our area, lives in the South of England and drove over 200 miles to have a run on our track, driving back the same day.
During the day one of our members was hauling passengers with a ‘Springbok’ and he found he was starting to ‘slip’ under load. Then I noticed the owner of the ‘Atlantic’ re-oiling his tender axles.
I told him that there was no need for that, only the motion.!!
The other loco was a super detailed GWR King, bought by a member who had managed to seize it up while running on a short track at his home.
The owner is finding it hard to understand that there is an awful lot to learn about steaming and operating locomotives.

Robyn’s Rebuild Part Two

Richard Lockett

Work has commenced with reassembling the cylinders with no additional work required on the pistons or slide valves only a clean. New gaskets made for the cylinder end covers and fitted up with the new rod glands. Coupling rods refitted as no excessive bearing wear being discovered attention turned to the crank rods with the little end pin being replaced as worn out of round on the crosshead bush



bearing journal but not so the bronze bush in the cross head. Work has also centred on the boiler with new clacks made for the injector and pump feeds to my own design raver than the prototype Kerr Stuart design with flange pipe connections which were difficult to work on and impossible to polish. Remembering than for a pump clack it’s one sixth ball diameter of lift and for the injector it’s one third ball diameter of lift.

On removal of the blow down valve a large amount off scale was trapped behind around the foundation ring, big bits unable to pass through the valve at blow down. On further examination looking inside through the clack mounting revealed a build up of scale on all internal surfaces. These deposits need to be removed while the boilers out remembering this is after fifteen years of service so a good soak with citric acid was called for to brake up the deposits followed by a good flush out with the hose.
Work to follow will include a new blowdown valve, new pop safety valves, and regulator handle and gland bush.

Model MEE 09 Memories

Well what can one say, a pretty impressive effort all round on our part guys and girls from a smooth Friday set up right through to a very sharp Sunday evening break down.
A big thank you from the management team to all who gave up their weekend for the PNMEC to sell entry tickets, raffle tickets, made cakes and muffins for our morning – afternoon teas, entertained our visitors, built miniature forests, before cleaning up our mess on Sunday evening and to all those who brought in their treasures to show off to the public.
We did make some money although I feel not

enough for the effort we put into the event, the Leisure Centre having the capacity to handle a far bigger turnout of people through the door but on saying that only 200 people turned up to watch our representative netballers play Southland on Sunday the 6th at Arena 2 so perhaps we didn't do to bad after all.
The raffle was won by a young fella called Ben, I dropped the prize off at his home on my way home from Model MEE, his mum and dad were so excited but the train set was to be hidden in the garage to await Ben's birthday in October. I thought that was a bit hard as winning a raffle a bonus you don't win that many in a lifetime, well I don't.
Now we did have some support from a couple of local businesses to assist with our advertising so if your feeling a tad lazy and fat nip down to **CLM Health and Fitness Gym** at the Lido pool and see Vaughan Hope to organise a decent workout for yourself.
If you're about to do a bit of DIY about the home or section remember to check out the **Mitre Ten Mega** store and discuss your requirements with the staff.
Last thing if you're after quality tools for the workshop visit Kelvin and the team at **Trade Tools** in Tremaine Ave.

Richard Lockett

Stan's restored 1914 Governor Motorcycle

Ben's prize.

Two of the Income Gatherers

Les's Railway

Looking after 3 railways

Go to
www.pnmec.org.nz
to find many additional photos