

The Generator

Issue 487
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Palmerston Model Engineering Club
www.pnmec.net.nz - pnmec@trains.net.nz

Managers of the Marriner Reserve Railway - Marriner Street - Palmerston North
c/- 119 Ruapehu Drive - Palmerston North 4410

The Palmerston North Model Engineering Club

Upcoming Club Events

Club Nights typically start at 7.30pm and are usually held at the Hearing Association Hall, 435 Church Street, Palmerston North.

Thursday 24 March

There is no club night this month.

Thursday 26 May

Annual General Meeting.

Marriner Reserve Railway

Sunday 27 March

Members only Track Run.
1pm to 4pm
(Richard Lockett 06 3230948)

Thursdays

Railway operations for club members
Subject to ongoing track maintenance and weather.
Contact track manager (Richard Lockett 06 323 0948)

PRESIDENT'S REPORT

I hope the month of March finds you all well.

The Clubs Annual General Meeting was scheduled to be held 28th April, however, it is unlikely that we will be holding regular club meetings by that date. As a consequence, the AGM has been postponed, and will be held as soon as regular meetings commence. Club members will be given the required notice before this meeting is convened.

As mentioned previously, the club is developing a new Website. The existing website will soon be discontinued and the committee would like to thank Murray for his efforts in promoting the club through this medium. Unfortunately, the march of time does not have a place for nostalgia, and if we are going to survive we have to move forward. This does mean change. The new site is in the final stages of development. It is still to be fully populated with photos, historical copies of the Generator, email details etc. Before we hear howls of protest, we know it looks different, smells different, tastes different, and feels different. But this is the price we have to pay, just to catch up to where the world is now. Be patient.

Our current website does a bit of everything, but the prospective members market is a very congested space. To gain penetration, we must separate the roles of the website and the newsletter. The new website has been designed with the specific purpose of attracting the attention of any new members and directing them towards us. The Generator will now focus on club related news and informing members about the running of the club.

Another change that is about to be implemented involves the issue of the Generator. Rather than sending you all an email telling you that the Generator is ready to be uploaded, we will very soon be sending you an email with a copy of the Generator attached (you know like everybody else does).

Once this change has bedded down we will be making changes to the content of the newsletter. Those who visit the new website will notice that it does not include an event calendar. The Generator will soon have a detailed event calendar as its last page, telling members what is planned and projecting activities and key dates months ahead.

For General Interest: The attached photo was taken during the Rotorua Convention held in January of 1984. This photo was taken by Bruce Fordyce and recently posted on the NZ Model Engineers Face book Page by Caleb Scott. This shows Stan Compton (a PNMEC founding club member) driving his newly completed 7¼ inch gauge locomotive on their portable track.

The portable track was in operation because back in 1984 the Rotorua track was only gauged for 3.5 and 5 inch locomotives. This locomotive was built in Palmerston North by Stan having brought the castings and the riveted steel boiler from another individual. When Stan moved back to the UK the locomotive was sold to a person in Whangarei, then ended up in a private museum to reappear in Germany of all places before returning to the UK!

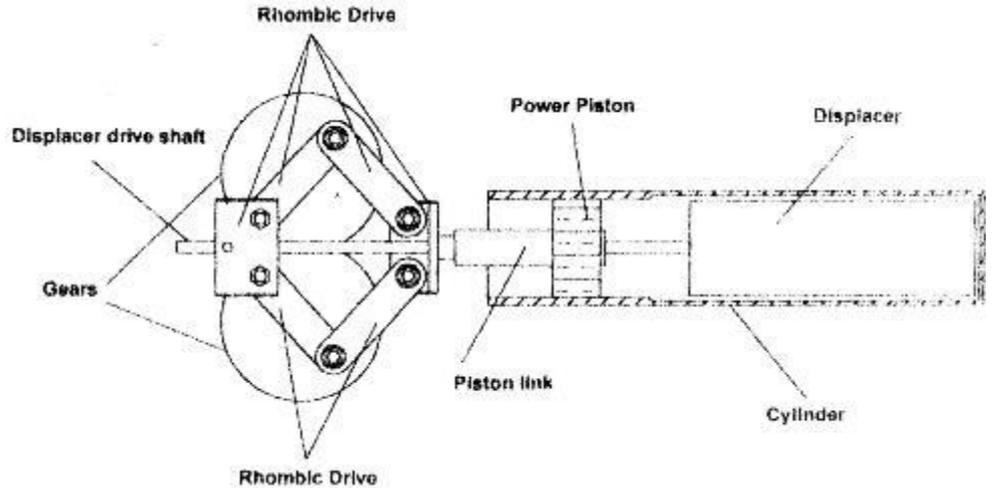


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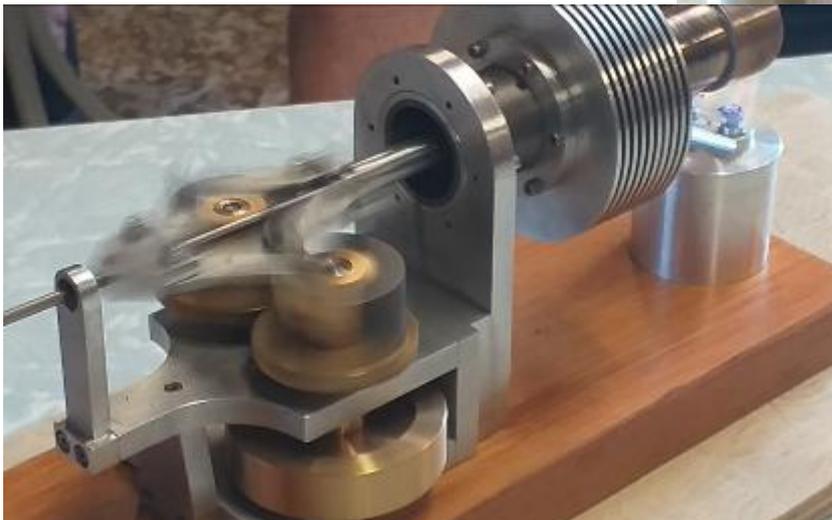
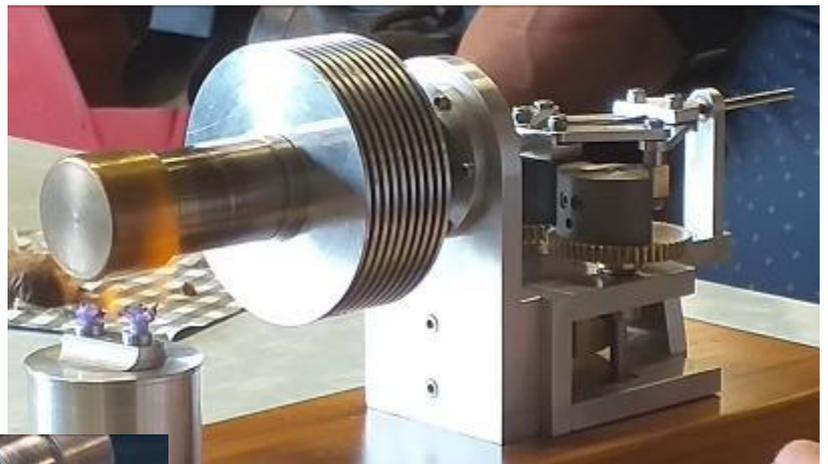
Rhombic Hot Air Engine

As mentioned in the last edition of the Generator Graeme Hall had brought along and demonstrated at the club January barbeque his latest finished workshop project, another Hot Air Engine design featuring a Rhombic drive to control the movement of the power and displacer pistons relative to each other. The Rhombic drive was first applied to an Hot Air Engine by the Dutch electronics company Philips in the 1950's in pursuit of developing a silent electricity generator. The origins of this drive can be traced back to the early 1900's with the Lancaster Car Company who employed this drive on a single cylinder Internal Combustion Engine.

The design for this engine featured in a series from the Model Engineer Magazine from 2005 and Graeme wishes to thank those club members who were able to assist with the acquisition of the full series to enable this project to proceed. Using his many years of experience in the building of Hot Air/Stirling Engines Graeme made some modifications to the design to improve the performance of the engine mainly the fitting of ball bearing to all shafts and linkages to minimise frictional losses. The displacement cylinder is made from Stainless Steel with the power Cylinder and piston made from Cast Iron. A high degree of precision in the manufacture of the drive is required to achieve a smooth running engine with the bronze gears being cut to suit the dimensions of the Rhombic linkage. With the spirit burner lit Graeme was soon able to flick start the engine which as is the norm with Graeme's engines it ran faultlessly!



Spirit Burner lit heating the hot end with the cool end being cooled by the large machined fins by air.



The Rhombic drive in action a blur of spinning gears and linkages.

Photo's editor

Bob the Builder

Of Locomotives that is! Bob being Robert (Bob) Walters, then of Titahi Bay, a model engineer with a long association with the PNMEC.

You will remember the photo from last months Generator of the Belton Manor Great Western Railway Locomotive that Club President David Bell captured while visiting the Christchurch Society of Model and Experiential Engineers at Halswell in Christchurch, which was build by Bob.

Bob a Post Office technician began his association with the PNMEC after an article on him having built an 1 inch scale "Minnie" traction engine featured in the May 1978 edition of the New Zealand Woman's Weekly Magazine which was read by the Chambers family. Jack Chambers, Doug's father made contact and Bob was invited to participate with activities at the Steam Traction Society in Feilding with his miniature traction engine. Bob then went on to built a 2 inch scale freelance compound traction engine before switching over to the production of a long line of railway locomotives which coincided with the building of the PNMEC's miniature railway at the Marriner Reserve.



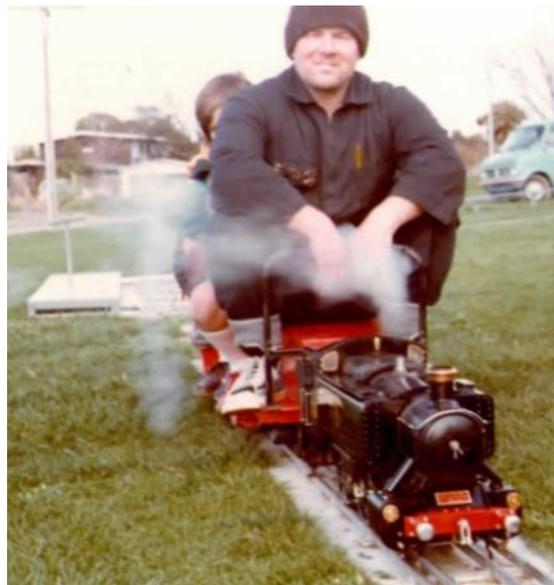
The May 1978 Woman's Weekly article on Robert Walters, Model Engineer.



Bob's compound Traction Engine at the Steam Traction Society's sheds at Maewa, Feilding

Photo's Doug Chambers

Bob driving his 0-6-0 locomotive "Speedy" at the Marriner Reserve Railway in the early 1980's



With the building of railway locomotives, Bob became a regular visitor to the Marriner Reserve Railway over the years at our "Locomotion" weekends and just popping in when passing through when visiting his son who lives up this way. In quick succession Bob produced 5 inch gauge locomotives before moving up to 7.25 inch gauge and the building of an Orenstein and Koppel 0-4-0 rack locomotive.

The Koppel has special significance for longstanding PNMEC club members in that this locomotive, driven by Bob hauled the official train when our Marriner Reserve Railway extension was formally opened in March 1991. Bob is also a keen tramper and would often walk the old Remutaka incline railway route from Kaitoke up to the Summit Tunnel, this inspired Bob to build a 7.25 inch NZR S class Single Fairlie 0-6-4 of which used to operate on this line in the 1890's. A visit to Bob's workshop with Doug Chambers while the Fairlie was under construction made a lasting impression on me, the cab and side tanks in brass, then unpainted, it looked truly awesome and was the moment that my NZR W class 192, then just a dream of mine went from 5 inch to 7.25 inch gauge! Bob was developing other interests in life at this stage and the Fairlie's construction was finished off in the workshop of Doug Chambers in Palmerston North and hence this locomotive did all of its initial running at the Marriner Reserve Railway until sold to Graeme Harris of the Hutt Valley before being passed on Dave Brownlow.

The locomotives built by Robert Walters

- 1 inch scale "Minnie" traction Engine
- 2 inch scale freelance compound traction engine
- 5 inch gauge 0-6-0 "speedy" locomotive
- 5 inch gauge 4-6-0 "Torquay Manor" renamed "Belton Manor"
- 5 inch gauge 2-10-0 "Evening Star"
- 5 inch gauge 4-4-0 "Virginia"
- 5 inch gauge 0-4-4-0 Heilsler logging locomotive
- 7.25 inch gauge 0-4-0 Orenstein and Koppel rack locomotive
- 7.25 inch gauge 0-6-4 NZR Single Fairlie S216
- 7.25 inch gauge Bagnell 0-6-0 contractors locomotive

All these engines were built during a period of about twenty years which is impressive when you think about it, built to a very high standard with no short cuts taken and all performed well straight out of the workshop. Bob had no problem with passing his engines on to new owners when the current build became operational and still to this day Bob Walters locomotives are sort after and owned with pride.



Orenstein and Koppel Locomotive driven by Bob Walters hauling the official train carrying Awapuni Ward Councillor waana Davis and then Club President Chris Morton.

Photo Fin Mason



A recent photo of Bob reunited with his Heilsler locomotive now owned by Robert Edwards at the Marriner Reserve Railway.

Photo Doug Chambers

NZR Single Fairlie S216 simmering away at the Marriner Reserve Railway



Photo Doug Chambers

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Half Round Brass Beading

The current focus of attention on my 7.25 inch gauge NZR U193 locomotive is the tender tank which is fabricated in 1.6 mm brass sheet joined by brass angle. During the 2020 first lockdown at level 3 when it was all click and collect, no contact I ordered the brass angle and a length of brass round bar of 6.35mm dia which turned up on the doorstep the next day from Wellington. The brass round was purchased to make some half round beading which runs around the top flared out rim of the tender sides. During the past week I have finally gotten round to making the beading, so I've had plenty of time to think about how to make the beading from round brass bar.

Many years ago I hunted down the remains of a U class tender in Springfield on the Midland line between Christchurch and Greymouth and took a few photo's as you do for reference. As you can see from the photo below, ignore the cobwebs, half round is not exactly what it is but some lesser amount. The flat edge of the full size beading is 25.4 mm which equates to about 4.5mm on my locomotive and with the limited range of diameters available in these modern times 6.35mm was it but a fraction smaller would have been better.



I had decided way back that cutting the bar in half with a Slitting Saw was the best bet for achieving the desired result.

The plan was to make a fixture to support the bar whilst the bar was drawn past the saw, in other words a bar with hole drilled in it, held in the milling machine vice to facilitate access for the slitting saw arbour etc.

So we drilled a 6.4mm dia hole in a length of bar and Mig welded a piece of flat plate to it and cut into the side of it with the saw.

The brass bar was then pushed through the fixture by hand which took about one hour to slice through 1300mm of bar. Coolant had to be run as the heat build up jammed the bar in the fixture! Two slitting Saws stacked together were used to give the desired beading thickness.

Photo's and script R Lockett



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