The Generator

Issue 495
November 2022

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

Sunday 22 January

Club Day at the Marriner Reserve Railway
From 12 noon (See notices)

Thursday 23 February

Club Night
Project Progress
Show us what you've been up to in your workshop or else where over the summer break

Marriner Reserve Railway

Sunday 4 December & Sunday 18 December

Railway operations at the Marriner Reserve
Trains in operation from 1pm to 4pm
Weather permitting (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)

Club Notices

January Club Day

Our traditional January club gathering will be held on Sunday 22nd January at the Marriner Reserve Railway, Marriner Street, Palmerston North starting from 12 noon.
A Barbeque will be present for you to cook up your lunch etc.
Steam and Diesel outline locomotives will be available for you to drive around the clubs railway track.
Bring along your chair and your choice of food and beverages and some sunshine please.
It is not intended for the railway to be carrying the public on this occasion.
Hope to see you there

A young Liam Puklowski starting his life journey messing around with steam locomotives.

Photo R Lockett

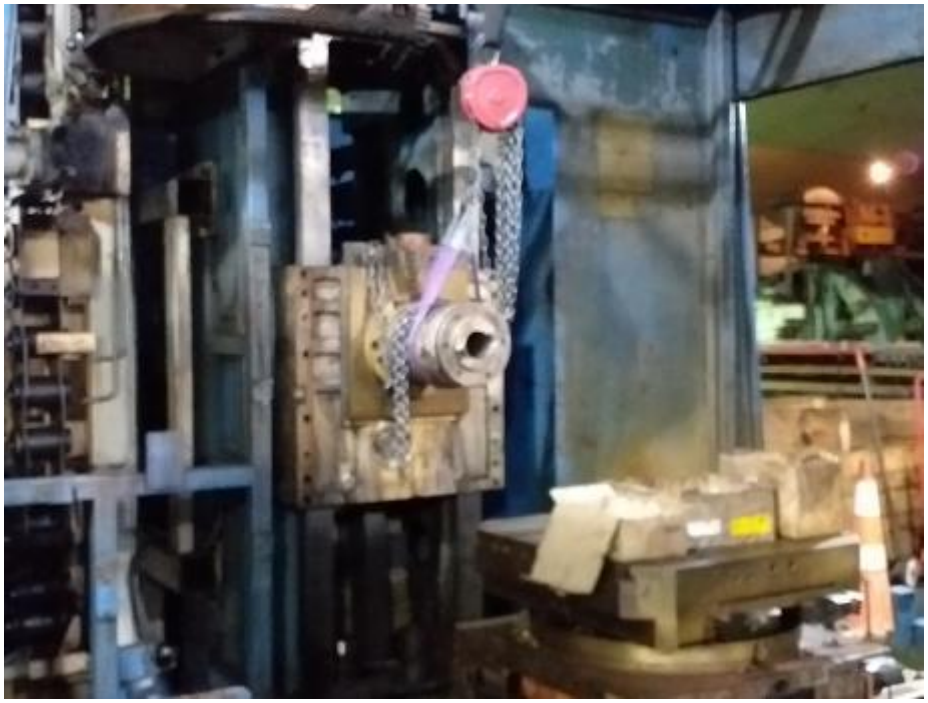
Amusement Device Registration

The Marriner Reserve Railway's Amusement Device Registration (ADR) came up for renewal in October and the first part of the renewal process is to pass a MEANZ safety audit of our railway operation. MEANZ safety auditor Mike Hartle from Levin carried out an audit in late October which the club passed. With a clean safety audit application has been made to Worksafe NZ for registration as a Hobby club Miniature Railway for another 2 years. The club is required to have accurate records of what locomotives and rolling stock are used at the railway and that there are systems in place to ensure that this equipment is regularly inspected. With our personal railway equipment being brought and sold etc keeping the paper work up to date and accurate can become a challenge but having accurate records is what allows you as a locomotive owner to operate at our club and to travel and run at all other MEANZ miniature railways in NZ. PNMEC wish to thank Mike Hartle for making his time available to travel up to Palmy to undertake the safety audit.

October Club Night Report

A club visit to local engineering business Manawatu Hydraulics drew a good turnout of members to see what projects Paul Burr and his staff are currently engaged in.

On a previous club visit many years ago now we were able to view Paul's then newly acquired twin pallet horizontal machining centre and on this occasion we were hoping to see its replacement but with the world situation as it is at present its arrival has been delayed. Purchase of a new machine was necessitated due to a catastrophic failure of the spindle gearbox i.e. 2 speeds engaged at ounce. It would be in Paul's nature to repair this machine but being now an old machine, 20 years it is just not economical to bother with! Paul has sourced the replacement machine from China but fitted with the proven Fanuc CNC control equipment. These machines are large in physical size so the broken machine is slowly being broken down so it can be removed from the building as time permits but knowing that its replacement is to arrive imminently.



The remaining carcass of a machining centre being broken down into manageable pieces.

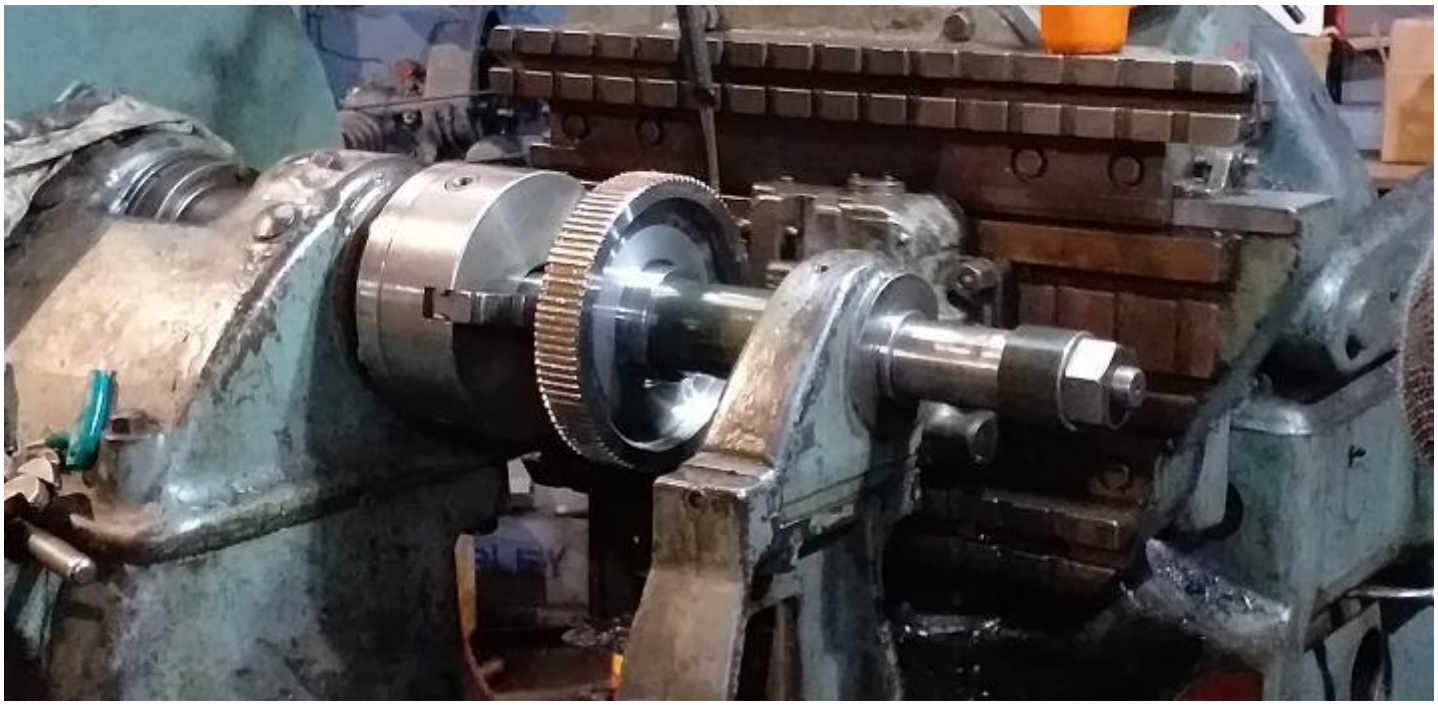
Photo R Lockett

Manawatu Hydraulics have built up a successful and diverse product line over the years from the hydraulic jacks that lift houses onto transporters to the equipment that alters the tire pressures of trucks to provide more traction on gravel forest roads. Over recent years electric truck drive units have been under development and Paul has built up a collection of gear cutting machines, planers and shapers with a possible hobbing machine although I didn't see one amongst the 9 gear cutting machines someone said were in the building. These were older second hand machines which were properly acquired at a favourable price as these are specialized machines i.e. they only cut gear teeth and if you're cutting lots of gear teeth they are priceless, if you're not you would have trouble giving them away.

A Sunderland Gear Planer was in operation cutting a 2mm module spur gear which seemed to memorise those present with the action of the rack cutter advancing a tenth of the tooth pitch with each stroke before retracting the rack cutter back a pitch and repeating the process again, all done mechanically no electronics' in sight!

The Sunderland method of cutting a gear was patented in the early 1900's by Yorkshire engineer Samuel Sunderland with the machines manufactured by J W Parkinson and Son of Keighley, Yorkshire and are made in various sizes, with the machine which we viewed in operation on the smaller side of the range!

A large Kearney and Trecker planer style milling machine was set up for machining large round billets of steel in the first stage in the manufacture of another batch of crankshafts for the single cylinder engines of the first Cadillac motor cars from 1902, which are sold to owners of early Cadillac's worldwide.



The Sunderland Gear Planer cutting a 2mm Module spur gear
Photo R Lockett

Lionel Forde beside the large Craven Lathe “it’s a bit big for my workshop”!
Photo R Lockett

As some of you know Paul has had a lifetime interest in historic military vehicles to which his team of fellow enthusiasts are building up a 6 pounder Artillery Gun from the remaining components salvaged from North Island west coast sand dunes. This gun being one of 2 brought into New Zealand during WW2 for evaluation by the NZ army. Restoration of this gun requires a signification amount of reverse engineering of the remnant parts to produce CAD drawing and hence 3D printed foundry pattern’s and tool paths for subsequent CNC machining operations. Paul’s enthusiasm and dedication to his hobby is impressive.
Thank you Paul Burr

Fitting a DRO to a Milling Machine

I've long planned to fit a Digital Readout (DRO) to my Milling Machine but the price must have put me off because I'd never got around to it until earlier this year. These devices have been around since the 1970's when I was an apprentice Fitter and Turner and we learnt about them at Tech but I'd never seen one until a working holiday in the UK in the 1980's where every turret mill seemed to have one fitted to it! Claimed to reduce machining times by 10 to 15% with a reduction in scraped components they should have been a common sight, but they must have been a very expensive item back in those days. If you purchase a new milling Machine today it will come with a DRO fitted, but unless you are paying big money it is still a tacked on after market addition with cables and linear slides with their mounting brackets in my view an ugly addition to a nice new machine. You would think that with ball screws and rotary encoders incorporating a digital readout could be far better done. With cheaper Chinese Sino brand of DRO becoming available I bit the bullet and ordered one.

The DRO for a set price gives you the 3 axis control unit, 3 linear scales which you chose the lengths of and a mounting kit for the control unit and scales and the whole package being on special at the time of purchase and with my mill requiring scales of the larger length I was getting a good deal.

The control unit needs to be fitted on the RH side of the machine because most of us are right handed and the machine is designed for RH persons but hence other stuff is mounted on the RH side for the same reason so the some thought is required to best position the unit so as to not interfere with lamps etc and to be set at eyeball high and this required additions to the mounting kit.

Additional bracket made to allow control unit to clear work lamp.

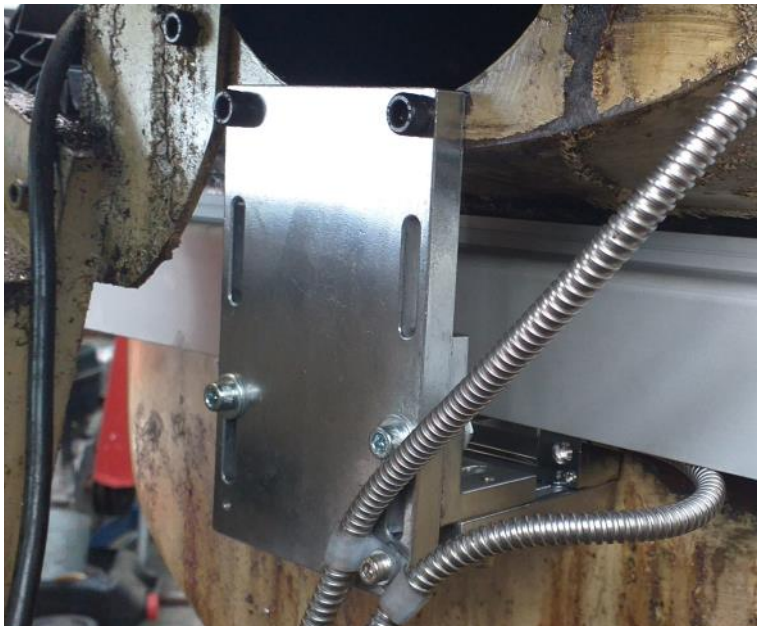
Photo R Lockett

The Z or vertical axis scale ideally would also be fitted to the RH side of the knee but on most machines this is where the machines electrical control cabinet is located so LH side it is and again additional brackets were made to allow mounting of the scale and the reader unit, tapered cast surfaces etc. The scales have to be parallel the machine slides in both planes for the DRO to be accurate and need to be set using a dial test indicator (DTI).

Additional bracket made for mounting of the Z axis reader.

Photo R Lockett

The mounting kit for the scales come with die cast alloy plates and angle plates with tapped holes and slots to allow for multiple positioning possibilities but come with very small screws for the size of the slots, these were all re-tapped for 6mm screws. The Y axis scale was mounted directly to the knee requiring just spacers to bring the scale parallel to the Y axis slide and using the supplied parts for mounting the reader.



Mounting of Y axis scale and reader unit

Photo R Lockett

My Mill came with a hardened work table surface but luckily this treatment didn't extend to the back face where the X axis scale and reader had to be mounted with just holes to be drilled and tapped on nice machined surfaces making for an easy job of this! Just a matter of making shore that the cables are tidy and don't fowl on stuff when axis are traversed to the full extent.
The benefits of these units are that they remove some of the areas where mistakes can be made particularly around the backlash of the leadscrews when positioning using the dials and the built in features of the DRO positioning holes around a pitch circle diameter (PCD) etc.

Date and Time	Activity
Thursday 1st December 7.30pm Sunday 4th December 1pm to 4pm Sunday 18th December 1pm to 4pm	Committee Meeting Marriner Reserve Railway Marriner Reserve Railway
Sunday 15th January 1pm to 4pm Sunday 22nd January From 12 noon	Marriner Reserve Railway Marriner Reserve Railway Club Day
Thursday 2nd February 7.30pm Sunday 5th February 1pm to 4pm Sunday 19th February 1pm to 4pm Thursday 23rd February 7.30pm	Committee Meeting Marriner Reserve Railway Marriner Reserve Railway Club Night Project Progress

If you would like to be notified when this newsletter is published, send us an email with your **Name, Club** and **Email** address to **pnmec@trains.net.nz** with **"Generator Please"** in the subject line.