Newsletter of THE PALMERSTON NORTH MODEL ENGINEERING CLUB INC
Managers of the **"MARRINER RESERVE RAILWAY"**
Please address all correspondence to **:- 22b Haydon St, Palmerston North.**

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THE GENERATOR

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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 onerous.

Visiting club members too, 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

Place stamp here

This Months Featured 1:1 Model

NOVEMBER MEETING.

This was the 'End of Year Dinner' held at the Cloverlea Tavern and judging from the amount of talking, laughing and joking all attending must have enjoyed themselves. It was great to see so many of our members together.

JANUARY MEETING.

This meeting will be held on the 26th January at Chris and Pam Rogers home, 42 Manawatu Street, Palmerston North. Start time is 6.00pm through to 10.00pm and will comprise of a BBQ tea and a workshop 'tour'. Members attending are requested to bring their own steak, sausages etc. Ring Chris or Pam if you are not sure what to bring.
For those of you who have not yet seen Chris's workshop you can be assured there is plenty to see.

VISIT TO MARRINER RESERVE

Bernie Coyne joined in the track running at Marriner Reserve on the 4th December. His NZR Wab No 794 along with Murray Bold's 'Phantom and Stuart Anderson's Dh were the first engines to use the new station. The new station has been attracting favourable comments from passengers and local residents alike.

FOR SALE
PETROL- HYDRAULIC
'Hunslet' (7 14"gauge)

This is the NZR Dsa built by the late Jim Curtis. Fully detailed the Dsa looks good and runs superbly.
This is a classic example of model engineering. It featured in the Australian Model Engineering magazine (September-October 2002) and comes complete with a purpose built driver's car built to the same standard. Enquiries to Jean Curtis, 115 Guy Street, Dannevirke. Phone (06) 374 7151. Price $10,000.

FOR SALE
0 –4 –0 NZR Tr.

7 ¼" gauge. Powered by a Briggs and Stratton via an Albion gearbox. Including a driver's truck
Asking Price $3,200 Contact Dennis McConkey Phone (04)904-6195

COMING EVENTS

Mid Week Run at Marriner Reserve Railway

24th January between 10.00 am and 2:00 pm
Please contact Doug Chambers beforehand.

Track running at Marriner Reserve Railway

1st January 1 - 4 pm
15th January 1 – 4 pm

OPEN WEEKENDS

Whakatane 2006 Open Weekend
14, 15, 16 January

Whangarei Long Weekend
28 –30 January

Manakau Summer Open Weekend
4 – 6 February

Kapiti Open Weekend
11 – 12 February

Auckland Exhibition Weekend
18 – 19 February

Palmerston North Model Engineers Locomotion Weekend
4 - 5 March

Featherston Mini Fell Society Open Day
12 March

Hamilton Open Weekend
18 – 19 March.

The closing date for the next issue of The Generator is Friday 10 February

PLEASE NOTE

In a recent letter Stan Compton told me that the Technical Editor of the 'Model Engineer' was so impressed with Stan's 'La France' fire engine that he insisted it must go on the cover of the magazine in full colour. It appears on the front cover of the October issue.
Stan has since made a display case to keep the 'La France' in.

VISIT TO FEILDING STEAMRAIL

On Saturday 3rd December Bernie Coyne and Doug Chambers went over to Feilding to check progress on the NZR Wab No 794. We arrived just in time to see the left- hand cylinder removed with the aid of a fork lift truck. The bolts retaining the cylinder block to the

frame are fitted to reamed holes and are driven into place with a SledgeHammer. This meant that there was considerable difficulty in removing the bolts, as it was not possible to swing a sledgehammer between the frames because of the proximity of the saddle and other castings.
The cylinder block has a large crack that has become

longer in the period that the loco has been back in steam. Another block was obtained from the Kingston Flyer operators who fortunately had four spare cylinder blocks, through the assistance of Russell Glendening. This will be fitted to the engine in the next few weeks.
The driving axle has to be removed to allow the repairs to be made to the bearing that suffered a 'hotbox' when a spring hangar bolt broke. All this work has to be completed before next Easter when the Wab resumes service hauling the Trans Scenic 'Northerner' between Feilding and Ohakune on alternate Saturdays until Labour Weekend.

But that was not all there was for us to see. The little NZR F class has been suffering from steam leaking past the cylinders and rings. The boiler not being a good enough steamer to provide an excess of steam meant that it was deemed a good idea to see that full use should be made of the steam generated.
The cylinders are being prepared for boring in place. The front buffer beam has been removed but a bracket was in the way of the boring bar spindle. Mike Barnes got busy with the oxy – acetylene gas cutting torch and removed the material obstructing the spindle.
Mike was heard to say that he never thought he would end up cutting up a steam locomotive.!!!!!!

Anyone interested in seeing progress for themselves, should visit the site on Saturday mornings.

Awa Puni Station

By Richard Lockett

Well it's finally up finished except for the internal fencing along the platform, all comments so far very positive from club members and the public alike.
Some of us have been working on the replacement station project over a few years now, as they say good things take time.
With funding secured from the Square Trust steel tubing and aluminium extrusion was purchased and delivered to Roger Corlett's workshop, Bisley Street in late 2004. Steel tubing was also delivered to Valentine Engineering to be rolled into the 1.5m and 4m radius required. Fabrication of the base frame commenced in Roger's workshop on week day evenings and with it half built I received a phone to

say that the city council's structural engineer wanted some changes to the design before a building consent would be issued. All work stopped.
With the design modified and drawings changed a building consent was issued but because the station was to be sited just off the reserve on the road margin a resource consent was also required which in the end was no problem getting. Both consents issued free of charge by the city fathers as we're good people and our trains run on time.
With consents in hand and enthusiasm rekindled fabrication recommenced in August 2005. Big bits at Roger's, small bits in my shed. A large jig was used to ensure the curved sub assemblies were all the same before they were welded onto the main structure.
Welding was done using the Jowett family mig welder (thanks Terry). Six weeks of good weather in August, September saw the steel all but finished and our efforts shifted to the aluminium angle used to secure the Lexan panels onto the steel fabrication, some of these also being curved. I had hoped to be able to bend these by hand around a former, being of a large radius 1.5 meters. No such luck. Next step was to build a rolling machine, which took several days work but still the aluminium angle refused to bend to the required radius. That evening waiting for my fish and chips at my local, I bumped into Bruce Geange's son in law who used to make aluminium bull bars. "You have to anneal the aluminium first, soot up the aluminium with a sooty flame, then heat up until the soot goes, then quench". Gave it a go the next morning sweet as.

Once each aluminium angle had been rolled it was fitted up onto the steelwork to check the bend radius and to cut to length, deburred and numbered. This process repeated for the smaller section angle, which sat on the larger, spaced apart by the thickness of the Lexan. These were then drilled for the 3/16 pop rivets.
All straight pieces also received this treatment. All up 110 pieces of angle and a process, which required a great deal of patience, a quality the editor of this newsletter has in abundance.
The next challenge was to get it all down to the powder coaters in Keith street, the big bits proving difficult to secure to the large trailer we had hired for the job. We got them there and back with out them falling off the trailer or getting collared by the law for an insecure and over size load.
All steel items powder coated Permanent Green with the aluminium angles powder coated coal dust which was deemed to be apt as a colour for a rail station.
The aluminium angles were fitted up onto the steelwork and the holes for the rivets were drilled, Lexan panels cut out and fitted into place and riveting done.
Our attention now shifted to installing the structure on site at Marriner Reserve, the first task being to dig the five holes for the canopy poles 1.2 meters deep, a

good days work with another day to dig and box up for extra platform area and cut and weld up the reinforcing.
A rather large mobile crane was used to pick up the base and top frames at Roger's shop, place onto a

truck and unload on site placing the top onto the base which was then secured to the platform using trubolts.
The canopy poles were then placed in the holes and bolted to the top structure, final welding of reinforcing carried out before 2 cubic meters of concrete arrived from Allied to fill in the holes that were previously dug.

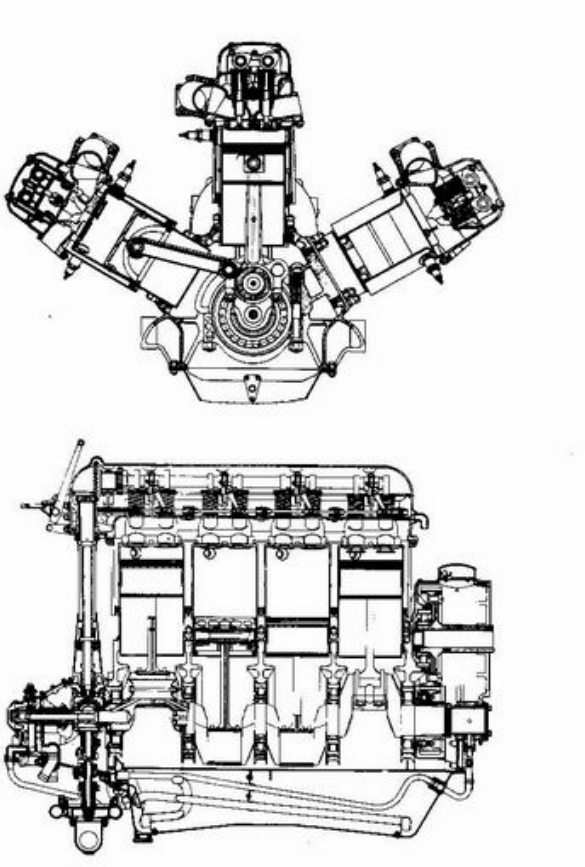
A long wait to watch it dry.
The next day the canopy steelwork was bolted in

position and bracing beams welded to length and then sent for powder coating.
The final act was to bolt up the bracing beams and secure the colour steel roofing another good days work.
A big thanks to all who gave time for this project when called upon; you know who you are.

MORE UNUSUAL ENGINES

By Doug Chambers

By the end of World War 1 the rotary engine had reached the end of its design limitations. Aircraft engine designers were turning to in-line and V arrangements to aid the quest for power without to severe additions of weight.
The first departure from the norm came with the Napier Lion. This was a twelve-cylinder engine having three banks of four cylinders, the central bank being vertical and the two adjacent banks at 60 degrees.
The Napier Lion had a capacity of 24 litres and developed 875 bhp and weighed only 930 pounds. It proved a very reliable and powerful unit, remaining in service for several decades. The designer of the Napier Lion was A.J. Rowledge who later went to Rolls Royce to join their design team.

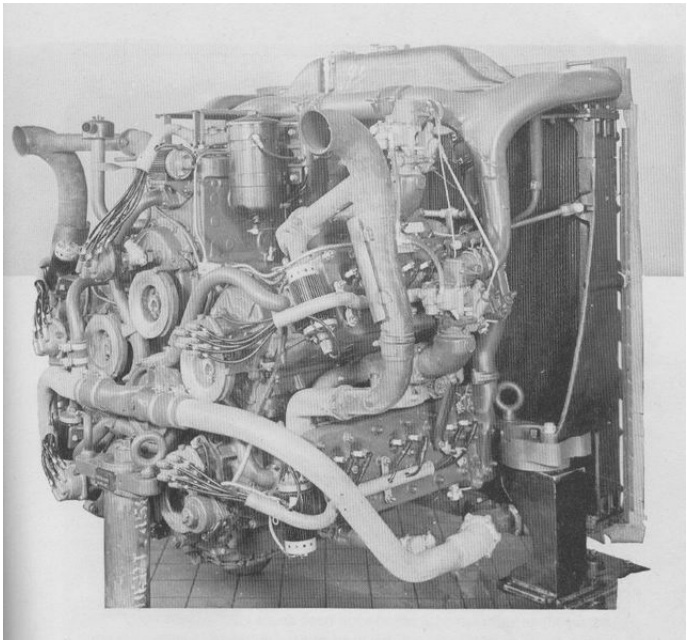


Napier followed up the Lion with another engine that became known as the Cub. This was a 16 cylinder

having four rows of four cylinders arranged in an irregular cross on a common crankcase. The angle between the two upper blocks was 45 degrees and the angle between the upper and lower blocks on the same side was 90 degrees. This meant that the two lower blocks were at 135 degrees to each other. This layout gave excellent balance characteristics. The four-throw crankshaft gave a firing interval of 45 degrees and perfect primary and secondary balance. The Cub was expected to deliver 1000 hp but on its first run on the test bed it delivered 1057 hp during what was really a running – in stage of the engines development.

The French firm Lorraine Dietrich soon rivalled it with a 24 cylinder, having the same layout as the Napier Lion.
The German Rumpler factory designed (but were not allowed to build) a 1000 hp 28 cylinder, seven row radial engine. After the Second World War the American firm Lycoming designed and built a huge engine.
It was a four –row radial having 36 cylinders with a total displacement of 127 litres. The engine was over ten feet long and weighed 6050 pounds. It was initially rated at 5000 hp but was expected to produce 7000 hp after further development. Some features were described as being very sophisticated, but in other features it was considered to be rather crude. Although the engine had a two-speed reduction gear it had only a single stage supercharger. The idea was that the ratio of crankshaft to propeller speeds could be varied to suit the characteristics of the airscrew. This had been tried in the USA some twenty years before when test pilots became used to demonstrating their skills changing gear in flight until one day a gearbox exploded due to a clumsy gear-change while the aircraft was in a power-dive.!!!!!!
An interesting feature was the two sets of cams to open the valves. These were shifted to alter the valve- timing for maximum power for take-off or emergency conditions. The other setting provided maximum economy during cruising. Some fifty years later several car manufacturers were to expand on this idea for their products.
However not all multi-bank engines were successful. Rolls Royce Vulture and Exe engines were both miserable failures.
Due to lack of interest after the end of World War 1 the Americans found themselves in 1941 with no suitable engine to power their 25 – 30 ton Army tanks. The only engine available in production and then not very suitable was a 9 cylinder radial aero-engine displacing 16 litres and developing a modest 375bhp.

The Chrysler Corporation took their six-cylinder car engine and arranged five of them around a common



crankcase with each crankshaft driving a common ring gear. One of the immediate advantages was in that tooling for producing the six-cylinder car engine was available for production.
The Dodge carburettors were used but inlet tracts of different lengths had to be arranged with elbows to allow the carburettors to be mounted in their normal vertical position. The distributors were fitted up to the rear of the engine to improve accessibility for servicing.
As finally developed the engine produced 470bhp at 2700rpm. Not an ideal engine for the job but it had the advantage of being quickly into production to fill a gap until an engine designed for the job could be put into production.