July 2004
No 292

THE GENERATOR

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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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,

Place stamp here

Coming Events

Coming Events; July Monthly Meeting. This will be held at the Hearing Association Rooms, Church Street, Palmerston North on the 22nd July at 7. 30 pm. **SHARP.**
See further details on page 2.

Mid Week Run at Marriner Reserve Railway : 27th July, between 10.00 am and 2 pm.
24th August , between 10.00 am and 2 pm

Please contact Doug Chambers beforehand.

Track running at Marriner Reserve Railway: 1st August 1 – 3 pm
15th August 1 – 3 pm

OPEN WEEKENDS

South Canterbury Model Engineers	18th – 19th September 70th Anniversary
Havelock Live Steamers	23rd – 25th October
New Plymouth Model Engineers	23rd – 25th October
Tauranga Model Engineers	12th – 14th November 25th Anniversary

The closing date for the next issue of The Generator is Friday 13th August

REPORT of the JUNE MEETING

On the table for us to see were the following projects.

Fred Kent had a clock face that he is trying to repair and a Myford lathe spindle that he had successfully straightened.
Barry Parker had some of the boiler fittings that he is making for his 'Rob Roy'.
Richard Lockett had the regulator lever for his NZR 'W'.
Bruce Geange showed us the boiler feed pump for his 3" scale 'Burrell'. Bruce has altered the design a little to allow access to the valves and seats.
Richard Lockett gave a short talk on 'backlash' in feedscrews on lathes and mills and how it is necessary to be aware of the potential for removing too much material if allowance for 'backlash' is not made.

Various items were brought along for the 'Buy, sell or exchange' and it appears that everything found a new owner.

The very attentive members at the June meeting

JULY MEETING

Roly Penhall who was a foundation member of the Palmerston North Model Engineering Club, will be at the meeting and he will have a brief video of early days of the club.
Members are invited to bring along a contribution for the 'Bits and Pieces' as Roly will no doubt be interested to see what current members are busy making in their workshops.

FROM the COMMITTEE

The committee received a letter from the Palmerston North City Council General Manager, Peter Eathorne. In the letter he said:-

"I would also like take this opportunity to acknowledge your contribution to the community, not only in terms of maintaining the condition of Marriner park but also with regard to providing and preserving such a unique attraction as the model railway."

LETTER FROM ENGLAND

By Stan Compton

Recently I was asked to look at a steam launch engine that was making strange noises. John, the owner took two of us to a large marina located opposite the small riverside town called Upton – on – Severn.
I knew this place as a boy having camped there in an orchard, in the same location. The fruit trees have gone now but I recall my first attempts at rowing a dingy on what is quite a large river.
The sheer size of the new marina with well over a hundred boats moored to floating pontoons stabilized by massive vertical 'H' beams, long enough to accommodate a flood of over twenty feet above normal. There was the 25-foot steam launch "Whisper" shyly hiding among all those fancy expensive cruisers. John removed the canvas cover and we got onboard. It was just like going back a century with varnished wood, soft cushions and polished canopy stanchions, even one of the traditional tea makers mounted on the vertical boiler. There was not much room to examine the motion of the vertical compound engine which was quite stiff to turn over, giving a dry squeak on every revolution. Strange, but I did not consider that the noise came from a piston as I could see signs of oil inside the chimney. What was causing the noise ?
The motion all seemed to be in line although it was difficult to examine in the cramped conditions.
"Has the engine seized up during the Winter lay-up ?" John said "No, I turn it over every week with the twenty one inch propeller when its on the trailer in my garage."
So, to raise steam and take the boat out. The boiler is fired on heating oil in a "Lune Valley" burner and it did not take long to obtain the 150 psi working pressure.
We cast off and John put the reversing lever over to astern. "Where is your tiller ?" I asked. "Ah yes, this has happened to me before !" said John producing the tiller from a locker. Then a touch of throttle and "plunk, plunk, plunk" and that large prop has us moving rapidly towards the bows of a massive "floating gin palace" way above us.
"This is where we like to know the valve gear will respond" said John as he threw the lever over to ahead, and with a touch of throttle the engine responded and we were gliding out of the marina into the River Severn.
A blast on the whistle, no one to see us, and plunk, plunk, plunk out into the main stream, just like the old "Africa Queen" we used to watch on TVNZ on Christmas Day only we had no crocodiles or hippopotamus on our English River.
Instead we were steaming sedately past old riverside pubs that often end up with a metre of muddy water in the bar during winter floods. The power points in the pubs have all been raised to allow for this.
Incidentally, Upton is the venue for an Annual Jazz Festival when bands from all over the country descend on the town for a week.
It was a very damp Spring morning, but very pleasant. Nothing else on the river that used to carry heavy traffic once. Back to the marina and once tied up again John started to refill the lubricator out of a plastic container with a very thin clear oil.
"What on earth is that ?" I asked.
"Compressor oil. I was assured that it was the best thing for my engine." replied John.
"Rubbish, steam engines need steam oil, two quite different applications. Buy some heavy steam oil"
"I have some as I used to use it" said John.
Now he is using steam oil the dry squeak has gone and no harm done.!!!

One of our club members often goes fishing in Ireland. He had booked a boat and found when he arrived at the dock at the appointed time that the engine had been taken out and was lying on the dockside !!!! On remonstrating with the owner he met complete indifference. "I booked this boat for 2.30 pm and here I am."
"Ahrr so ye did, so ye did, but it won't take long to repair it and put it back". Sure enough, with brute force and use of a hammer to get the shims back into place between the prop shaft flanges (my old R.N. engineer would have had a fit at such practices) the boat was taken out to sea and fishing commenced.

In the U.K. these days most parents are paranoid that someone will abscond with their children, hence children no longer can judge for themselves whether someone will harm them. We notice on Running Days at our track that children are not happy to sit close up to strange children, unlike in New Zealand as I recall

Running Days years ago. (it is changing here too) Ed. It was a surprise to hear the comment by our steam launch man that when he was on a fishing trip to the Irish Lakes he was on a main street in a small town

when a little girl approached him and said, “Mam says I must ask a grown-up to see me across the road” and reached up to put her hand in his. John was staggered at such trust. !!!

Injectors are the bane of our lives. If we have a good one we are so pleased, especially if it is one of our own make. Recently I dug out some “weeny feeders” as Laurie Lawrence called them. None would feed at all as built, so I tried a bit of tuning up and success.!!! Originally they passed the old squirt test, pressured water into the mounted steam cone, minus the feed cone, resulting in a two metre jet straight out. All I did was to polish the cones with a small 3 corner scraper.
I was asked to make a new steam cone for a massive injector made in the fifties. It looked like one called “The Cert”. The original steam cone had eroded as they do, so I made a new one using drawn bronze, identical to the old one with a 1/16" throat With such a massive water gap I had my doubts but the owner reported back 30 to 90 psi dry feeding. !!!

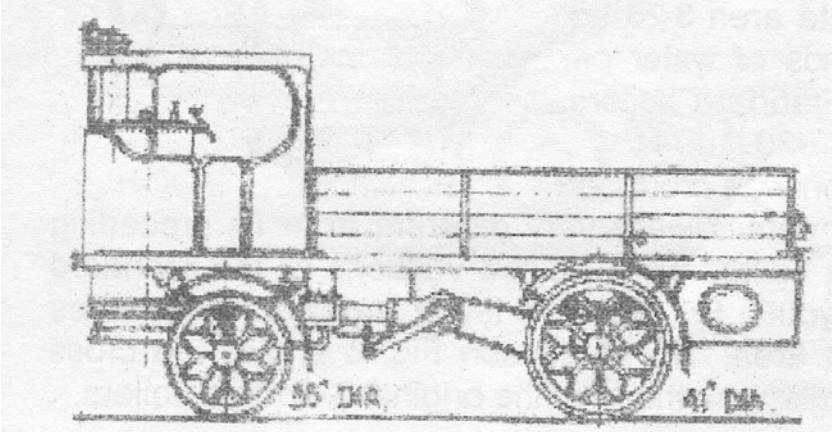
FOR SALE

Myford lathe for sale. This is Jim Curtis’s lathe. At least the one that he replaced when he bought a new Emco some years ago. Jim sold the Myford and now the present owner wishes to sell it.
Asking Price. $1,000
Apply to Jim Curtis Phone 06 374 7151.

THE SENTINEL WAY

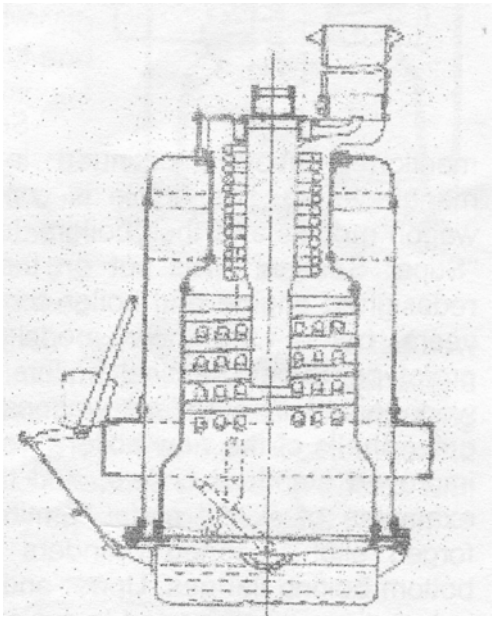
By Bren Campbell

The following brief essay is compiled from references to volume 1 of “The Sentinel” by W J Hughes and J L Thomas, “The Development of the English Steam Wagon” by R H Clark and “The Undertype Steam Road Waggon” by M H Kelly. Some authors spell waggon and or wagon. My computer chooses the latter.
Prior to 1904 the founders of the Sentinel Wagon Works, Alley and MacLellan produced high quality steam machinery for every class of industrial and marine application. Over the following 48 years the works included the manufacture of steam lorries, tractors, portable engines, road rollers, railway locomotives and rail cars. In most cases the power plants consisted of boilers and engines derived from the well proven steam wagon counterparts.
This article deals with the Sentinel wagon boilers. While the variations on the original theme were few, the multitude of purposes to which they were applied demonstrates a remarkable versitality. Before new models of wagons were introduced, prototypes of boilers bearing new modifications were installed in working vehicles of established manufacture. Nothing was passed untried or untested.



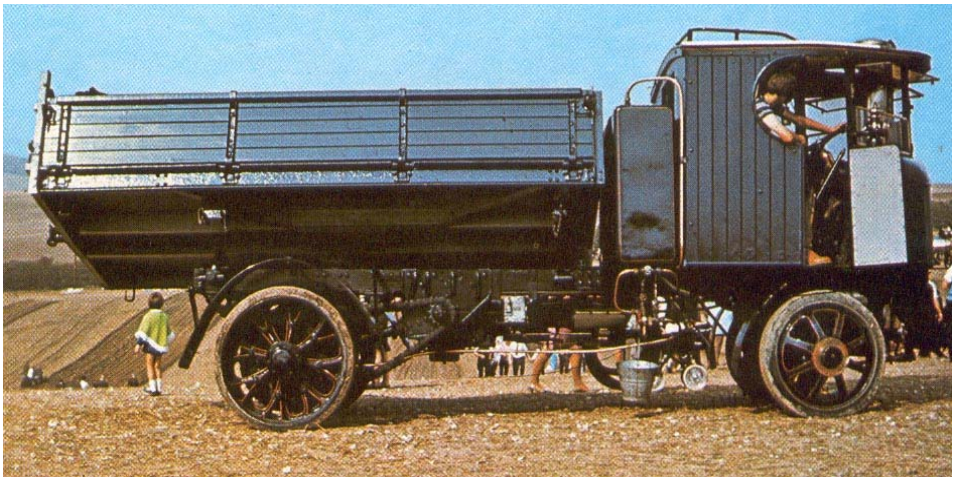
1904 Standard Wagon

It was in 1904 that Sentinels introduced their standard production lorries and with them their famous water tube boilers also given the identity, “Standard boilers”. There were 48 slightly inclined water tubes, 16 of which were screwed stay tubes, a grate area of 2.6 square feet, 56.5 square feet of heating surface and a super-heater coil. The external shell was a plain cylinder with riveted on iron flanges providing the top and bottom connections. The internal flue was a forging with a cylindrical furnace at the bottom. A square in plan mid-section carried the cross water tubes. A cylindrical flue of reduced diameter was riveted to the top of the squared section. The inner and outer assemblies were bolted together at the top and bottom angle flanges.
An excellent feature of these Sentinel boilers was that without dismantling any steam connections, the



The Standard Boiler

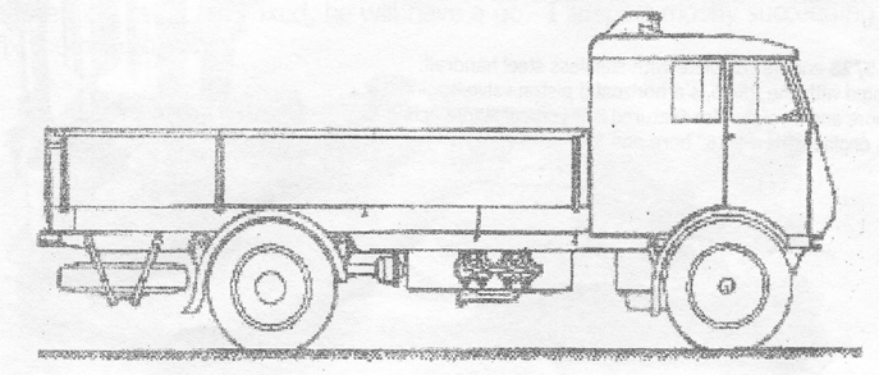
inner flues carrying the water tubes could be unbolted from the shells and dropped out beneath the vehicles for inspection and maintenance.
A diagram of a Standard wagon is shown in fig. 1. Note that the boiler is installed ahead of the front axle beam. After two years testing the first wagon of this model entered service in 1906 and 3764 were manufactured up to 1922. After the first year of production the standard boilers were slightly modified in detail. The outer shells had inward flanged top and bottom and the inner flues had outward forged bolting flanges, circular furnace, squared centre section and top flue now slightly coned, were forged in one piece.
The improved boilers had 54 tubes of which 20 were stay tubes, a heating surface area of 61 square feet and a larger super-heater.
All Sentinel boilers in the wagon applications were fired from the tops via central chutes. This standard pattern boiler was carried right through the manufacture of tractors, portable engines, road rollers, railway locomotives and rail cars.
The blood and sweat expended to dismantle and lower the flue into a pit under the Sentinel wagon for inspection and cleaning, is best left to one's imagination.
Sentinels were very adverse to such rigid devices as fire - hole rings through water legs, but there were situations where they had to adopt that option.
While the other Sentinel productions mentioned above continued in parallel with wagon manufacturing, this article is constrained to the various wagon models and their boilers.
In 1922 a new wagon, the "Super Sentinel" was put on the market with a cleverly redesigned engine and boiler combination. During the five years before the new model was confirmed, twelve prototype "Super Sentinel" boilers were work tested in standard wagons on normal duties. The outer shells of the new boilers were similar to those of the improved standard boilers, and the inside flues were fine examples of skilful metal forming. They consisted of all forged slightly coned cylinders with the usual top and bottom bolting flanges. Upper and lower rows of ten helical indentations were formed to provide landings for three sets of steeply angled straight water tubes located tangential to the stoking tubes. This scheme eliminated the flat tube plates and thus no stay tubes were required. The heating surface was 48.44 square feet and the grate area was 3.26 square feet. The new boilers evaporated 1200 pounds of water per hour, compared with 900 pounds by the Standard boilers.



Sentinel Wagon No 5509 built 1924 with side tipping tray

By 1930 2200 Super Sentinel wagons were built.
From 1930 to 1932 a lightweight wagon was produced also named Super Sentinel, but its major details were very different from its preceding namesake and only twelve were built. The boilers were refined versions of the Standard model bearing similar furnace and tube layouts. But they had fewer larger diameter tubes and about twice the superheating element area. The cross water tubes were inclined at a slightly steeper angle than those in the Standard boiler.
Beginning in 1927 following the tradition of overlapping their regular and development models, Sentinels produced their new "D G" wagons. "D G" stood for double-geared as a follow on from up to that stage single-geared vehicles. The middle to late 1920s Super Sentinel boiler was abandoned and the final development

of the Standard boiler was adopted. A reported reason for the change was that Galloways, the builders of boilers for Sentinels had closed down. No other firm was prepared to produce the complicated formers and dies needed to produce the specially forged inner flues. The heating surface was now 66.5 square feet and the grate area was 3.2 square feet. The evaporation rate was 1100 pounds of steam per hour.
With various body styles and 2, 3 and 4 axles the "D G" wagons continued in production until 1932 with a total of 854 being built.
Introduced in 1932 the highly innovative model "S" Sentinel lorries came on the market. 400 examples were built up to the beginning of World War 2 and a final 100 were produced in 1950 for Argentina and a further 1 was assembled from parts for the British National Coal Board. Thus 501 of these most advanced steam lorries were built.



Model "S" of 1932

The "S" designation referred to them having shaft drive to the now regular automotive rear axles. The engines were in-line units mounted with their four single acting cylinders lying transverse to the chassis.
The boilers with increased superheating temperature were now mounted behind the front axle and the inner furnace arrangements were dismantled over drop-pits as with all Sentinel wagons.

Sentinel Wagon No 9075 Built 1934