



**Newsletter of THE PALMERSTON NORTH MODEL
ENGINEERING CLUB INC**

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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 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
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This Months Featured Model



REPORT on the JULY MEETING.

A large number of Palmerston North Model Engineers turned out on a fortunately mild night to view progress on the restoration of the Supermarine Spitfire Mk 9. Owner Brendan Deere gave us a run down on the Spitfire's history, the restoration to date and the work yet to be done. One of the engineers was there to answer the more technical questions, he and Brendan were kept busy answering questions during the evening. This particular aircraft was built at Castle Bromwich in 1944. It served during the Italian campaign with 111 squadron, 225 squadron and possibly 253 squadron. It was handed over to the Italian Air Force in 1947 and in 1952 it was sold to Israel.

In 1954 it was sold to the Burmese Air Force, used actively against guerillas until 1956. It spent many years as a Gate Guardian at Hmawbi Air Force Base in Burma before being moved to Mingadalon Air Force Base in 1985 as part of the establishment of the Burma Air Force Museum.

Bought by an American it was transported to the USA where Brendan was able to purchase it and bring it home to NZ.

Although much of the work is being done in NZ some specialist work is being done overseas. The engine is being overhauled in USA by a firm specialising in all V 12 aircraft engines. The radiators are being made in England and the propeller unit is being overhauled in England. The new blades are being made by Hoffman in Germany. The aircraft will be finished to represent the Mk 9 of Kiwi Ace Al Deere when he was a Wing Leader at Biggin Hill in 1943.

And yes there is a family connection. Brendon Deere is Al Deere's nephew.

CORRECTION

In last month's Generator I credited Richard Stevens with the work done on his Traction Engine. It was in fact **Ian Stephens** who had done all the work and I apologise for the error. Both of them live in Marton, and both attend meetings together and I made the wrong identification.

AUGUST MEETING.

This will be held on the 23rd August at 7.30pm in the Hearing Association Rooms, Church Street, Palmerston North. A guest speaker has been arranged. Hugo Montieth will talk to us of the three months he spent in Zambia working for the United Nations, servicing their jet boats and 4wd vehicles. As you can imagine the United Nations team had some interesting experiences with the local population along the Zambesi River.

COMING EVENTS

Mid Week Run at Marriner Reserve Railway

28th August between 10.00 am and 2 pm
25th September between 10.00 am and 2 pm
Please contact Doug Chambers beforehand.

Track running at Marriner Reserve Railway

2nd September 1.00 - 3.00 pm

*As this is Father's Day,
Dads travel free if accompanied by a child*

16th September 1.00 - 3.00 pm

Open Weekends - Labour Weekend

New Plymouth - 3.5" and 5" gauges
Havelock North - 7.25" gauge

VISIT TO THE TAWHITI MUSEUM

For some time we have been thinking of arranging a trip up to Hawera to visit Nigel Ogles' Museum.

A date has been set Sunday 9th September. A bus has been arranged and now we need to fill the seats.

If **30** seats are sold then the cost will be \$22.00 each.
If **56** go it will be \$14.00 per seat.

Think about it and call Richard on 323 0948 for more information and to make your reservation.

The closing date for the next issue of The Generator is Friday 14th September

Aveling Roller

After building a number of stationery running I.C. engines, I decided my next project would be a working model. A photograph of a road roller in E.T. Westbury's book, Model Petrol Engines, 1943, took my interest.

It was a 1½" scale of an Aveling Type DX Diesel Roller of 1935, the building of which was described in Model Engineer Magazine of 1938, all the castings and gears were available at that time!!

The roller had a single horizontal cylinder diesel engine with chain drive to the gearbox below the chassis with clutches for reversal of drive, a handbrake fitted to a drum on offside and



steering by worm and quadrant gear.

An assessment was made on fabrication materials and a start made on the chassis. With no castings available, all parts, including steering fork, front roller, side frames and fore-carriage, had to be fabricated. Front and rear rollers were made from offcuts of hydraulic tubing with welded-in discs and bushings for axles. The pivot head was machined from solid aluminium.

After chassis was completed, a start was made on the engine. The crankcase was machined from aluminium bar, with bronze cylinder head. Steel crankshaft and flywheels, cast iron cylinder liner and aluminium piston. The timing gears, which are of cross helical type and are of same diameter ($\frac{9}{16}$ ") and 2 to 1 reduction, were not available. Much head scratching and research followed and a solution was found and satisfactory gears made!!

With the engine completed, a start was made on the transmission, which uses a friction drive disc to obtain forward and reverse, with variable speeds. A number of gears and sprockets had to be made, including differential and transmission bevel gears.

The model was starting to take shape.

The ignition system is by batteries in front water tank, with ignition coil, from chainsaw, under driver's seat. Fuel tank under rear of chassis, and muffler under floor panel. Next were brake and transmission levers, roof panel and supports, side-chain cover and exhaust. Painting then followed, in the coldest part of winter. Final assembly, then test running!!

Difficult starting and lack of power required modifications to the motor from the original plan, including raising compression ratio to achieve satisfactory running, but it is still not an easy starter, due to design of fuel system.

Once running, roller attracts quite a bit of attention with its quiet, slow realistic speed.

In all, a challenging 12 months of model building.

Graeme Hall

PNME CLUB BOILER INSPECTORS

As reported earlier the position of Boiler Inspector is an appointment of suitably qualified member.

Now that we operate under the regulations of the Australian Model Boiler safety Code we can no longer elect the Boiler Committee at the AGM as in the past.

Doug Chambers has accepted appointment as the Club's Chief boiler Inspector and he will continue to look after the Boiler Records and regulations.

To assist him the following have agreed to be appointed as Boiler Inspectors.

Richard Lockett, Ken Neilsen and Chris Rogers.

THE REVEREND IAN McLELLAN

Yes, our Club is fortunate in having one. Our former past President is also a valued member.

Towards the end of 2006 Ian felt his 'plumbing

wasn't up to its normal self, so off to the Dr., and after the usual check ups the big C was diagnosed.!!!

To say the least we were all blown away, not Ian, couldn't be true.!!

Belief and Faith came to the fore. Nuts and Bolts are not everything and after the battle Ian was given a clear report.

On Sunday 29th July a Thanks-Giving Service was held and several members supported Ian and Family at the Service.

Thanks to Chrissy for the wonderful spread you put on for us all.

So gradually Ian is getting back into the workshop and progress on LBSC's 3 1/2" gauge 'Maisie' is coming along nicely.

From Brian Leslie.

MORE ON INJECTORS

By Doug Chambers.

In last months 'Generator' Richard told of his experiences with a new injector for the Kerr Stuart loco named 'Robyn'. When the new injector wouldn't work Richard explained the problem to me and I referred to a sheet of notes that I think Stan Compton gave me. Unfortunately the original writer's name is very hard to read but I think it is Ken Grills of Australia.

I have studied his notes several times over the years and I have been able to get injectors to work properly by following his guidelines.

Below are the notes and if anyone is struggling with a reluctant injector, I am sure that you will be able to sort it out using the following.

INJECTORS ON MODEL LOCOMOTIVES AND WHY THEY DON'T WORK

By Ken Grills, Australia.

Let me correct that statement and say they will work very efficiently if made and fitted correctly.

It is a good feeling while driving to know your engine has reliable injectors.

Remember the reason injectors won't work is not necessarily the injector's fault. Is the steam line connected to the manifold and not to the backhead, or have the balls in the clacks got enough lift, or perhaps a pipe is twisted or kinked, or is the orifice in the steam valve large enough – maybe air is entering the water line through the gland on the water valve.

Enough rambling on. Let us get down to working injectors. If the decision to fit one or two injectors has

been made, let the first one be in the small to medium range – one that the boiler can steam against.

After fitting an injector to the boiler and raising steam pressure the moment comes for the big test. Let's play safe with the new injector and turn the water on first, let it drip for a few seconds to cool it down a bit, turn on the steam and one of several things will probably happen.

- 1 Works perfectly.
- 2 Works and discharges water out the overflow.
- 3 Just pours water out the overflow.
- 4 Blows steam out the overflow.
- 5 Blows a mixture of steam and water out the overflow
- 6 Works, but blows short sharp spurts of steam out the overflow.

Now lets go through the list in order and see what can be done to correct any defects.

- 1 You were probably born under a lucky star (beyond my control)
- 2 a Steam cone bore slightly to small.
b Steam cone nozzle too small allowing too much water to enter the combining cone. The space between the tip of the steam nozzle and the internal taper of the combining cone is used to govern the water intake.
c Insufficient taper inside steam nozzle. When this is the case the steam expands on leaving the cone and in doing so loses some velocity.
- 3 This is covered by 2a. Water flow through an injector should vary between separate droplets on the small size to a fast drip on the larger injectors.
- 4 a Steam nozzle too large or too far in the combining cone, blocking the flow of water.
b Air leak in the water pipes leading to the injectors. Generally I fit a piece of clear plastic pipe between the water line and the injector to see if any bubbles pass through.
c Do not forget to check the water line for blockages.
- 5 Excess steam or insufficient water. Try a 5 thou spacer on the steam cone.
- 6 A good injector with a very small air leak in the water line.

LETTER FROM ENGLAND

By Stan Compton

We have just returned from a holiday on the South Coast, the coaching company organised a day trip to a restored railway called "The Kent and East Sussex Railway." First we were taken to a winery for a 'Ploughman's lunch although I am sure that the ploughman of years ago could not afford the meal of bread, butter, cheese, ham and pickles. Anne and I shared one with a glass of wine, a dry white of good quality.

Our climate is changing back to what the Romans had two thousand years ago when they made wine here. We have heard that French wine-makers are moving to suitable parts of the South of England due to climate change.

After a walk through the vineyard we boarded our coach for the railway just a few miles away where I found a group of English motorcycles parked in the station yard, all about fifty years old and in regular use touring the country. They brought back memories of my youth when I owned three bikes and had no money !!

Our train pulled into the station after climbing a very steep bank sounding most impressive, only a 'Hunslet' 0-6-0 saddle tank but it was handling a heavy load. We took our places in the dining car where we were served a traditional cream tea, tea or coffee, fresh scones with butter, clotted cream and jam. Meanwhile we are rumbling through typical English countryside with wheat and even broad beans growing, have you ever smelt a field of broad beans in flower? Our trip was only about nine miles each way but our train was fully loaded showing how popular these railways are.

Another day we tried to get to the 'Bluebell Railway' but we were out of luck. The trip on the modern Southern Railway was fast and comfortable but, being Sunday and an hourly service to London, we had only thirty miles to go but missed the earlier train. At our connection we missed the bus to the Bluebell Line and with two hours wait for the next one we would be too late to ride the Railway and return, so we got the mainline train back to our hotel.

Back to the Hereford track site where we had a successful opening of our new station complex by an invited TV presenter. She had no idea the 'Model Railway' she was asked to attend was capable of carrying adult passengers and has promised to return with a TV camera crew!! Her schoolboy son could not wait to get back home to his computer, yet I was told of another boy who arrived at the Worcester Track when we were dropping our fires leaving only a petrol-engined 'box on wheels' still running, he

called the whole operation 'Cool', I suppose that is a compliment!!!

One of the Hereford members is building up a stable of incomplete locos he has bought off the Internet. The latest was a 5" gauge 'Austerity' which had some stays missing from the boiler. He has minimal skills, remember the test bar he turned on his old 'Hardinge' lathe. The test bar had two tenths of an inch taper and he wanted to know was that good!!!! He would be better to buy good completed engines. The boiler tubes on the 'Austerity' proved to be too thin and the loco was returned.

I have always given advice when asked for it, but I may be more wary in future. A Hereford member has a 5" gauge tender loco that often has difficulty keeping steam up. He bought the loco years ago and I wondered if the boiler tubes had a build up of carbon in them. I suggested he make up a spear-point drill of mild steel, finished undersize and used with a hand drill, not an electric. Another member had the same problem and removed the carbon from his tubes with no problem. But, rather than forge the end of a mild steel rod and file to shape the old blacksmith method, which I did offer to do for him, our man welded a twist drill to a rod and proceeded to remove the carbon. However two of the tubes were slightly kinked and yes he cut through the copper. A desperate phone call "What can I do now?" My answer was to make two taper plugs, one with a plain hole, one threaded and screw a rod into the threaded one and run a nut down the other end sealing the tube until permanent repairs are done. Incidentally the loco steamed better than ever even minus the two blocked off tubes!!!!

We all know that even a minor air-leak in the smoke box of a small locomotive will severely affect the steaming ability. It is usual to block the tubes up, or stuff rags into the firebox and chimney and apply low air pressure with a tyre pump while listening for escaping air. I found I could get a four thou feeler gauge between the smoke box door and the flange, the hinge pin being too tight on my 'Speedy'. But I have never heard of standing a loco on its front buffer beam with the chimney plugged off, then pouring water down the fire tubes thus filling the smoke box and proving for leaks. A first time builder I know did this.

MORE ON PISTON RINGS

By Doug Chambers

Since I wrote last month's article on piston rings I have been talking to Graeme Hall and I realised that the description of ring-making was quite adequate for steam engines but a more refined product is desirable for use in an internal combustion engine.

The reasons for this are that the rings are required to achieve higher compression pressure, then withstand the temperature and pressure of combustion and also to scrape the cylinder bore to prevent oil from getting into the combustion chamber.

Graeme referred me to an article written by a G. Trimble (of USA) which appears in 'Model Engineer' 17th August 1984 on page 210.

Mr. Trimble was building a V 8 having a 90 degree V and a bore of 1 inch.

Each piston has two compression rings and an oil control ring, all are fitted above the piston pin.

Mr Trimble makes the rings in much the same method, By machining a cylinder having the inside and outside dimensions for the finished ring. Then the ring is parted off and split and fitted to a purpose built mandrel for heat treating. It is in the heat treating that there are differences in method.

Brown paper is fitted between the ends of the ring and the dowel on the mandrel that sets the gap for the ring. The brown paper burns up the entrapped oxygen

Brown paper is also used between the top of the mandrel and the cap.

The whole assembly, ring and mandrel are then heated to 600 degree F and then a boron based scale inhibitor is applied.

The heat is then increased to 1475 degrees F (dull cherry red) and then allowed to air cool.

The scale inhibitor is removed in boiling water.

The rings are then removed from the mandrel and the ring end gap is set at .004 thou.

If anyone is about to make rings for an internal combustion engine I recommend that they read the article as they may find help in it.

MODEL TRAINS FOR SALE

Towards the end of last year Christies of London were preparing for a special sale of model trains in their twentieth annual 'Trains Galore' sale at their South Kensington branch.

The first toy trains appeared in the 1850's and the market is still going strong today as the appeal of trains has yet to fade.

Toy train collectors became enthusiastic in the 1960's and when the movement first started it was possible to get in at 'pocket money' levels. Not today however. Hornby, Bassett-Lowke and Marklin of Germany are among the most popular manufacturers.

Lot No273 is an early Hornby locomotive from about 1927 which is notable because it is



painted in the colours of the South African railway.

Hugo Marsh of Christies explained that 'Hornby' was a keen exporter and would paint the trains in the livery of South Africa, Argentina and later New Zealand. He expected this example to reach between four and six hundred pounds.



A Bassett-Lowke model of an LMS express locomotive which was hand made to order was expected to reach between 6000 and 8000 pounds.

An early Marklin boxed set was expected to reach between 4000 and 6000 pounds.