



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

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PNMEC Home Page www.pnmecc.org.nz
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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
22b Haydon St,
Palmerston North

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This Months Featured Model



NZR Ab 697 has now arrived at Ian McLellan's loco depot for a minor overhaul before being made ready for steaming at MRR.

REPORT on the JULY MEETING.

The meeting got under way with Bruce Geange giving details of the models that are required for the **Model Mee Exhibition** on the 26–27 August.

See the link on the PNMEC home page.
www.pnmeec.org.nz

The following members had brought along their current projects for us to see.

Bruce Geange had built a set of special rolls that he made. One set of rollers produces ‘corrugated iron’ and others can produce a ‘weatherboard’ appearance. One of the first jobs he did with the rollers was to make a pair of ‘corrugated iron’ tanks, which were fitted to a stand and will be a feature for his O gauge Hornby Railway.

Fred Kent showed us the railway station he is making for his Gauge 1 railcar. Fred is looking at using a ‘corrugated iron roof’ with the iron produced off Bruce’s rollers. Fred also had a rather sophisticated battery charger that he has made up. It is suitable for charging 2 volt and upwards batteries.

John Tweedie showed the four wheels and two axles completed and painted for the 3½” gauge Shay he is building.

Mike Barnes showed us the front axle stub and bronze bearing made up for the 12” to the foot scale Garrett steam tractor. The original bearing and stub had worn considerably since 21st September 1911.

The guest speaker for the evening was **Simon Power**, one of our junior members.

Simon had been one of a party of 44 St Peters High School students who have recently toured Vietnam. Simon told us his impressions of the country and the Vietnamese. He had put his camera to good use and we were able to see old Buddhist Temples dating back over 1000 years and examples of French architecture dating from the French colonial period.

The students were able to get a pretty good idea of the way of life for the Vietnamese people under a Communist system.

This visit to Vietnam will stay with Simon for the rest of his life and he will have learned a lot from seeing for himself a totally different society. Something he could never hope to grasp from a classroom in New Zealand.

AUGUST MEETING.

This will be held on the 24th August at 7.30pm in the Hearing Association rooms, Church Street, Palmerston North.

Part of the evening will be taken up with discussion about the Exhibition in the ‘Leisure Centre’. Members are invited to bring along their current project for the ‘Bits and Pieces’ section and there is a possibility that Richard Lockett may have something to tell us.

COMING EVENTS

Mid Week Run at Marriner Reserve Railway

22nd August between 10.00 am and 2 pm
26th September between 10.00 am and 2 pm
Please contact Doug Chambers beforehand.

Track running at Marriner Reserve Railway

3rd September 1 - 4 pm
17th September 1 - 4 pm

FOR SALE

PETROL-HYDRAULIC ‘Hunslet’ (7 ¼” 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. Or phone (06) 374 7151.

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

Apply Dennis McConkey Phone 04 904 6195

5” gauge driving trolley

A 5” gauge driving trolley for ground level track. It has eight wheels, (two bogies) and mechanical brakes. Asking Price \$200.

Bernard Coyne Phone (06) 753 4528

The closing date for the next issue of The Generator is Friday 15th September

SUBSCRIPTIONS

After many years of holding the subscription rate at the same level, it has been decided to make a small increase. (Inflation adjustment).

Member	\$30. 00
Country Member	\$15.00
Junior Member	\$15. 00

Please make payment to:

The Treasurer (B Parker)
C/o 22 B Haydon Street,
Palmerston North.

MODEL MEE

The Palmerston North Model Engineers are going to have a Model Engineering Exhibition in the Leisure Centre, 26th – 27th August with set up on Friday 25th.

Members are asked to start thinking about what they have to display.

Bruce Geange and Chris Rogers are the coordinators.

As usual all members are invited to come along during the opening times 10.00am till 4pm each day. The public often like to have questions answered about the various exhibits.

Members are asked to do their best to get the relations, neighbours and friends along as a good turnout does help the club funds.

MODEL of the MONTH

The 'Model of the Month' is an NZR Ab No 697 built by the late Ken McLellan of Christchurch in 3½" gauge. The prototype Ab carrying the No 697 was a Canterbury based locomotive and was thus available for Ken to check details from.

Some of the details regarding the engine are as follows. The cylinders are fabricated steel and fitted with cast iron liners. Pistons and rings are of cast iron.

The Westinghouse pump is a working model as is the turbo-alternator. Ken wound the stator himself.

The Ab is fitted with two injectors, an axle pump and a tender mounted hand pump. Ken spent seven years building the Ab with completion in 1965.

The locomotive was only run four or five times before Ken passed away in January 1967.

Ken McLellan was a motor mechanic involved in engineering through his working life. Before building the Ab he had already built two 'Juliets'.

One a standard 0 –4 –0 tank and the second was an 0 –6 –0 tank version.

Until recently the Ab was in storage in Christchurch, but recently Ian McLellan, one of Ken's two sons,

has brought the engine up to Palmerston North where he has started preparing the engine for steam again.

The Ab is very well detailed and excellently finished. Make a point of seeing it at the PNME Exhibition on August 26 –27 in the Leisure Centre.

MERCHANT NAVY PACIFICS

By Doug Chambers

I doubt if any other class of steam express locomotive built in Britain aroused so much comment both for and against as the thirty Merchant Navy class Pacifics and the very similar, but lighter, West Country and Battle of Britain classes.

The Merchant Navy class were introduced in 1941, the West Country class in 1945 and the Battle of Britain class in 1950.

The class introduced to Britain many features not previously seen on locomotives of the 'Big Four'. Heading the list of new features was, a welded steel firebox, thermic syphons, 280psi boiler pressure, box section wheels, no reciprocating balance and servo-operated firebox doors. Other features were new to any country and these included, enclosed radial valve gear with pump lubrication and a chain drive instead of a return crank and eccentric rod, the inside big end, connecting rod and crosshead ran in an oil bath and the outside admission piston valves were driven between the valve heads instead of through a valve spindle.

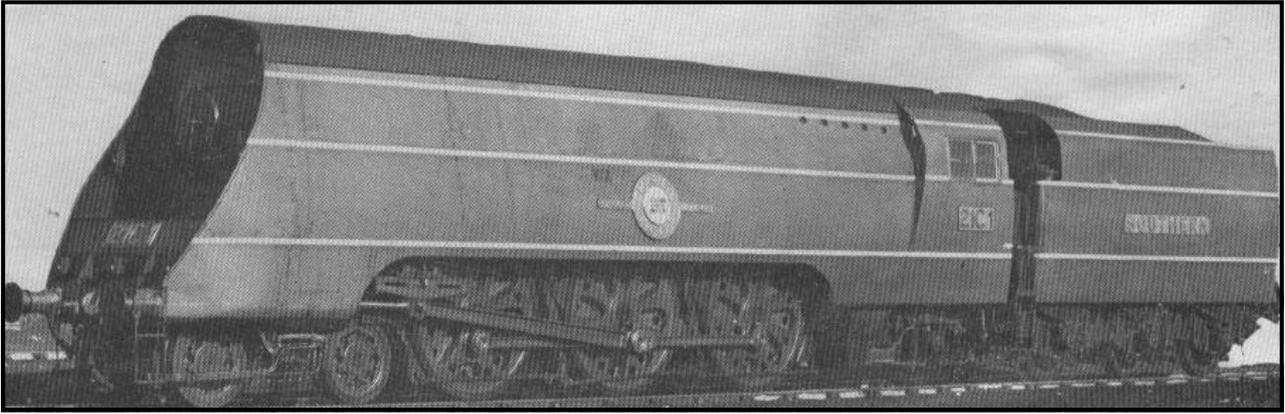
Even their streamlining was different to anything seen before.

Cylinder bore and stroke was 18"by 24" and the valves were 11" in diameter. This gave a ratio of 61%, the highest ratio used in Britain.

O.V.S. Bullied had been appointed chief mechanical engineer to the Southern Railway in 1937 following a period where few new steam locomotives had been built and the Southern Railway had pushed ahead with electric traction. Bullied soon came to realise that two trains, the Night Ferry and the Golden Arrow both required a bigger engine which would replace the need for double heading with two smaller engines as had been the norm. Both a 2 –8 –2 and a 4 –8 –2 wheel arrangement was considered before the Pacific 4 –6 –2 chassis was settled on.

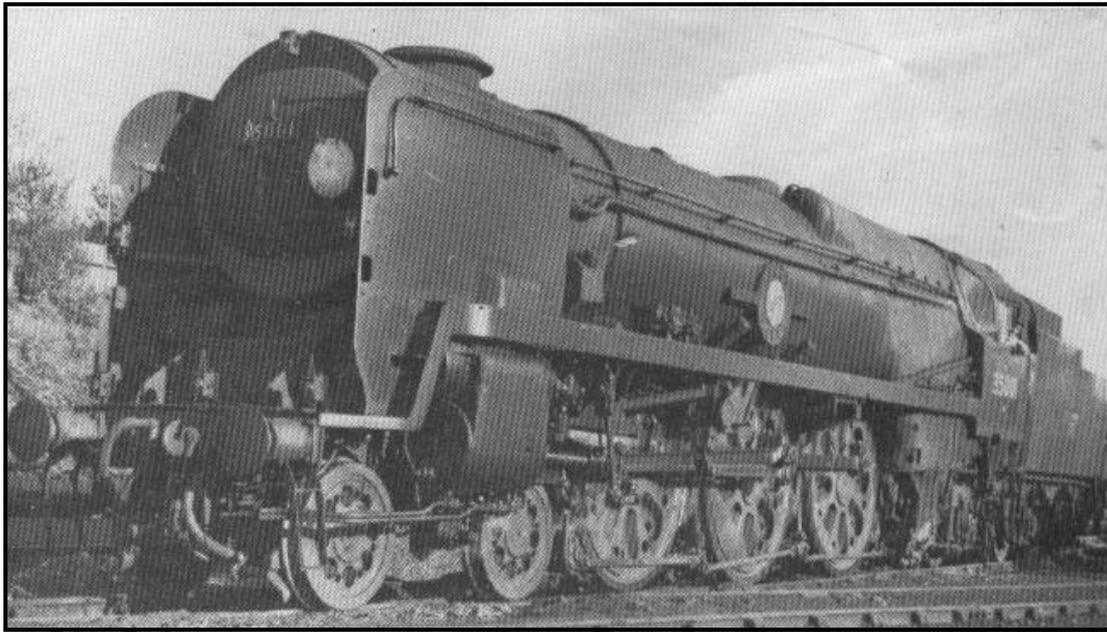
The first ten boilers were ordered from North British in Glasgow, but due to that companies commitment to War Department locomotives and the arrival of new boiler building equipment at the Southern's Eastleigh depot saw the final twenty boilers made by the Southern Railway.

The Merchant Navies entered service when things were at their worst during the Second World War. Initially there were problems with them exceeding



Above: First Merchant Navy No 35001 "Channel Packet" as built in 1941

Below: Rebuilt Merchant Navy - No 35018 "British India Line" 1957



their axle loading. The large cast stretchers were gradually replaced with fabricated steel units. Further problems arose with oil leakage from the valve casing and the casing surrounding the inside connecting rod and crank. The chains driving the valve gear were found to be prone to stretching and this caused the valve timing to alter from the correct setting. Oil leaking from the enclosed cases occasionally saw a large fire burning outside the firebox.

The sanding gear was very poor and the power reverser gave constant trouble, being very prone to 'creep'.

The streamlined casing had to have extensive modifications before exhaust steam could be lifted away from the crew's line of sight.

However, though beset by many problems there was one undeniable asset. The boiler was outstanding in its ability to generate steam. No 35022 Holland America Line was sent to the Rugby test plant in 1952 where the new test plant was found to be unable to cope with the steaming capacity of the boiler. The best the Rugby plant could record was a continuous steaming rate of 39,000lbs/hour over a period of 60 minutes and

42,000lbs/hour for 20 minutes. This was well up with the best of British and European standards. Probably no copper firebox would have been able to withstand such high rates without causing serious tube damage and burning of the flange plate overlaps.

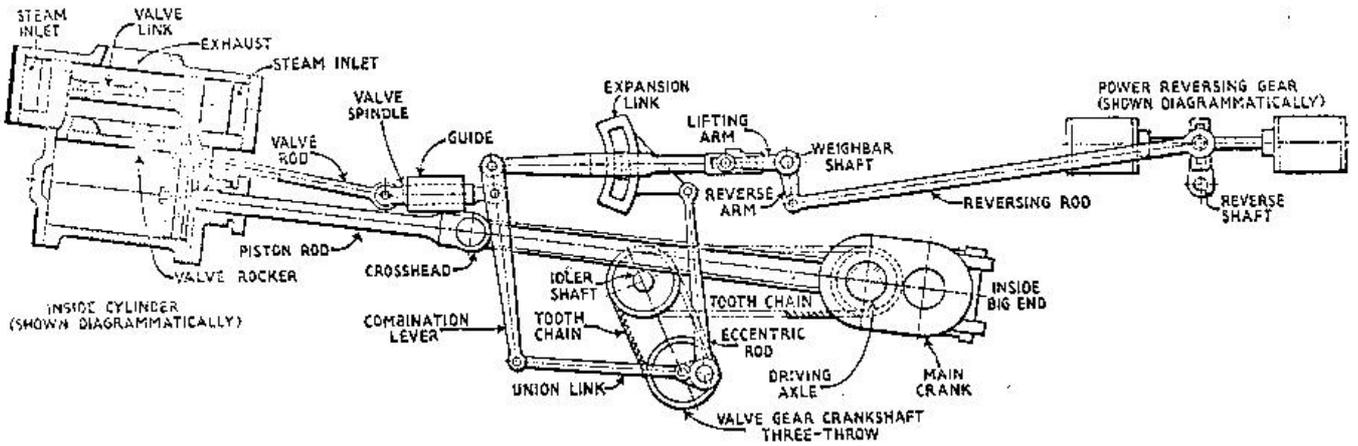
The steaming rates were almost 20% above the figures attained by the Gresley A4s and the Stainier Duchess Pacific's.

The original fireboxes fitted to the Merchant Navy's lasted seven years. The replacements with the advantage of boiler treatment lasted ten years.

The boilers fitted to the last batch of lighter engines, the Battle of Britain and West Country classes that were built 1948-9, retained the original firebox through their rather short working life all being replaced by diesel traction in the mid 1960s.

Despite their many failings they became firm favourites with many of their crews. Their free steaming, good performance (when in good condition) kept their followers happy. They performed very well during the Interchange Trials of 1948, never the most economical, but also never running behind time.

Diagrammatic layout of the Bulleid patent chain-driven valve gear, generally as applied to a Merchant Navy engine.



Bullied retired in 1949 and not long after British Railways started on a redesign program for the Merchant Navy class.

At this time Britain was exporting high quality coal to help pay off the debts from World War 2. At the same time cheaper but poorer quality coal was imported to be used in power stations and by British Railways. Some of the British locomotives designed to be fired on good Welsh coal suffered badly when fired on the imported coal. However the Merchant Navies performed very well on whatever diet of coal they were supplied with.

The rebuild changes started with the removal of the air-smoothing casing. Large deflector plates similar to those fitted to the Britannia's were fitted alongside the smoke box.. The Bulleid valve gear and oil baths were removed and in their place three sets of Walscharets valve gear were fitted. The outside cylinders were retained and they retained the original outside admission. The inside cylinder was replaced with one of new design having a piston valve of inside admission. The power-assisted reversing was removed and replaced with a hand screw reversing gear on the left-hand side.

There were other changes but the former were the most important. The rebuilt engines were just as powerful and fast but the bonus was in their greatly increased reliability. Only some of the West Country and Battle of Britain classes were rebuilt.

Only one of the Merchant Navy class was saved for preservation. It is the property of the Merchant Navy Preservation Society and is based at Ashford Shed, where it is kept in working order.

Few of the class attained any great mileage, a few covered 1 million miles, but No 35028 Clan Line had only managed 714,391 miles at the time it

was withdrawn from service.

The low mileage of the class members can be attributed to the serviceability problem suffered in their early years and their early replacement by diesel traction while really only halfway through their working life.

In our library there is an excellent videotape that deals with the history of No 35028 Clan Line.

TABLE II—LEADING DIMENSIONS OF MERCHANT NAVY 4-6-2 ENGINES

Type		First 10 after modifs. in 1945 (see text)	Recon- structed 1955-59
Cyl. bore and stroke (three)	in.	18 x 24	18 x 24
Cyl. slope: inside		1 in 7.75	1 in
outside		1 in 40	1 in 40
Coupled wheel dia.	in.	74	74
Boiler pressure	lb./sq. in.	280	250
Max. axle load	tons	21.0	22.0
Adhesion weight	tons	83.0	65.0
Locomotive weight in w.o.	tons	94.2	97.9
Locomotive weight empty	tons	84.45	88.4
Coupled wheelbase	ft. in.	15-0	15-0
Locomotive wheelbase	ft. in.	36-9	36-9
Engine and tender wheelbase	ft. in.	59-6(1)	61-6(2)
Length over buffers	ft. in.	69-7½(1)	71-7½(2)
Boiler pitch	ft. in.	9-5½	9-5½
Max. height	ft. in.	12-11	12-11
Boiler: max. dia.	ft. in.	69.75; 76.5	69.75; 75.5
Length between tubeplates	ft. in.	17-0	17-0
No. and o.d. of tubes	in.	124 @ 2½	124 @ 2½
No. and o.d. of flues	in.	40 @ 5½	40 @ 5½
Evap. heating surface:			
tubes	sq. ft.	1242	1242
flues	sq. ft.	934	934
firebox	sq. ft.	275	276
total	sq. ft.	2451	2451
Grate area	sq. ft.	48.6	48.6
No. and o.d. of elements	in.	40 @ 1½	40 @ 1½
Superheating surface	sq. ft.	665(3)	612
Free gas area through boiler	sq. ft.	6.4	6.4
Tender: water capacity	Imp. gal.	5100	6000
coal capacity	tons	5	5
tare	tons	20.5	21.5
full weight	tons	48.6	53.5
Engine and tender full weight	tons	142.7	151.4

(1) With 5100 gal. tender (2) With 6000 gal. tender
(3) Usual figure given, 822sq. ft., is surface on outside of elements.

**HAWKES BAY M.E.
MIDWINTER OPEN WEEKEND 22-3 JULY**

Chris Saunders

After deciding that the trip to Napier was off because of the weather forecast, a rapid change of plans took place on Saturday morning when a gloriously fine day greeted us. Bruce Geange with Murray Bold on board picked me up at 9.30 and we were underway. The cold southerly of the previous night had deposited fresh snow on the Puketoi Range to the east, and much more on the Ruahines to the west. We took Highway 50, which brought us into Taradale not far from Anderson Park.

We arrived just in time for an excellent hot lunch, and then Bruce unloaded his Burrell. Richard Lockett was there already. He was staying with a cousin for the weekend, and enjoyed steaming his Allchin.

The recent rain had flooded parts of the park and the railway line had to be drained several centimetres before running could start. The Fowler traction engine helped with this, pumping unwanted water into its tank.

Various locomotives ran on the track, giving rise to a steady stream of visitors – WA 165, the Maid of Kent, the Simplex, and a Fowler that was always busy.



A variety of stationary engines was on display, the most interesting being an Ericsson hot air pumping engine from the early 1900s. It was described as 'very unusual'.

Traction engines were very much in evidence with four models and three full size. Part way through the afternoon, the McLaren got stuck in the soft earth, and an interested audience watched as the Ransoms, Sims and Jeffries on its first attempt to winch the McLaren out, pulled itself over the chocks and through a wooden fence, punching a hole in its water tank in the process. The Ransoms was moved further

away from the danger area, and this time succeeded in retrieving the McLaren from its unfortunate position.

Meanwhile Bruce had given some small passengers a thrill by driving his Burrell through the water that still covered the concrete path.



No panic! It was only 50 mm deep.

Now and again the 1903 Holly automobile, rebuilt from just the original engine and gear box, toured around the site. The engine purred.



Left to Right: Monty George, Peter George, Bruce Geange and Richard Lockett

By 5.30 the day had become cool, so we went inside the clubrooms with their interesting old notices on the walls, and small models on shelves, to wait for the excellent dinner including desert. A fairly quiet day, probably because of the previous heavy rain, but thoroughly enjoyed by all. Our thanks to the club for their welcome and hospitality, and to those involved in preparing the excellent meals.

We had a pleasant break for a cup of tea at the Wiffin's in Dannevirke on the way home. They had no problem welcoming us visitors – we had phoned ahead.