



MainLine



The Journal of NMRA

Australasian Region

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NMRA Australasian Region Directory

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All members of Australasian Region are invited to submit articles of a railway nature for publication in MainLine. Submissions in Word or JPG format can be Emailed to

editor@nmra.org.au. or to my home email address rjtonkin@iinet.net.au Original uncropped photo files would be preferred.

Please ensure any contributions of copyrighted material have written approval from the copyright holder for the use of the copyrighted materials.

Disclaimer

All comments published are the views of the author/authors and not the views of NMRA AR.

Articles are provided by members in good faith and the views expressed therein are not necessarily those of NMRA AR.

Cover photo

3825 running tender first towards Canterbury on the goods lines in 1968 .

Photo by Rod Tonkin

Target dates for future issues

Spring

Content submissions **15 September 2015**

Publish date on web **1 October 2015**

Summer

Content submissions **10 December 2015**

Publish date on web **20 December 2015**

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From the President's Desk

Welcome to the 3rd edition of the electronic MainLine. Rod Tonkin is doing a great job and we thank him for taking on the challenging task of being the MainLine editor.

Our Australasian Region (AR) Convention at Ettalong Beach is less than three months away and planning is virtually completed. Look at the NMRA AR web site (<http://nmra.org.au/Convention15/convention15.html>) to see all of the information on clinics, layout tours, partner's program and so forth. This Convention is at a much more upmarket venue than many previous conventions and Ettalong Beach is lovely in spring so the Convention should be a great event. If you have not yet signed up for the convention, jump in quick. The "Early Bird" sign-up rate closes on 1 July and the sign-up fee will increase on that date.

On other matters, our acting AR Secretary, Peter Burrows, has been doing a lot of work with our Insurance broker to ensure we have the correct insurance coverage and are not under insured or over insured which would cause us to pay too much for insurance. As part of our insurance policy, we can provide Public Liability insurance (to \$20m coverage) for members taking layouts to train shows or engaged in other hobby-related events. However, to get the coverage you must submit a sanction form to the AR Secretary for approval. Elsewhere in this issue of MainLine, Peter Burrows has provided a sample of the sanction form and an explanation of its use.

A number of you subscribe to the US-based *NMRA Magazine*. The cost to Australian members for this subscription is based on recovery against costs in that we don't aim to make any "mark-up" or profit on these subscriptions. Australian members have been paying a subscription rate of \$65 (AUD) for a 12 month subscription. The AR converts this to US Dollars and pays the NMRA in the USA. With the deterioration of the US/AUD exchange rate, the AR Committee has reluctantly been forced to increase the subscription rate to AUD 75. This increased subscription rate will flow through with membership renewals in the future.

Our Achievement Program Regional Manager, Gerry Hopkins, advises that we now have issued over 516 Achievement Awards and over 181 Golden Spike Awards since the creation of the AR in 1984. Well done to all those who have done the work to meet the requirements for an Achievement Award or a Golden Spike.

As we are now in to the winter months, it is too cold to enjoy the great outdoors so it is now a great time to work on your latest kits and models. Make the most of the time huddled up indoors and enjoy this world's greatest hobby.

David O'Hearn AR President 3 June 2015



“Back to Basics”

This year's Convention is hosted by Division Seven. In addition to the region wide fellowship of railway modellers this years Convention will focus on the basic skills and techniques we utilise to make our hobby more satisfying and enjoyable.

The Convention will provide entry level advice to new modellers, and a fresh approach to these skills for those of us who've been around the loop a few times.

The centre piece of the Convention will be building a HO scale display layout during the weekend of the convention.

Clinics will be presented on to skill levels, basic and intermediate/advanced. The clinics will explore layout design, layout framing, wiring, train control, structures, scenery, rolling stock building and detailing. Mark the 18th to the 21st of September on your calendars for this event. More details on venue, clinics, layout visits and accommodation are available on our region web site

NMRA (AR) SANCTION FORM

The NMRA Australasian Region provides Public Liability Insurance (PLI) coverage for members undertaking activities associated with our hobby. As part of providing that insurance coverage, the Australian Region Committee (ARC) must be made aware of and approve the activities for which the insurance coverage is sought. This approval is undertaken through the use of a sanction form. The following section explains how to complete and process the sanction form. This is followed by an addendum providing guidelines to be followed when model railway layouts are displayed at exhibitions.

EXPLANATORY NOTES

By popular request a new “all in one” sanction form has been developed and replaces all previous forms. This form shown at the right may be found on our NMRA web site at www.nmra.org.au/forms/forms.html.

There are basically two situations we need to capture for insurance purposes and these are represented by the first two tick boxes. The proposed event you are asking to be covered by Public Liability Insurance (PLI) will either be held at a venue hosted by you (or your Division, Club or SIG) or at a venue hosted (organised) by another group or company e.g. an AMRA exhibition or Bunnings Store.

The third box is a subset of the second situation and is there so we can get some statistics on layouts being exhibited by individuals, Divisions, Clubs and SIGS. Here are some examples of the kind of situations we are seeing and which box should be ticked.

- Div 6 is hosting a Regional Convention in a venue they have hired. Tick box 1.
- A 100% club is hosting an exhibition in a venue they lease or own. Tick box 1.
- A 100% Club is running a sausage sizzle at Bunnings to raise funds for their club. Tick box 2.
- Div 7 is running a Kid’s Clinic at an exhibition hosted by Epping MRC. Tick box 2.
- A 100% Club is taking a layout to an exhibition organised by AMRA. Tick box 3.
- A member is taking a layout to an exhibition organised by a non NMRA group. Tick box3.

NMRA (AR) SANCTION APPLICATION FOR DIVISIONS, 100% CLUBS & SIGS



- HOSTING AN EXHIBITION, CONVENTION OR FUND RAISER
- CONDUCTING A NON-LAYOUT DISPLAY, CLINIC OR FUND RAISER AT AN EVENT OR VENUE HOSTED BY OTHERS
- CONDUCTING A LAYOUT DISPLAY AT AN EVENT OR VENUE HOSTED BY OTHERS

Please tick the box adjacent the circumstance best matching your activity.

The NMRA (AR) will sanction Divisions, 100% Clubs and Special Interest Groups (SIGS) for Public Liability Insurance (PLI) purposes for the above activities provided the Division, Club, SIG or Individual undertake that the following conditions will be strictly adhered to. These rules are not proposed to be show stoppers but are to ensure the event falls under the NMRA (AR) umbrella (to ensure PLI cover).

1. When hosting an exhibition or convention, place the NMRA (AR) logo on all exhibition/convention advertising, web sites, ticketing and associated correspondence.
2. Display an NMRA (AR) Banner or Sign in a prominent position. Note that signage can be provided by the NMRA (AR) upon application to the Division Superintendent.
3. Be responsible for the maintenance of their layout (if exhibiting a layout) and keep the display or fundraising space in a clean and tidy condition.
4. Comply with the Venue Manager’s safety and other requirements.

Please fill out the information below and return to secretary@nmra.org.au

I / we will abide by the terms listed above. PLEASE NOTE: Write clearly.

Name of Organisation or Layout owner	Exhibition/Convention Name
Name of Organisation Rep or layout owner	Date of Exhibition/Convention
Signed	Date
Email Address for response	

ARC use only	
Approved/Rejected by	Responded to Applicant(s) (date)

Note 1 - When hosting a venue in premises you own, lease or hire, make sure organisations and/or merchants you invite to attend have their own PLI. See also the following guidelines.

Note 2 – When exhibiting a layout or conducting a display/clinic/sausage sizzle at an exhibition/venue hosted by others, you may be asked to demonstrate you have PLI cover. Some venue owners may ask to be notarised on our PLI documents. In these cases please include this in your sanction request so we can have this done and/or provide you with a certificate of cover.

Important – please fill out the form clearly and **provide a return email address** so we can notify you of acceptance or (in rare cases) rejection. The shaded box at the bottom of the form is for the Secretary to complete so we can ensure we have acknowledged and recorded your request.

A summary of all requests applied for in the periods between ARC meetings are presented at each ARC meeting and form part of the minutes. This ensures all requests are formally acknowledged by the Association for PLI purposes and ARC members get an overall view of how the Association is being promoted across the nation.

Peter Burrows

A/Secretary NMRA (AR)

Errata Membership Fees

The original motion carried at the ARC meeting of September 2014 was actually two motions one for Ordinary members and the other for Family members. Each had different movers and seconders. For convenience these were merged for the national membership vote but we have been requested to clarify the original motions in the AGM minutes. Therefore please see the correction below.

Motion #1 –

Fees for Ordinary Members are to increase to \$30 per year to take effect from 1 July 2015

Moved D. O’Hearn, Seconded R. Solly

Fees for Family Members are to increase to \$6 per year to take effect from 1 July 2015.

Moved P. Burrows, Seconded S. Mangion

The combined motions were carried with **77** yes votes and 7 no votes.

Addendum

Guidelines for Exhibition Layouts

The guidelines below are the recommended practice for layouts being exhibited at an exhibition where the public may be present. These guidelines apply to NMRA layouts being exhibited and also those presented by others which should be checked for compliance to the following requirements.

- Layout Bench Work is to be robust and solid and capable of taking the weight of the articles and equipment placed on the layout with a high degree of safety margin. Leg support for structural Bench Work must be pinned or secured against collapse either by accidental or deliberate attack.
- Be responsible for the maintenance of their layout and keep the display space in a clean and tidy condition.
- All electrical cables and power boards are to be visibly tagged within the allowable 2 year date window for use in a public place. Cables showing visible damage **MUST NOT** be used. Tagging is to be done by a person qualified to do such tagging.
- **Double adaptors are not to be used under any circumstances.**
- All power supplies or lighting circuits that are connected to the supply authority 240 volt or multi-phase supply must be earthed to the standards of the regulatory authority for the area where the exhibition is taking place.
- Any switch mode power supplies that exhibit live chassis must be contained within an earthed metal box or a double insulated plastic enclosure.
- Radio Frequency operated equipment must either have Australian C tick approval or fall within the regulatory approval for low power emission devices.
- Any interference caused to other layouts from either infra-red or radio frequency signals operating in the same exhibition must be resolved in a non-hostile or non-abusive manner. The NMRA will not be liable or responsible for such complaints. Resolution of such a problem may require the shutting down of the suspect equipment and the use of tethered throttles implemented instead.
- Layout running sound must be limited to a level such as to NOT cause interference to other show operators.

End -

2015 Achievement Program awards

2015 Golden Spike Awards

Cert #	Name	Surname	Certificate	Date Issued	Division
497	Rodney	Tonkin	Volunteer	04-Mar-15	4
498	Max	Wright	Structures	28-Apr-15	6
499	Rev Dr. Vern	Cracknell	Author	28-Apr-15	6
500	Robert	McLear	Structures	03-May-15	1
501	Graeme	Goodsell	Structures	09-May-15	7
502	Graeme	Goodsell	Cars	09-May-15	7
503	Graeme	Goodsell	Motive Power	09-May-15	7
504	Graeme	Goodsell	Author	09-May-15	7
505	Chris	Minahan	Civil	09-May-15	9
506	Michael	Bartlett	Civil	09-May-15	9
507	Robert	McLear	Cars	18-May-15	1
508	Erik	Bennett	Volunteer	27-May-15	7
509	Graham	Young	Official	27-May-15	1
510	Chris	Minahan	Official	27-May-15	9
511	Peter	Jackson	Volunteer	28-May-15	6
512	Ron	Solly	Scenery	28-May-15	6
513	Max	Wright	Dispatcher	28-May-15	6
514	Peter	Jackson	MMR	28-May-15	6
515	Ron	Solly	Electrical	01-Jun-15	6
516	Ron	Solly	Civil	01-Jun-15	6

Cert #	Name	Surname	Date Issued	Division
178	Christopher	Tonkin	8 Jan 15	9
179	William	Rohr	13 Apr 15	1
180	Max	Wright	28 Apr 15	6
181	Graeme	Goodsell	9 May 2015	7

Members' Modelling

Division Two member Ross Balderson's

N Scale model of Sydney Terminal Station.



Photo of 6029 from Division Two's newsletter

"The Flimsy"

Photographs for MainLine

(Editorial Musings)

Changing MainLine to digital publication gives us the opportunity at no cost to publish in full colour. Digital publication gives us another advantage, photo file size. We don't need large photo files to suit a printing process. File size need only provide adequate on screen reproduction. The file size of photos published in the digital issues published to date are around 300 Kbyte. While I welcome large file size photos, to keep the file size of the published issue within limits, I reduce the published photo file size to around 300 Kbyte.

While I own and enjoy using my digital SLR, it's rather bulky to cart around. I have carried a pocket sized camera with me since the mid 1960s. Most of my prototype photos have been taken on this type of camera. The cover photo and the "Prototype Observations" photos in this issue were taken with my first pocket camera, a half frame 35 mm Fujica. The photos in this issue were scanned from the negatives.

These days my mobile phone is my preferred point and shoot camera. I regard my phone as a camera that occasionally receives phone calls. It produces 300 Kbyte sized photo files. I consider this file size adequate for publication in MainLine, The prototype observations photos in Volume 32 issue 1 and the Division Four Roundup photos in volume 31 issue 4, volume 32 issue 1 and this issue were all taken with my Nokia phone.

One of the photos of my model of Santa Fe's only GP40 2964 was taken on my Cannon digital SLR. The other photo was taken with my Nokia phone. I'll be interested to see if you can identify which is which.

I look forward to your answers as to which photo was taken with which camera and your views on photography for MainLine.

Regards

Rod Tonkin

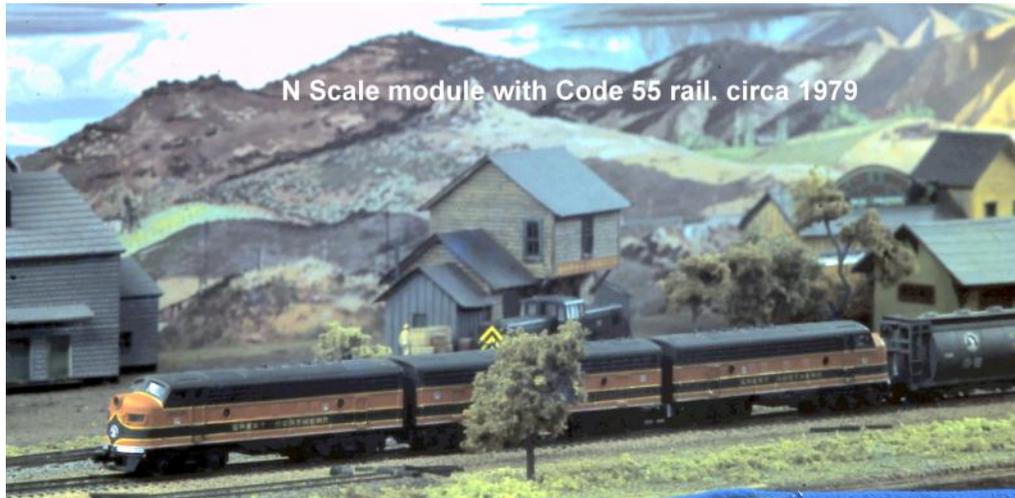
Editor MainLine



Looking Back – 40 years

Gerry Hopkins MMR

40 years ago I got back into model railroading. I started modelling in N Scale and following a British prototype – GWR. The locos and rolling stock were very primitive in those days and I eventually bought a white metal kit of the Beyer Peacock Hymec diesel and a Minitrix chassis to put it on. Shortly after I started, I joined the **Sydney N Gauge Model Railway Club** and turned to an American Prototype – firstly Great Northern and then Burlington Northern.



N Scale module with Code 55 rail. circa 1979

The **SNGMRC** had a module system, anyone could build a module and join in. The modules could be any length and shape as long as the end plate was square to the track and the track was a particular height from the ground – about 30” from memory. I learnt a lot from the other members – hand laid turnouts, fixing locos and rolling stock, how to do scenery and, most importantly, about operations.

We used the car card and waybill system from “Old Line Graphics”. This was very flexible for a module system that went together differently every time. I made a number of modules over the next seven years – and learnt a lot.

In 1982 my company sent me to Tokyo for training. While there, I was able to buy some HO_n30” locos and rolling stock kits. These were in the Joe Works “**Rio Grande Miniland**” range. I picked up some for myself and for a few friends and we built an exhibition layout called Rio Grande Miniland. It measured 1m x 2m and was first shown at the AMRA exhibi-

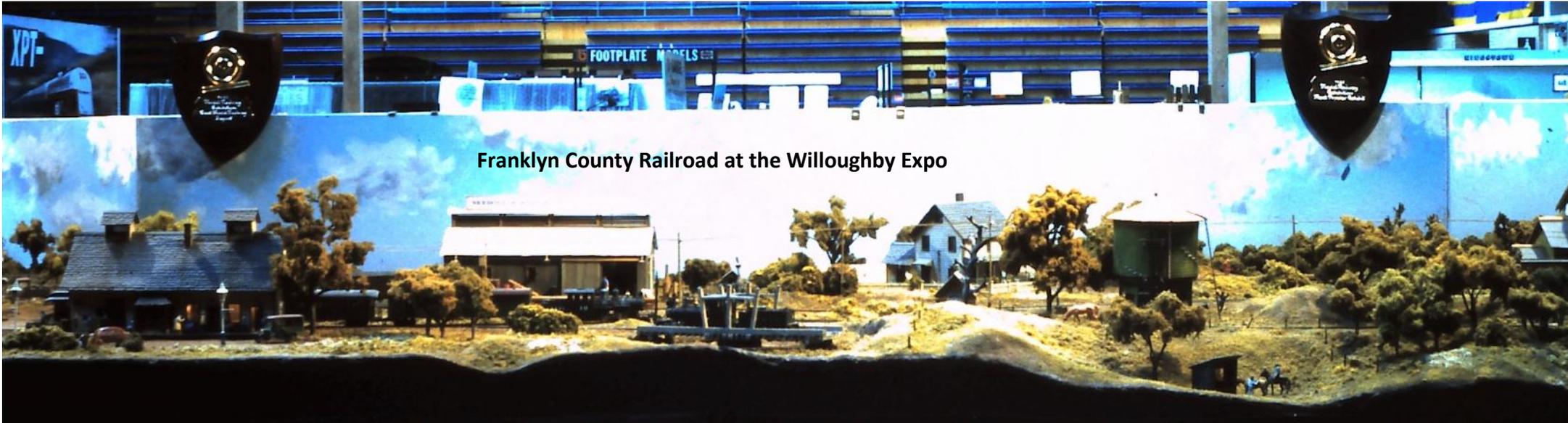
tion at the Showgrounds at Moore Park in 1982. There were four of us involved in the building and three of us have been the greatest of friends since then, and still meet regularly.



Rio Grande Miniland



Rio Grande Miniland - circa 1982



Franklyn County Railroad at the Willoughby Expo

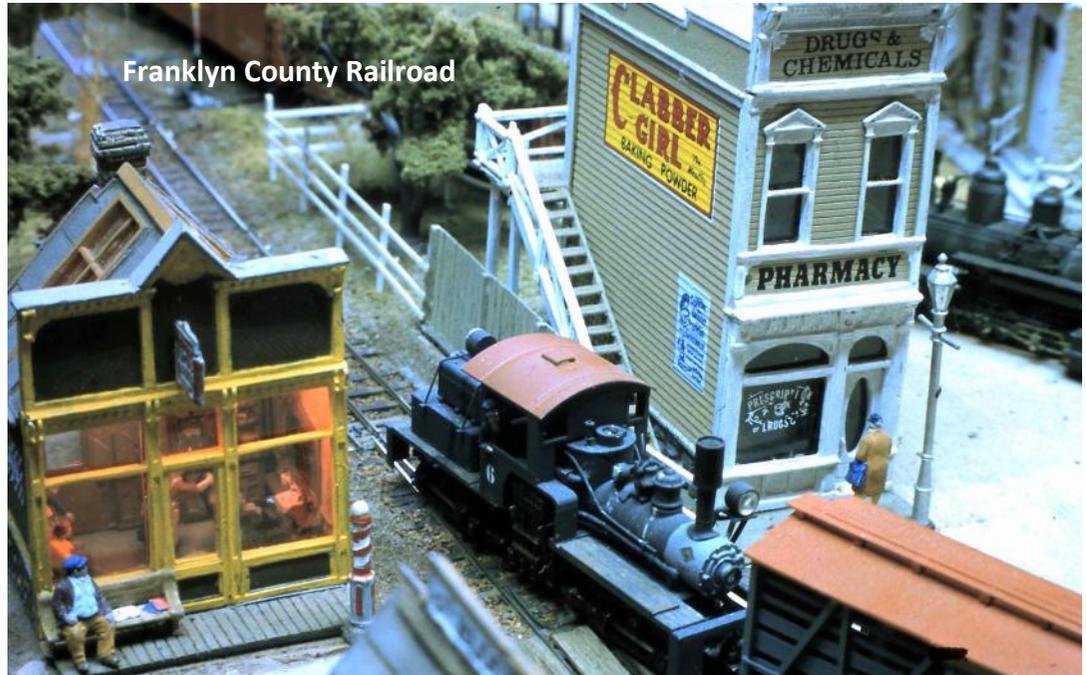
Within a few years our interests changed – HO_n30” for me, HO_n3 for Laurie, and N scale & G scale for Trevor. I was “smitten” by the “Two Foot” bug and studied the **Sandy River & Rangeley Lakes Railroad** of New England USA. In 1984 I built an exhibition layout called **Franklyn County Railroad** which travelled across many states in Australia over the next five years. None of this could have been accomplished without the help of my wife **Lauris**.

We made many friends over these years and still keep up with many of them. The experiences learnt while building and running the layout at these exhibitions are still with me today. In the late 90’s I was involved with an HO module group – this gave us all a start in DCC.

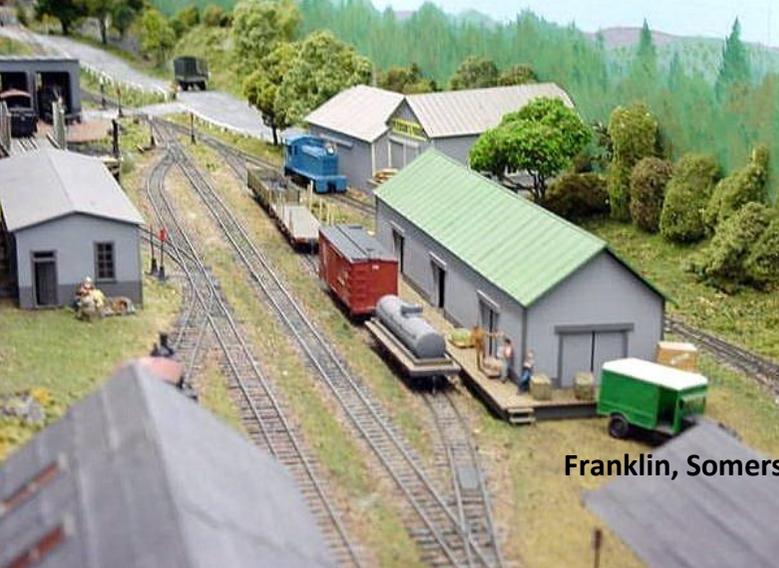
This layout also travelled to Adelaide in 1987 – two weeks after it appeared in the **Australian Model Railway Magazine** (Oct 1987). Over the next few months we started on the replacement for Franklyn County. The new layout was called **Kennebec County Railroad**. It followed the previous theme of the Maine Two Footers.

This layout also had numerous sound systems running in the background and ran automatically. The sounds were on endless tapes and ran on “Walkman” type players. Only passenger trains stopped at the station, while all trains slowed down and stopped at signals.

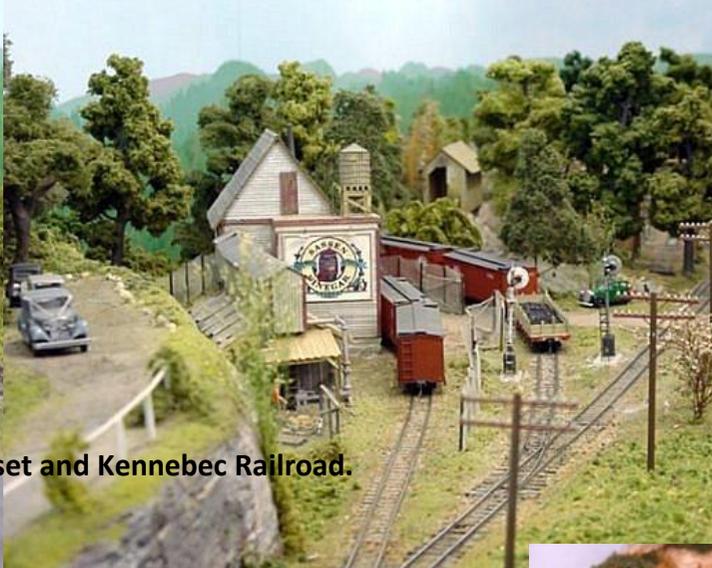
The biggest thing I learnt at this time was the need for “all wheel pickup” on all locos. It took some practice to get it right. Reliable running has always been my phobia.



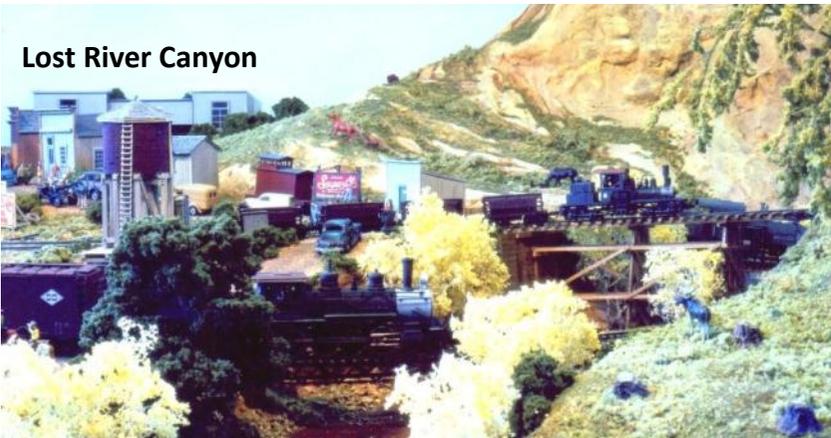
Franklyn County Railroad



Franklin, Somerset and Kennebec Railroad.



Kennebec County did the exhibition circuit for a number of years – all exhibition layouts have a limited life. The exhibition layout was eventually incorporated into my home layout. This layout was called **Franklin, Somerset and Kennebec Railroad**. The layout filled the single car garage. We had many operating sessions on this layout – again using car cards & waybills.



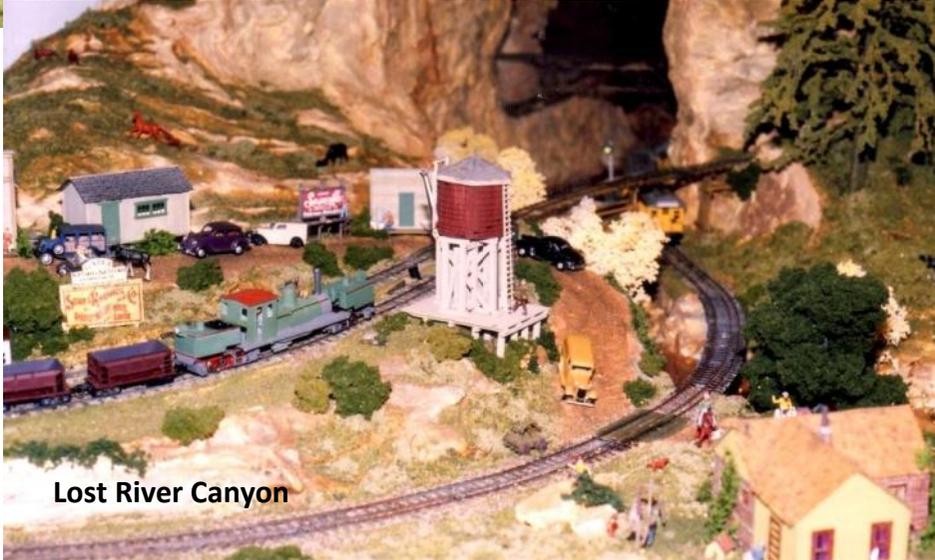
Lost River Canyon

I then stated on another exhibition layout this one “**Lost River Canyon**”. This layout featured three gauges – HOn30”, HOn3 and standard gauge. The layout would run automatically,

two trains running in opposite directions on the HOn30” section of track. There were no moving parts in the turnouts. The other part of the layout had 3ft and standard gauge loops that ran as dual gauge – with signals.

All HOn30 track was hand laid code 40 rail, the Hon3 track was code 55 and the standard and dual gauge sections were code 70 rail. This layout only lasted a couple of years and was then retired to make room for some HO scale Standard Gauge modules.

These were built so that I could get some experience with DCC. The concept of these modules was totally different to the modules I was used to at SNGMRC. The only thing in their favour



Lost River Canyon

was the DCC learning curve. I dropped out of the module group, I could never get my head around the need for the module to be strong enough to support me AND my elephant – one or the other would be good enough – not both.

After trying a number of different systems and getting to know the pros and cons, I decided to get myself an Easydcc system from CVP. This was in the “time before wireless” and was a great learning experience. Decoders were “primitive” in those days and I finally ended up using the Lenz decoders. DCC was then incorporated into the HOn30 layout and made operation a whole new experience.



Sweetgrass on exhibition



Sweetgrass Exhibition

Layout

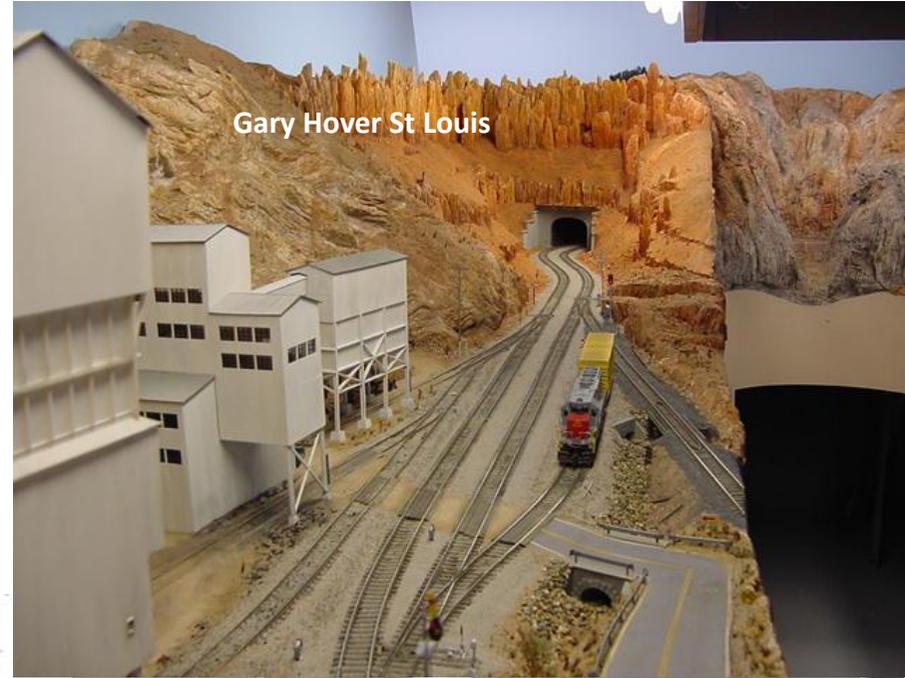
In the June of 2000 we found a suitable house on the Central Coast and bought the house and moved there in July. There was a 2 car garage and one half was suitable to house a modular layout. The layout was built in half the garage which enabled a small group to have operating sessions, using the same Car Card & Waybill system, and get used to using DCC. The layout was called **Sweetgrass** and ended up being taken to a few exhibitions. The track was Peco Code 75 and building a complete HO layout was a new experience. I had decided to model my old favourite – the Great Northern Railway. I decided that a dedicated train room was the way to go.

So, in March of 2001 the train room was built – a garage style building measuring 6m x 7m. Work on the layout soon started but I was not sure about the possibility of a double deck layout.

In the July of 2001 we went to the NMRA Convention in St Louis, USA and I my aim was to look at different layout designs before I went past the initial construction of my layout. On the layout tours we saw many

styles of layout – some very large and some were very “busy”. I decided to stay with an “ordinary” layout with a few 2% grades.

To come –
Building and
operating
the Great
Falls
Subdivision.



Gary Hover St Louis

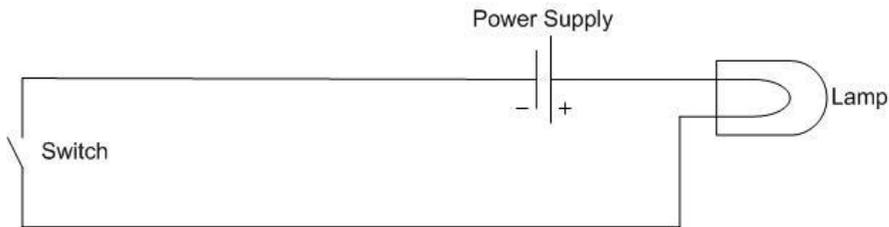


Carl Winkler St Louis

Layout Command and Control (Part 2)

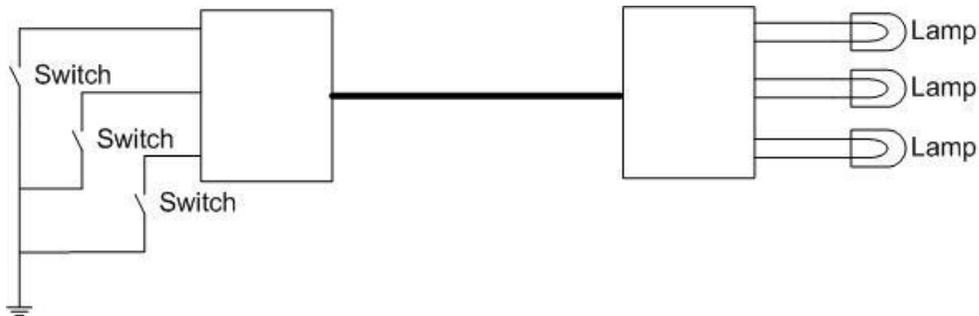
Chris Minahan

Last time we spoke of the primary advantage of LCC being the simplification of layout wiring. In the simplest case of layout line side equipment there are three components - a power supply, an actuator (usually a switch), and the controlled device such as a lamp or point motor. There are several methods of wiring that can be used to achieve the control of the device. Let us consider the control of a lamp.



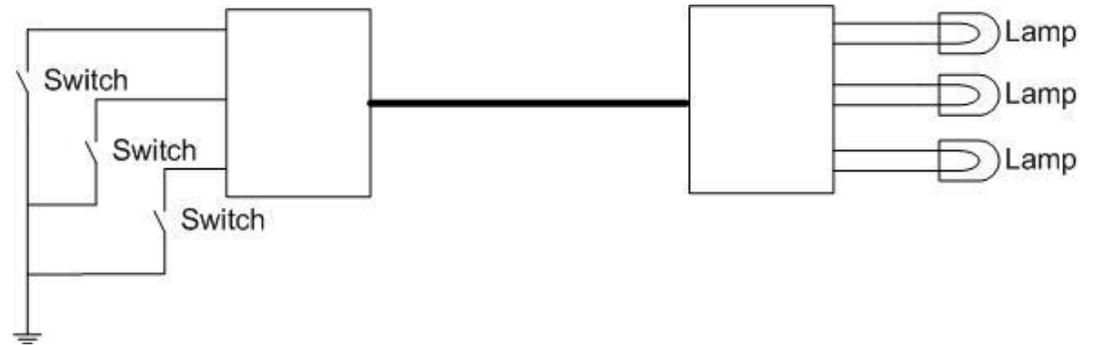
In this basic circuit, the physical location of the lamp and the switch would usually be determined by the placement of the switch (e.g., in a panel) and lamp (e.g., in a signal). The power supply could be mounted anywhere convenient. Regardless of where the power supply is located, there must be two wires from the switch to the lamp to complete the circuit.

Commonly in a layout, the basic circuit above would be replicated many times. We can take advantage of using common wires in each of the circuits but, inevitably, the number of wires required increases linearly as the number of circuits increase.



LCC gives us a mechanism whereby we connect all the switches and all the lamps onto the same piece of wire.

LCC gives us a mechanism whereby we connect all the switches and all the lamps onto the same piece of wire.



The switches and lamps are connected to a node and the nodes are connected by a single connection called a bus - from the term bus bar. The diagram shows three devices connected to their respective nodes but generally, nodes have the ability to have eight or sixteen devices connected and these can be a mixture of inputs such as switches, and outputs such as lamps.

This node is a Railstars IO and has eight inputs and eight outputs. With two of these boards, a layout could have a panel controlling eight points and lamps showing the actual position of each point. One board would be located in the panel, and the other mounted in the layout near the points it is controlling and sensing.



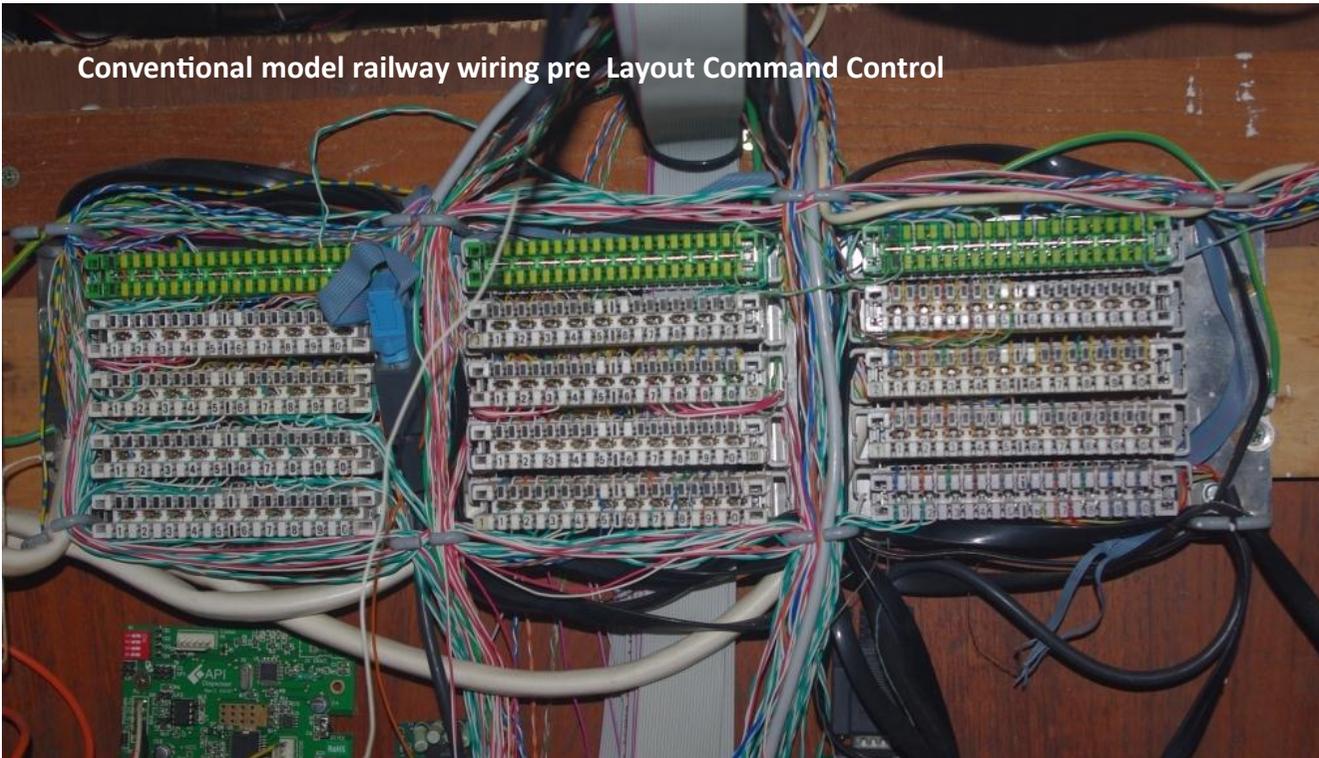
The bus cable specified by the LCC standard is the readily available, or fabricate it yourself, computer or LAN (Cat 5) cable with standard RJ45 connectors on each end.

This cable can also carry power (within certain limits) for use by the controlled devices.

The nodes are connected in daisy chain fashion with a maximum length of about 300 meters and about 48 nodes.



Conventional model railway wiring pre Layout Command Control



As shown previously, all inputs and all outputs are connected to each other by the CAN bus. Once installed on a layout, we need to define what output is driven by what input. In the last article, I stressed that this system does not require a computer system to either program it or run it. In the Railstars photo you can see a blue button and a gold (actually yellow) button. This blue/gold button combination is used to set up the system. These buttons put the individual outputs into a "Learn" mode, and then the input that is going to actuate the selected output "Teaches" the output what message to listen for.

The LCC system creates an environment where an action, such as pressing a button or a locomotive entering a section of track, creates an event and a particular output, or indeed, several outputs, react to that event. The event is generated by a "producer" and is acted on by a "consumer". The system allows for a huge number (many millions) of event numbers or IDs. These IDs are intended to be globally unique. That is, no two events on any layout, anywhere in the universe, will generate the same event identifier.

The LCC system is defined around a bus system called CAN (Controller Area Network). This system was defined by the Bosch company for use in the automotive industry and almost all motor vehicles currently manufactured have a CAN system as part of their control and monitoring systems. For vehicles having many controls on the steering column, it enables all those controls to be implemented over just two wires.

The automotive environment is an electrically hostile one and requires robust electronic systems for reliability. I commend to those who are interested to read the CAN documentation available on the internet. Suffice to say, it is a very good choice for use in the model railway environment which due to foreign objects on train wheels and track can also be electrically noisy.

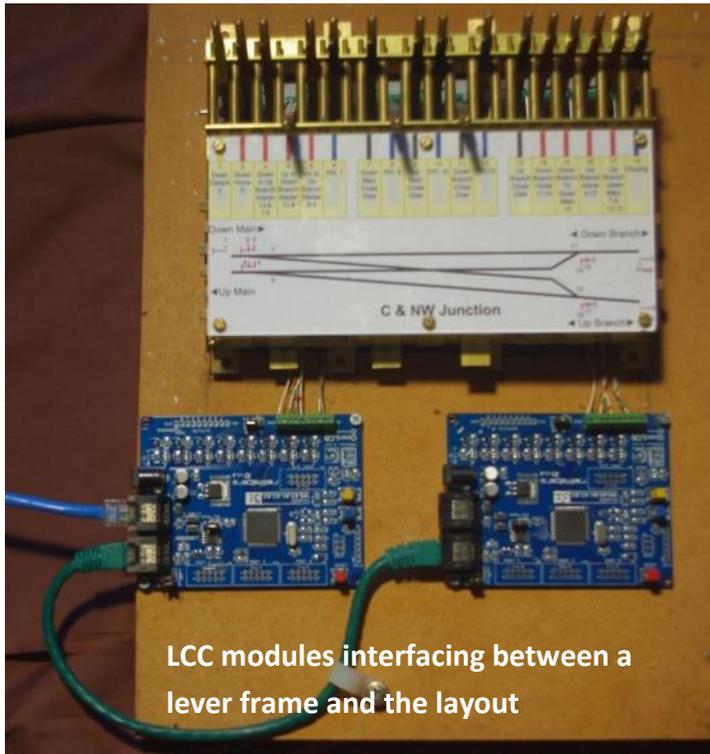
Devices similar to the Railstars unit above, are capable of interfacing to many layout objects directly, particularly those which draw low current. (Less than about 50mA). They will directly drive LEDs, grain of wheat bulbs, servo point systems such as TAM Valley, signals etc. They are not capable of directly driving high current (Peco/Atlas etc) or stall (Cobalt/Tortoise etc) point actuators without additional interfaces.

This also caters for groups with modular layouts being guaranteed that if they plug modules together, there will be no risk of devices on one module reacting to events generated on another module. (Unless they had been programmed to do so of course.)

Using our simple switch/lamp example, if we wanted lamp 3 to be controlled by switch 2, we select the "lamp 3 on" output using the blue/gold buttons on the node that is driving the lamp to (learn) listen for a teach event. To send the teach event we use the blue/gold system to select the "switch 2 on" input on its node and it is done. Similarly for the off event.

It should become immediately clear that we could have set this up so that the "lamp 3 off" could have been triggered by an event other than the "switch 2 off" event. Other outputs could also be listening for the "switch 2 on" event. Any output can be turned on or off by any event whether it be an on or off event. The system allows for any number of outputs to listen for a single event. In other words there can be a "one to one" or a "one to many" operation. An example of one to many mapping would be route selection by a single button press event to set many points.

While it would be possible for outputs to listen for more than one event, I am not aware of any current products that implement this type of mapping and would be tedious to set up via the Blue/Gold system.



LCC modules interfacing between a lever frame and the layout

For those who want to interface LCC to a computer or other automation system, there are CAN to USB interfaces available and the ubiquitous JMRI (aka Decoderpro) software can be used to configure producer/consumer settings in connected nodes. JMRI will also generate and listen for events.

Nodes directly interfacing to high current devices such as point motors will also become available.

LCC nodes such as the Railstars example will accommodate simple signalling systems, but once the signalling logic becomes more complex, LCC systems will

send the various sensor data to an interlocking system which will decide the point directions and signal aspects and LCC will relay that data to the line side equipment.

Interlocking systems do not have to be computerised. Pictured below is an 18 lever Moderatec signal frame connected to an LCC system. The interlocking is done in the lever frame and the signals and points are driven by the LCC system.

For the sake of the photograph, the lever frame is showing the top rather than the under-

neath. The only cable required for this setup is the blue cable on the left connecting to the layout and providing power. In non LCC environment, the wires coming from under the frame would have to run to the controlled device on the layout.

The number of inputs and outputs (I/O) per node will vary from manufacturer to manufacturer. The more I/O per board, the cost per I/O will be lower. However, large numbers of I/O on a node will begin to reduce the benefit of simplified wiring as the node will be required to be connected to line side equipment more distant from the node. In the case of the arrangement in the photograph, only twelve inputs of the possible 16 available with two boards are used. None of the outputs are used.

Yard ladders and other routing systems using diode matrices can be implemented in LCC systems. The diodes used in the matrices only need to be small signal types such as 1N914 rather than high current power diodes.

As noted previously, the CAN bus is very tolerant of electrical noise and is easy to install. The nodes have two sockets and the bus cable loops through each node. If the current load of the system is low, a single power supply can be connected to any node and this can supply the entire LCC system. In the photograph above, the green cable is the loop from one board to the next. The only significant requirement is that the first and last nodes terminate the bus. Due to the very high data rates these terminations are required. As the termination is simple to implement, most manufacturers provide terminations on their nodes and it is left to the layout owner to set the jumpers on the end nodes to activate the terminations. The board on the right is one end of the CAN bus and requires the termination jumpers be set. The jumpers on these boards are at the very bottom left corner under the sockets with the green cable connected.

I foresee potential problems in this area. If additional LCC nodes are added at a later time to the end of the bus and the original terminations are not disabled, the potential exists for the bus to be multiply terminated. This may lead to unexplained random faults appearing.

We have only touched the surface of the features and benefits of this Layout Command and Control system. LCC systems can be implemented without the need for computing systems; it is an adjunct to DCC; and will significantly reduce the amount of wire and cable in model railroad layouts.

The specification having been adopted by the NMRA will prompt manufacturers will begin to produce LCC compatible components.

Exhibiting Leaffield (ne Western Lines)

Rod Tonkin

We intended to exhibit Western Lines partly completed as Division Four's exhibit in this year's AMRA WA Exhibition. Exhibiting a partly built layout lets exhibition patrons see how a layout is built. Transporting, setting up and operating the layout at the exhibition would be a good trial for the construction techniques used to build the layout and its ability to operate models of mainline rolling stock.



I've not previously used expanded foam decking or secured the roadbed, track and scenery onto foam layout decking with white glue. A three day exhibition would I thought show up any deficiencies in the use of this material for a portable layout. As the photo show the light weight layout decking made the folded layout is easy for a single person to move. The folded layout as the photo below shows fits easily into my Kia Cerato hatch back



To visually frame the layout the scene modelled is in a box. I was impressed with the "Layout in a Box" approach demonstrated by Geoff Nott with "Smugglers Cove" at the 2012 Australasian Region convention. The layout in a box approach suited my needs precisely. The box limits how a visitor to the exhibition can see the layout and allows you to control the lighting of your layout regardless of your location at an exhibition.

The exhibition organisers wanted a name for our display for the printed exhibition guide. Western Lines didn't quite fit the bill as a name for our exhibit. So Western Lines has now

become a section of a cross country line in Oxfordshire England. The layout name was selected by perusing maps of the area looking for villages never served by rail. The village of Leaffield fitted the criteria. As the real Leafield never had a railway, the choice of prototype, style of line side structures and rolling stock in use on the model of Leaffield is up to us.



The fictional preserved railway is the Witney, Leaffield and Wychwood. This line once formed part of a fictional line from Chipping Norton to Witney declared surplus to requirements by the esteemed Doctor Beeching. As well providing entertainment for railway enthusiasts, the line provides passenger rail access to the Wychwood National Nature Reserve. The location of our preserved railway is under the jurisdiction of the Thames Valley Police force. This allows the model railway to be the setting for an episode of "Inspector Morse"

The layout operated as anticipated. My OO scale models of English Electric's type 4 1-Co-Co-1 diesels effortlessly orbited the layout hauling rakes of BR Mk1 coaches corridor during the show. The part finished layout scene drew many questions from exhibition patrons.

Exhibiting "Leaffield" showed the foam layout decking with track and scenery secured with white glue was a robust method of layout construction. The



fitter tracks across the hinged joint were reasonably easy to install and provided reliable train operation The layout was easy to transport and set up at the exhibition. The layouts track work was capable of reliably operating OO scale models of British Railways mainline rolling stock.

Hopefully at next year's exhibition the scenery will be more advanced.

Sandwich layout decking

Jeff Lee

As the layout is around the walls and the base is suspended from the walls, keeping everything lightweight was important. I do have some braces from the skirting boards to the base to stiffen the frame in places.

On a previous layout and also on a diorama I built whilst the current house was being built, I used a sandwich design of Styrofoam between boards. Previously I had used 3mm MDF as the "bread" either side of the 15mm Styrofoam sandwich filler. This worked well. I did seal the MDF with paint before installing in case water penetrated the glue of the sandwich.

This time I decided to be more conservative and use 3mm plywood. The sheets of sandwich material once made could then be cut into the various sections, just like cutting regular plywood. Before installing any sections and after the sections were cut I sealed the edges with "No More Gaps". After the No More Gaps dried I painted the whole section to help seal it.

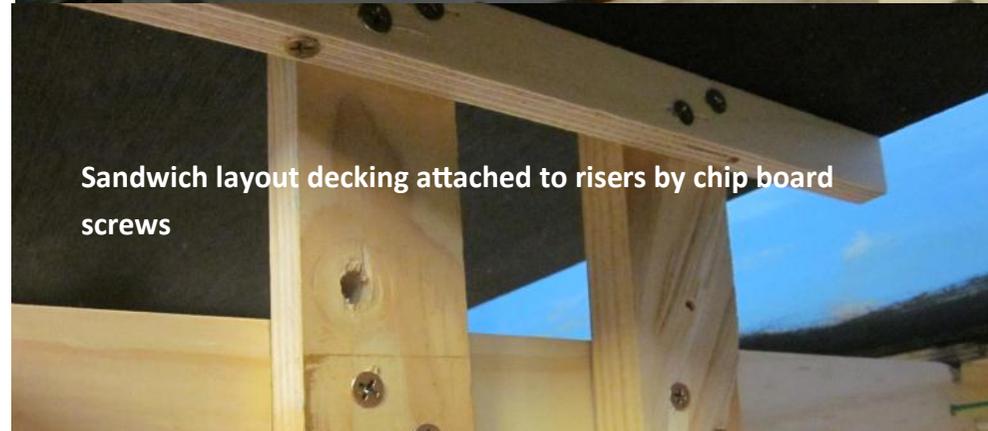
The sandwich section is slightly lighter than say a 12mm plywood section and just as stable - perhaps more so. The only downside is the sandwich is 21-22mm thick versus a 12 mm plywood base. The sandwich roadbed can span up to 400 mm.

However for the sections where track passes underneath one can cut the lower elements of the sandwich and create only a 3mm overhead height if required.

I have had this design in use for nearly 10 years and many colleagues also have used it successfully.

There are some advantages over dense Styrofoam and plain plywood. With the sandwich we have timber top and bottom which. You can easily screw into the sandwich board. This is handy for mounting small items under the layout like wire hangers and switches. It is also handy to join two sections between risers. The weight of the sandwich overall is lighter than plywood. Styrofoam is good but when you want to attach something having a plywood base helps. Of course all methods have positives and negatives, but the sandwich model works well for me.

The sandwich will accept a wallboard / chipboard screw to attach it to the riser and keep it stable.



DWiC ?

Bob Backway

On March 9 Melbourne I created a ripple amongst model railway command control enthusiasts by sending out invitations to rail modelling organisations throughout the world. Interested individuals were invited to join a working group to explore the possibility of using a new WiFi server chip as the basis for a directly controlled wireless locomotive/accessory control system.

The response was interesting. Within six hours I had four new friends, within 24 hours i had eight. The internet moves much faster than when I joined the DCC WG in 1990! I also had some slightly angry declines. Why? Because this technology could easily and cheaply replace DCC. A lot of people, including myself, have put a many hours of work into DCC. What the heck are you doing?

Before I get lynched by avid DCC fans can I make the following points...

- This new system will work quite happily on a DCC layout with no extra outlay.
- You will be able to get into it for the cost of one controller (decoder in DCC talk).
- A relatively simple and cheap interface to your command station will also allow control of your DCC layout with the same hand throttle – a phone/tablet or PC.

The technology is called **DWiC – Direct Wireless Control**.

Direct because the operator is virtually in the loco directly controlling it via **wireless** internet (**Wi**) reading and modifying a web page located in the actual loco on-board **controller**. Thus the word “command” is missing.

A free App on your phone/tablet/PC will display and allow modification of the web page located within the loco controller. No need for proprietary hand throttles, command stations or boosters.

The loco power possibilities include DC, DCC, simple AC from a transformer or Li-ion batteries powering the 3.5 volt chips and modern efficient low voltage motors.

A range of modules is currently available based on the EPS8266 WiFi server chip. I paid \$3.50 + free postage for mine but with the AUD deteriorating they are now just over \$4. A USB to serial interface (like a USB stick in size) at \$3.50 allows you to program the firmware from a

PC. Add a power supply a motor interface/lighting chip and function out/input chip and you have a DWiC controller.

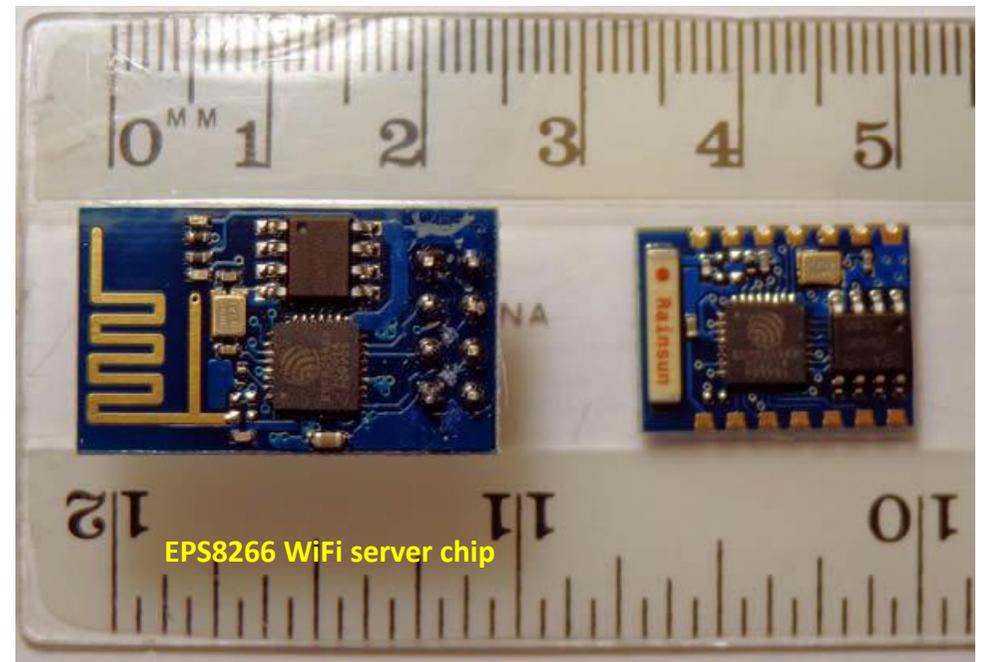
While we talk about programming I should mention that manufacturers would ship the chip programmed as a DWiC controller with a web page appropriate for that loco. The above interface is used for experimentation only – or for future firmware upgrades via a sub-miniature 3 pin plug.

Sick of configuration variables? Well a web page normally has any settings in plain English. I would imagine a manufacturer would supply a DWiC fitted loco with a web page having the exact buttons required for the available controls – no remembering which function number does what. As these chips get better they may even include a driver’s view of the cab.

The stress the DCC WG had over bidirectional communication? Well WiFi is bidirectional without you knowing it is there.

For more information see the DWiC WG developing web site at: <http://members.iinet.net.au/~backway/DWiC/DWiCintroduction.html>

We are looking for technically minded modellers to join the working group.



ENHANCING A BRASS MODEL

Rob Mcear

So finally you've been able to buy that expensive brass model, car, loco, item you want and you think it is an accurate model of what you are looking for? Well, maybe not. I recently purchased a brass model of the Santa Fe's Dynamometer car number 29. The car was used to test the relative pulling power of locomotives the Santa Fe used.

In my case I thought the car was accurate. Did I have a lot to learn! The car needed extensive modifications and the following pictures show what I did. The prototype pictures are by various photographers and the original model photographs are by Paul Brown. The enhanced model photographs are mine.

The prototype and the model end on. The prototype front view (Fig 1) shows note the extra MU plug on the side low down.



Fig 1

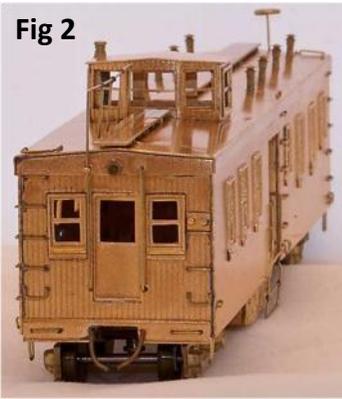


Fig 2



Fig 3

On original Hallmark model (Fig 2) notice the poor representation of the brake lines and the simple way of doing the MU plugs next to the window. Also note that there is no MU plug lower down on the car end. You can also see here that there are centre mullions in the windows in the cupola which are not on the original. There is also a distinct lack of detail under the ends and no uncoupling levers.

My model (Fig 3) with the enhanced MU plugs-now three of them-and the centre mullions removed from the windows. You can also see one light has been installed on the cupola, that's what happens when you assume that there are two lights in a pack. The other one has since been fitted. Notice the uncoupling levers have been added and the brake, steam and signal lines have been replaced with brass and plastic parts. The coupler box and surrounds have been added as well. After the model was completed I changed from Kadee Couplers

to Sergent so the finished model will have these. So now we will move on to the sides of the model.

On the prototype side (Fig 4) on which I will call the right side On the prototype you will notice that there are two battery boxes, and a handrail through the centre of the door. there is also a distinctive step and a centre mullion



Fig 4

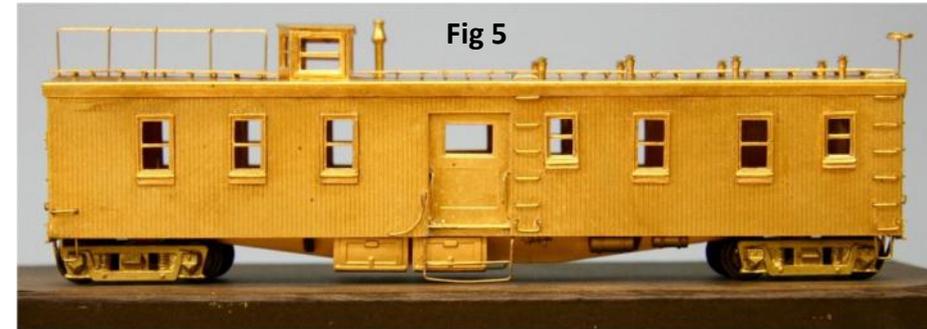


Fig 5

on in the window in the door. I don't have a picture of the original

model on the right side but these were all missing from the model.

This is the right side of the original (Fig 5). Notice the poor representations of the side steps and the battery boxes. There are other mistakes here as well such as no handrail in the middle of the door, the steps are very poor representations of the original, there is no platform around the cupola and the handrail is too long and has four supports instead of the prototype's three. Also there are too many vents on the roof.

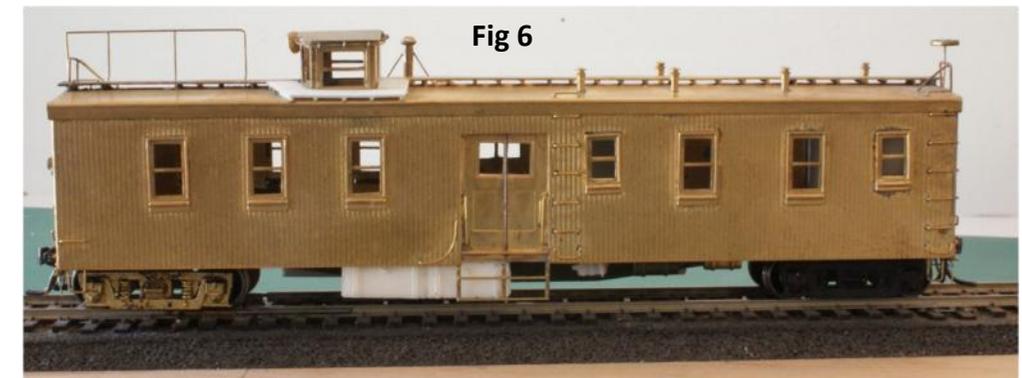


Fig 6

The model modified on the right side (Fig 6), you can see the added and modified detail here. The enhancements I made to the basic model on the right side are two battery boxes which were cast in resin from a mould I made and the step has been added. The handrail in the centre of the door has been added with steel wire and the centre mullion of the window has also been added. You can see the detail below.

Close up of the battery boxes (Fig 7) and the new side step, also notice that the car now has a centre handrail in the middle of the door as per the prototype.



The left side (Fig 10) received new cast in resin battery boxes and a new water tank which

With the right side is now completed, the left side of the model could be addressed. This required more work as can be seen on the prototype photo (Fig 8). There are three large battery boxes, on this side together with a large water tank. Also note there are only three bent handrail supports on the car roof.

Original model left side (Fig 9). The left side of the model has only two indistinct looking battery boxes. Note also that there are no bends in the roof handrail, it has four supports and the handrail is too close to the cupola. The water tank is an indistinct piece of tubing



was also cast from a master off a Walters Car.



and is far too small. The steps are the same simple wire arrangement as on the left hand side and are not close to the prototype at all.



Now for the roof and unfortunately as the roof needs the most amount of work on the model, there are not a lot of pictures to use as a guide.

Fig 11 is a rather grainy view of the

roof from the Cupola end.

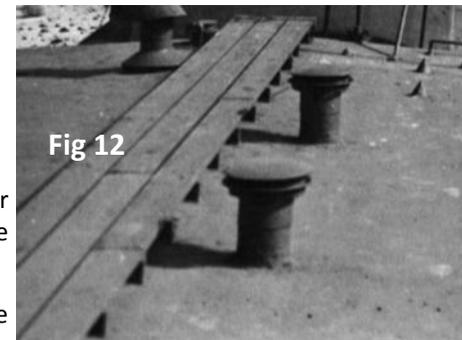


Fig 12 is a shot of the opposite end giving some detail of the roof vents.

The bend has been added to the roof handrail as well more on this when we get to the roof mods. Handrail was replaced and moved further away from the cupola and closer to the walkway on the roof.

Fig 13



Fig 13 is the roof of the model as acquired, eight vents where there should only be five, no cupola handrail and no roof walk around the cupola. The handrail as already stated was completely wrong.

Fig14 is the re detailed roof of the model. A new handrail fabricated from brass wire replaced the original roof handrail. It was moved closer to the roof walk, a

new roof walk around the cupola was fabricated from styrene. Whilst I would have like to use brass here I was not able to here as soldering would have caused difficulties with items in the cupola. I didn't want to end up with a brass kit!

Fig 14

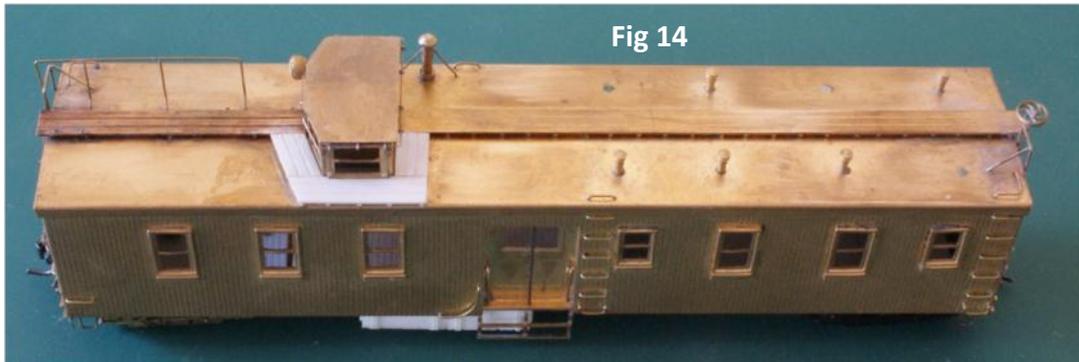
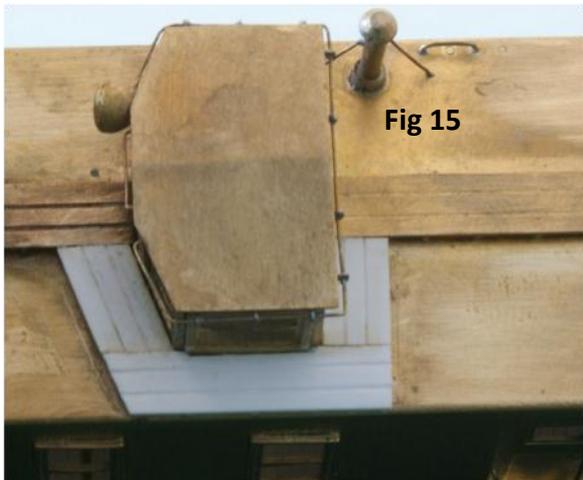
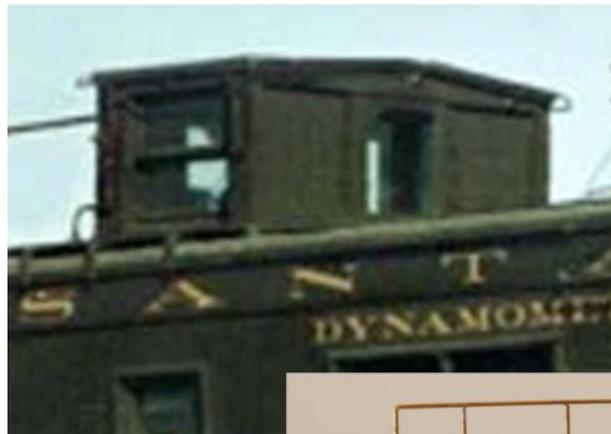


Fig 15



Three of the stacks have been removed and the holes plugged with solder from underneath and then finished off with body filler and sanded. The chimney stay wire has been added to it and the handrail around the cupola has also been added with brass wire and eye bolts.

Fig 15 a close up of the cupola walkway



The prototype photo shows that the windows on the rear of the cupola were closed off at some point. this was done sometime in the 1920's so it is appropriate for my version. I don't have a photo of the original models cupola but if you look back a figure 2 you can see the original Hallmark version.

The modified roof and cupola. Fig 16 shows the bend in the new handrails as well as the one roof light added and the detail around the cupola including the caboose style

Fig 16



Fig 17



handrail added to the roof of the cupola. Fig 17 The rear of the cupola in the prototype showing the blanked off windows.

With the car the modifications completed now it is time to paint. When completed I should have a very accurate representation of dynamometer car number 29 for my 1947 Santa Fe layout.

To paint brass what I needed to do was to put on a coat of primer. Before I did that I completely washed the model to release the moulding release from the resin parts and to get rid of oils and other contaminants that may have been put on the model during handling.



The primer I used was Rust-Oleum 2X Gray Primer (fig19) it is easy to find now in Bunnings or Masters hardware stores here in Australia.

To use this product you hold it about 6 to 8 inches from the model and spray in light coats. I neglected to take a picture of this car primed but you can see the result of the primer on another model here.

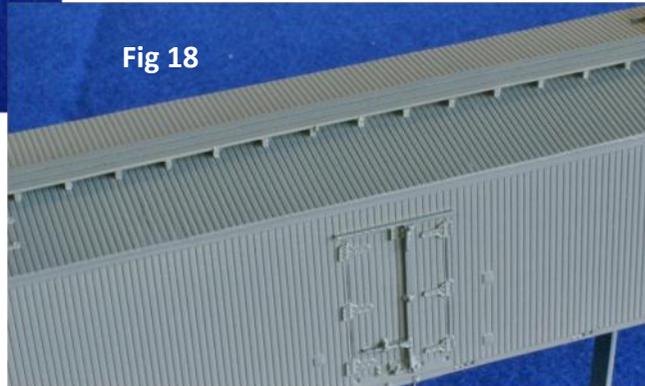


Fig 18

Fig 18 is an example of the primer coverage, I neglected to take a picture of the Dynamometer car as I was doing the priming but I have a picture here of a resin refrigerator car that I had been doing at the same time. The coverage is excellent and the primer almost self levels. It is dry to the touch in about an hour but needs about two to three days to harden properly

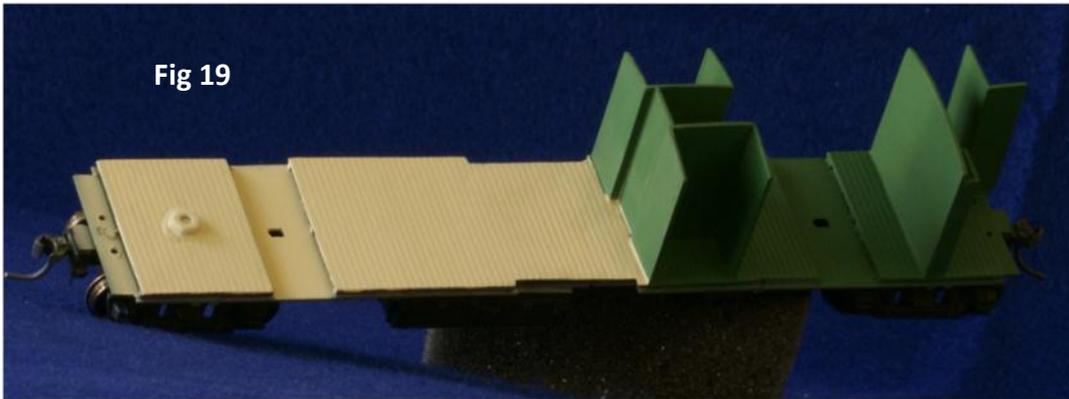


Fig 19

Whilst I was modifying this car I decided to add some interior partitions with styrene (Fig 19). They are not much but they do blank out the windows that are not meant to be seen through. Whilst I was at it I thought that I would add some styrene floorboards and basic interior in the Dynamometer section of the car. The interior is painted as per Santa Fe practice; well as close as I think I can get to it, various references state that it was green inside

but some photographs show the working dynamometer end white. I guess I took a 50/50 guess and did what I thought was the right thing. I guess someone will tell me different in the future, but the interior is easily removed so it can always be modified later if further information comes to light. The gaps in the floor are for the mounting strips on the body of the car.

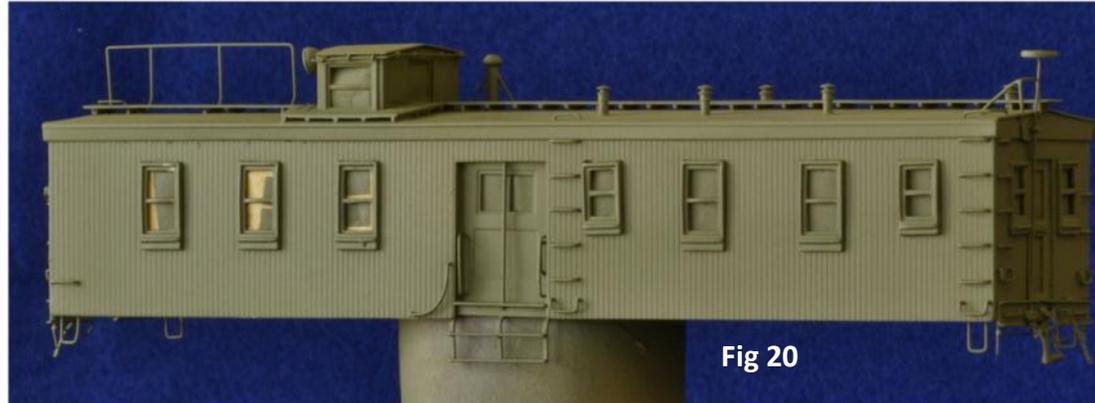


Fig 20

Here is the car after the first coat of Santa Fe Coach Green (Fig 20) I use a mix of 50/50 Floquil Coach Green and Pullman Green, it has a small amount of Reefer Yellow added to it as well. I'll use Floquil paints until my stock runs out and to my eye under layout lighting the colour looks pretty close to the Santa Fe colour of Coach Green.

After painting the green the sides, ends, cupola sides and the roofwalk were masked off and the roof painted black, at this time the underframe was also painted black. Full strength black tends to disappear under layout lighting and hides detail. It sort of becomes lost in all the shadows, so I mix a 50/50 mix of Floquil Weathered Black and Engine Black which lightens it up a bit and looks better under layout lighting.

One final thing, just because it is brass don't be afraid to tackle those modifications to bring it up to today's standard. Some of the older models are easy to pick up at hobby shops, on line or on e-bay. It's mine and it's going to stay mine so the value to me is in having the correct model, not investing in it for the future. Models are models whether they are brass or plastic or some other medium. Have a go-you just never know what you might achieve.

Division One Highlights

Visit to George Stainlay's



George's NSW Railway layout was visited last year and the repeat visit this year had 25 members attend. George's NSW railway runs beautifully and he has trains that look as authentic as any I have seen.

George often runs long strings of goods wagons, cleverly modelled and realistically painted and weathered, with subtle differences in the amount of weathering. His passenger trains are likewise done in his particularly artful finishing. As someone said at the visit, "Where else would you see Garretts double-heading and thus be brought back to your childhood so quickly?"

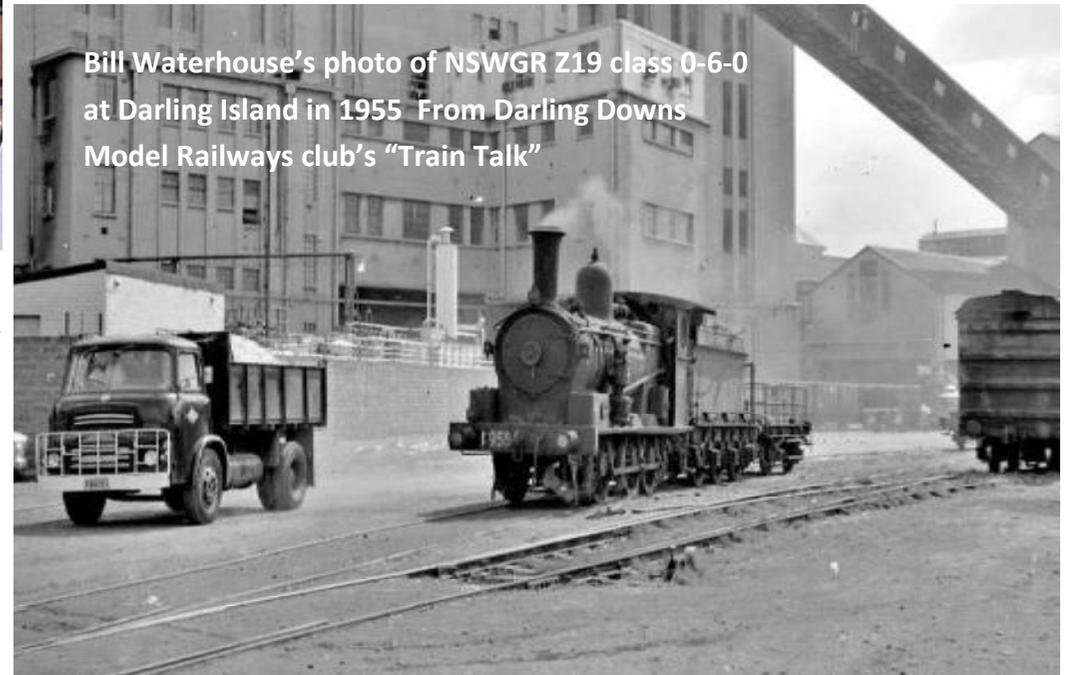
Martyn gave us some information about the National Convention to be held in Portland this year and hopes to see other Aussies there. He also reminded us of the Australasian Region

Convention to be held at Ettalong on September 18th – 21st. His next rather pleasant duty was to present to Arthur Hayes his AP awards as Arthur was unable to receive them at the previous meeting.

Ken Edge-Williams brought some NMRA history into proceedings by showing his old 1974 NMRA guide with its member list, standards, model layout registered names, etc. It was mentioned that at the moment NMRA Division 1 has about 257 members and is the largest Division in the Australasian Region.



Arthur Hayes receiving his award certificates from Laurie McLean and Martyn Jenkins, and possibly wondering about completing his MMR.



Bill Waterhouse's photo of NSWGR Z19 class 0-6-0 at Darling Island in 1955 From Darling Downs Model Railways club's "Train Talk"

Division Two Highlights

This year's exhibition at the University of Canberra High School, Kaleen, was yet another tour de force by the CMCRI (Canberra Model Railway Club Inc.). 37 layouts and 22 trade stands made for an excellent display. Unfortunately, it was a fine sunny day and attendance was down somewhat on 2014 but still very healthy. 2014 was wet and as many sports were cancelled, more people were available for indoor activities!

Best Layout prize was awarded to "Electric Car Sheds" owned by the Historic Electric



Best in Show
"Electric Car Sheds"

Traction Society, Most Popular was "Leonville", a brightly coloured fantasy G scale layout owned by Leon Sawyer and John Beaumont, while Best Scenery went to Alistair and Col McMaster's "638" layout. "638" was unusual for an exhibition layout in that it was a point to point operation, requiring much more effort from operators than the more common "round 'n round".

Division Two was represented at this show for the first time in several years following the tearing up of Division 2's old exhibition layout. This year, David Low brought his layout, "The Western Front in 1917", to make for an 'active' stand.



NMRA Stand, with "The Western Front in 1917" in front, some display models from the same period and a continuously running loop of WW1 battlefield railways of all major participants, plus a rather bemused Division Superintendent behind.

Division Three Highlights



The June meeting was held at the home of Dan & Carolyn Pickard in Highton Geelong, Victoria's 2nd largest city located SW of Melbourne.

Dan is very competent On30 modeller and partner with John Hunter to produce the On30 Dolly Varden Railroad which now resides in at The Suncoast Center for Fine Scale Modeling in Florida, USA.

Dan is the Chief Organiser of the 13th Australian Narrow Gauge Convention which will be held at Easter 2017 in Geelong.

Next meeting will be in Stawell on Saturday 11th July as an Evening

Barbecue, at the home of John & Linda Hunter;

**Models
displayed by
Division Three
members at
recent Division
meetings**



Division Four Highlights

The March meeting was held at Rod Tonkin's in northern Perth on a pleasantly warm Sunday afternoon. The turnout of members was over fifty percent of the divisions members who



50 year Member Rob Nelson with Peter Scarfe, Les Hodgson and Alan Burough at the March 2015 meeting



Rod's scruffy GP60M

live in Perth.

We confirmed exhibiting at AMRA WA's exhibition on the Foundation day weekend and the manning for our display. Meeting hosts were confirmed for most of the meetings this year.

Our division Superintendent's birthday this year netted him a Santa Fe GP60M. It arrived clean, it has since been fitted with a DCC decoder and to him suitably weathered.

Alan showed us progress on controlling a stall motor point motor from remote push buttons via a DCC accessory decoder.

Our April meeting was held at AMRA WA Branch's club rooms a week earlier than usual to avoid clashing with the ANZAC Centenary weekend. Les gave his SP U50b an outing on AM-

RA's Valentine Run Layout.

The AMRA Exhibition coincided with the last Sunday in May. We decided to make our display at the exhibition the

May Division four meeting. We exhibited our project layout now named "Leaffield" at the exhibition. The work in progress layout, especially the "Vita Brits" box goods shed shown in the photo below at the left received favourable comments from exhibition goers.



Les's GE U50b

Division Four's display at the 2015 AMRA WA Exhibition



The "Vita Brits" goods shed

To demonstrate modelling Alan installed the decals he printed using a laser printer onto clear decal paper onto some new control panels.



Alan installing his home printed decals

Division Six Highlights

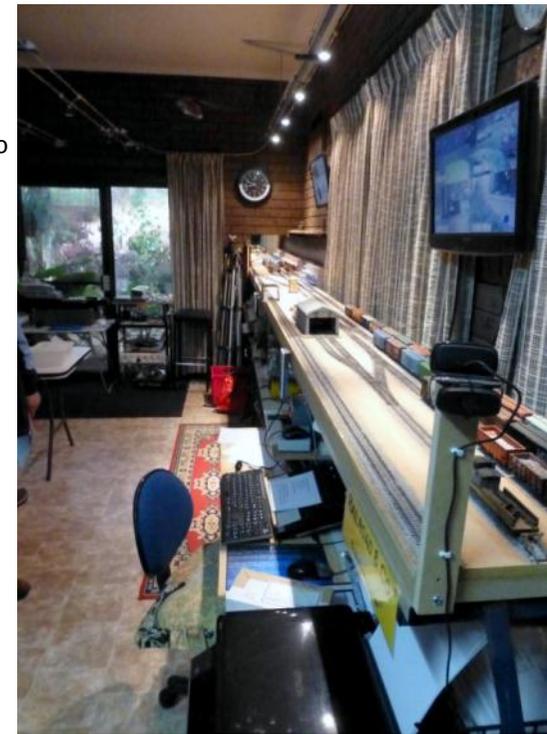
NMRA Div 6 meeting May 9, 2105 was held at the home of Wendy & Max Wright. The 2017 Regional Convention is planned to be held here in South Australia – the local committee will be meeting in a couple of weeks on the start of the proposal to be put forward to the Regional Committee.

Achievement program – Ray advised that while the certificates are still en-route from NSW, he could announce a Golden Spike award to Max for his recently sold H0 scale layout, a Structures certificate also for Max & an Author certificate for Vern. A couple more are in the pipeline.



Peter talked about painting figures, especially those for 0 Scale & finding new brushes for the fine detail painting. There is even a paste to use to help remove all the paint from a brush after washing. A website he found <https://www.rustystumps.com/> has many detail items for both H0 & 0 scales.

Then after a fine lot of refreshments, Max operated his 5m long H0 scale shunting layout, run by RR & Co software with two locos moving box cars around. This also includes many sounds found in loco sheds.

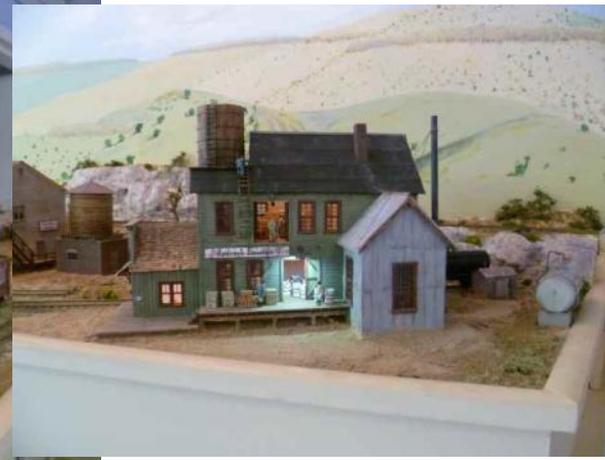
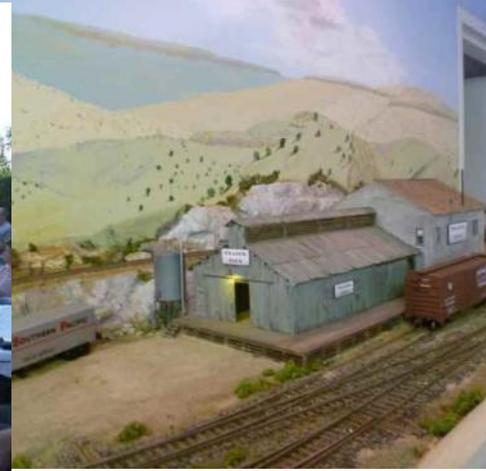


Division Seven

On a pleasant Saturday afternoon on 11 April, members tracked down to the very pleasant Kangaroo Point to admire David Latham's Fanta Se layout, loosely based on the Santa Fe railroad. David as the photos show has done some very impres-



Les Fowler addressing the members of Division Seven



sive structures and scenery which make for great viewing by those who are not vertically challenged as the layout is about 5 feet off the ground.



Narrow Gauge SIG Meeting

Stephen Magee hosted the bi-monthly Narrow Gauge SIG Meeting at his place at Edgeworth on Saturday 18 April 2015.



Narrow Gauge SIG members enjoying operating Stephen Magee's layout

2015 Narrow Gauge Convention

Convention attendees at a major session

Tour of Joadja shale oil facility

The 12th Australian Narrow Gauge Convention was held at Chevalier College at Bowral on the Easter Weekend of 4 and 5 April.

On Monday the 6th, about 50 people toured the historical ruins of the Joadja Shale Oil Mining complex and the new Joadja Whisky Distillery.

David O'Hearn



Traders tables in the main hall

Model of walhalla Fire station



Assessing the contest models



Upcoming Exhibitions and Events

11-12th July 2015

Stawell-Vic, Grampians Model Railway Exhibition Grampians MRC

SES Hall, Sloane Street Stawell

Sat 9-5 & Sun 9-4

Miniature Trains on the Coast (Gold Coast) at Carrara Basket Ball Stadium.

1-2 August 2015

Braybrook-Vic, Sunshine Model Railway Show Sunshine MRC

Braybrook College, Sports Stadium, Burke Street Braybrook (opposite Masters)

Sat 9-5 & Sun 9-4.

22-23 August 2015

Caulfield-Vic, Caulfield Model Train Show AMRA-Vic Div

Caulfield Racecourse, Grandstand, Station Street Caulfield

Sat 10-6 & Sun 10-5

Pine Rivers Train Show at the Pine Rivers Community Centre.

12th & 13th September

Redlands Model Train Show

3rd, 4th & 5th October

Liverpool-NSW

AMRA NSW Model Railway Exhibition

Saturday and Sunday 9am to 5pm, Monday 9am to 4pm.

This space is available for you to promote your event, exhibition or

an exhibition you will be exhibiting at. Please send details of your event to the Editor for publication.

Plan to attend

PORTLAND DAYLIGHT EXPRESS

NMRA NATIONAL CONVENTION



We're working hard to bring you a great
National Convention

August 23 – 29, 2015

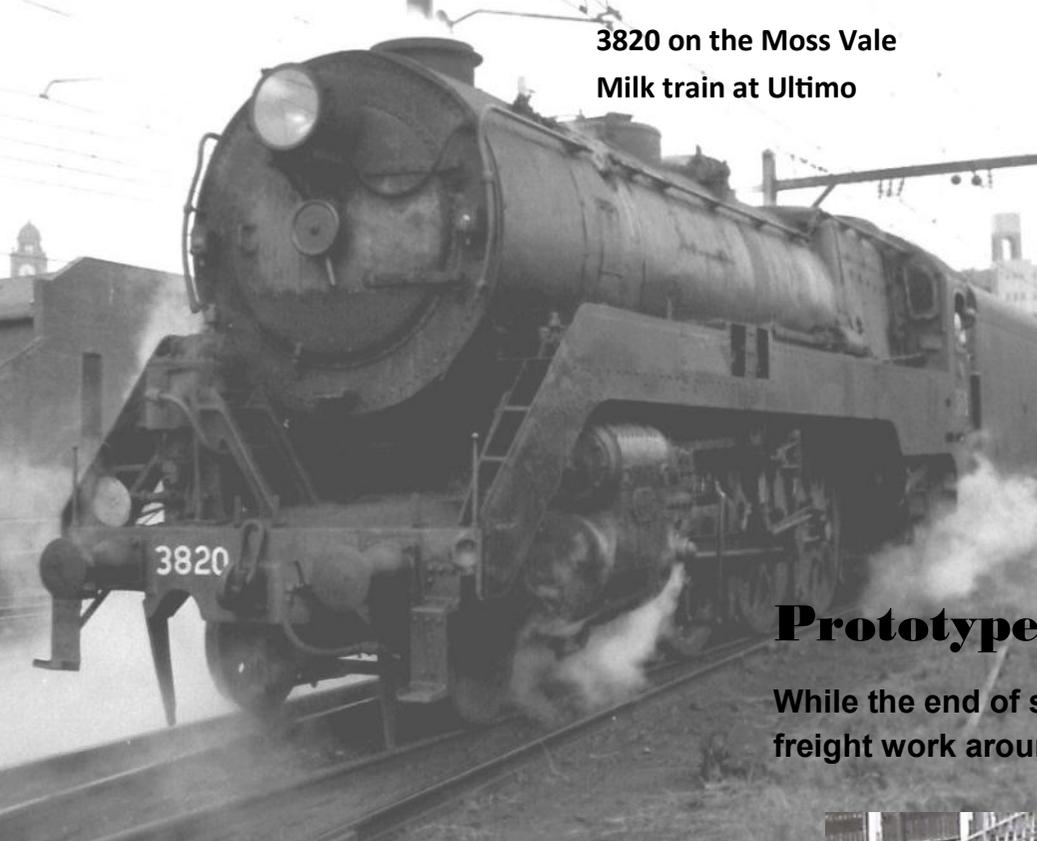
Hosted by the
Columbia Gorge Model Railroad Club,
who also brought you the 1994 NMRA National.

The event is to be held at the Doubletree Hotel at
Lloyd Center, near downtown Portland.

**Bring the family to explore and enjoy
the Great Pacific Northwest.**

Check out our website
<http://www.nmra2015portland.org/>
and follow us on Facebook.
<https://www.facebook.com/NMRA2015Portland>

**3820 on the Moss Vale
Milk train at Ultimo**



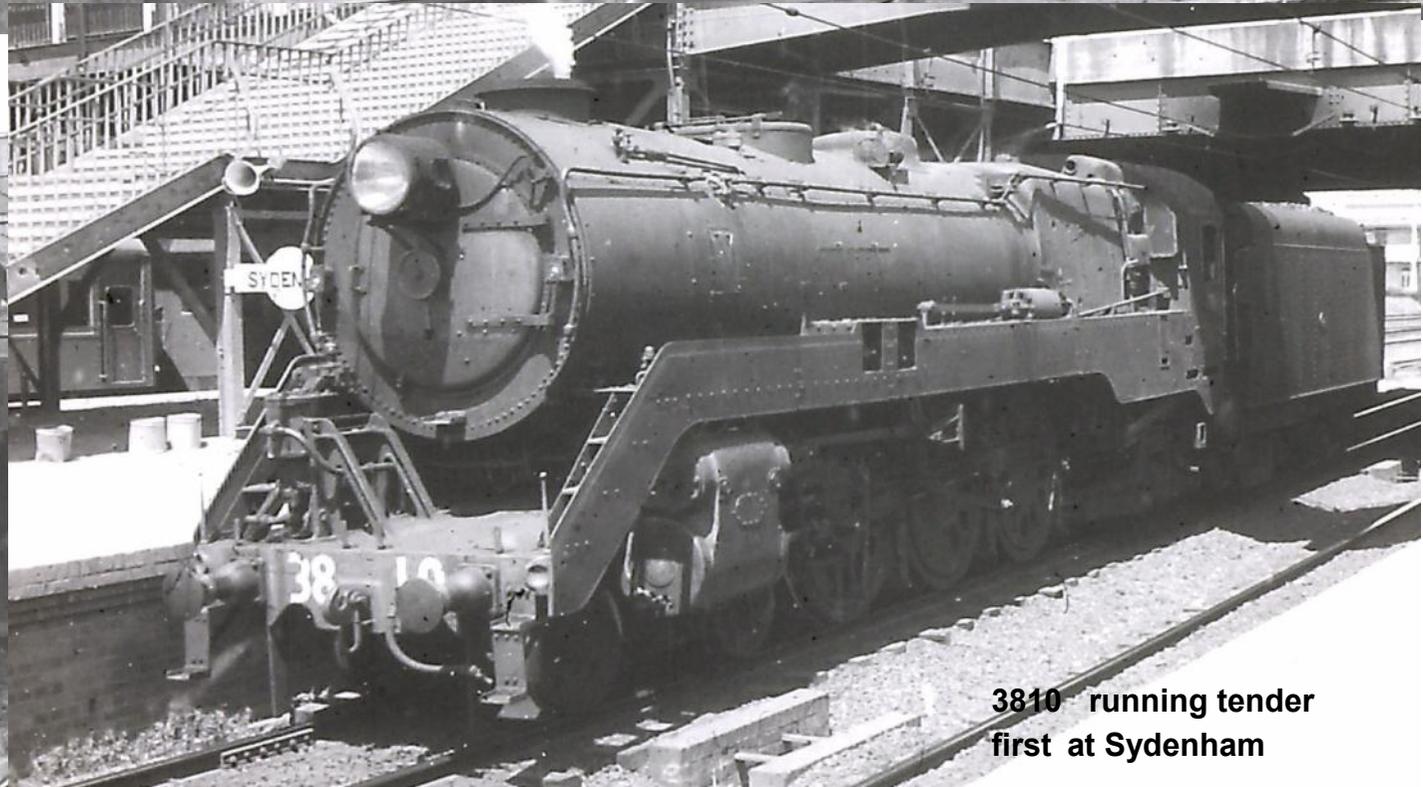
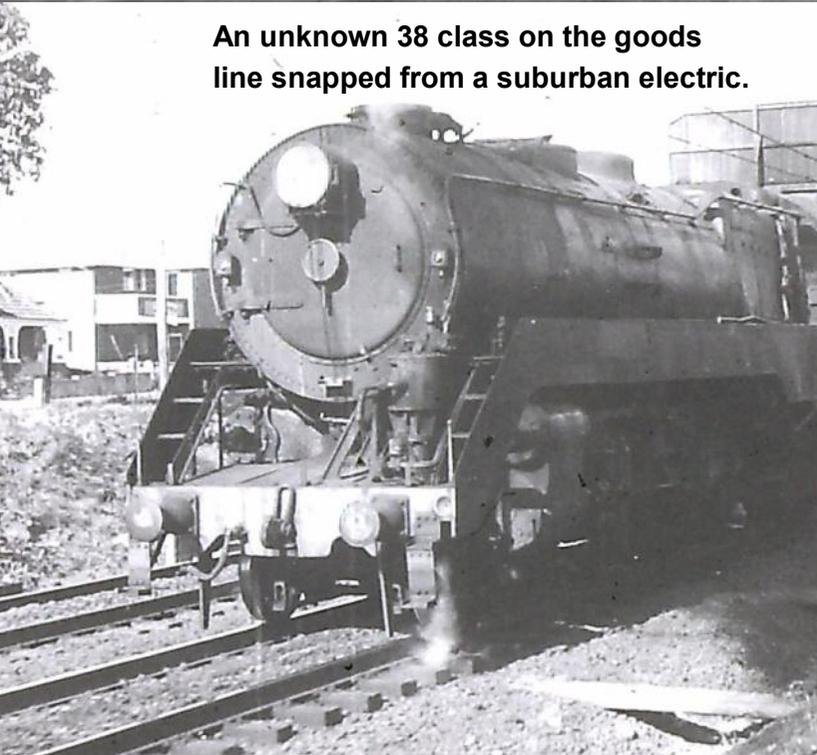
3807 ready to roll at Enfield locomotive depot



Prototype observations

While the end of steam was near in 1968, 38 class were still in common use on local freight work around Sydney. All photos by Rod Tonkin

**An unknown 38 class on the goods
line snapped from a suburban electric.**



**3810 running tender
first at Sydenham**