

MainLine



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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 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.

Disclaimer

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

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March April

Content submissions

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Publish date on web

30 April 2019

Cover photo

On the 11th of November 1918 the guns fell silent on the western front. The gun on the cover of this issue of MainLine is a British Army 9.2 inch railway gun in action in April 1918. This public domain photo illustrating the part railways played in that conflict is from the Imperial War Museum collection

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Regular features

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- Education program
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- Divisional round up
- Convention news
- Achievement program awards.
- Australasian Region directory
- Coming events
- Prototype observations

Presidents Thoughts

It is with sadness that I have to report the death of our committee member Sam Mangion MMR on 24th November after a long battle with cancer. Sam has been involved in all aspects of model railroading over the years. He was a great mentor to many of us as we have built layouts, models etc. He was organised in whatever he was doing and together with a wild sense of humour got the message over. Sam will be sadly missed by all and in particular his wife Jan and sons Stuart and Rowan and their families.

Now that we are carrying NMRA clearances gauges in the "shop" this has caused interest amongst our members and several sales have occurred. The new gauges now include the necessary clearances required for double stacked wagons and for the bigger 80 ft carriages. If you would like to order a new gauge then please contact David North as he is the store keeper.

As we are now at the end of the year and Christmas is around the corner it is time to wish you all a Merry Christmas and a Happy New Year and hope Santa brings you something that you have wished for your modelling and your good health.

Graham Young

7th Dec 2018.

Editorial Musings:

2018 is now on its last lap. I'd like to thank members, Division superintendents and Special interest Group Coordinators for their help over this year. Your contributions of articles, division notes and photos of members enjoying our hobby enriched MainLine. They are most appreciated.

Till next year merry Christmas, a happy new year and happy modeling.

Rod Tonkin

Editor MainLine



Pacific Directors Report

Nationally all is quiet at the moment, with the major issue the revamping of the website. There is a survey for member and non-members to provide their thoughts and I encourage as many as possible to participate. I think the current survey is on Facebook at the moment. If you have any comments and not on Facebook I am happy to receive them and pass them on.

Status of Smugglers Cove

There have been some commercial/contractual issues arise that is delaying the construction of the exhibit. That has been distracting the museum committee from attending to other issues. I have spoken to Charlie Getz and they still want the layout for the exhibit. The shipping date is now in March next year and I will be confirming this with Charlie and the shipper we have selected. Charlie is currently travelling around Australia (by ship) and there is a meeting with him next weekend where David North and I can chat to him about it more detail.

With some of the concerns that have been raised:

There are only TWO (2) layouts that will be shown in the museum – Smugglers Cove and San Juan Central. The current planning has both of these layouts being the first items that you will see as you enter the exhibit.

The layout is in good condition and from exhibiting the layout over the years everything is now glued down and won't move (Geoff N liked to place the scenery in place with blutac and then forget to come back later and glue it down, not good for an exhibition layout!). I saw the San Juan Central in 2016 and Smugglers is currently in a lot better condition. The main reason we decided to stop exhibiting the layout was due to the flimsy nature of the staging yards and the reliability problems this caused. As part of the back scene this would be replaced for the exhibit anyway. The shipper selected specialises in moving bulky / fragile items

Will let you know any outcome from the meeting with Charlie.

Cheers Rob Peterson

Remembrance Day 2018

Arthur Hayes MMR

11:00 am on Sunday the 11th of November 2018 marked 100 years since the end of World War 1. Pioneer Steam Railway turned the clock back to the war years as they remembered those who left by train to join in the battles.

Trains departed from Bundamba Racecourse and ran to Swanbank Station where numerous displays of memorabilia, Light Horse, machinery, vehicles, re-enactors, current servicemen, war time entertainment and good food were available.

Two trains were planned to run. A Troop Train hauled by preserved AC16 221a and a train of military equipment including the light horse hauled by PB 15 448. On Sunday afternoon the PB 15's Westinghouse pump failed and the equipment train did not run.



Ex Lend Lease AC 16 221a heading up the Troop Train



PB 15 448



The Studebaker 6x6 soldiered on in Australian army service until the late 1960s. The seats on the tray body were rather hard but riding on them was better than walking. Editor

Logan District Model Railway Club Expo

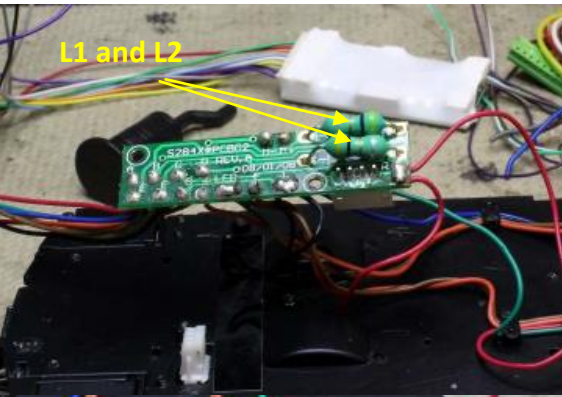
The Logan District (100% NMRA) Model Railway Club held their exhibition in early December this year.



Bachmann On3 Rail Motor

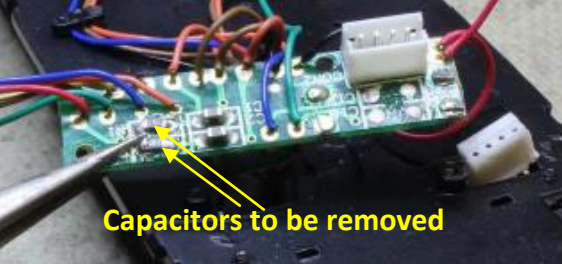
Sound Install using ECOname 200 – UK

Gerry Hopkins MMR

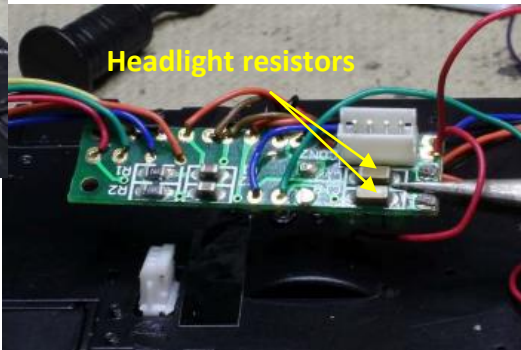


This rail motor was originally On30 but has been converted to On3 by the owner.

With the loco dismantled the connection board in the floor of the chassis is accessible. The first thing to do is remove the “European bits”. They are L1 & L2 – the two large green components on the right of the board. When they have been removed, put a wire link in their place. On the reverse side of the same board, remove the two capacitors – as show by the tweezers. DO NOT replace with wire links. While you are working



this board, replace the two resistors shown by the tweezers. They are 3K9 – replace with 1K0 for a slightly brighter headlight.



I used double side tape (the Black kind) to hold the decoder in place as shown. It fits nicely into place. This is the ECO 200 – UK but the ECO 100 –UK is smaller and fits well. I replaced the Soundtraxx harness with a TCS harness – the wires are finer and better for this install.

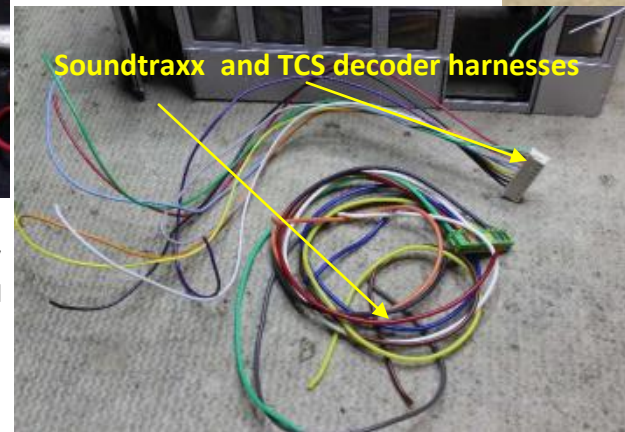
I wired the decoder directly to the 8 pin socket as shown. If you ever need to remove the decoder, use the plug at the decoder end of the harness. I did not show the speaker-installed – it sits between the two rear seats inside the loco and the wires are run up inside the back wall with the harness from the bottom board. A small piece of PCB Sleeper/tie is



glued in the speaker recess as a connection to the wires from the decoder.

The speaker is similar to the one shown – but mine is 15 x 11x13 and is black. It is glued to the cross bench between the rear seats.

Almost finished, using the wheels on the trailing unit to get power to the loco for programming. The marker lights and the interior lights are on the same circuit so they come on together. To separate them would require making a new board and components. With the change of resistors the headlights are better now. In the next day or so I will do a video of the unit running up and down my 2 metre test board.



Ozi Layer Cube10
Loudspeaker
with integrated sound chamber
8 ohm 1 watt 15 x 11 x 10mm

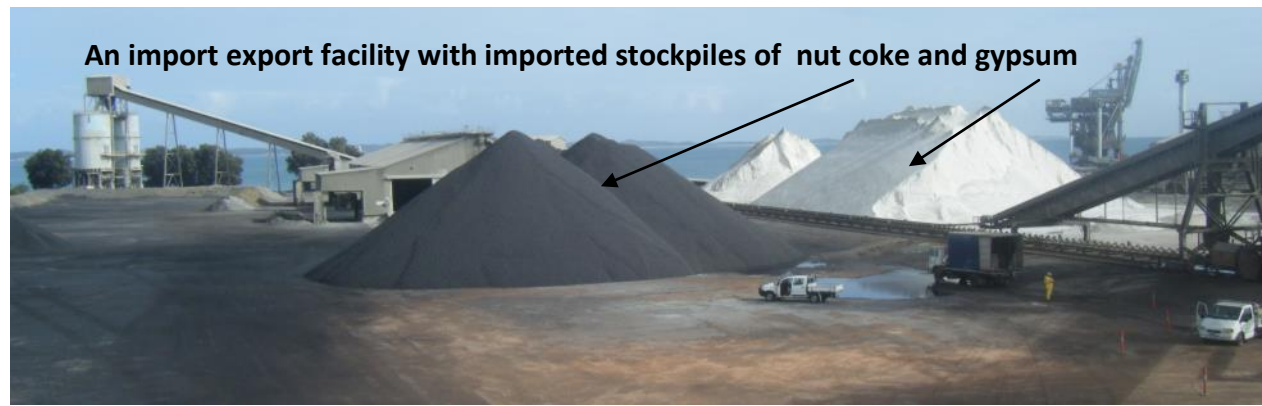


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A Modelers Guide to Bulk Materials Handling

Rod Tonkin MIEAust CPEng (ret)

Australian industries process large quantities of bulk materials. These bulk materials are stockpiled, moved through processing plants, loaded onto trains, unloaded from trains, stockpiled and loaded onto ships for export. This article is intended as a guide to modelling these facilities



An import export facility with imported stockpiles of nut coke and gypsum

Bulk Materials physical properties

The physical properties of bulk materials have been obtained from handbooks or laboratory testing guide to guide the design of the bulk materials handling system. The table below gives a reasonable guide to the bulk materials handling properties of commonly handled bulk materials.

The shape of a stockpile depends on the angle of repose of the product. The angle of repose is the slope of a material when it is tipped onto a stock pile from a conveyor or tip truck. The ability of a belt conveyor to elevate a product depends on the products maximum conveying angle. The maximum conveying angle is the steepest practical angle the material can be elevated on a troughed belt conveyor.

Material	Properties of Bulk Materials			
	Angle of Repose	Maximum Conveying angle	Typical Storage arrangement	Typical reclaiming method
Alumina	22	12	Enclosed silo	Aerated floor silo
Bauxite	31	17	Open stock pile	Reclaimer FEL
Coal	35	15	Open stock pile	Gravity, reclaimer FEL
Cement	33	20	Enclosed silo	Aerated floor silo
Gravel	35	15	Open stock pile	Reclaimer FEL
Iron ore	35	15	Open stock pile	Gravity, reclaimer FEL
Limestone	40	16	Open stock pile	Reclaimer FEL
Sand	35	15	Open stock pile	Reclaimer FEL
Salt	25	18	Open stock pile	Bulldozer
Super Phosphate	45	18	Enclosed stockpile	Crane grab bucket
Sulphur	35	22	Open stockpile	Front end loader
Wheat	25	12	Enclosed silo or Covered stockpile	Gravity, FEL
Wood chips	45	25	Open stockpile	Bulldozer
Metal concentrates	35	15	Enclosed shed	Front end loader (FEL)

Product storage

The type of stockpile and means of moving the material around the plant depends on the material and its physical properties. Some products need enclosed storage. The storage types shown in the attached table are based on protecting the product. The storage may need to be enclosed to protect the surroundings from the product. At Esperance and Geraldton in Western Australia, iron ore is stored and conveyed in enclosed stock pile and conveyor systems. This approach prevented coating the surrounding towns in iron ore dust.



A salt export facility. The yard conveyor in this plant can simultaneously stockpile salt and reclaim stockpiled salt to feed the ship loading system

Bull dozer pushing salt into the reclaim feeders feeding the yard conveyor to the ship loader

Belt conveying

Belt conveyors are commonly used to transport bulk materials through plants. In plant belt conveyor capacities can range from less than twenty tonnes per hour to thousands of tonnes per hour. The product is kept on the belt by forming the belt into a trough. The common trough angle is 35 degrees. Depending on the material conveyed and the conveyor location the conveyor may be open to the weather, require to be shielded from the wind or be completely enclosed. Conveyors handling foodstuffs need to be enclosed. Dusty product conveyors are often enclosed.

Belt widths of 750mm to 1800mm are adequate for most in plant conveyors. Large iron ore and coal export ports use belt widths up to 2,100 mm wide. The belt width is selected on either product lump size or belt capacity. The belt width should be more than five times the width of the largest expected lump size. The capacity of a conveyor depends on the material being conveyed. A 1,200mm belt will carry 5,000 tonnes per hour of iron ore. You'll need a 1,800 mm wide belt to carry 5,000 tonnes per hour of coal.

The rollers (idlers) that support the belt in its trough are usually spaced two thirds of the belt width apart. The lower return belt is supported on rollers usually 3000mm apart. The support roller diameters range from 100mm to 150mm. The width of the conveyor support frame for typical belt widths and 35 degree trough idlers is shown in the attached table.



Processed iron ore conveyors pre plant start up



Primary crushed iron ore conveyors

Troughed Belt Conveyor Support Frame Widths

Belt Width	Support Frame Width
750 mm	1200 mm
900 mm	1350 mm
1050 mm	1500 mm
1200 mm	1650 mm
1500 mm	2000 mm
1800 mm	2400 mm

Most in plant conveyors have the drive at the head pulley of the conveyor. Head pulleys are typically 75 percent of the belt width in diameter. Tail end pulleys are usually 50 percent of belt width.

To maintain belt tension conveyors longer than 30 metres typically use a gravity belt tensioner. The tensioning pulley is arranged in a slide, preferably vertical and a weight, usually concrete provides the appropriate belt tension. This type of belt tensioner is self adjusting to allow for changes in temperature.

A common problem with belt conveyors is carry back. A small proportion of the product does not discharge from the belt into the transfer chute. This material is gradually dislodged by each successive return roller. This creates a mini stockpile beneath the conveyor. This is a mess that needs to be cleaned up on a regular basis.

Conveyors elevated above ground level require access for maintenance and inspection. Elevated conveyor trusses are typically one tenth the support spacing deep. Conveyors up to 900mm wide usually have one access walkway. Conveyors wider than 900mm usually have access walkways on both sides. Uncovered elevated conveyors normally support the conveyor on a steel truss. The walkways are outriggers off the support truss. The support truss for enclosed elevated conveyors normally encloses the conveyor and the access walkways. The depth of an enclosed conveyor truss is usually 2,500 mm or more to provide access to the conveyor.

Changes of direction with belt conveyors require transfer chutes. A transfer chute height of three belt widths or a minimum of 3,000 mm usually gives good transfer chute performance. Enclosed conveyor systems usually have enclosed transfer stations.

Belt conveyor loading stations guide the product onto the belt. From the feed chute the conveyor is fitted with skirt plates to centre the load in the trough of the belt. The width between the skirt plates is usually one third to half the belt width. The skirts are typically three belt widths long. To ensure the belt trough is fully developed before entering the loading station, the minimum recommended distance from the tail pulley to the rear of the feed chute is three belt widths. To reduce spillage the idlers at loading stations are mounted close together, usually at 300 mm spacing.

Belt conveyors can follow vertical and horizontal curves. Horizontally curved conveyors would be unusual in an industrial plant. The normally accepted minimum radius for a horizontal curve on a belt conveyor is 900 belt widths. Horizontally curved belt conveyors are most likely encountered on cross-country conveyors. Vertical curves on in plant conveyors are common. The usual reason is most conveyor designers prefer to load a conveyor at a maximum slope of five to eight degrees. This relatively flat slope reduces spillage at the loading station. To increase the slope of a conveyor from a slope of eight degrees at a loading station to a slope of fifteen degrees requires a vertical curve. A reasonable vertical curve radius for modelling purposes would be one hundred belt widths. The method of calculating the vertical curve radius is detailed in one of the texts referenced at the end of this article.

Bins and Hoppers

Bins and hoppers are used to supply materials to the plant production process and to load out the finished product, often by train. They are usually made of steel or concrete. They may be circular or rectangular. The design of bins depends on the flow properties of the material to be stored in the bin. The exact wall angles and outlet dimensions can be obtained from detailed material flow properties testing.

Conical bins with wall slopes of 45 to 50 degrees usually don't self empty. Conical bins with 70 degrees wall slopes will usually self empty. Bins combining a 70 degree wall slope outlet from a 45 degree slope cone bottom bin will self empty. The diameter of the transition from 70 degree wall slope to 45 or 50 degree wall slope is determined from bulk materials flow property testing. This dual wall slope bin arrangement is commonly used for train loading bins. The resulting bin is quite tall.

Rectangular bins (length three or more times the width) will usually self empty at 50 degree wall slopes. This arrangement is commonly used in dump hoppers.

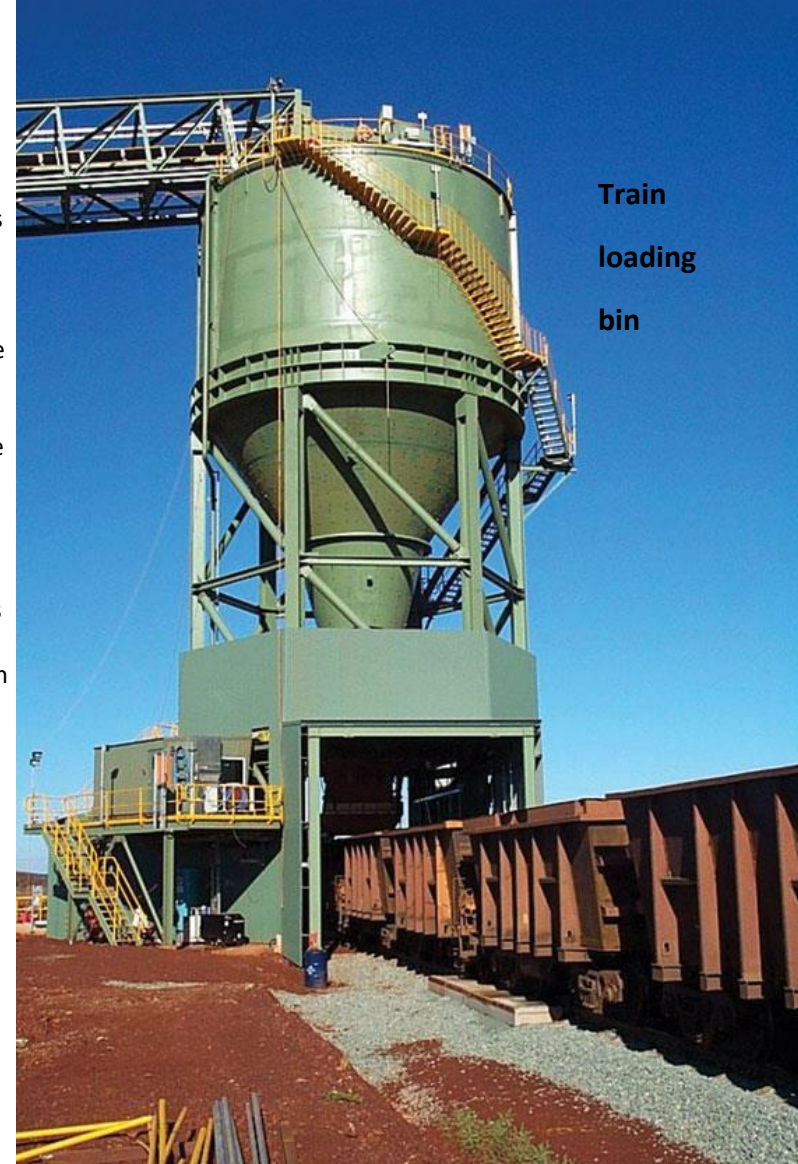
Flatter bin wall slopes can and have been used. These flatter slope bins need flow promotion devices to empty them.

Depending on the product and location the bin may or may not need a roof.

Some products such as alumina, lime and cement need flow promotion devices to be discharged from bins.

References:

- Fenner Dunlop Australia Conveyor Handbook
- Sandvik conveyor equipment catalogue



**Train
loading
bin**

Burlington Northern Railroad operations

John Gilles

John's talk was on the Burlington Northern's mid-1970s operational practices to illustrate the way things were done in North America. But first, here are some general points about prototype railroad operations in North America:

Moving a freight car in a train from point A to B involves a number of steps conducted in accordance with rules and regulations. In its simplest form, an empty car of the correct type is supplied to the shipper, loaded and after pick up returned to a yard where it is classified into the appropriate train which takes it to the rail yard closest to where it will be delivered. This might require the car being interchanged to another railroad/s to continue its journey. In the final yard it will be switched into a local train or switching run and delivered to the consignee for timely unloading before being collected and returned to the yard for its next trip. Incentive per Diem box cars could be loaded and sent to any destination. BN and other railroads operated their trains and moved cars in accordance with the Association of American Railroads Code of Car Service Rules – Freight.

BN introduced three systems in the early to mid 1970s that helped improve car recording, management and use: COMPASS – COMPUter ASSisted car control system was a computer data management system which provided immediate information on train movements and location of freight cars. While still requiring manual input of data, it also improved customer tracking of cars (and loads), car accounting and utilisation as well as customer billing.

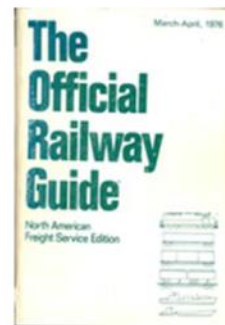
SPINS – Southern Pacific Industrial Numbering system was purchased from SP and used to better control and record the location where cars were actually set out or picked up. Every yard and industry track was assigned a SPINS number along with the appropriate number of car spots available. SPINS broke BN's trackage in terminals, stations and geographic areas in Zones, Tracks and Spots where cars could be loaded, emptied or stored. It comprised a 6 digit number where the first two digits were the zone number, the following two digits were the track number and the final two digits were the spot location. After implementing this system, the location of any freight car was known exactly (when information was input in a timely manner into BN's COMPASS system Microwave radio – BN completed what was then the

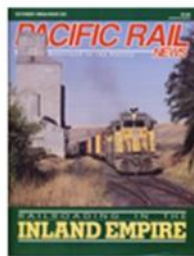
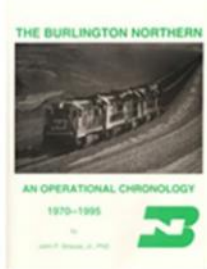
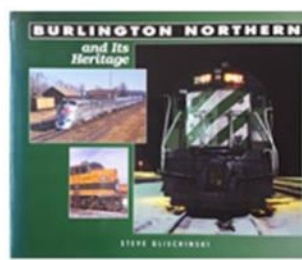
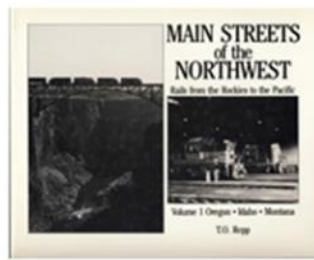
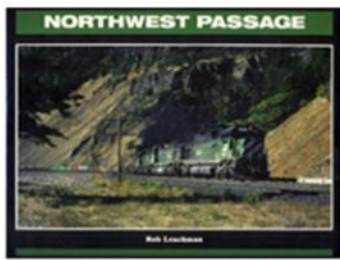
world's largest privately-owned microwave radio system in 1974 (4,528 miles in 10 states at a cost of \$22.5 million). This significantly increased data transmission rates, enhanced voice communications and with a link to COMPASS, improved car utilisation by 12%.

On the BN, on an average 1976 day, the BN operated 314 through trains including coal trains and 410 trains in local service. And on that same day in Spokane (Washington State), BN operated around 23 trains through Spokane (seven high priority), one terminated there and one originated there. BN operated around nine local trains out of Spokane, seven returning the same day, two returning the following day. Amtrak operated four trains through Spokane each day (*Empire Builder* and the *North Coast Hiawatha* in both directions)

In terms of mainline train composition, all through trains were blocked for set outs at intermediate points and the final destination to simplify switching. Blocks were removed or cars added during the journey. For local train composition, there was usually insufficient time or available tracks in yards to block local trains or switching runs before departing. Local trains and switching runs usually sorted cars at the first opportunity after leaving the yard/main line, usually at the first suitable station or siding.

High Priority trains through Spokane moved the following: TOFC/COFC (includes UPS), mail, automobiles, auto parts, perishables and forwarder/connecting traffic to Conrail, ICG, Southern, L&N and other Eastern roads. Other trains moved everything else with lower priority, including empties. Main loads moving from locals to through trains included timber, woodchips, grain, aluminium, flour, potatoes, frozen food. All freight train crew changes were done at Yardley in Spokane.





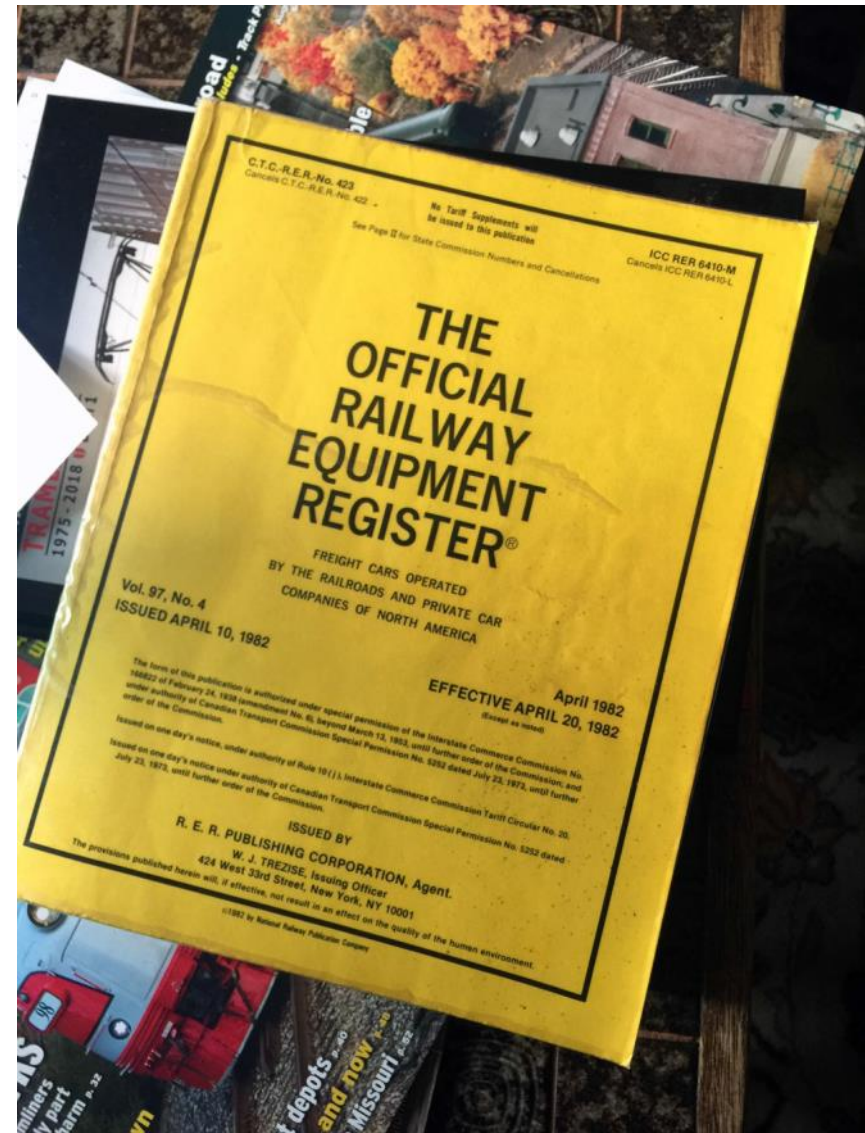
Books & magazines helped too

Useful sources of prototype information

Understanding prototype railroad practices will help us model and operate our model railroads more realistically. Also, the historical research is always interesting and there are many sources of prototype information available once you start to look. Some of the sources I used are illustrated above.

Useful sources of information for model railroaders

- *The Railroad: What It Is, What It Does* 5th Edition (2008) by John H Armstrong <http://www.transalert.com/cgi-bin/details.cgi?inv=BKRRNN&cat=18> - excellent coverage of the prototype including a brief historical perspective
- *A Compendium of Model Railroad Operations - From Design to Operation* (2017) by the NMRA Operations Special Interest Group (OPSIG) <http://www.opsig.org/OPSigBook2.pdf> - excellent mix of prototype and modelling information on how prototypical operations can be designed to work on our layouts
- *Track Planning for Realistic Operations* (1963 and later editions) by John H Armstrong
- *How To Operate Your Model Railroad* (1977) by Bruce A Chubb



CRUSH CONNECTORS AND WIRING YOUR LAYOUT

By

David O'Hearn and Stephen Magee

These notes are extracted from a clinic delivered by David at the 2015 AR convention

Background

This clinic was originally prepared by Stephen Magee for presentation to the NMRA Convention at Ettalong in 2015. Unfortunately, Stephen was unable to give the presentation, so I did it for him. Therefore most of the photos must be credited to Stephen and his experiences with the Newcastle Model Railway Club.

Layout Wiring

Perhaps you relish the challenge of fault finding? Perhaps you were inspired by a bowl of spaghetti at an early age? Figure 1 shows how most of us wire layouts. We progressively add wires until the wiring becomes unworkable. Figure 2 shows some attempt at tidiness but it is still confusing. I should add that these photos

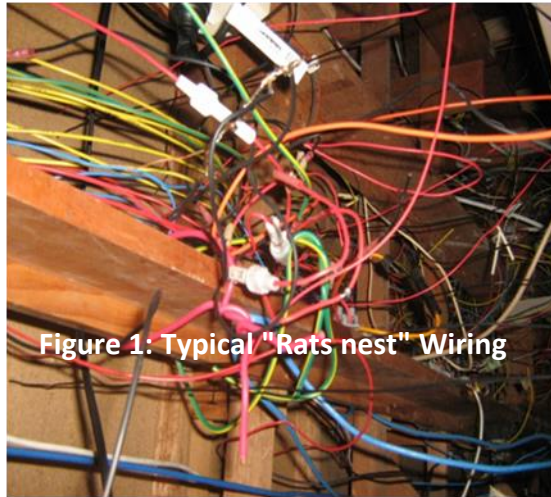


Figure 1: Typical "Rats nest" Wiring



Figure 2 Somewhat tidied up but still a mess

were taken under the layout of the Newcastle Model Railway Club and are presented with their kind permission. I should also add that this mess of wiring – several epochs worth, it's

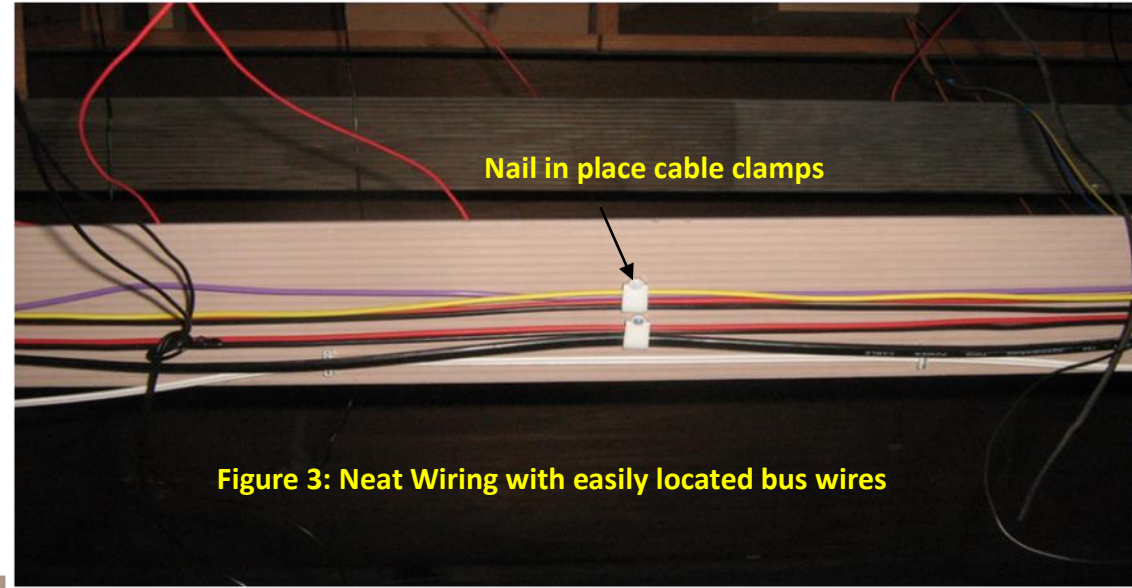


Figure 3: Neat Wiring with easily located bus wires

like an archeological dig to trouble shoot – are currently being replaced by front wiring that is the subject of this clinic.

Do you just wish you could somehow make it easier?

On an existing layout it is often possible to secure radiata pine or other timbers to the layout legs to allow bus runs to be made. Figure 3 the main bus runs (2 track and 1 accessory bus, plus a 12v power bus) can be seen, sub busses for block detection are on another board. Now let's look at the tools needed for this to happen and make it easy on us

On this run normal cable clamps were used. To make the wiring runs neater a cable stapler is a good idea. The advantages over a normal stapler is that the staples can be driven into the timber in a run and then the cables threaded after the staples are in place.





Dual purpose wire stripper

Another very useful tool is this wire stripper which can be used both to strip the ends of wire for soldering and on a run to push the insulation aside to allow droppers to be soldered to the bale run bus's. Figure 5 shows a heavy-duty wire stripper. Note these are easier to use than the cheaper ones that just guillotine the wire insulation.

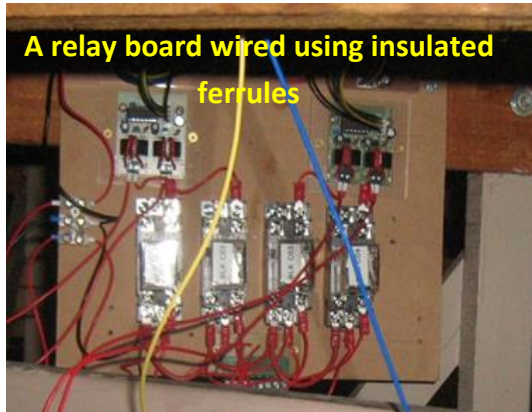
Connecting Multi strand Wire to a Terminal Block

How do you connect multistrand wire to a terminal block? If you tin/solder the wires before inserting them into the terminal block, the solder can "cold flow" making the terminal connection become loose later. If you twist and shove the wires into the terminal block, wire strands can break free and cause short circuits. Also, the loose wires can jam up the grub screw in the terminal block.

The solution is to use bootlace or Insulated ferrules.

"insulated ferrules" can be bought from local hardware shops but are limited in their size range and are expensive, typically only the white (0.5mm size) and they are often too big for our wires.

The attached photo shows connections made from an accessory (a relay board in this case) as well as feeds to/from the relevant sub-busses and returns. Bootlace connectors (correctly called insulated ferrules)



A relay board wired using insulated ferrules

Rhino Tools (URL at the end of this paper) offer insulated ferrules and the crimper. The set includes the 4-way crimper Note this set only goes down to the white (0.5 mm) connectors, but another supplier,

Carroll, supplies 0.25 and 0.34 mm ferrules that are commonly required for electronic circuit

board terminal blocks. Just to confuse you there are two international colour standards; the German and French codes. Figure 5 shows the two colour codes. Stephen and I use the German



The Rhino Tools insulated ferrules set with crimper

colour codes which are sold by Rhino and Carroll. If you buy your ferrules from China (ie Banggood or Alibaba), you will find the Chinese use any colour available without any consistency. The key point is to always order your ferrules by size and not by colour.

Don't Scrimp on Wire

Modellers are a funny lot! How often do you see modellers use old wire, join multi colours of wire together and use ex-PMG telecom wire? Wire is the cheapest and one of the most vital parts of your layout so don't skimp. The cost of one decent loco will give you enough wire to make a really neat and colour coded install.

For main bus wire, Stephen and I use at least 14 AWG 30 amp wire. We sourced our bus wire by mail order from RS Components.

For droppers and lower current wiring (such as point motors), Jaycar sells 10 metre rolls of hook up wire.

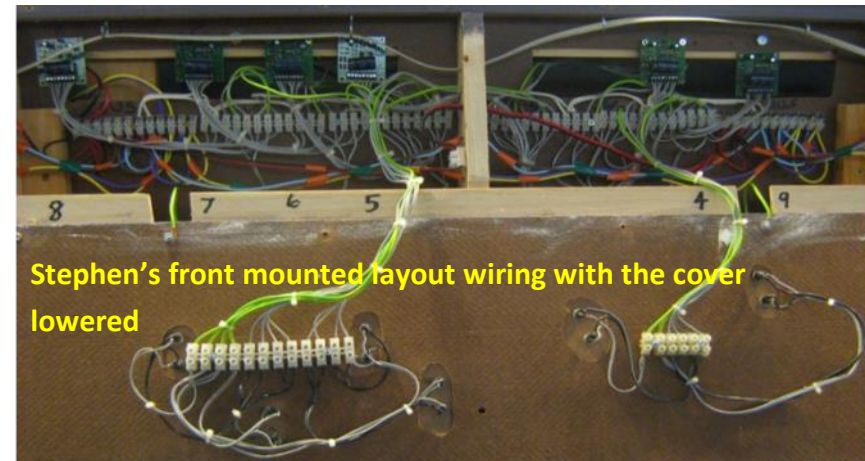
Access to Wiring

As we get older, we find we are less flexible and our deteriorating eyesight leads us to multi-focal or bifocal glasses. When we build our layouts, we need to build in how they will be worked on in the future when we are older. I can tell you that working in a tight space under a layout is no fun (especially when you have to crawl in and out to get other tools or to check voltages, etc. As for the glasses issue, you cannot do close up work above your head if wearing multifocals or bifocals. As for soldering by braille, I just won't go there!!

The answer to the problem is to mount all electronic components in an easily accessible position and run all your wiring at the front of the layout. Both Stephen and I have done this.

Stephen's Layout Wiring

Stephen has mounted a wide fascia at about a 60-degree slope. This fascia is hinged at the bottom and can be swung down to allow work on the wiring and electronics. When not being worked on, the panels are secured at the top with panel screws.



Stephen's front mounted layout wiring with the cover lowered



On Stephen's layout, components, point motors, even track connections are installed on the layout with sufficient wire to reach to the front of the layout. The NCE Snap-its can be seen mounted to the top of the frame and connected to the bus and the points by the wires shown.

The Newcastle Club Layout as shown in the attached photo now uses insulating ferrules in it's wiring . The larger red ferrules shown at the top of the nylon terminal blocks suit the larger wire. The .25 mm Carroll connectors are seen in the NCE Snap-it accessory decoders.

As an aside, the 2200 mfd capacitor is used as the 1000 mfd capacitor on board the Snap-it doesn't have enough power for NJI or Tenshodo type twin coils. The layout was built before Tortoises and servos became popular. And the external cap wiring IS insulated with the heat shrink tubing being transparent.

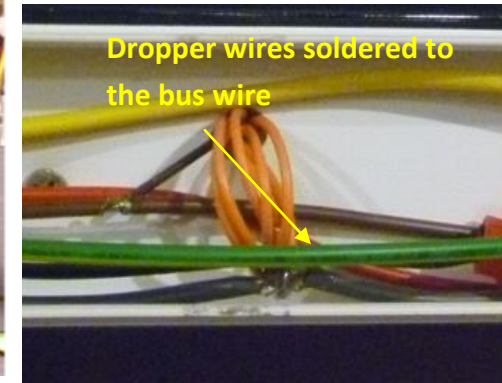
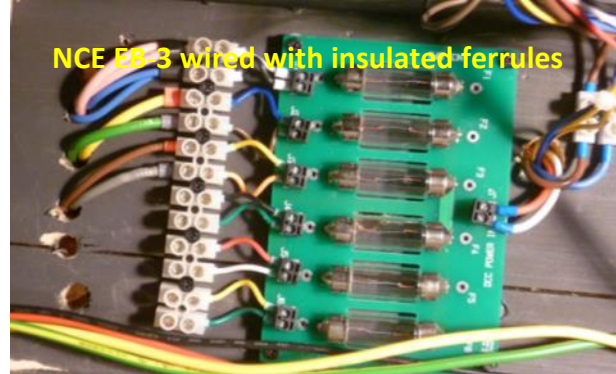
My Layout Wiring

I preferred to use several control panels on the layout. The layout is divided into three "zones" with a separate track bus for each zone. There is also 12 v DC and 18v AC buses that power track accessories, building lights, etc. Along the fascia, a 50mm cable trunk runs between the control panels and carries the track, AC and DC busses. The cover of the conduit is hinged at the top using duct tape. Wires from the layout are "dropped" below the baseboard, then run to the front and soldered to the appropriate bus. Note: I leave bare soldered joints suitably spaced to prevent shorts. This allows for easy troubleshooting because each soldered joint is a "test point". However, Stephen uses insulation over all joints.



The attached photo shows one of the conduit sections with the cover of one section being held open by blue masking tape and with the other cover closed. Three buses (track bus, 12v DC and 18v AC) are shown in the conduit.

The "droppers" from rails are joined to the track bus by bring them forward to the cable conduit then soldering them to the bus wires.



The photo shows a close-up of the bootlace ferrules being used for an NCE EB-3 Current Limiter. Note that like many DCC electronic circuit boards, the terminal blocks are two small for the wire gauge required so short "joiners" are used to connect the high current bus cables to the small terminal block. **Conclusion**

What has been presented here is not the only method of wiring a layout. Everyone finds their own level and system. But the front wiring system, joined with bootlace connectors, does make wiring easy and – dare I say it? - enjoyable. It also simplifies troubleshooting when Murphy rears his ugly head.

If you are about to build a layout or are doing major changes to your layout, I suggest you explore the world of Front Wiring and insulated ferrules.

References

Heavy Duty Wire Stripper (Jaycar Cat#TH1827) and Crimpers and ferrule kits from Rhino

Tools: www.rhinotools.com.au

Small size insulated ferrules (.25 mm and .34 mm): www.carroll.com.au

Jaycar cable staple gun (Cat #TH2610) and staples:4mm to 6mm pkt of 200 Cat #TH2611 and 8mm to 8mm pkt of 200 Cat #Th2612

David's 50 mm conduit from Bunnings is Deta 50mm x 25 mm trunking (Bunnings I/N: 4330853.

Division One Highlights

The Cannon Hill Community Model Railway Club hosted the October meeting. Twenty five members were in attendance. Many thanks to the club for a great BBQ and an enjoyable day.

Achievement program awards presented were

- Robyn Taylor Golden Spike, Association Volunteer and Master Builder Scenery
- Bill Cox Golden Spike
- Murray Joll Golden Spike

Arthur Hayes MMR gave a presentation on choosing what structures to build you layout.

Robyn Taylor showed us her work with 3D printed parts

John Burt showed us his turnout operation servo mountings

Division One is planning promotions at shopping centres and skills weekends next year.

The Ipswich Model Railway Club hosted the November meeting. We were able to run trains on their T track layout

The Division One Christmas party was held on the 1st of December.

Canon Hill community Model railway club's 16.5 mm gauge layout



Rob McLEAR receiving his MMR plaque



Ipswich Model Railway club's T track layout



Bill Cox receiving his golden spike plaque



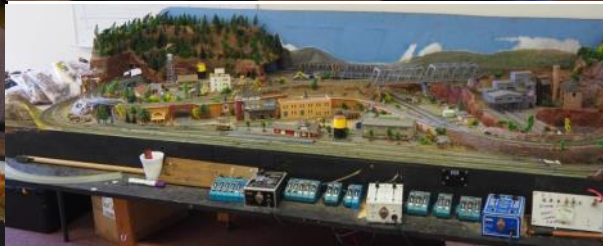
Division One's Christmas party



Murray Joll receiving his golden spike plaque



Robyn Taylor receiving



her Achievement Program awards



Division Two Highlights

The September meeting was held at the home of John Gillies. There were 22 members in attendance plus a visitor. Div.2 Superintendent Stephe Jitts opened the meeting with a presentation to Jess Brisbane for her AP author award (left photo). Stephe also congratulated John Bullen for 25 years of membership with the NMRA (right photo). Our congratulations to Jess and John.



John Bullen receiving his 25 years membership award



Jess Brisbane receiving her AP Author Award

Stephe took the opportunity to give an overview of the NMRA Achievement Program and how the system works. Stephe encouraged members to participate in the AP program as it really does improve your modelling skills. Full details of the AP program can be found at the Australasia NMRA website.

Stephe noted we had a couple of far flung members down Albury-way present plus a visitor and asked them for a brief intro.

Brian and Fran reminded everyone that they host the next meeting. However, it will be on the last Saturday in October, rather than the third Saturday of the month. The date is Saturday 27 October with a 1pm start time.

As there was no report from the ARC, Stephe opened a discussion about the end-of-year Christmas party. As the final meeting of the year will be at Stephe's home on 15 December, Stephe offered to host a lunch or dinner, at cost, at Old Linton on that day if members thought it a good idea. The majority at the meeting decided that lunch would be preferred rather than a dinner. Stephe said that prepayment will be required and he will ensure the information about the event is sent out to all members.

The meeting concluded formalities with Stephe asking members to consider hosting meetings next year and to get back to him with preferred months so he can put the 2019 meeting calendar together.

After *Show and Tell* (report next page), John Gillies gave his presentation on prototype railroad operations on the Burlington Northern (BN) in the early to mid 1970s (see report on page 6). After a terrific presentation, we all settled into a delicious afternoon tea. Thank you, John.



John Bullen's G gauge tank engine

John Bullen started proceedings with a 1:22 Bachmann scale model of a north German narrow gauge steam locomotive from LGB. The loco has quite complex valve gear, working lights front and rear according to direction, a lit cabin, adhesion tyres and with spring-loaded sliders to maximise contact with the track to enhance electrical contact. The prototype is still active as part of the steam railways in Lower Saxony.

Brian and Fran, freshly returned from the *Modelling the Railways of South Australia Convention*, showed us two recent purchases from Orient Express Models - the South Australian Railways F class tank steam locomotive in HO scale. There are eight different versions (including coal and oil burner) and the two on display illustrated coal burners with the copertop and stovepipe chimneys of the prototype.

Graeme Schultz from Albury came prepared with a book about detailing your model track work. He also had another modelling book, "Almost Real" a bilingual book in German and English. To round things off, Graeme brought along a self-made colour chart for NSW railway buildings plus a list of interesting model railway pod-casts.



Brian and Fran's HO scale SAR "F" class 4-6-2 tank engine

Rob Nesbitt, also a recent returnee from a trip overseas (to Europe), had a couple of interesting books in Dutch on historical tramways in Amsterdam. On his trip, Rob snapped a few photos (over 1000 he tells me) including one of a pair of Cargo diesel along a famous European river. Upon returning home, Rob purchased from Ebay a *Brawa* model (HO scale) of the same type of locomotive as in the photo.

Ian returned from a trip to Russia with a couple of books on railways in Russia and some wonderful experiences riding the Metro system in St. Petersburg and visiting Grand Market Russia, a superb model railroad.

Graeme Schultz from Albury came prepared with an interesting HO scale house from Faller from 1961 (see the photo on page 1). He also had a book, "Detailing Track" published by Ost Publications. While mostly for 1:48 scale modelling, it is still a useful source of tips and observations

Jess brought along her O scale three storey tenement house constructed from a kit.

Robin passed around his Branchline kits HO scale passenger cars that he had recently built. Robin commented that the kits are good to put together, greatly helped by comprehensive instructions.

Peter Dinham showed us a cardboard mock-up of his proposed new N scale layout ... naturally!

David Virgo showed us an interesting aluminium frame using 3D printed connectors he designed and made him-self. The lightweight frame and connectors are used for the lighting, utilising LED strip lighting.

Matt S. demonstrated an Accutrack II train speedometer that sits over a piece of track and measures the speed of your model train as it passes through in scale miles/kilometres per hour.

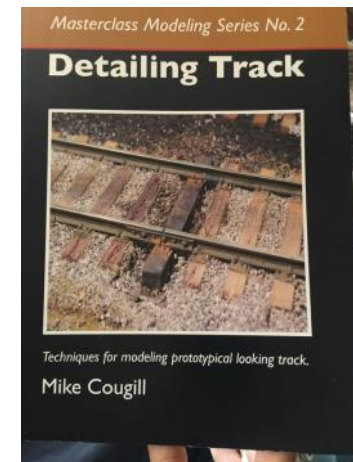
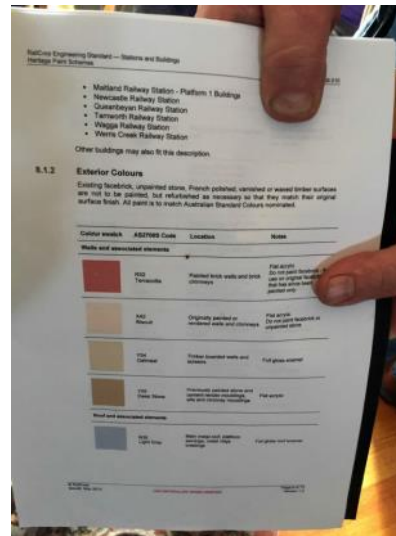
Jack showed us his HO scale American "Consolidation" steam locomotive in HO scale that he is converting to Alaskan Railroad No.557. This type of American "Consolidation" had over 2000 built for World War II so it was indeed a plentiful prototype. No. 557 is currently being restored by the Engine 557 Restoration Company. Jack's model will require some modifications to make it look like No. 557, including changing the position of the head-light and compressors, as well as re-decating and painting.

Lastly, Stephe showed us his *Eureka Models* HO scale NSW 40 class diesel locomotive in green livery. Stephe did say he had a problem getting the loco to stop as it tended to keep going (and going) after the loco was supposed to stop. After a good

discussion within the group, one suggestion was that a boost to the programming track might do the trick as QSI decoders sometimes need additional voltage for programming the decoder.

While not specifically discussed, I found reference to the PowerPax DCC Programming booster for this very thing. The link here is to the Powerpax for sale from *Tony's Train Exchange* in the US but probably available in Australia, possibly from *Model Railroad Craftsman* in Sydney.

After *Show and Tell*, we got into the business-end of the afternoon with an excellent presentation by John Gillies on *Burlington Northern Railroad* operations in the early-mid 1970s in the Pacific Northwest.



The September meeting



Division Three Highlights

Rod Hutchinson

2018 September

The September meeting was held at the home of John & Lynn Cracknel in Norlane West, a suburb of Geelong located SW of Melbourne. Around a dozen or so people ventured out on another cool but sunny day. John has been on the exhibition scene for many years but is slowly putting his feet up as he reaches a more mature age.

Modelling on display included

- Bob Backway – Mini MP3 player
- Dan Pickard – Cordless hot foam cutter
- Ken Hughes – O scale Milled Styrene County Donegal rail car
- Peter Kendall – O scale shop by Outback Models
- Rod Hutchinson – On30 TACL rail tractor and Log Bogies
- Rod Hutchinson – O scale chopper and Link & Pin couplers
- Rod Hutchinson – Fascia plates for Deltang Radio Control receiver

A good day for all attendees and Allan Ogden, Superintendent Div 3 presented the Cracknells with their thank you plaque.

The November meeting was held at your reporter's home in Mooroolbark, east of Melbourne. Rod & Julie Hutchinson's home houses a HOn30 diorama "Regnans Tramway" and an On30 diorama "The Points". Regnans Tramway has five modules showing the harvesting, carriage, saw milling and distribution of hardwood timbers in the West Gippsland region of

Victoria. The Points represents sawn timber coming from a bush sawmill on wooden rails to meet with a locomotive to haul it to a railway siding via steel rails. The but joint of timber and steel rails existed east of Warburton, Victoria at Big Pats Creek. All locos on both modules are controlled via Radio Control and on-board battery. There is no track wiring.

The November Meeting



Around a dozen people came out on a beautiful spring day from



Dan Pickard and Rod Hutchinson receiving their Hopkins/Bone awards

as far afield as Ballarat, west of the city and Tootgarook on the Mornington Peninsula. A pleasant afternoon chatting about all things in rail on a deck which overlooks the Mt Dandenong.

Our superintendent presented Hopkins/Bone awards to **Dan Pickard and Rod Hutchinson**.

The Hopkins/Bone Awards citation reads:

Hopkins/Bone Award is presented annually by Divisional Superintendents to any member he/she believes has "performed above and beyond" in any way to support the association or the hobby within his division

The December meeting was held at the home of Grant McAdam, which is quite central to most members of NMRA. Grant is a prolific structure builder, both scratch and kit builds. He does the initial build for the Outback Model Company series of kits. His major work is an O scale model the Walhalla Railway Station.

Around 20 members and partners braved a cool and windy day with the constant threat of rain showers. However we all experienced bursts of beautiful sunshine. As this was the Christmas function, we all enjoyed an extensive array of sweets provided by the prolific cooking of Grant McAdam.

A number of items were on display and two stand out. Dan Pickard brought along a new weathering book for model railways by AK Interactive called "Trainspotting". Rod Hutchinson presented his radio controlled remote uncoupling mechanism.

A video of the uncoupling mechanism is shown here https://youtu.be/cdtHa4C_w00

Items for display:

- Bob Backway – Mini MP3 player suitable for static and mobile configurations
- Dan Pickard – Weathering Book, "Trainspotting"
- Dan Pickard – Weather O SUV and the material used.
- Peter Kendall – HO store
- Peter Macdonald – On30 – Two Peckets by Locos-N-Stuff
- Rod Hutchinson – Radio controlled uncoupling mechanism

Division Three members modelling





The editor's decoder equipped FP45's orbiting an AMRA WA layout

Division Four Highlights

Division Four members supported AMRA WA's open day "Modelrail" in early November.

Our November meeting was held at our Divisional Superintendent's (Also MainLine editor and now President of AMRA Inc) in Perth's northern suburbs. The day dawned warm and sunny. The predicted rain did not reach into Perth's northern suburbs until late in the evening so we had a fine afternoon. The clear weather allowed us to enjoy afternoon tea outside under the pergola. We welcomed Ken Wyatt and Malcolm Taylor to our meeting.

Peter showed us the itinerary of the trip he is planning to go on next year to see the Union Pacific's Big Boy in action and the 150th anniversary of the joining the tracks at Promontory Summit.

Rod's layout now sports a valance and scenic fascia made out of Corflute sheeting. The valance and Fascia in the Pauline's Bend scene has been painted matt black.

Malcolm ran his sound equipped two tone grey liveried Union Pacific Challenger over Wombat Gully's main line. Alan coupled his two tone grey Union Pacific coaches behind the locomotive for the test run. The locomotive and attached coaches sailed around the layout's 19.875 inch (504 mm in French) radius mainline curves.



Malcom Taylor's Challenger sweeping through Pauline's Bend on the editor's new layout

Narrow Gauge SIG

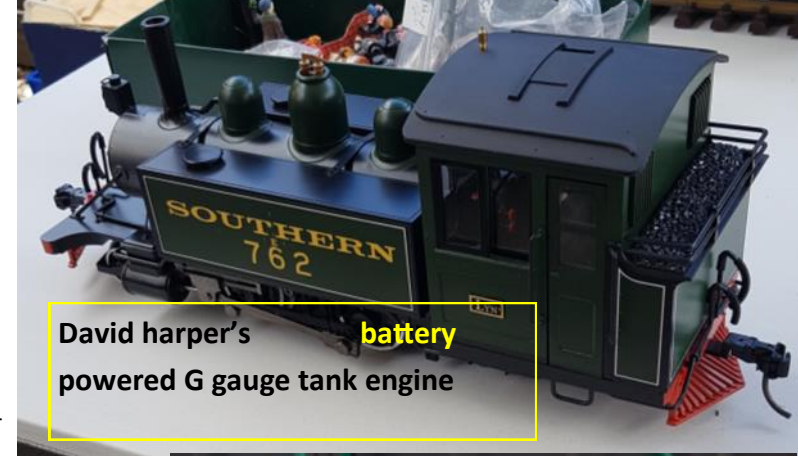
The November Narrow Gauge meeting was held at Ray Walter's house with 14 members attending.

Meeting went well, plenty of banter and just about any and all subjects.

A discussion was held on future meetings and a list has been made up for the coming year 2019.

David Harper bought along some G Gauge narrow gauge models running on battery and NCE radio. He also brought a southern G gauge loco also running on battery and NCE radio.

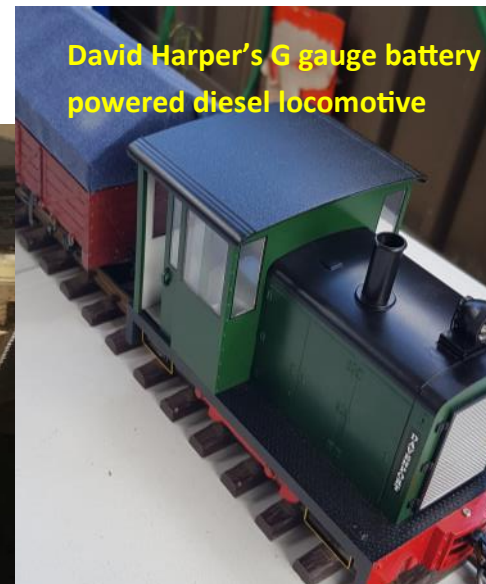
Paul Marrant brought along some very interesting buildings he scratch build.



David harper's battery powered G gauge tank engine



Paul Marrant's scratch built building



David Harper's G gauge battery powered diesel locomotive

Well done modellers.

Steve Chapman MMR

Narrow Gauge SIG Coordinator

Division Six Chronicles.

Minutes for NMRA Division 6. November 10th 2018

We welcomed our members and thanked Peter and Mary for hosting our meeting and showing us their lovely renovations to their home.

Attendance – 17 present. Apologies – 6

Business-

AP. - Members reminded about the Golden Spike awards.

New mugs have arrived thanks to Bob Bevan with NMRA logo and Div.6 on them available to members at a cost of \$7. Please notify me if you wish to have one.

AMRE: Ongoing discussion regarding location for next year should we have a choice.

Applications are to be sent in by January 1st. The number of volunteers over the 3 days needs to give adequate cover of our stand. John Prattis will loan us his Timesaver layout and he is going to enter an application for his large layout but will need some assistance if accepted. Brian Hutchinson hopes to be located near our stand with his layout but with access for wheelchairs.

Bring and Brag-

- Michael Robinson- Showed members a model locomotive, a UP SD70Ace NO.1943 "Spirit of Union Pacific" Allan Garbutt had given him. Allan won in the model in a raffle at the convention dinner at Helensvale.
- Vern Cracknell- showed us how to make trees using garden lashing and copper wire.

cleaners attached to balsa sticks to use as uncouplers.

- Graham Cocks- He showed us a diorama of the original rail operations in the city. He has refurbished the laser cut building with the original photo as a backdrop and plans to donate it to the National Railway Museum.



Graham Cocks's Diorama

We needed to have a break from Bring and Brag to have afternoon tea. We all enjoyed Mary's hot scones, jam and cream with lots of conversation and laughter between members before getting back to Bring



Afternoon Tea

and Brag.

We eventually finished and went and admired Peter's layout before heading home. Many thanks Peter and Mary for a great afternoon.



Peter Jackson's vintage O scale structure

- Peter Cawthorne showed us how to make our own containers from balsa wood and printed covers in N scale.



Peter Cawthorne showing us his N scale container covers

- Peter Jackson- Peter showed us his first building he did in O scale 25 years ago and how different he would do it now. He also explained some changes to his layout and how he is extending it. He discussed the use of Xmas Lights, plastic figures, pastel pencils for weathering, high lighter pens and the use of tooth



A scene on Peter Jackson's On3 layout

Here are some photos taken at our Division 6 Christmas BBQ and December meeting on the 8th of December. We all had a great time even though it was raining, which was better than 39'o the previous 2 days.

Wishing you and your family a very merry Christmas and a happy and healthy new year.



Chief cook for the day Ray Brownbill



Division Six enjoying the Christmas BBQ out of the rain



Lucky dip for members



Ron Solly with his Hopkin's Bone Award



Michael Robinson with his host plaque

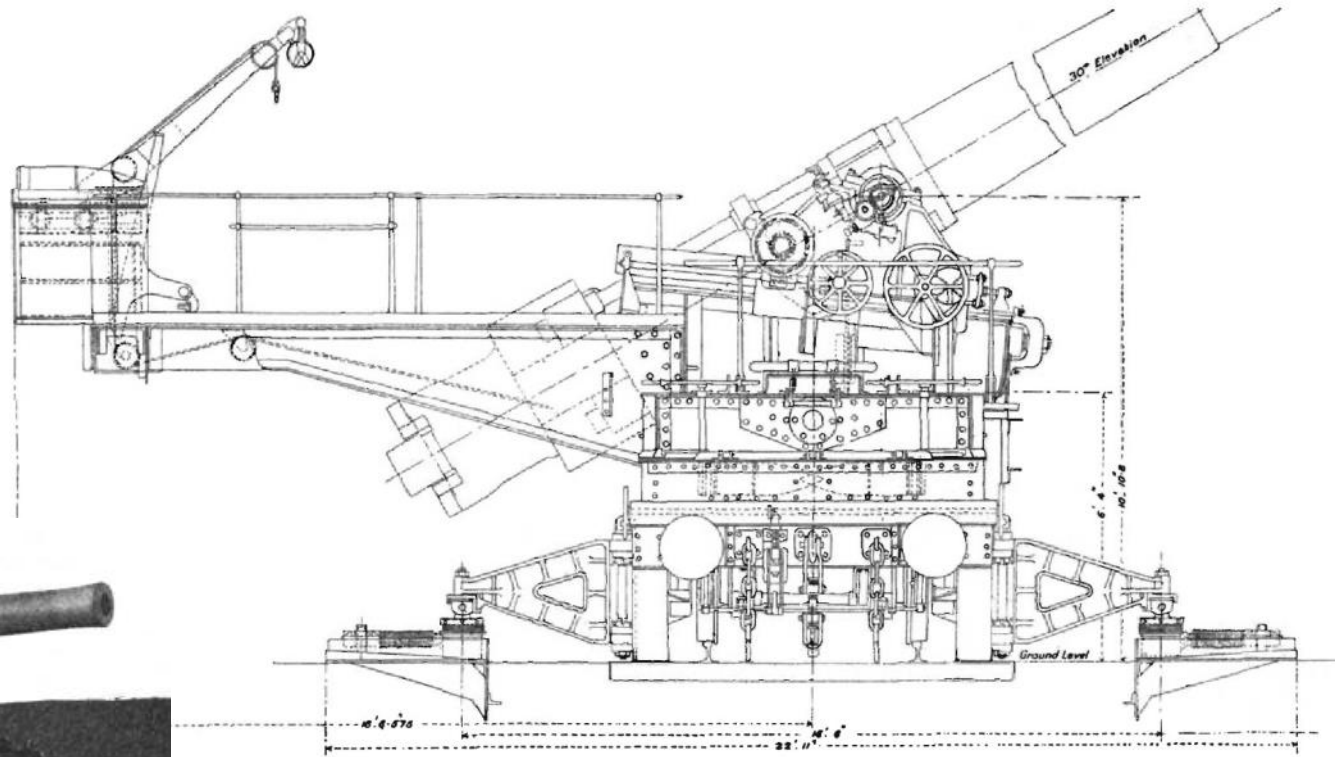
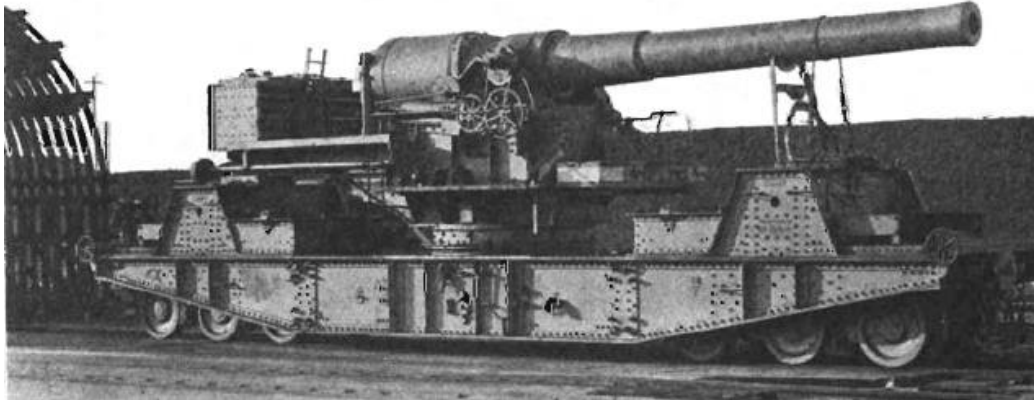
Port Adelaide wharf on Michael's layout

Prototype Observations

The British Armies 9.2 inch railway guns were built by the Elswick Ordnance Company using surplus Royal Navy 9.2 inch guns. The guns were the similar to the guns preserved on Rottneest Island's Oliver Hill battery. The 9.2 inch Mark III railway gun carriage was unusual in being able once jacked up to allow the gun to be traversed 360 degrees for firing.

The attached drawings show the Mark X gun on a Mark III mounting in its firing position and secured for transport .

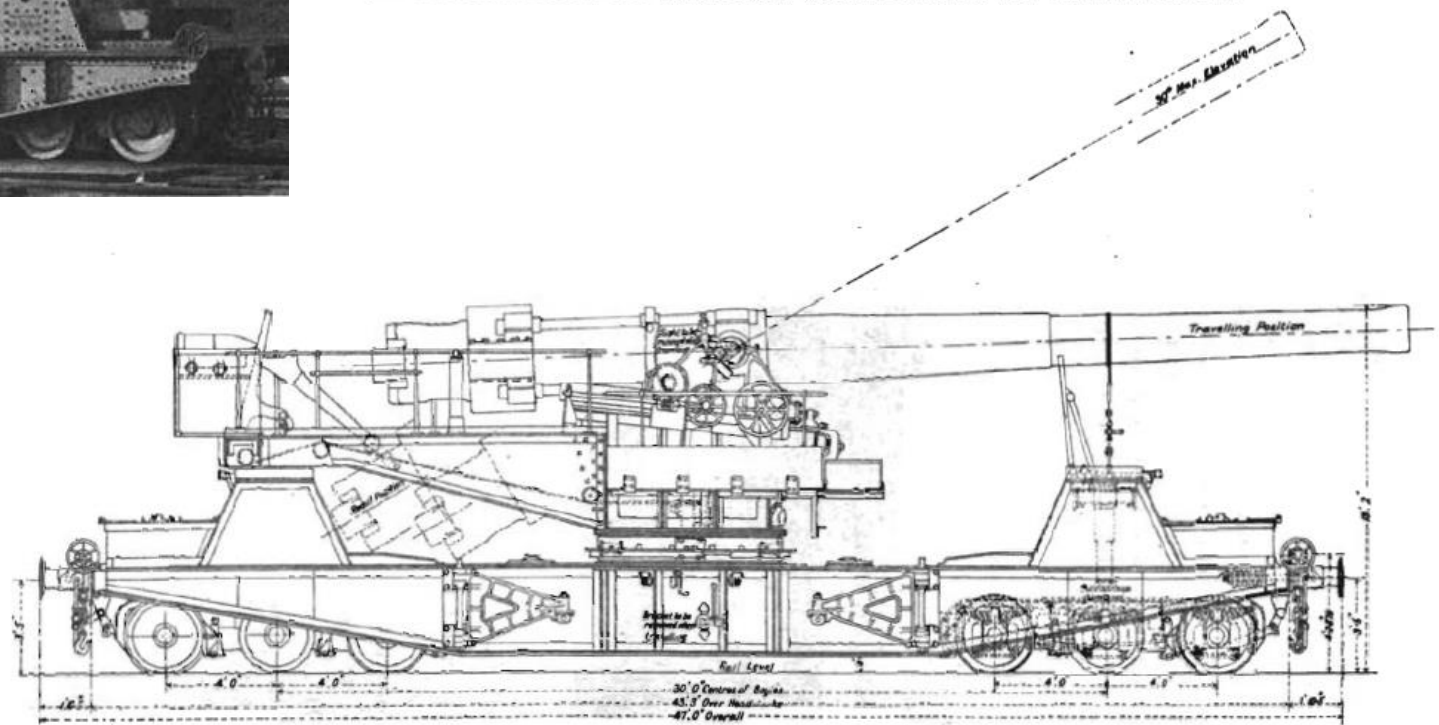
Mk XIII gun a Mk III carriage



CAR ANCHORED FOR CROSS TRACK FIRE, 9.2-INCH MARK X GUN ON MARK III CAR.

The Mk X gun could fire a 172 kg shell out to a range of 19,200 metres. The British armies 9.2 inch railway guns fired around 45,000 rounds during the conflict.

The drawings and photo shown here are reproduced from a 1920 report prepared by Lt Col H.W Miller for the US Army Ordnance department on British, French and Italian railway guns used in World War I



ASSEMBLY RIGHT SIDE ELEVATION BRITISH 9.2-INCH GUN MARK X ON A MARK III RAILWAY CAR, TRAVELING POSITION.