

Punchbowl Hobby Centre Pty. Ltd.

545 Chapel Road, Bankstown, N.S.W.
Australia 2200
Telephone: (02) 709 5082

LOCOMOTIVES and ROLLING STOCK

ATLAS, STEWART, KATO, ATHEARN, ROUNDHOUSE, RIVAROSSO, BRASS LOCOMOTIVES, POWERLINE, AR KITS, IAN LINDSAY KITS, MAIN WEST MODELS, LIMA, CONCOR, IBERTREN, BACHMANN, LILIPUT, JOUEF, FLEISCHMAN, ROCO.

BUILDINGS and SCENIC ACCESSORIES

ATLAS, WOODLAND SCENICS, DESIGN PRESERVATION, EVERGREEN, CAMPBELLS, FOX CASTINGS, LJ MODELS, POLA, HEKI, FALLER, HELJAN, VOLLMER, PREISER, WIKING, KIBRI, BREKINA, HERPA, ROCO.

ACCESSORIES and TOOLS

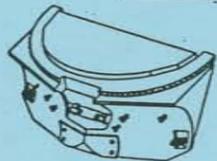
ATLAS TRACK and ACCESSORIES, PECO, SHINOHARA, NORTHYARD WHEELS, ROMFORD, DETAIL ASSOCIATES, WHEEL WORKS, SENTINEL, CAL SCALE, KADEE, MITRONICS, LABELLE LUBRICANTS, MICROSCALE DECALS, KERROB MODELS, AMRI SIGNALS, J&C MODELS, FRONT RANGE, BRAWA, EDA, FLOQUIL, DREMEL, PRO EDGE KNIVES, DRILLS and TAPS, K&S METAL, FULLER PLIERS, JEWELLERS SCREWDRIVER SET, 1 INCH 'G' CLAMPS.

MAGAZINES and VIDEOS

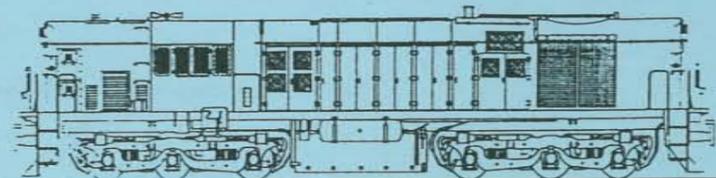
AUSTRALIAN, AMERICAN, NEW ZEALAND, BRITISH VIDEOS.

N-GAUGE MAGAZINE, MODEL RAILROADER, RAIL MODEL JOURNAL, PACIFIC RAIL NEWS, TRAINS, NARROW GAUGE GAZETTE, AUSTRALIAN RAILWAYS, ROUNDHOUSE, BULLETIN, AUSTRALIAN MODEL RAILWAY MAGAZINE, PACIFIC RAILWAY, RAIL AUSTRALIA, RAILWAY DIGEST, MAINLINE MODELLER, RAILWAY MODELLER, CONTINENTAL MODELLER.

SNOW PLOWS



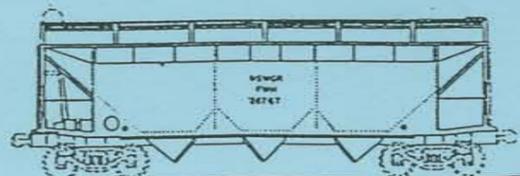
AIR HORNS



COOLING FANS



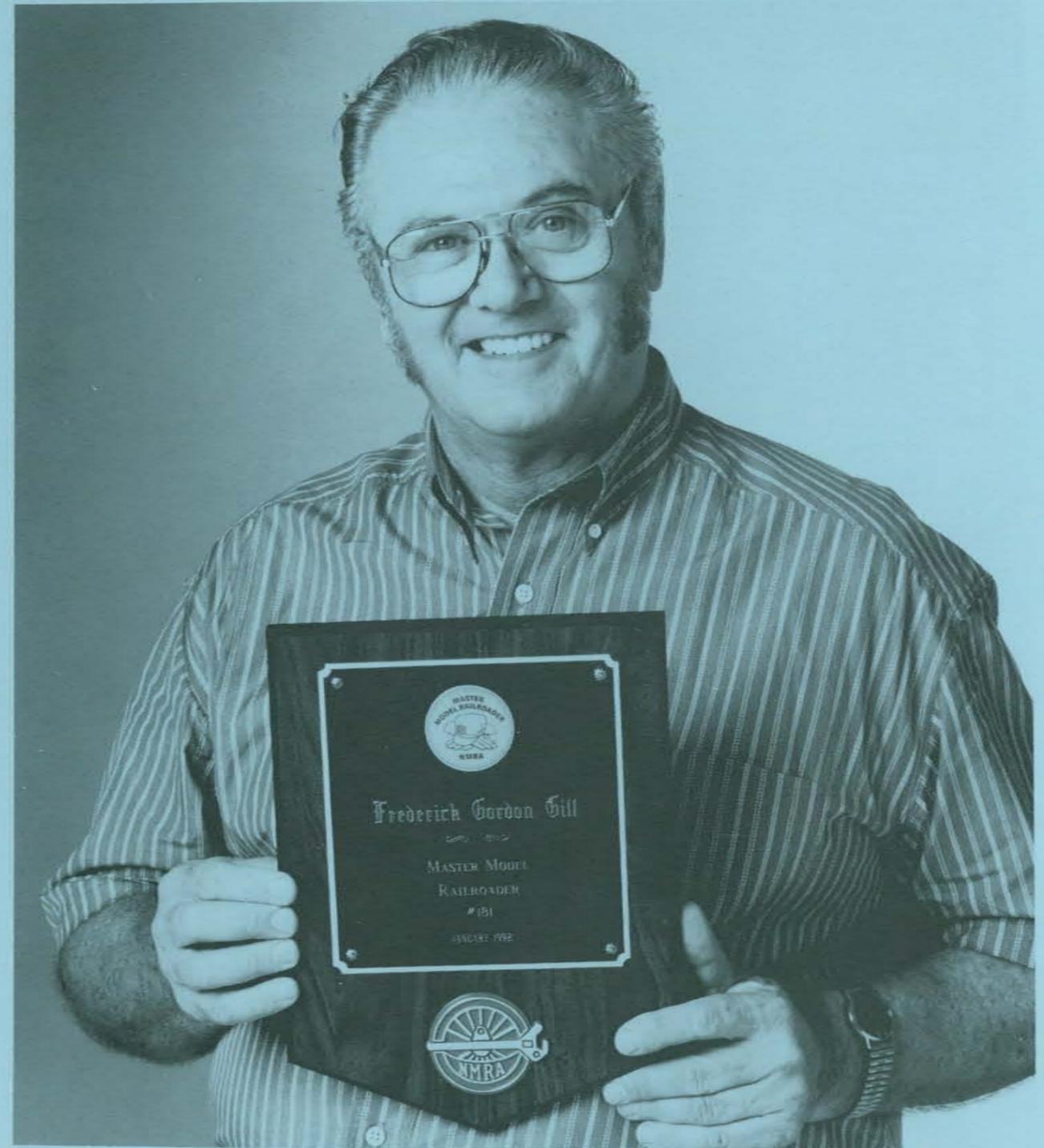
NUMBER BOARDS



MAIN LINE

National Model Railroad Association
Volume 9 Number 2
Registered By Australia Post

Australasian Region
Apr, May, June 1992
Publication # NBH 7190



AUSTRALASIAN REGION DIRECTORY

PRESIDENT Sowerby Smith (02) 411 5726	174 Fullers Rd CHATSWOOD 2067	COMPANY STORE Shirley MacMicking (02) 958 5988	MIDDLE COVE 2068
VICE PRESIDENT Glen Coventry (02) 452 2131	16 Lanai Pl BEACON HILL 2100	PUBLICITY VACANT	
SECRETARY Gary Norwood (02) 622 5859	271 Vardys Road BLACKTOWN 2148	LIBRARIAN Glen Coventry (02) 452 2131	16 Lanai Place BEACON HILL 2100
TREASURER Phillip Moore (02) 624 8332	32 Reading Ave KINGS LANGLEY 2147	EDITOR "Main Line" Gerry Hopkins (02) 450 1033	7 Booralie Rd TERREY HILLS 2084
TRUSTEE John Saxon (02) 949 4767	37 Beatrice St CLONTARF 2093	Div 1 Ian Venables (07) 378 3647	Queensland 7 Aberfoyle St KENMORE 4069
ACHIEVEMENT PROGRAM Richard Roth (042) 94 2133	1 The Crescent HELENSBURGH 2508	Div 2 Kerry McPherson (062) 58 1421	NSW/ACT 21 Crossley Cts MELBA ACT 2615
MEMBERSHIP & RENEWALS Jack MacMicking (02) 958 5988	247 Eastern Valley Way MIDDLE COVE 2068	Div 3 Paul Richie (053) 32 1138	Vic/Tas 28 Ascot St South BALLARAT 3350
TAPE SLIDE DISPATCHER Bill Cooper (02)	2 Mason Ave CHELTENHAM 2119	Div 4 Bob Nelson (09) 364 4417	NT/SA/WA 36 St Michael Terrace MT PLEASANT WA 6153
CONTEST CHAIRMAN Gerry Hopkins (02) 450 1033	7 Booralie Road TERREY HILLS 2084	Div 5 Bruce Seddon (09) 520 1923	New Zealand 112 Great South Rd REMUERA AUCKLAND 5

Main Line is the official journal of the Australasian Region of the National Model Railroad Association Incorporated. It is published four times per year in approximately February, May, August, and November. Articles, letters, members classified advertisements and club notices are solicited from the membership and are considered to be donated free for the benefit of the hobby. They should be mailed to:- THE EDITOR, Main Line, 7 Booralie Road, TERREY HILLS. N.S.W. 2084.

Articles can be submitted on a computer disk (IBM) 3.5" or 5.25". Most WP packages can be read at this time. This magazine is prepared on a 386SX computer (100M & 40M HD's) and a laser printer using Wordperfect 5.1 and Drawperfect 1.1.

Paid advertising is welcomed. Current rates for four issues are \$130 for a full page, \$70 for a half page, \$40 for a quarter page and \$150 for the back cover. All enquiries regarding advertising should be directed to the Editor.

Cover: Fred Gill our new Master Model Railroader... N0. 3 for our Region.

WELCOME ABOARD **WAYBILL**

2	Crew Roster	10	Repowering Diesels <i>John Gordon</i>
3	Waybill Meeting Schedule	12	Pittsburgh & West Virginia RR <i>George Paxon</i>
4	President's Report <i>Sowerby Smith</i> Membership Report <i>Jack MacMicking</i> Hobbyists are a funny lot! <i>Peter Schultz</i>	14	Rio Grande Southern <i>Laurie Green</i>
5	Meeting Reports <i>Glen Coventry</i>	16	Turnout Control <i>Lawrence Nagy</i>
6	ANNUAL MEETING	18	Towards Lightweight Layouts <i>Lyndon Spence</i>
7	1992 CONVENTION	20	Ratishe Bahn (RhB) <i>Paul Richie</i>
8	Destination Durango Pt3 <i>Laurie McLean</i>	21	Imajineering <i>Phil Morrow</i>

MEETING SCHEDULE

9th May	MINI CONVENTION		Chatswood NSW
13th Jun	John Baker 12 Roseberry Road Kellyville NSW (02) 629 2349	17th Oct	Michael Flack 14 Dawson Street Epping NSW (02) 868 1723
20th Jun	Graeme Nitz 20 Alpha Street North Balwyn VIC (03) 857 6959	8th Nov SUNDAY	ZIG ZAG Railway Train leaves 10.30am from Clarence Station, BBQ lunch at Gerry Hopkins "country estate" look for the Red Dragon between Bell and Clarence.
12th Jul	Galston Live Steam		
15th Aug	Laurie Green 20 Nambour Drive Sunbury VIC	21st Nov	Peter Myers 19 Marjorca Road Maryborough VIC (054) 61 2323 11.30am BYO, BBQ.
22nd Aug	Newcastle Exhibition Basket Ball Stadium Broadmeadow NSW	12th Dec	Train Museum & Ian Hopkins Thirlmere NSW
12th Sep	Sowerby Smith 174 Fullers Road		

HOBBYISTS

We hobbyists are a funny lot,
To stamps and coins devotive.
But me, my love is model trains,
So what's your locomotive?

We strive to build a layout
On which our trains can run.
We run on kitchen tables,
you can never stop the fun.

We go into the hobby shops
And stay in there for hours.
We think our hobby is the tops
And dream of what could be ours.

So if you see a model train fan,
These things you must not do.
Don't push them round or pick on them
'Cause they are humans too.

P Schultz,
Morwell 3840

WELCOME ABOARD

Bernie Benson
15 Christopher Street
Sunnybank Hills
QLD 4109

Les Chandler
16 Regent Street
Castle Hill
N.S.W. 2154

Would all members, particularly those who joined during the last twelve months, who haven't received a copy of the Data Sheets as supplied to members on joining, please advise me giving your name, address and membership number.

For those who are missing copies of the Bulletin, please advise me as well so that replacement copies may be sent from head office.

Jack MacMicking
Membership Officer

President's Report

Congratulations to Fred Gill are in order as you can see on the cover he has completed his Master Model Railroader requirements and he is our third member to do so to date. The photo was staged for the magazine cover as Fred will have to wait for the mini convention to take his plaque home. Scenery, Structures, Electrical, Author, Cars, Locos, and Civil Engineering are the categories in which Fred received the Achievement Awards. Come on members lets's have some more of you going for your MMR.

*Frederick Gill.....
Master Model
Railroader*

This magazine has come out a little early this year to remind you that the elections are on. Nominations close 30th April and President, Vice President, Secretary, Treasurer and Trustee are vacant. Phill Knife is the returning officer. We will announce the result at the first meeting after the convention. This allows us time to send out ballots

papers if necessary and tally the result. So don't be shy be involved with the running of your association.

Following last months visit to Canberra I thought it a good time to mention our recruitment schedule for new members. Newcastle on 19-20 August and Liverpool in October. Our annual Convention is also our major push for new members. So if you think one of your friends would like to join the

NMRA bring them along to a meeting or the Convention and help keep the numbers up. Without new members we fade away.

Don't forget 9th of May is our Annual Convention so get your models ready and make it an unbreakable commitment. We want to see you all there.

Sowerby Smith

Meeting Reports

February - Bruce Ballment

Suffering from acute writer's block, I turned for inspiration to previous meeting reports. I found that over the past the year, not counting conventions etc., we had 9 monthly members' meetings, and of those, 5 were narrow gauge! I don't mind, I'm equally interested in both narrow gauge and standard gauge.

Bruce models Colorado Narrow Gauge in HO_n3, and his layout, a continuous lapped oval, fits comfortably in his single garage. This is a case where narrow gauge fits nicely. Standard gauge would have required a duck-under, or more restricted operating space, neither of which he wanted. The layout is essentially finished, in that it is fully scenicked and populated with people, trees, and buildings. However there's always something to do on a finished layout; since the time I had seen it two months previously he has reworked one section adding a tall bridge over a river.

During our short meeting Peter Burrows announced an arrangement with Normanhurst High School for running a club layout. If you're interested, please call Peter on... No mini clinics this time, which is a pity. They are interesting and informative. If you have a tip on any aspect of rail modelling, please consider sharing it with the rest of us.

Videos played in the lounge room for those who wanted to relax. A nice afternoon tea rounded off an enjoyable afternoon. Thanks Bruce and Barbara for you hospitality.

Glen Coventry

March - Canberra

Twenty eight members signed the register for our weekend meeting down in the Nation's Capital. It is about two years since our last visit and on this occasion the weather was fabulous on both days of our visit. Very warm and sunny. Due to a last minute posting our plans were changed and Canberra MRC's exhibition was the focus of our

visit. The exhibition held in the Wesley Uniting Church Hall had several very interesting layouts on display.

Peter Weller-Louis, long time NMRA member had his **Elk Run** C&O layout on display and featured long coal drags with several first generation diesels on the point. Peter had a "For Sale" sign on it at the show so anyone interested call Peter for details.

He has a new project he wants to get his teeth into. **Brynddu** [pronounced *brin-thee*.Editor] a Welsh O scale layout incorporating a slate hauling narrow

gauge section had some very interesting scenery and weathering effects. Extensive use of expanded urethane foam as rock-work and scenery base being a feature. Very light and strong it takes paint well. Stone buildings walls and bridges made from DAS modelling clay were featured. **Far Twittering and Oyster Railway** provided

its usual light relief and always held the attention of old and young alike. Inspired by the cartoons of Emmett one of its locos even has a prototype. The layout is controlled by a VIC 20 computer and incorporates very interesting computer automation of the train running.

Wingham fresh from its first public showing at Camberwell, impressed the skilled modellers and

general public alike. Having just been awarded "Best layout in show" in Melbourne last weekend I have a feeling that this large NSW prototype layout, (50' long and with another 12' to come) will take out many more best layout in show awards. With integral curved diorama style backdrop with concealed lighting and fully signalled (interlocked no less) fabulous quality scenery and building techniques this new layout is a most impressive state of the art exhibition layout.

British and European prototype modellers were catered for with a Great Western branch line layout **Little Woodland** and an N Scale Scottish layout **Glenfiddich**. CMRC displayed their **Hamilton and Ohio** layout and Forest Bank was also there.

Later in the afternoon Kerry McFerson had arranged a room upstairs for us and after the usual preamble

*9 monthly meetings.....
....5 were narrow gauge*

*Elk Run....Brynddu...
Far Twitering and Oyster
Railway.....Wingham...
Hamilton & Ohio...
Little Woodland...
Glenfiddich...*

Kerry presented a clinic on the health and safety aspects of the hobby. It brought home to us all the potential dangers of cutting, painting and sticking things. I trust we will at some future date have a short piece by Kerry outlining his talk for the Main Line.

Later that evening a trip into the wilds of Belconnen a north-western suburb of Canberra and 30 members and family sat down to a fabulous Chinese dinner arranged by Kerry. No one left feeling hungry! A very good evening to round off the day.

For the adventurous, at 6am on Sunday morning, there were some balloon flights from in front of the old Parliament House. I think I was the only mug to get up that early, along with several thousand Canberra residents and tourists. About nine of the thirty five hot air balloons made it into the air and due to the weather they all remained tethered to the ground by long ropes.

The organised part of the day commenced at 10 o'clock with a visit to Canberra Railway Museum. A small collection with a Garrett in very good nick for me being the highlight of the visit. They also have a model railway in a parcels van, about 40'x 8' and an interesting track plan. No scenery as yet but most of the trackwork is in place. Running through

the museum alongside the full size locos is a dual gauge 5" and 7" model track. Adjacent to the museum the Canberra Society of Model Engineers have their running track and a long branch runs into the museum. Later in the morning a lovely 5" gauge 0-4-0 freelance tank loco was being fired up by it's female owner. Having just been overhauled, it was in beautiful condition and just had its head of steam up and raced of a few laps prior to my departure.

Well that's what you missed if you didn't make it to Canberra. I would like to thank Kerry our Canberra Director for the work and organisation he put in for our visit and to thank the Canberra Model Railway Society for their invitation for us to display our recruiting stand and the facilities they made available to us.

Sowerby Smith

Library News

The Library has a number of new acquisitions, and the librarian promises an updated list in the next issue of Main Line. It now has several videos of layouts and conventions, and it is planned to convert the tape slide clinics onto video as time and resources permit.

1992 ANNUAL MEETING

This year, our annual members meeting will NOT be held in conjunction with the Convention on 9 May at Sans Souci.

Instead, it will be held at John Baker's scheduled layout visit meeting on 13 June at 12 Roseberry Road, Kellyville NSW 2153 commencing at 4.00pm.

There are a number of reasons for this change, the first being that the Convention is so full of good things that we do not want to spend too much time outside the program with formalities.

The second is that the committee has decided to press ahead with incorporating the Region under the Associations Incorporation Act 1984. This will involve some changes to our Constitution and as we are required to give at least 30 days notice in Main Line of the proposed changes, there is now insufficient time for that between the mailing of this issue of Main Line and the Convention date of 9 May.

Apart from these changes, we will also be submitting the accounts for the year to 31 May, 1991 for approval, reporting the results of any ballot necessary to appoint the committee for 1992 to 1994 (or advising those elected unopposed), naming Presidential appointments for the next two years and dealing with any other business which properly forms part of the Annual Meeting.

The proposed revised Constitution will be available for inspection at the commencement of John's meeting (from 2.00pm) and any questions in the interim should be addressed to John Saxon on (02) 949 4767 or Garry Norwood on (02) 622 5859.

1992 One Day Convention

The N.M.R.A - 1992 One Day Convention is being organised to achieve maximum participation by all attendees and this will include everyone - Yes! - even officials and presenters. To achieve this a number of new concepts are being introduced and by reading this article YOUR participation has begun.

Clinics:

- | | |
|---------------------------|--------------------------------|
| * Tools and Tips | * Athern Drive Repowering |
| * Diesel Bashing | * Scratch Building Turnouts |
| * Scenery Tips | * Videotaping Your Layout |
| * Scratchbuilding Windows | * Casting Building Sides |
| * Rolling Stock Tips | * Painting Backdrops |
| * Clouds (9?) | * Symposium on Command Control |

Model Display:

Many members produce fine models for there individual model railroad - but to be practical they would not be capable of placing in a modelling contest. In line with the participating formula of the 1992 Convention we have decided to set up a display area for these LAYOUT QUALITY MODELS.

Model Contest:

The Modelling Contest will be held at the convention. The categories are as follows:

- | | | |
|----------------|--------------------------------|--------------------|
| * Steam | * Diesel and other locomotives | * Passenger Cars |
| * Freight Cars | * Cabooses | * Non-Revenue Cars |
| * Structures | * Displays | * Traction |

Photographic Contest:

There are four categories in this contest:

- | | | |
|-----------------|---------------|-----------|
| Black and White | (1) Prototype | (2) Model |
| Colour | (3) Prototype | (4) Model |

Minimum recommended size is 6" X 4" and ideally mounted on a presentation card.

Entries for both these contests can be registered when you arrive at the Convention. If you require any details before hand contact the Contest Chairman Gerry Hopkins on (02) 450 1033 after 6.30pm any day.

There will be two video displays running throughout the day. One will feature STEAM and the other DIESEL. You will have a chance to see some NTSC videos that have not been converted to PAL. A full time table will be displayed so will not have to miss out on a desired video.

In the last issue a sketch and photos showed part of the module structures. The sandhouse is a very simple structure, however, a period of time will show certain changes, mainly weathering and use. The period chosen is the late 40's and there have been many running repairs made externally to the sandhouse. These are mainly broken capping boards which overlap the main wall boards. There are many photos in books and magazines but the best is the plans in last years N.G. & S.L. Gazette. Styrene was used for the shed and wood for the bin, styrene being distressed by using a file, razor saw and craft knife for wood grain and knots simulation.

Gee they look great in the pictures...

The shed was built wall by wall, each wall having 5 pieces being:

- A 10" X 10";
- B Board and Batten 4 ft up;
- C 6" Horizontal Board;
- D Board and Batten; and
- E Roof Bearer/Plate.

The roof was 0.015" plain styrene with masking tape cut to scale to represent tar paper. A pin was pressed into tar paper to represent nails and a 0.2 black 'Artline' pen was used elsewhere to again show nail holes. The sand bin itself was made using scale timbers for the retaining walls. Balsa was carved to form the vertical posts which were tree logs tapered and had metal rods threaded to span across the bin to keep the walls from sagging or collapsing. Code 55 rail was also attached vertically for this period of time. The sand tower was made of styrene with wooden dowel for the tapered drum. The sand pipe was fabricated in brass as per the NG & SL plans and made as a working unit, however, once painted the thickness of paint has taken off through it's sliding, so sadly it was glued so it wouldn't move and show 'brass'. Wire was used to form ladder rungs and pipework and a lamp shade attached. I am yet to experiment to get the lamp working using a mini micro lamp in a 'grandt-line' shade. I'm hoping the 2 tiny wires coming out of the lamp can be painted and

wrapped together, painted again to insulate and bent. This will then be one and will form the conduit/pipe that prototype wire would run through and give correct appearance.

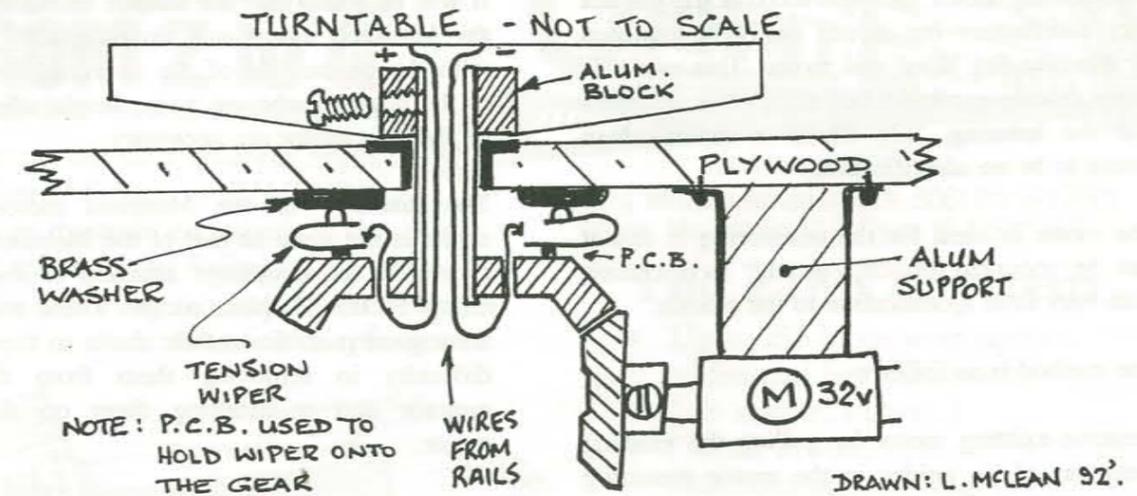
Right next to the sandhouse is the "pit". I chose to use the "Model Masterpieces" Durango turntable kit as it had very good details including the builders plate and had dental plaster curved walls. Gee they look great in the pictures but you can be disappointed with this kit if you don't have patience. My kit was second hand and

someone had tried to build it to about 30% of the way and in gluing the plastic didn't get the aluminium bearing block true. I couldn't unglue it so I drilled it slightly oversize and made a stainless steel bottom pit bearing and carry plate 1 inch dia with a 0.280" bore and made a bronze tube to clearance fit it and locked it into the aluminium block on the turntable by means of a screw thread. This made it 'pull-apartable' - you know, things never go right first time! The deck was made of styrene rather than the timber supplied by choice. It was distressed and glued and had 7 light spray coats of paints each being sanded back with fine 120 grit.

Fine wires were soldered to the rails and run through the bronze tube. Now to turn the monster a missile launching system bevel helical 90 degree gear set was obtained and on the largest gear 2 holes

were drilled so that the wires could run through (see sketch). The 2 wires were soldered to 2 relay wipers which in turn ran against a 1 1/2 inch dia brass washer cut in half for electrical gaps and glued to the sub-base plywood. From this 2 wires go away to the panel for powering a loco on the T/T. The wipers were soldered to printed circuit board (P.C.B.) to insulate from the gear. The most difficult part was the pit walls. The six plaster arcs were not square nor was the thickness the same. After squaring by eye by use of a coarse file they were glued to the plywood base which had the centre hole marked.

The diameter of the walls was determined by



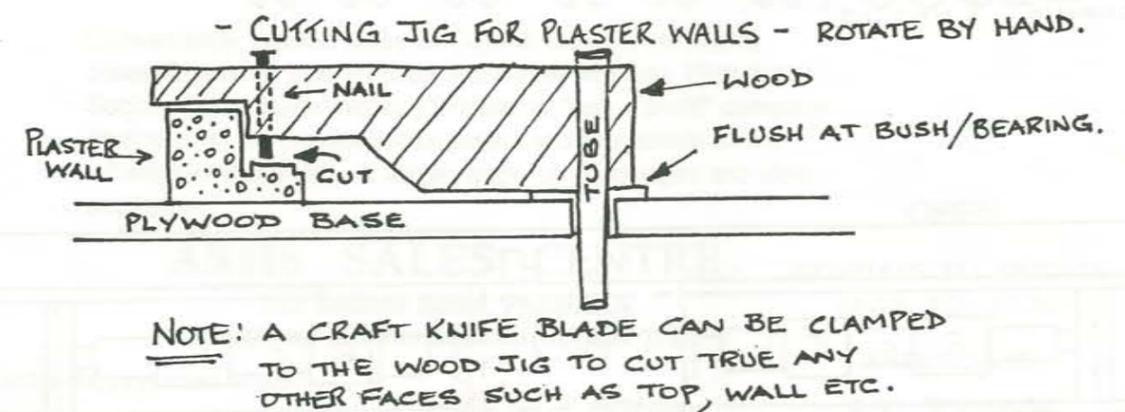
This turntable works very well, however the 32 volt gear reduction motor is old and worn which has backlash and allows the table to free play. It will be replaced at a later date. Prototype unit is still in use now.

But, unfortunately that's nearly all that remains as the sandbin, roundhouse, coachshed and coal tower have long since gone, a new larger roundhouse has been built and a new coachshed also. The sand shed only still exists.

Next article we will continue with the loco yard by describing my favourite two structures - coal tower and coachshed and a little on the track and watertank.

Still to come is the scenery and a little wiring and then is onto the next section. The depot and the town with the "North Yards" at the rear of the main street buildings.

...things never go right first time!



Remotoring Mehanoteknick Diesel Locomotives

By John Gordon

The existing motor on these locos (C628) is not very satisfactory but it can easily be replaced by Mashita flat sided can motor. This motor is fairly readily available but except for its name and the lettering "12v Made in Japan" there seems to be no identification.

The motor is ideal for the remotoring in that it can be mounted directly on the loco chassis with very little modification to the chassis.

The method is as follows.

Remove existing motor by pulling the existing keep out of its guides in the motor mounting lugs on the chassis.

Cut off the motor mounting lugs from the chassis.

With a small half round file smooth the surface of the stumps until the rounded base of the Mashima motor fits snugly into the half round section of the chassis.

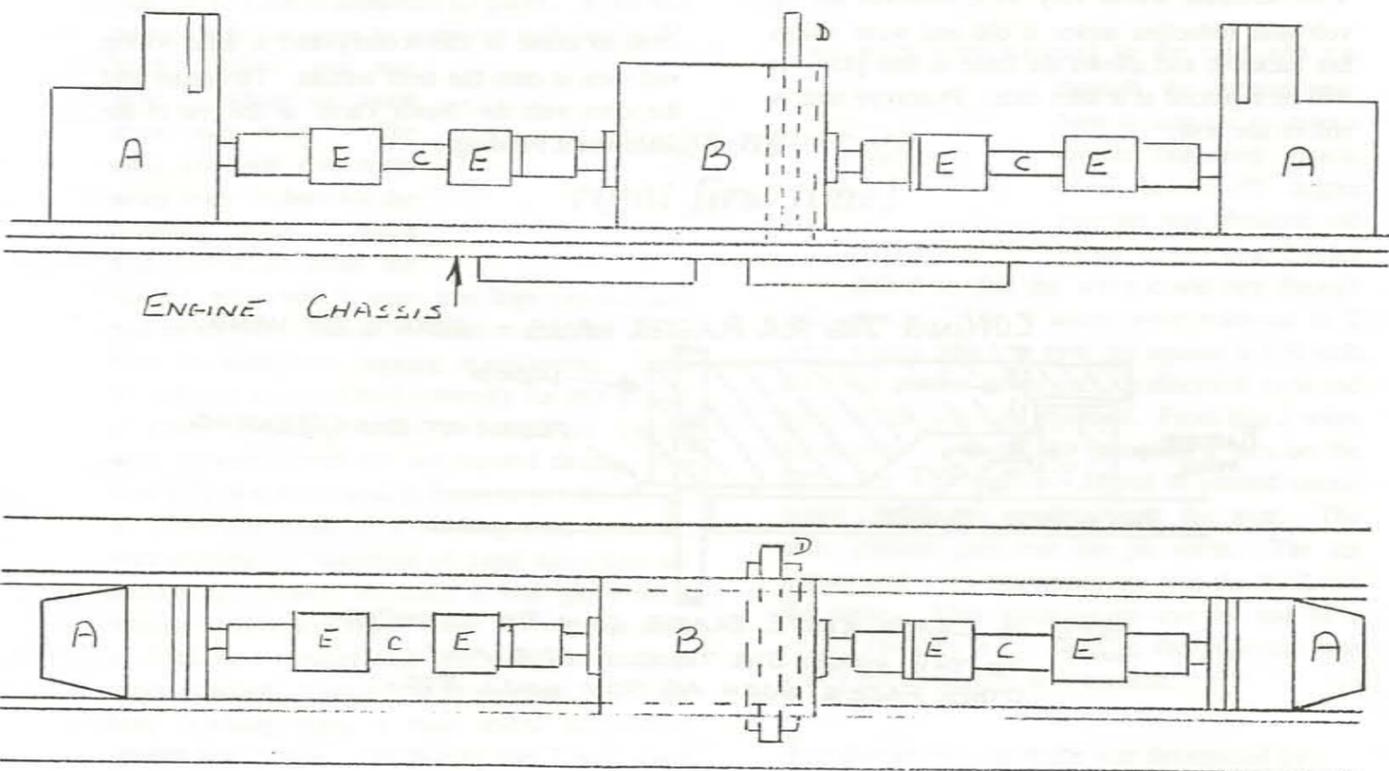
It will be found that the double ended shafts of the Mashima motor and almost exactly in line with the centre line of the universal couplings to the bogie gearboxes, so no height adjustment on the new motor are necessary.

The diameter of the Mashima motor drive shafts is the same as that of the Mehanoteknick motor so the couplings attached to the latter motor fit the Mashima motor. These couplings are a good push fit on their shafts so there is no difficulty in removing them from the old motor and re-installing them on the new motor.

It is necessary to shorten parts "C" by approximately 1/4" as the Mashima motor drive shafts are longer than the Mehanoteknick's.

All the modifications being completed, secure the motor temporarily in position with masking tape and finish the wiring, then run the engine on the track.

All being satisfactory secure the motor in position with silicon sealant or "Supa Glue".



The Specialist Shop which concentrates on

JUST TRAINS FROM Z to G

and all their myriad accessories.

We offer you the most advanced Multi Train Control System — ZIMO. Now available in Australia exclusively at the Orient Express Model Railway Shop.

If you like to run *any* loco *anywhere* at *any* time, **this is the solution.**



Ask for your free information leaflet

Full range of Model Railway equipment in all gauges available at our shop. Mail order welcome.



73 King William Rd Unley S.A. 5061 Ph. 271 7861
Hours: Mon to Fri 10-6 Thurs 10-9 Sat 10-4

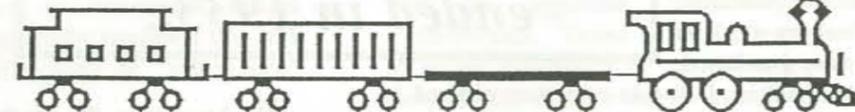
The ZIMO System

- Up to 255 locos with up to 5 additional functions each (i.e. smoke, lights...)
- "Walk around control" with all functions at your fingertips, even Accessory Control.
- Multi Traction function — control of up to 5 locos simultaneously.
- Semi-automatic operation possible using the unique "signal controlled movement".
- Powerful start-up configuration.

RAILWAY BOOKS

Do railways hold a special fascination for YOU!

For Sydney's best and cheapest range of Australian and overseas railway books visit the ARHS Sales Centre.



Conveniently located close to Central Station, the ARHS Sales Centre is operated by Australian Railway Historical Society New South Wales Division, a "non-profit" company dedicated to the publication of books and magazines on the railways of Australia. A large range of video tapes are also available.

ARHS SALES CENTRE

182 Redfern Street, REDFERN
Telephone and Fax number (02) 699 1714

Mail order enquires most welcome.

Write for a booklist

Postal address:-

PO Box E129, St James, NSW, 2000

OPEN

MONDAYS TO FRIDAYS

12.00 TO 17.30

SATURDAYS

9.00 TO 16.00

Part 3

By George Paxon

Previous articles looked at a brief history of the P&WV and at the modelling possibilities. This article will concern itself with the types of equipment that operated over the Railway.

As coal was the mainstay of the Pittsburgh & West Virginia Railway for much of its life, it is not unusual that the coal carrying hopper was the predominant freight car owned by the Railway. In the early part of the century the predecessors of the railroad would probably have had wooden hoppers, but not much information has come to light. As all neighbouring roads operated such equipment, it is reasonable to assume the local road which formed parts of the P&WV did so also. Steel hoppers came into use beginning in 1904 when 500 cars of an experimental design were ordered from the local Pressed Steel Car Company. Data that is available reveals that the hoppers owned by the P&WV per year were as high as 3758 as indicated in Table 1. It would appear that all these hoppers were two bay cars of 31 to 34 foot length and 50-55 tons capacity.

...Steel hoppers came into use in 1904...

The most common freight car in railroad inventories in America was, with few exception, the box car. However, the P&WV was one of these exceptions and did not own any box cars until 1947 when 100 American Car and Foundry steel 40 foot cars were purchased.

..Passenger service ended in 1933..

An 100 additional steel 40 foot cars were ordered in 1948 from Pullman-Standard. And finally about twenty 50 foot double door or automobile box cars were also purchased. I have a photograph of a wood single sheathed (composite car with wood siding with diagonal steel bracing) box car of about 1918 vintage operating in P&WV work car service. For some years I thought the P&WV must have had such cars. After a careful study of equipment registers I have concluded that the car was purchased second hand just for work train use and that the wood cars were not used in revenue service. It would appear this composite car was a one off purchase from the Boston and Maine Railroad as Boston and Maine records reflect such a sale.

Many gondolas were also owned. Composite gondolas with wooden sides and steel frames and bracing were owned, but I am still attempting to locate a photograph. The majority of the gondolas were standard 40 foot straight sided steel cars. However some 55 foot and 65 foot "fish belly" sided mill gondolas were owned.

Flat cars and covered hoppers were also part of the P&WV fleet. A picture of one of the flat cars has just been found and from equipment registers we know that they were 40 foot cars with a 50 ton capacity. The side sills for the flat cars were a "fish belly" design. The covered hoppers were rather standard but modern PS-2 cars of 34 foot length and 70 ton capacity.

A recap of the type and number of freight cars owned by the P&WV in selected years for which data is available is presented in Table 2.

Passenger service ended in 1933 but passenger cars existed on the Railway to the end of independent operations with the Norfolk and Western takeover in 1964. Three business cars were operated by the Railway until that time. Several old wooden passenger cars of classic proportions also served in maintenance service until that time. These could have been purchased second hand for maintenance work, but more probably were original P & W V equipment.

We know that 25 ornate steel frame wood body cars were bought for through joint passenger service in conjunction with the Wheeling & Lake Erie and the Wabash Railroads in 1904. This through passenger service operated from Pittsburgh west to Toledo, Ohio from the origin of the line in 1904 until about 1915 when the through service was discontinued. From that time on local service between Pittsburgh and Brewster, Ohio was operated until discontinued in 1931. Additional local service was provided between Avella, Pennsylvania and Pittsburgh Junction, Ohio until 1932. The last of P&WV's passenger service was mixed train service for miners between Avella and Mingo, Ohio which extended to February 1933.

The ornate wooden bodied cars were removed from service in July 1922 when 14 new steel passenger cars were purchased for the limited passenger service remaining. It appears these steel cars were sold to the Alaska Railroad after most passenger service was abandoned in 1931. As we don't have any known photos of the steel passenger cars, it may be worthwhile to chase down the cars in Alaska.

The equipment seen on the P&WV was not limited to the varieties of owned cars. In the early days the predominant foreign car would also have been coal carrying hoppers to include those of connecting railroad as well as some owned by coal mining companies served by the Railway. Many Pennsylvania Railroad hoppers were interchanged at Bridgeville. Wheeling & Lake Erie and Wabash hoppers would have also been found. After completion of the Connellsville extension in 1931, hopper cars of the connecting Western Maryland would have been found on the P&WV. Generally hopper cars stay close to home rails and those of western roads probably would not have been found on the P&WV.

As the coal era began to fade in the 1930's and the Alphabet Route fast freight service grew in importance, the variety of cars handled by the P&WV would have increased dramatically. It would have been reasonable to expect to see merchandise laden cars of any American, Canadian, or Mexican railroad. Remembering that the P&WV was a vital link in the eastern seaboard to midwest traffic, almost any box, gondola, covered hopper, tank, or flat car could have been found. The P&WV even participated in intermodal freight operations and provided specially equipped flat cars for TOFC (Trailer on Flat Car) or "piggy-back" service.

The takeover by the Norfolk & Western in 1964 and the formation of Conrail in the mid 1970's brought changing traffic patterns mentioned in a previous article. As a result the car pattern shifted again. The evaporation of through traffic was countered by routing Norfolk and Western through trains of grain and automobiles via the P&WV. This traffic was short lived because the curving track on the eastern end of the line between Pittsburgh and Connellsville was not conducive to efficiently moving 100 plus car trains of these modern cars (90 feet long and 110 ton capacity). This traffic was diverted to other Norfolk & Western routes where it could be moved more economically.

Why not build a model of the P&WV in your available space?

Today the old P&WV route between Pittsburgh Junction and Rook Yard sees considerable general merchandise traffic of all descriptions to include long box cars of automotive parts and auto-racks of finished automobiles. Of course traffic on the east end from the Pittsburgh vicinity to Connellsville has reduced to near nothing.

Pittsburgh, until the most recent times, was the largest steel producing area in America and the traffic on the P&WV would have reflected this. Gondolas and flat cars loaded with steel slabs and steel coils, gondolas loaded with scrap metal, box cars loaded with refractory brick, and hoppers loaded with coal, coke, iron ore and limestone, would be headed toward Pittsburgh from the east and west. Gondolas and flat cars loaded with rolled steel shapes and steel coils would be headed away from Pittsburgh in both directions as well. The process of converting coal to coke for the iron making blast furnace produces a substantial array of chemical by-products such as benzene, naphthalene, kerosene, oils, and road tar which would provide traffic in tank cars out of Pittsburgh as well. Some of these chemical by-products also spawned a series of local industries which converted the by-products into paints and other chemical products and resulted in outbound traffic in both box and tank cars. The P&WV competed against the Pennsylvania Railroad and other Pittsburgh carriers and won a share of this traffic.

Remember that in all eras the traffic described above is mixed with solid coal trains. Although coal is no longer as important as it once was, it is still an important commodity in Western Pennsylvania. Trains of coal moved from the area to power companies all over America as well as to ports on the Atlantic Ocean and the Great Lakes for export in ships. Coal mines still operate on the west end of the P&WV.

The P&WV is an interesting line with attributes made for modelling. It was a relatively short single track operation through rugged country with a interesting variety of traffic. It employed a small but handsome stable of well maintained locomotives and owned a fleet of cars that well reflected traditional mainstream railroading. A convincing model of the P&WV could be built in modest space. Why not build a model of the P&WV in your available space?

RIO GRANDE SOUTHERN

A HO_n3 Narrow Gauge Railroad built by Laurie Green.

THE RAILROAD

The fascination of the "RIO GRANDE SOUTHERN" narrow gauge railroad was the incredible sight of tiny steam locomotives struggling up high mountain passes, often two or three locomotives to a train. It has been admired by all who have journeyed through the mountains of south western Colorado. The "SOUTHERN", as it became known, was the dream of its creator, Otto Mears, who built the railroad to tap the tremendous mineral wealth found in these mountains, as well as serving the rich farming and ranching country found there.

The railroad started construction in 1890 at the northern terminus of Ridgeway a stopping point on the "Denver & Rio Grande's" branch from Montrose to Ouray on its third division. It ran almost due south for almost 160 miles, passing over three high mountain passes (Dallas Divide - 8989 feet, Lizard Head 10025 feet and Cima Summit 9870 feet) to finish at the southern terminus of the line at the railroad town of Durango, situated on the second division on the D. & R.G.W., thus forming a unique circle of narrow gauge railroad that passed through some of the most awesome and spectacular mountain scenery seen in North America. The railroad only remained in the hands of its builder, Otto Mears for three years, until the great silver crash of 1893 put the railroad into receivership. It was then taken over by the DENVER AND RIO GRANDE WESTERN Railroad, who operated the "SOUTHERN" until its closure in 1951, which is why locomotives and rolling stock from both companies could be seen moving over its rails.

*...tiny steam locos
struggling up high
mountain passes...*

THE LAYOUT

To build a model of a mountain railroad, especially one which has to be portable, like the RIO GRANDE SOUTHERN presents new problems that are not found on a normal model layout. The type of terrain, number of bridges, rock cuts and grade of track all present the builder with a difficult task. Add to this the fact the prototype railroad was situated half way around the world and ceased operations in 1951 also adds to the

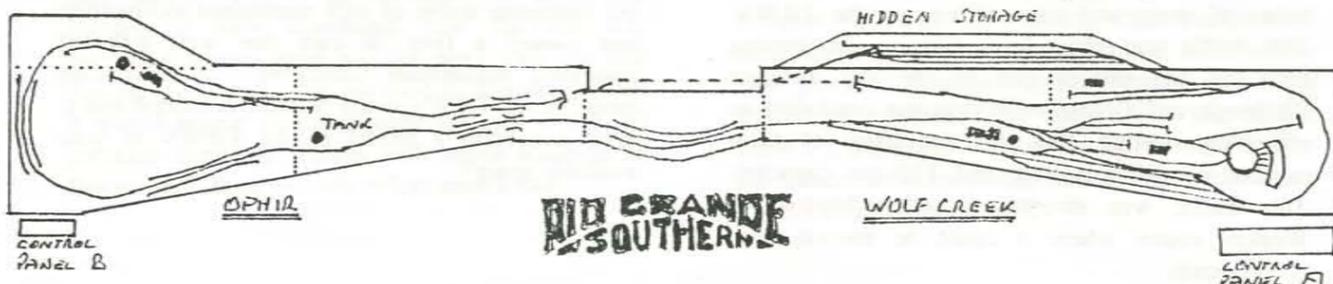
difficulty.

The layout has been built in five main sections, four at 8 feet long and the bridge section is 5 feet long. There are also two small sections:

1. The rear extension at Ophir, and
2. The hidden storage yards.

The entire layout stacks firmly into a purpose built trailer which is 10 feet long, 6 feet wide and 5 feet high. It normally requires 4 hours to set up for display and about 2 hours to dismantle the layout.

As you can see by the track plan, it is an oval of track 80 feet long, divided into five equal operating sections, three controlled at the main panel at "Wolf Creek" and two at the "Ophir" panel (these two can be switched to a main panel for one person operation). Between each section, a short "stopper" is located to enable a train to be held until the following section has cleared its train, while allowing a train to continue moving in the preceding section. This enables smooth operation of up to eight trains



on the main line.

THE TRACK

The track is hand laid (except in the hidden sections) using code 70 rail pinned to the ties with tiny rail spikes. The turnouts are constructed on a similar basic, except some of the ties are copper clad thus allowing the rail to be soldered to these ties for accuracy and strength. The turnouts seen on this layout are called "STUB TURNOUTS", and were used extensively on the "Southern" and unlike normal blade type, the stock rail is moved sideways to change the route. On the model these turnouts are controlled by "Switchmaster" slow motion turnout motors, which because of the slow action, move realistically, are very reliable and do not damage these delicate turnouts. About 250 feet of rail, 9000 ties and 8000 rail spikes were used in laying the track on the layout.

THE CONSTRUCTION

The construction of this layout, which started three years ago, starts with an open timber frame, upon which are attached particle boards formers or ribs shaped to the profile of the scenery shape require.

The track bed is then installed, leaving the gaps for the bridges. Metal fly wire is then stapled over all areas requiring plaster work. "Cornice Adhesive", a slow drying for 5m of plaster, is spread over the fly wire and carved to simulate rocks and cliffs. Various colours and shades of "Tile Grout" are then used to colour the plaster. When this is complete, the bridges are installed, the track is laid, and trees, grass, retaining walls, buildings and thousands of detail parts are added to complete the scene.

THE STRUCTURES

Most structures including all the bridges are hand built using published plans and photos. They are built to exact scale dimensions of the prototype originals. Some have taken up to 100 hours to build.

THE TRAINS

The locomotives seen on this layout are all brass models of "RGS" and "D&RGW" locomotives and are painted and lettered as the prototype. The passenger cars and other rolling stock are a combination of commercial kits and hand built and represent the type fo cars seen on these two railroads.

TURNOUT CONTROL

By Lawrence Nagy

The system I'm about to describe uses micro-switches to change the frog polarity of live frog turnouts, and it has been in use on my N scale layout for almost five years. In that time, one of the forty eight units has needed repair and six or so have needed minor readjustments that took maybe fifteen seconds. My electrical knowledge and mechanical aptitude is painfully close to nil and the most sophisticated tool I own is a pair of pliers, so I guess the system can be described as close to idiot proof.

The micro-switch relies on the turnout throw bar to move it, therefore a form of self locking turnout like Peco, or any other turnout equipped with a ground throw such as Caboose Industries makes, is required. When you reach onto the layout and manually throw the turnout, the micro-switch automatically changes the polarity as required by the turnout.

LIST OF PARTS

- Any cheap micro-switch. Dick Smith P-7802 or equipment.
- Mounting nuts and bolts. DS H-1684
- Short self tapping screws. DS H-1611
- Piano wire
- Electrical wire
- 5 to 10mm wide aluminium strip 1mm thick.

If you do ten or so turnouts at a time the task progresses quickly.

First step is to cut off or flatten the bend in the arm of the micro-switch. I squeezed it flat in a pair of pliers. Temporarily slip a piece of plastic tape between the arm and the switch to protect the movement from glue, and Araldite the piano wire to the arm. Make the wire longer than you'll need so you can trim it to length once the switch is installed. While the Araldite sets, drill four holes into the aluminium stri, two 10mm apart for mounting the

switch and two at random for mounting onto the layout. Bend the strip into a ninety degree bracket.

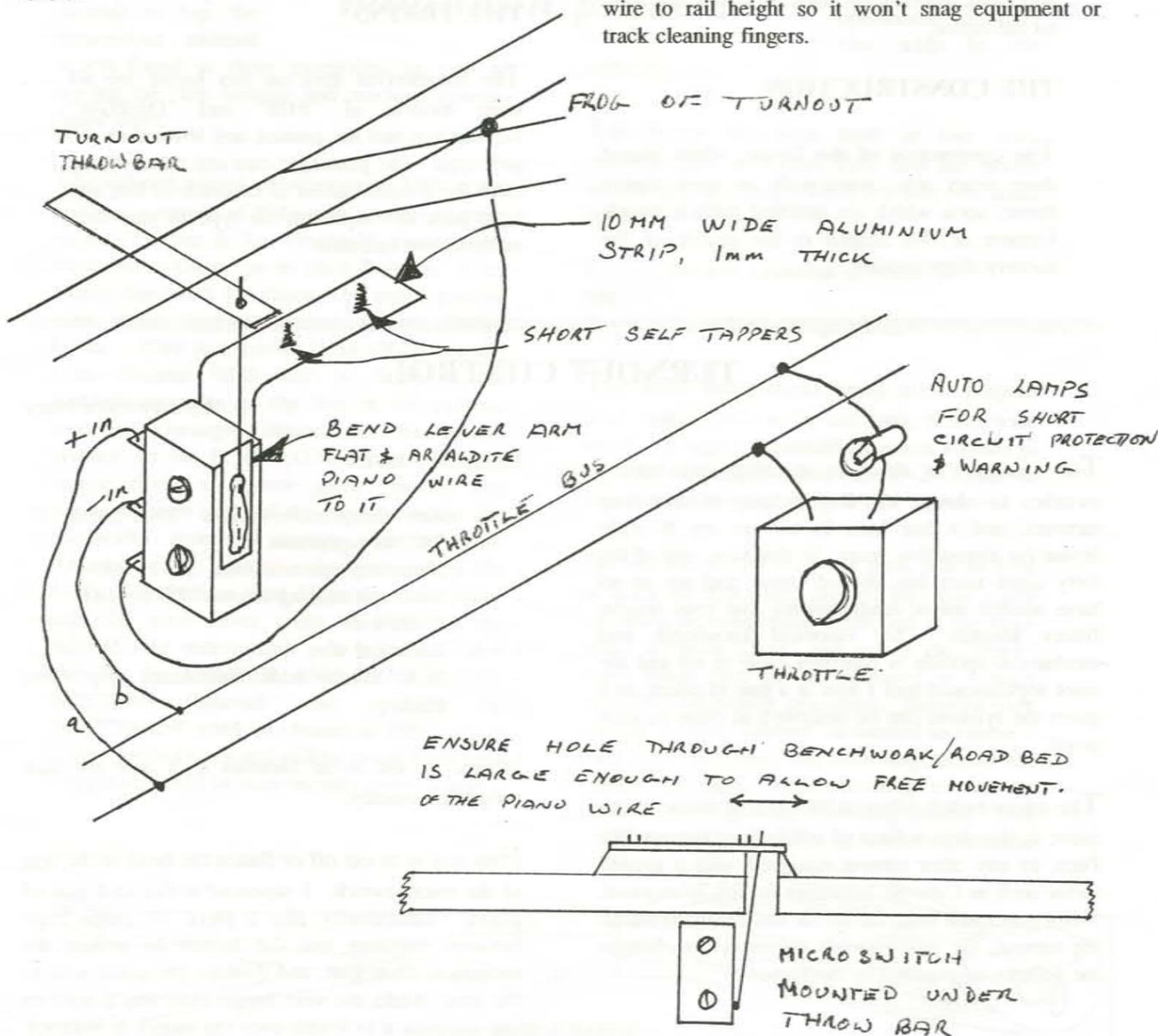
After Araldite sets, solder three lengths of wire to the terminals.

Bolt the micro-switch assembly to the bracket. Drill a generous hole through the roadbed, the diameter depends on the roadbed thickness, lining up with the turnout throwbar. Slip the piano wire into the throwbar and tape the assembly roughly into position. Solder the wire from the lowest terminal to the frog (wire C).

My layout has two automotive blinker bulbs connected in series with the track power supply. A short causes the bulbs to glow, which both provides a visual indication and protects equipment. There are two possible ways the micro-switch will cause a short.

Firstly, if wires A and B are connected to the wrong bus wires, the micro-switch will short whichever way the turnout is thrown. Secondly, if the polarity is right, but the amount of throw is not sufficient, then the short will occur when the turnout is thrown one way but not the other. I check for shorts while fiddling and watching the bulbs. By fiddling about for a minute you'll get a feel for when the turnout and micro-switch are throwing in unison. When you've found a non shorting position for the micro-switch, permanently mount the bracket with the self tappers. Over a period of time changes in humidity and track movement will cause the occasional switch to short out. Simply reach under the layout and gently bend the bracket to cure the short. The bracket has to be firm enough to hold the switch securely, but flexible enough to allow adjustment.

Once the installation is incomplete, trim the piano wire to rail height so it won't snag equipment or track cleaning fingers.



Part 3 - The Home Layout

The Plot So Far

A quick re-cap of previous articles in this series:- These articles discuss using lightweight expanded styrene foam for layout scenery. In part one, I described the portable exhibition layout "Gum Creek" built by the Wollongong Model Railway Club. Part two discussed construction and finishing techniques. This issue I'll discuss using styrene foam for scenery on your not-so-portable home layout. Once again, SAFETY FIRST, always use adequate eye protection and ventilation during shaping and finishing.

Lightweight, Practical Scenery

You have probably built your layout bench work using L-girders or whatever, installed your roadbed, laid track, completed miles of wiring and are now running trains. We've all been guilty of it, we'll do the scenery later but right now we're having fun after all that blood, sweat and tears. Months go past and "I must start on that scenery soon"! What's holding you up? It could be the thought of a network of support frames, wire mesh and messy plaster. Seems like hard work, not the fun the hobby is supposed to be. What about some instant scenery? Grab a sheet or two of styrene foam, cut it roughly to shape with a rip saw, slap some plastic paint on it, push some trees into it, plonk on some of those buildings you've had assembled and packed away for years and there's your instant scenery!

Back to Reality

No, it's not quite that easy, but creating scenery with foam can be quicker and easier than a lot of other methods. It's also lightweight and flexible; less likely to be damaged, and when it is, easy to repair, thus the basic theme of these articles. Qualities that are not so important maybe for a permanent home layout but consider the following:-

Pacific Seaboard Railway

I fell in an old trap with my own home layout; lots of almost inaccessible track! I would have to have a removable hatch or two to access track, turnouts and point motors for maintenance and cleaning. But wait, if I was using the lightweight foam for scenery, why not have major sections of the scenery removable? Figure 1 shows the result. The PSR stage 1 is approximately 4.3m x 2.15m (14'x7') with a "view-block" down the middle. I preferred a 3-dimensional meandering view block to a 2-dimensional double-sided painted backdrop. The

addition of a strategically placed mirror on the back wall allows me to keep an eye on the opposite side when operating alone.

One side of the layout is rolling Californian foothills and the other side is High Sierras. The scenery is glued into five main scenery sections (lettered "B", "C", "D", "E" & "F" in Fig 1). Each section is fully removable for great access to track. A typical section is up to 600mm high. Scenery and river bed closer to the layout edge was however made more permanent. A large background section ("A" in Fig 1) consisting of rugged mountain scenery is still to be constructed.

Bonus Advantages

Having completely removable scenery sections also means you can construct, shape, colour and finish them outside. The saving in clean-up hassles in the train room is incredible. My track support consists of a 12mm plywood sub-roadbed with 12mm canite and 3mm cork roadbed. By my simply increasing the required width of the sub-roadbed by another 25mm or so, a more than adequate support for the removable scenery sections (See Figure 2) is achieved. Some day you may wish to change your layout theme: it's easy with removable scenery. Why not have an occasional change of scenery section; e.g., an urban scene becomes desert, an industrial area becomes mountainous etc. Perhaps a new prototype interest requires the scenery to change to support your new habit.

Scenery Finishing

Going against the actual theme of these articles here, but on a permanent home layout a thin layer of plaster over the foam can easily be used if desired. A Sydney modeller, Alan Garbutt, recommended Cornice Cement to me years ago and I've used it ever since. As a substitute to plaster it has the advantages of being cheap, light, easy to obtain in small quantities and has some adhesive qualities. Use a mixing ratio (by volume) of 1:1 with water. Gently sift the cement into the water and then mix thoroughly. By doing it this way you obtain a creamy, lump-free mixture. My rolling California Hills has a mixture of sifted sand and cornice cement brushed on. The High Sierras is brushed and carved cornice cement. The rocks were then coloured with washes of thinned acrylics and black ink and the grassed areas painted with plastic paint.

Reducing Costs

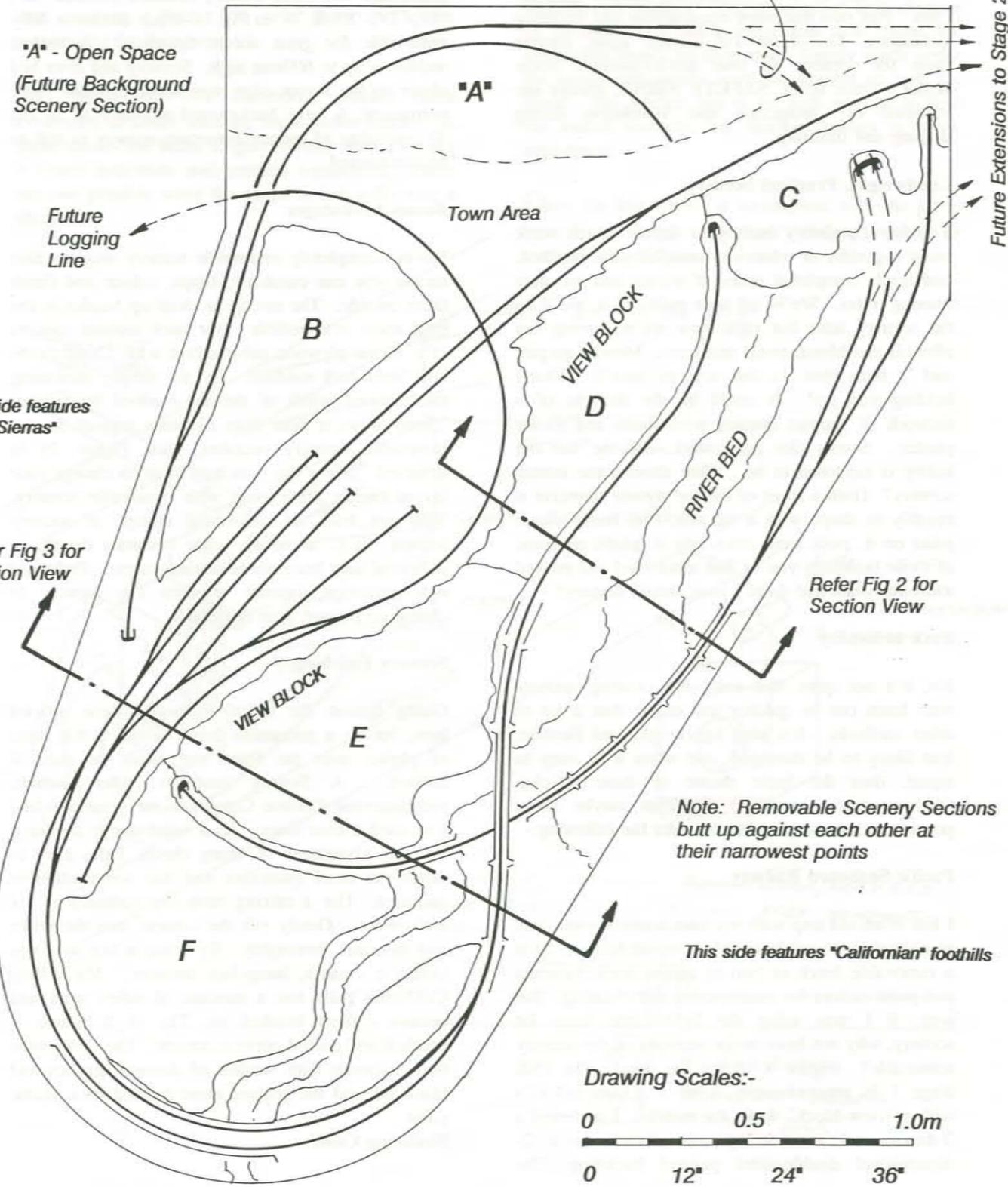
In the first of these articles I described how the Wollongong Model Railway Club were given a head start by obtaining sheets of unused styrene foam gratis. That was just as well because it is very expensive to purchase.

There is however, a very economical way of acquiring some, because in Australia there are cubic metres of the stuff thrown away every day.

Almost everything from refrigerators to motor cycle parts are shipped in it these days. If you scout around, it can be yours for the asking. Be a little particular, throw away the larger beaded type and keep the fine grained material. But how do you turn all those odd shapes and sizes into useable sheets and building blocks? Tune in next issue and I'll show you a couple of easy-to-build hot wire cutters and shapers.

Temporary Connection
Until Completion
of Stage 2

PACIFIC SEABOARD RAILWAY - STAGE 1



Note: Removable Scenery Sections butt up against each other at their narrowest points

This side features "Californian" foothills

Drawing Scales:-

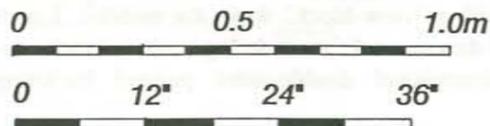


FIGURE 2:

CROSS-SECTIONAL VIEW OF SCENERY SECTION "D"
Scale of Drawing 1:5

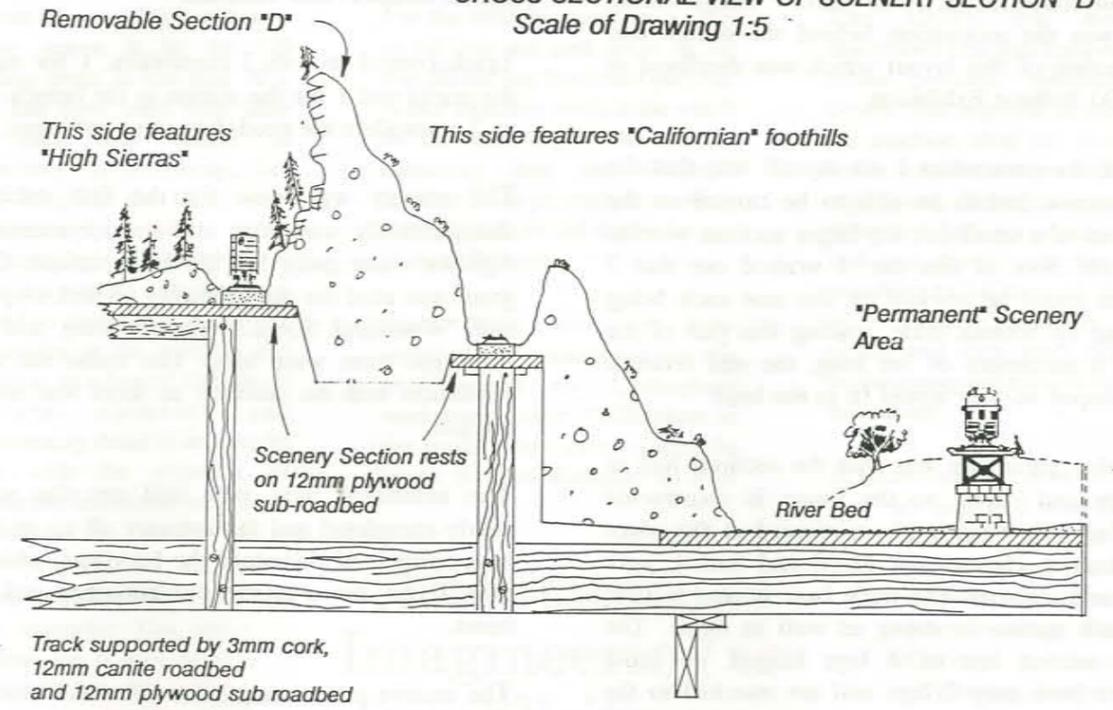
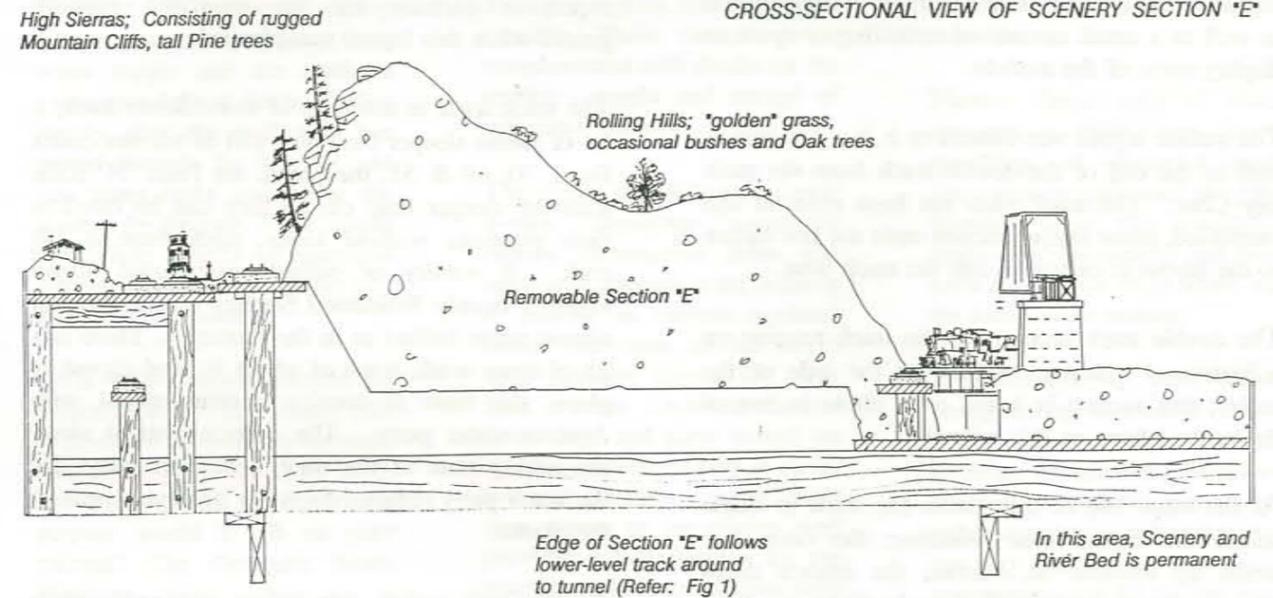


FIGURE 3:-

CROSS-SECTIONAL VIEW OF SCENERY SECTION "E"



A small collection of Swiss Narrow Gauge rolling stock was the motivation behind the design and construction of this layout which was displayed at the 1990 Ballarat Exhibition.

One of the parameters I set myself was that the main section had to be able to be carried on the back seat of a small car; the larger sections were to fit in the boot of this car. I worked out that 3 sections could be stacked on the seat each being 1m long by 500mm wide, making this part of the layout a maximum of 3m long, the end sections were shaped so they would fit in the boot.

The other parameter was that the sections had to be light and strong so the frame is constructed from builder's bracing ply reinforced at the edges by 20mm x 20mm pine glued and nailed, later glued and screwed. The track base is also bracing ply, each section is strong as well as light. The bridge section has its 4 legs hinged, all other sections have only 2 legs and are attached to the other by a loose pin hinge at the back and 1 bolt to

...the main line heads up towards St. Moritz....

lock them together.

The track plan was to be based on a prototype station which would offer a variety of train traffic as well as a small amount of switching or space to display some of the models.

The station layout was chosen as it is a junction as well as the end of the double track from the main city Chur. The track plan has been reduced and simplified, some layout section ends are not square so the layout is curved to suit the track plan.

The double track section has the track running on a buttressed concrete viaduct on the side of the valley; this section is based on a photo in one of the books I have on this railway.

At the other end of the station the track is single across the bridge then branches; the main line heads up towards St. Moritz, the branch drops towards Disentis. A shelf extends along the back of the layout to provide continuous running and storage tracks.

All point motors are the motor driven type i.e.

Bemo, Lemarco and Tortoise.

Track control is with 3 controllers, 1 for each of the tracks and 1 for the station to the branch point, so 2 controllers are needed to run continuous.

The scenery was basic for the first exhibition, aluminium fly wire base and cornice cement and Agnews water putty for the base surface. Colour grout was used for the colouring of rock slopes etc and "Woodland Scenics" for finishing and Heki pine type trees were used. The trains ran at the exhibition with no catenary as there was no time for this.

The exhibition next year will see the scenery nearly completed and the catenary all up so it will look correct. At this stage the buildings, which are only a few, are a mixture of kitbashed and stock items.

The motive power ranges for GE 6-6.1 crocodile, GE 4-4.1, GE 6-6.2 articulated, GE 4-4.2 & ABE rail car with a small 4 wheel diesel shunter which are all Bemo models running on the prototype. The rolling stock is at the moment Bemo and includes various types of passenger cars and freight stock.

Track gauge of this layout is HOe (HO_n2½) because the first items acquired were in this gauge and the expense of fitting all locos and rolling stock with HOm wheel sets would have been an expensive exercise for the improved stability gained when this layout was planned.

The track itself is made up of some Bemo track, a lot of Bemo sleeper base with rail of various codes fitted, 70, 60 & 55, the points are Peco 'N' scale with the sleeper base cut so they can be fitted in their positions without kinks, track base is 1/8 cork. A variety of ballasts were used mixed together mainly Woodland Scenics as I needed an almost white ballast as in the prototype. There is a lot of stone work, some of which is hand carved in place, the base is cornice cement mixed with Agnews water putty. The cornice cement slows the setting time of the water putty but when dry the water putty reduces the water absorption rate of the plaster.

As you will realise, this layout now needs more than 1 small car to be transported but was an enjoyable exercise in compressing an idea into a workable size.

IMAGINEERING a Logic Approach to Design & Detail

The term imagineering is not new. I came across it in the US modelling press in the mid 70's, but it has been used very little since then. The nature of imagineering is simplicity, but merely adopting the buzz word "imagineering" evokes some mystic complexity. Regrettably, my attempt at a concise definition may only add to that false complexity. Imagineering is the creation and application, in a logical fashion, of structural elements and complimentary detail to any model feature with the objective of fulfilling the functional purpose of that feature.

Let me explain with this simple example: You are modelling the houses of a town or village--- this is the feature---the model folk who live there (the purpose) will require a water supply and will receive mail, among other things. Now imagine this - In a larger town, water will be piped to each house and the mail will be delivered. So you should add a tap in the garden and a letterbox by the gate.

However - In our small country village, you may imagine no town water supply and the residents congregate daily at the post office shortly after the mail train has passed through. So here we add rain water tanks and delete the mailbox by the gate. These simple details help to fulfil the functional purpose of our models. In this way realism is enhanced.

Let's venture on and consider the 'Wheel Works' - Rail Truck. This is an excellent candidate for some imagineering as it is a fairly basic, but good quality, model. What purpose would it fill on your railroad? The Gulugaba North Western uses one as a maintenance-of-way vehicle. The first thing we must plan for this model is safety compliance equipment. A horn, headlight and end markers are essential.

For the M.O.W. function, a vice, an oil tank and junk detail on the tray fill out this functional purpose. A nice finishing touch is the winch on the front bogie. The GNW's subsidiary line, the K'nyngra Lumber Co. is presently converting another of these rail trucks for use as an ambulance.

Now let's look at how imagineering contributed to the evolution of my Chillingham workshops model. Chillingham is the headquarters for the Gulugaba North Western Railway, so it is

..The nature of Imagineering is simplicity.....

logical that this be the major centre for locomotive servicing. The Chillingham workshops reflect several periods of extensions to meet the increasing demands of a growing railroad. The structural elements modelled included; the engine shed, an office, machine shop, power plant, small forge and turntable. These elements were complemented with details for the service, supply and storage of associated materials.

The engine shed follows a classic design. Depicting nineteenth century construction, there was inadequate strength in the building to provide an internal overhead crane. The open service tracks were therefore chosen for siting such a crane. Locos are broken down here and parts moved on shop bogies with the help of an old kerosene powered tractor. Side door access to the engine shed provided a logical siting for the machine shop. In the machine shop equipment was provided for drilling, milling, grinding, turning and welding. The machinery was oriented toward a central material flow.

The 1930's era modelled determined that this equipment be steam powered, overhead belt driven. This required an annexe to the machine shop to house the boiler, stationary steam engine and water pump. Steam power calls for water and fuel. An adjacent water tank was chosen with the needed plumbing to fill the tank then tap off to supply the boiler. Steam piping and taps from boiler to engine pump and exhaust complete this circuit.

A small forge has been located in an open shed some distance from the machine shop. Such ergonomic inefficiencies allow for attractive design while still offering a functional complement. Realism is not detracted from with this type of license. Business purposes mandate that all this work be organised. A level of management must be overlaid so the office extension is required. a good place to site the toilet block? The final building offers light repair facilities for the shop tractor or rail trucks. To justify the aesthetic siting of this shed, access to the shed was facilitated by a small industrial turntable.

Narrow Gauge code of ethics demands a more than liberal sprinkling of discarded junk. Appropriately positioned along the boundary fence, this provides a ready supply of material and spare parts to keep the shop active and the locomotives running.

In summary, we have shown "imagineering" as a useful process in deciding on design and detail elements. Imagineering should not substitute for subject research but rather complement it. Imagineering can play a useful role in selective compression and fill the gap when model design information is unavailable.

Philip Morrow

NORTH AMERICAN RAILROADS ON VIDEO

STEAM POWERED VIDEO RELEASES (PAL Format)

American Titles

General Steam (Current and Archive)

- Sacramento Steam Showcase 90 mins BK \$72.00
(Everything - exhibits, pageant, ferry runs)
- Runnin' That New River Train 58 mins HW \$72.00
(Crew fight a heavy train up grade and explain the action and problems)
- Steamfest '90 (Stereo) 120 mins M1 \$72.00
(SP & S 700, SP 4449, GW 51. Scenery, pacing, on loco mini-cams)
- The East Broad Top (Stereo) 120 mins GF \$90.00
(The ex coal hauling 3' gauge system in Pennsylvania, 1950s-70s)
- UPs Last Steam Giants and Heavy Freight (3985) (Stereo) 80 mins WB \$84.00
(1958: Big Boys, Challengers, 800s etc Indian Summer 1990: 3985 hauls freight again. Fantastic!)
- Rotary on the Rio Grande Narrow Gauge (Stereo) 70 mins GF \$78.00
(1975 & 1976 snow adventures by Cumbres & Toltec out of Chama)
- St Louis 1990 Steam Spectacular - Official Video (Stereo) 120 mins M1 \$72.00
(CottonBelt 819 UP 844 Frisco 1522 N&W 1218 + on loco mini-cams)
- Steaming to L.A. 105 mins M1 \$90.00
(SP4449 & UP8444 converge on LA and pace each other up Cajon Pass)
- Railfanning the Silverton (Stereo) 110 mins M1 \$90.00
(Superb action & scenery. A comprehensive guide)
- Articulated 3985 V 1218 60 mins M1 \$72.00
(The 2 working artics, technical comparisons & both in action)

Diesel (Current and Archive)

- Union Pacific Odyssey Vol 1 (Stereo) 115 mins GF \$96.00
(Sparkling action - 1st gen gas turbines 8444 crack city trains)
- The Rock Island Railroad (Stereo) 60 mins GF \$72.00
(Classic diesel ops 1950s-70s + Southern 4501 out of Chicago)
- A Salute to Soldier Summit 60 mins WB \$72.00
(High speed & brute climbing power; Rio Grande's Utah Division)
- Super Cabs and Steam (Stereo) 88 mins WB \$84.00
(Superb coverage of the latest Union Pacific diesels at work with steam cocktail)
- Santa Fe Odyssey Vol 2 (Stereo) 108 mins GF \$90.00
(Incredible action from Illinois, west to California over 23 days in the late 1970s)
- The Algoma Central Railway - The Tracks of the Black Bear 56 mins RI \$72.00
(Thro' beautiful scenery, complete coverage, fall colours & winter snow)
- Santa Fe's Seligman Sub & New Mexico Main (Stereo) 120 mins WB \$90.00
(Red/Silver & Yellow Warbonnets, Snowcapped peaks, Desolate Beauty)
- California Zephyr (1965) (Stereo) 70 mins GF \$78.00
(Beautiful vintage coverage from on board and lineside)
- FT103 - Revolutionizing American Railroadng 115 mins M1 \$90.00
(Complete history of EMD 1st gen diesels + restoration of FT103)
- Rails to Steel City (Stereo) 60 mins GF \$72.00
(Present day Pittsburgh area hot spots)

REVELATION AUDIO VISUALS (PAL Format)

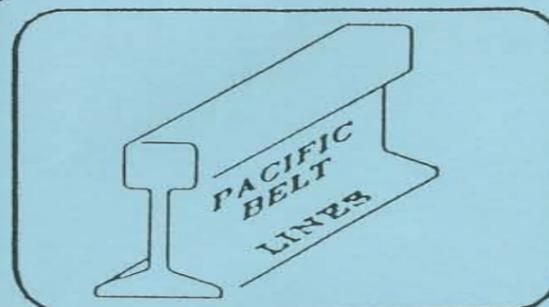
Canadian Titles

- "CANADA'S SHOWCASE" (112 Minutes) \$68.00
Step aboard for the trip of a lifetime, as "The Canadian" crosses a vast winter fantasyland. Ice-encrusted rocks pass beneath as we skirt the north shore of Lake Superior. Our ride, from late Dec 1989 and the first days of 1990, occurred weeks before the end of service via the Canadian Pacific. Great on-board views of the Kitchen at breakfast, and making up the uppers and lowers. Cab views through Rogers pass and Spiral Tunnels in deep snow. And a few views of earlier days to start things off. Railfan or not, this is a sure bet!
- "CANYON DAWN" (90 Minutes) \$68.00
Ride the cab of "The Canadian", and also a caboose through the rugged Thompson and Fraser Canyons east of North Bend, B.C. Cab ride begins in darkness, as daylight begins to increase. Long-continuous sequence! The caboose ride features an extended "race" with a CN freight across the Thompson! (Like the "Canadian", C.P. cabooses vanished Jan 15 1990 from the main).
- "BLACK DIAMOND TO GASPE" (104 Minutes) \$68.00
Experience travel on Amtrak, VIA Rail, and a Lehigh Valley private car! Chicago Union activity (with BN E-9s), ride to NY on "Broadway" - 5 and a half hours late - then "Montrealer" and "Chaleur" to Perce and Gaspé! Cliff-hugging ride along the Atlantic! Sunrises at 4.15 am. Beak-duelling gannets of Bonaventure Island. And, Perce Rock. Return trip includes "Capitol Limited" Washington Chicago. If you enjoy travel, enough said!
- "DOMINION STEAM" (60 Minutes) \$68.00
Look and listen to the twilight of mainline steam in southern Ontario, both C.P. and C.N.C.P. action centres around Guelph Jct, with several doubleheaders (2-8-2s, 4-6-2s, Hudsons etc). On the CN, 4-6-4s and 4-8-4s predominate on fast passenger and freight, plus the Fort Erie mixed. Ends with CN Consolidation #1551 in 1990, on the New W & LE.
- "TRANS-CANADA LIMITED AND STEAM EXPO" By Good Medicine (60 Minutes) \$68.00
Ride the restored "Limited" from Cranbrook to Vancouver, B.C. for a visit to the 1986 "Steam Expo"! 17 loco's pass in a Grande Parade. Ends with Last Run on the Kimberley Mine Branch, Feb 1, 1990. 3% grades and switchbacks, seen from caboose.
- "THE GREAT CANADIAN STEAM EXCURSION" By Good Medicine (60 Minutes) \$68.00
C.P. Consolidation 3716 pulls freight on B.C. RAIL, then is doubleheaded with 2860 (Royal Hudson). Then CN 6060/2860 get together, some fantastic bridge scenes! Also - BC RAIL School Train, Cab ride on CN freight in the Fraser, and vintage CP Steam in the West!

Postage - please add \$8.00 to above prices and deduct 25% for Australian \$ price.

Payment - cheque or VISA/MASTERCARD.

SOUTHERN PACIFIC VIDEOS - P O BOX 102 HUNTLY - NEW ZEALAND
Phone +64 817 89769 Fax +64 817 89830



PACIFIC BELT LINES

PO BOX 796
CLEVELAND QLD 4163
Factory & Sales: Cnr Bradman & Dulacca Sts
ACACIA RIDGE QLD 4110
Phone: (07) 2738794 BH or (07) 8245145 AH
Fax: (07) 2737246

MODEL RAILROAD HO GAUGE
MAIL ORDER SPECIALIST

Our range includes:

- * A R KITS
- * ATHEARN LOCOS & WAGONS
- * ATHEARN SPARE PARTS
- * ATLAS LOCOS & BODY KITS
- * ATLAS SPARE PARTS
- * ATLAS BUILDINGS, ACCESSORIES & TRACK
- * BACHMANN/SPECTRUM
- * CAMPBELL SCALE MODELS
- * DESIGN PRESERVATION MODELS
- * FLOQUIL PAINTS
- * HIGHLINERS BODY KITS
- * HUMBROL PAINTS
- * LABELLE LUBRICANTS
- * LGB 'G' SCALE
- * LIMA
- * MICROSCALE DECALS & SOLUTIONS
- * MODEL DIE CASTING LOCOS & WAGONS (incl 'G' scale)
- * NORTH YARD WHEELS & PARTS
- * NWSL GEARS, PARTS & TOOLS
- * PACIFIC BELT LINES REPOWER KITS
- * PACIFIC BELT LINES FLYWHEELS
- * PECO TRACK & ACCESSORIES

- * PIKESTUFF CO BUILDING KITS & PARTS
- * RAILPOWER PRODUCTS, BODIES & PARTS
- * SPECTRONICS CONTROLLERS & ELECTRONIC ACCESSORIES
- * STEWART HOBBIES, LOCOS & PARTS
- * WALTHERS PRODUCT LINES

PACIFIC BELT LINES CATALOGUE

To receive our 46 page catalogue, post paid, please send a \$2.00 cheque or \$2.00 value in stamps. You will also receive regular newsletters advising new products available and specials.

HOW TO CONTACT US

If you know what you want, mail or fax your order to us. Alternatively, if you have any questions, give us a quick phone call or write to us - we answer all enquiries.

RETAIL OUTLET

Our retail outlet is located at Acacia Ridge, Brisbane.
Hours are:
Saturday: 9 am - 4 pm
Thursday: 4 pm - 8 pm
(other times by appointment)

Proprietors:
Don & Heather Palmer

Bankcard, Visa and Mastercard facilities are available.