

The Times

July 2014

A journal of transport timetable history and analysis

From this....

.....to this

Station	Time	Time
288.1	Hmb Dammtor Hp	08:47
287.9	Sbk103	08:48
287.8	Sbk101	08:45
60		08:45
287.3		
287.3		
287.1		
286.9		
40		
286.7		

**Inside: EBUa— how DB put the WTT on a VDU
When Her Majesty kipped in the sale yards
Decisions, Decisions
The mobile staff ticket box**

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The Times

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Cover illustrations: (Top) A set of paper WTTs in a cab of a DB locomotive.
(Bottom) EbUla– the electronic WTT that replaced the books.

ROYAL TRAIN NOTICE No. 1

Instructions to Station Masters, Guards, Drivers and all others concerned.

TIME-TABLE

FOR

THE ROYAL TRAIN

FROM

SYDNEY TO ORANGE

And in place of lowing cattle, I can hear the fiendish rattle
Of the railways and the 'tramways making hurry down the line





notational matter. The display was, in all respects, a scrolling version of the old paper timetable.

Development

Official considerations for an electronic system for providing the book and other important documents to the driver go back to the year 1987. A major goal was to replace the multitude of paper timetables with an affordable, easy to update, electronic version. Among the documents that would be replaced were: duration books, speed booklets, preface to the book timetables, route lists, and diversion schedules. With the electronic “book”, it was thought that the number of paper documents required on the loco. could be reduced to about 20— and these were really only back-up copies to be used in case the electronic system fell over.

Another objective was the provision of train radio (or other systems) in order to avoid having to stop the train and telephone for instructions when disruptions occurred.

In March 1994, the project *Electronic book schedule* was decided upon by the DB Board of Management. Cost was the driving consideration. The Board believed that, with recent advances in technology, the cost could be brought down into manageable dimensions.

On 15 December 1997, the Board decided that the system should be in place by September 1999. Therefore, the locomotives and control cars began to be fitted with EBUla devices from early 1998. Field tests (*integration testing*) began on 22 February 1999 between Dresden and Decin. In these tests, the interaction of vehicles, EBUla devices and data was tested. These tests were followed by further field trials.

The launch planned for September 1999 was delayed— partly because of software problems. In early 2000 it was planned to have 97% of locomotives equipped with EBUla by November. In the initial proposal, EBUla would merely parallel the book timetable but, from March 2001, the latter was to be used only as a back-up. From 2001/2002 EBUla was to be the only method, with no back-up. These objectives were not met.

On 12 June 2001, the Board set a new target date of December 2002, first without integration of the list of speed restrictions, then with them from 15 March 2002. There was to be a training program for all drivers and Lokrangierführers. This target was met. Since December 2002 EBUla has been running on most train services. Some printed book timetables are still needed—especially in the case of technical malfunctions.

System EBUla

The system consists of an on-board device which displays the “Roadmap” to the driver and a EBUla radio server to transmit the timetable data. Our cover shows an EBUla device (no radio) in the cab of a 185 series loco.

Hardware

The hardware is mostly proprietary. The EBUla equipment is based on industry computers manufactured by Datalogic, Gercom/Deuta and Gersys, the DLog devices are the oldest, with 133MHz AMD CPUs, with an integrated BIOS from Epson. The operating system and the EBUla software were on hard disk drives of 1 to 20 GB capacity. The Gercom and Gersys devices were more advanced and had a compact flash memory card installed instead of a hard-drive. This has done much to improve the robustness of the hardware under vibration.

Software

The operating system was variously Windows 95, NT or XP. XP is currently the standard OS, but, because it is no longer supported by Microsoft, it will probably be changed. These operating systems have proven to be quite reliable because they have to meet only a limited remit in the EBUla device. Some initial problems oc-

curred during the first large-scale trial because neither the timetable data nor the device software was ready in time.

There were also problems in meeting German Federal Government regulatory requirements. For instance, regulations required that the speeds implied by the electronic timetables should be accurate in the same way required of road vehicles. This requirement was not met in the first two test runs of EBUla. Although the driver was allowed to drive *via* an EBUl schedule, there also had to be a paper version in the cab. Later, following the more widespread use of EBUla with improved software releases, the printed WTT was no longer necessary.

Unlike the classic book schedule which is read from the top pf the page, the EBUla display scrolls upward from the bottom. The unit scrolls the timetable window automatically by default. The speed of scrolling is set either by a timer which is set by the driver on departure, or a GPS device which continually calculates the distance covered by the train. The advantage of tracking control is that it does not have to be reset manually when delays occur in transit. The screen generally displays about 5 to 10 timing points at any one time. The current position of the train is indicated by a location marker in about mid-screen. You can see this on the screenshot on our cover.

Updating the timetables

Originally, timetable data was loaded into memory from a CD-ROM. In a later version, the devices were equipped with a PCMCIA slot. Drivers were given a PCMCIA card loaded with the relevant timetables from a host computer in the loco. depot. On the loco. a Windows application automatically copied the data



These trays contain part of the paper Working Timetable documentation required to implement a change for a single WTT.



from the card to the computer memory. This needed to be done only once per day. PCMCIA devices are very old hat now and, among many other enhancements made to the system is the provision of USB ports and thumb-drives instead of PCMCIA cards. Ethernet connections can also be used.

Response to malfunctions.

An electronic system always has the drawback that it may fail. For this, there are several fall-backs. If the EBU-La equipment fails before commencing the journey, and it is impossible to repair it, a new vehicle must be provided. However, it is possible to print a paper copy in the loco depot via the "intranet fall-back (EBU-La IRE)" which can be run from any PC on the DB intranet. Another alternative is to view and print the relevant timetable via the Internet. These "multiple fall-backs" enhance the reliability of the system.

If the EBU-La device fails *en route*, the train is halted. If there is no printed schedule on board the loco, one can be dictated *via* train radio from a Control Centre. If none of this can be done, the train runs with a maximum of 40 km/h, or lower speeds where necessary.

Problems with implementation

Hardware problems arose when the systems experienced their first winter - locomotives were mostly parked outside at night and were not heated. Short circuits due to condensation occurred under these conditions. In summer, temperatures in the housing rose too high for the initial 486 processors. In attempt to fix these problems, DB installed a combined heating and ventilation device. This limited temperature variations within a specified range (0-

55°). The device was normally activated well before EBU-La was switched on.

On some engines, the devices could not be integrated into the driver's desk, but had to be partly freely suspended from the roof. This, in conjunction with the running behaviour of certain post-war locomotives (e.g. 110 and 140 series) led to such strong vibrations of the monitor that the display could not be read by the driver. These vibrations also caused physical damage to the units.

The existing PCMCIA slots proved to be problematic because the contacts could be bent by frequent mating cycles. For this reason, all PCMCIA cards were exchanged and the issue was resolved.

EBU-La Radio

Since the widespread introduction of the standardised rail communication system GSM-R, EBU-La has been integrated with it – a typical in-loco installation is shown above.

After entering the train number into the EBU-La unit, the device automatically performs a setup call via the GSM-R train radio-and the GSM-R network to the EBU-La radio central server. From there, the schedule data is transmitted back to the train. Thus the necessity of updating the WTT via a plug-in device was obviated. In many ways this communications system is similar to the ICE system currently in use by ARTC in Australia and by CountryNet, in NSW. The advantage of EBU-La/GSM-R, over ICE is that the drivers always have the current timetable for the current location on display.

The development phase of EBU-La radio was completed in late 2003 and the gradual introduction of it in the field began in Au-

gust 2006. At first, the PCMCIA/USB method and the EBU-La radio method were operated in parallel, with the cards used mainly as a back-up in case of failure. The card itself could be updated *via* the radio system, so the WTT was always current. Final removal of the card system only became possible when the radio system covered all lines. According to DB, the new system cut the time to update an EBU-La unit when a new timetable was introduced from 72 to fewer than five hours. Every year, 2.5 million euro could thus be saved.

By the end of 2006, approximately 6,000 of the total of approximately 8,000 DB locomotives had been converted to radio. At the timetable change of December 2008, radio EBU-La data transmission had been fully implemented and the card slots were sealed off. Commercial versions of EBU-La still have them, however.

Extensions

In addition to displaying the "Roadmap" through the EBU-La device, there are further components.

Energy consumption indicator: DB is the largest energy consumer in Germany and, in 2002, required about 28,000 gigawatt hours (GWh) per year for traction. This corresponded to the energy needs of approximately 1.3 million households. DB surmised that this could be cut by as much as 10%. Therefore, the project "Energy Saving" (ES) was launched to reduce power consumption. For this, all locomotives / EMUs were fitted with electricity meters until 2003. Measurements and tests indicated that the targeted consumption reductions were possible. This would result in a saving of approximately €30 million per year or €83,000 per day.

In consequence later EBU-La devices were equipped with an electronic energy meter, called the TEMA-box (Traktions-Energy Measurement and interruption-A). The TEMA-box, illustrated on our page 6, determines the energy consumption of the traction unit and transmits this value to the EBU-La equipment. Thus, the driver can see how much energy he has used for traction and how much energy has been fed back by regeneration. Based on the data stored in the EBU-La equipment, the optimal power setting is determined and displayed to turn off the power by means of ESF.

Recent EBU-La evolution

From the end of 2009, EBU-La could also be used for occasional ("conditional") trips—but only in "test" mode. From the timetable change on 12 December 2010 EBU-La became mandatory for conditional services.

From the timetable change in December 2011, speed restrictions for regular routes were integrated into EBU-La. The represen-

tation of speed restrictions on different running paths were integrated at the next timetable change in December 2012 (all EU countries change their WTTs in mid-December of each year).

The use of EBUla on diverted trains was originally only by a method termed "redirection under less stringent conditions" and then only for small-scale diversions for which there was a pre-written schedule ("FPLO"). Since the 2012 timetable change "FPLO in EBUla", was extended to other railway companies as a trial. Together with the FPLO the driver will be informed of all necessary information to

cope with all forms of train diversion.

In the future the schedule data will no longer be restricted to Germany. Austria will be the next system to be integrated into the EBUla system.

Turnkey EBUla

EBUla has been fully commercialised by GerSys, one of the original developers. An extract of their sales brochure is shown below.

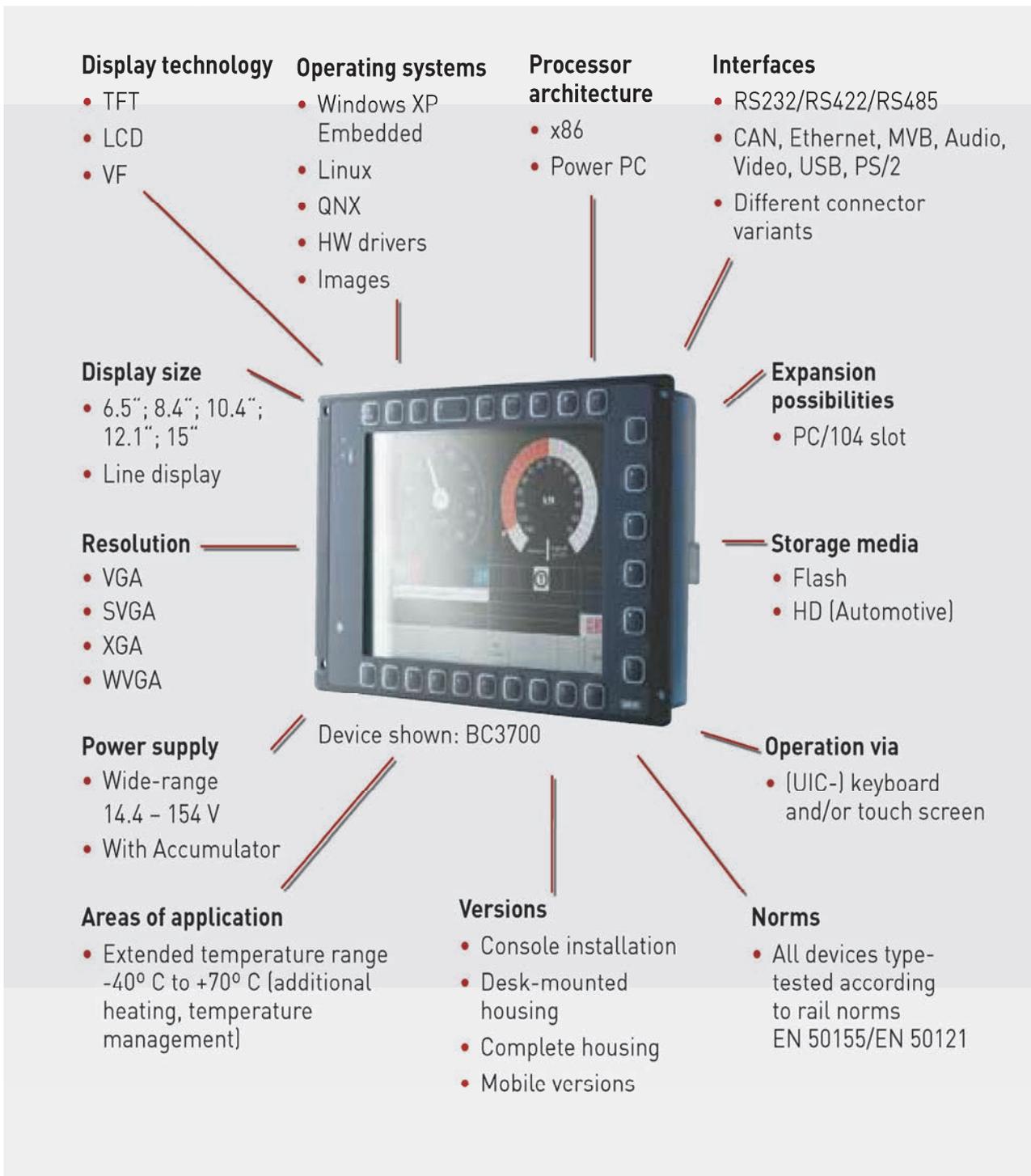
Competing solutions

In addition to EBUla, there are other sys-

tems which cover either the full functionality of EBUla or only parts of it, including:

- Ecotrainbook FASSI System
- LEADER - Locomotive Engineer Assist Display & Event Recorder
- LEA - locomotive crews Electronic Assistant
- DIS - Driver Information System
- ERTMS
- UIC 612-05 standard

There is not space to describe them here, but a description of each can be found on the Wikipedia EBUla page (<http://de.wikipedia.org/wiki/EBuLa> - in Ger-



When Her Majesty kipped in the cattle siding

By **GEOFF LAMBERT**

ROYAL TRAINS HAVE A LONG HISTORY in Australia. The first such appears to have been for the 1901 visit of Prince George, who travelled by train from Melbourne to Sydney after opening the first federal Parliament. He had previously visited in 1881 when he was 15 and, although he did not travel by train, he did manage to travel by Cobb & Co coach, taking over as driver for part of the journey. This was really roughing it, but it cannot compare with Queen Elizabeth II being shunted into a stock siding to sleep the night away on the Royal Train in 1970.

Sleeping on Royal Trains—even in Australia—was not something new. It happened at Goorambat in Victoria during the 1954 Royal Tour—much to the delight of my wife who was a school-girl there at the time. The train had arrived there from Spencer St in the evening, preparatory to a visit to Benalla the next morning. One supposes that Goorambat was chosen so that the Royals would not be disturbed by the passing parade of trains throughout the night on the main line at Benalla. Goorambat was also easier to keep secure.

The Queen spent some of the following day on the road and was picked up again by the train at Tatura, from where she travelled via Echuca, Bendigo, Castlemaine, Maryborough and Ballarat to spend another quiet night stabled away on the Ballarat Racecourse platform—on the Cattle Yards line. There is a pattern here of tucking the

Queen away in rural sidings—including rural sidings with smelly cattle yards.

This set a precedent of sorts for later visits, including the 1970 visit to NSW. On the night of 29th of April, most of the Royal Family travelled by train to Orange, stopping overnight in the stock siding at Newbridge. If this were not exciting enough, an attempt was made to derail the train near Bowenfels. This is the story of that train and its timetable.

From the days when Queen Victoria first boarded a Royal Train, an elaborate set of rules existed. In Great Britain, the Railway Clearing House coordinated the writing of a rule book common to all railways and added—almost as an afterthought—a set of special rules for Royal Trains. I found a set of these in the U.K. Public Records Office in Kew many years ago. Australian Railways—through the Commissioners' Conference—copied both sets of rules.

Thus, when the trip to Orange was first mooted, all the Traffic Manager J. L. Russell had to do was dust off his old RTNs, change the times, names and places—and he was away. Well—almost.

I bought RTN No. 1 in a recent ATA Auction. It is a 12-page Octavo-Foolscap leaflet (these were the days before metrification, you understand), now yellowing with age. The timetable itself takes up barely half of one of these pages, the rest being

devoted to the necessary meticulous instructions.

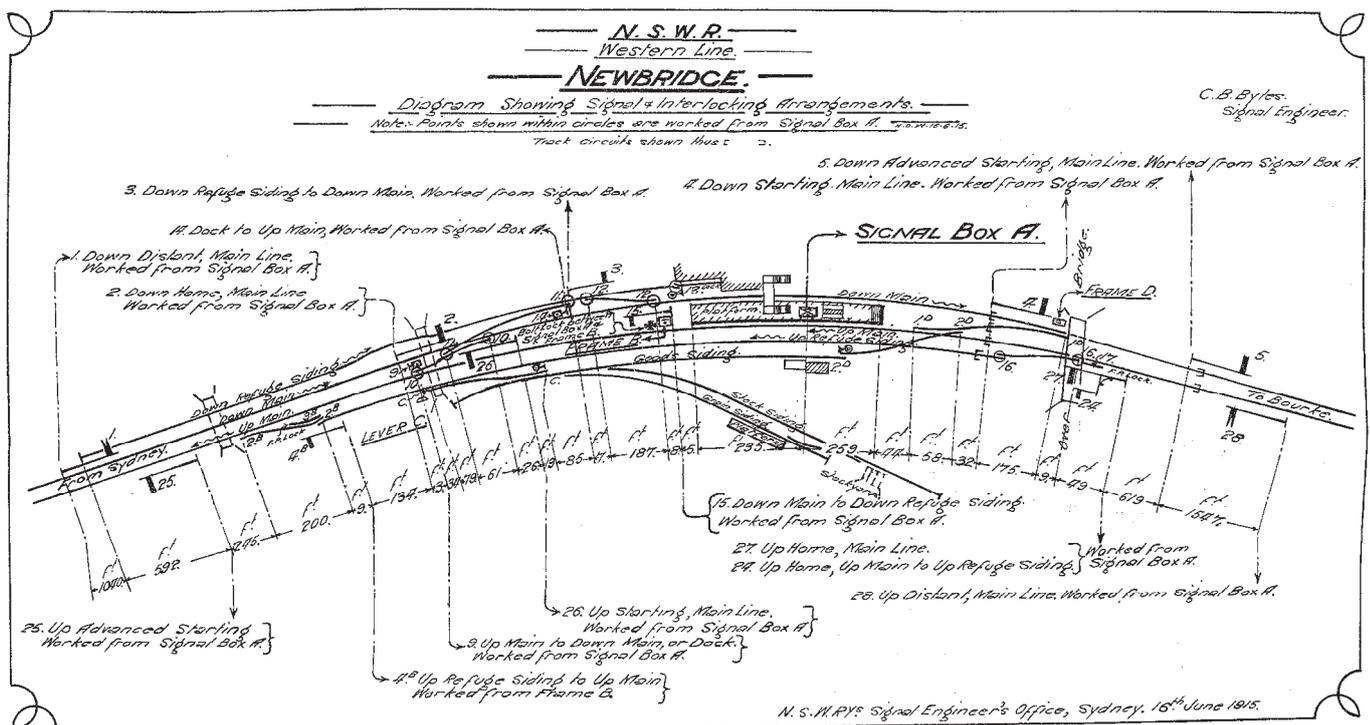
The train

The train was hauled by twin 422 class locomotives, and consisted of AAH9, SSA, NAM, LAN, RMS, and a PHN, equal to 272 tons. AAH9 (there was more than 1 car with this number) was the "Commissioner's Carriage", built in 1919. "SSA" appears to refer to the Commonwealth Railways "Special Service Car" SSA260, built as part of the Indian Pacific order in 1969. The Indian Pacific had commenced in February 1970, but whether this car had seen any use before the April 1970 Royal Tour is unknown. It was presumably the car in which the Queen slept. The other cars, including the PHN power car, need little comment.

The journey

It was a late start, following a state dinner in Sydney. Presumably, nightcaps were in order—a long tradition on Royal Trains. Departure was at 10:10 PM via the lines shown in the insert at the top of our page 9. For the 1954 Royal Tour, NSWGR produced a strip chart illustrating each set of points to be negotiated.

We don't have the actual times of passage, but the train seems to have run to time. At Bowenfels at about 1 AM, the train ran into a log placed there some time after the passage of the Pilot Train, #59 Through



TIME-TABLE FOR ROYAL TRAIN, SYDNEY TO ORANGE.

Stations	RL		Stations	RL	
	Royal Train			Royal Train	
WEDNESDAY, APRIL 29			THURSDAY, APRIL 30		
SYDNEY (Terminal) (Platform No. 1)	Arrive a.m.	Depart p.m.	NEWBRIDGE (Sdgs.)	Arrive a.m.	Depart a.m.
Strathfield		10 22	Newbridge		8 55
Lidcombe		10 27	Murrobo		9 10
Granville		10 31	Blayney		9 24
Parramatta		10 33	Polona		9 28
Westmead		S	Millthorpe		9 36
Seven Hills		10 39	Spring Hill		9 41
Blacktown		10 41	Orange East Fork		9 47
Rooty Hill		10 45	ORANGE	10 0	.. ..
St. Marys		10 50			
Penrith		10 55			
Emu Plains		10 57			
Glenbrook		11 7			
Valley Heights		11 19			
Springwood		11 22			
Faulconbridge		11 25			
Linden		11 30			
Woodford		11 34			
Hazelbrook		11 38			
Lawson		11 41			
Wentworth Falls		11 50			
Leura		11 55			
THURSDAY, APRIL 30					
		a.m.			
Katoomba		12 0			
Medlow Bath		12 7			
Blackheath		12 12			
Mt. Victoria		12 18			
Hartley Vale		12 23			
Bell		12 27			
Newnes Junction		12 32			
Lithgow		12 48			
Wallerawang		1 3			
Rydal		1 13			
Sodwalls		1 21			
Tarana		1 29			
Locksley		1 44			
Wambool		1 49			
Brewongle		1 55			
Raglan		2 0			
Kelso		2 4			
Bathurst		2 9			
George's Plains		2 21			
Tumulla		2 26			
Wimbleton		2 35			
Gresham	a.m.	2 42			
NEWBRIDGE (Sdgs.)	2 50	.. ..		
Forms		8.55 a.m.			

Mail, which was due to pass Bowenfels at about midnight. Clearly whoever placed the log on the line knew about the Pilot Train. The Royal Train pulled up undamaged within 200 yards, and was apparently not delayed for long. This event was not disclosed until 2009, when it was then described as an "assassination attempt". If it were such, it would not have been the first such attempt in NSW— an earlier attempt was made on Prince Alfred at Clontarf in 1868.

Doubtless the train ran somewhat later and perhaps more slowly after this fright. It was due to come to rest in the stock siding at

TIME-TABLE FOR RETURN OF ROYAL TRAIN, ORANGE TO SYDNEY. THURSDAY, APRIL 30.

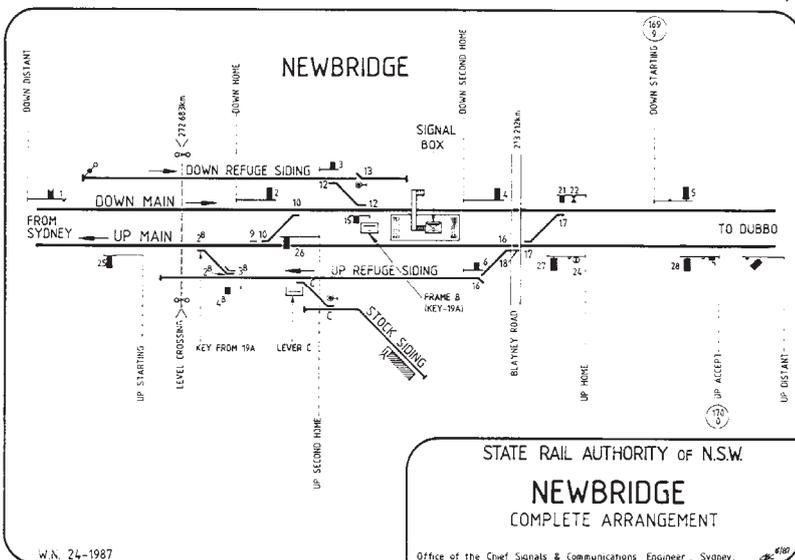
Stations	W20 Special Train
ORANGE	dep. 11 20
Orange East Fork Jctn.	" 11 22
Spring Hill	" 11 33
Millthorpe	" 11 39
Polona	" 11 44
Blayney	" 11 51
Murrobo	" 11 55
Newbridge	p.m. 12 8
Gresham	" 12 14
Wimbleton	" 12 20
Tumulla	arr. 12 28
do.	dep. 12 34
George's Plains	" 12 40
BATHURST	arr. 12 52
do.	dep. 12 57
Kelso	" 1 2
Wambool	" 1 21
Tarana	" 1 40
Rydal	" 1 59
Wallerawang	" 2 8
Lithgow	" 2 23
Mt. Victoria	" 2 49
Katoomba	" 3 4
Lawson	" 3 18
Valley Heights	" 3 37
Penrith	" 4 4
St. Marys	" 4 17 ^{1/2}
Blacktown	" S
Parramatta	" 4 20
Granville	" M
Lidcombe	" 4 30
Strathfield	" 4 35
SYDNEY (Terminal) (Platform No. 1)	arr. 4 53

¹ No. 220 follows from Bowenfels.
Load from rear:—AAH9, SSA, NAM, LAN, RMS, PHN—equal to 271 tons worked by two (2) 422 class diesel-electric locomotives.

The Royal Train will stop only where indicated in heavy type, figures shown in light type indicate passing times only.

Newbridge at 2:50 AM and to stay for just over 6 hours. The Duke of Edinburgh was renowned for climbing down out of Royal Trains and gas-bagging with signalmen but somehow I doubt it happened on this night.

RL was due away from here at 8:55 AM after what was unquestionably a breakfast of porridge (the Queen will eat nothing else— Prince Phillip once complained "Lizbeth would eat it three times a day if she could." Arrival at Orange was due at 10 AM. The train returned empty from Orange at 11:20 AM, The Queen left Orange by other, now unrecorded, means.



Pilot Train Arrangements.

Sydney to Penrith	No. 189, 9.48 p.m. inter-urban electric train due to arrive Penrith (Plat. 1) at 10.36 p.m. This train must not be delayed en route.
Penrith to Lithgow	No. 49 Mail (leaving Sydney at 9.25 p.m.), departing Penrith at 10.16 p.m. and arriving Lithgow (Up platform) at 12.8 a.m.
Lithgow to Newbridge	No. 59 Mail (leaving Sydney at 8.45 p.m.), departing Lithgow at 11.39 p.m. and depart Newbridge at 2.17 a.m.
Newbridge to Orange	No. 65a Special Goods (limited Bogie load), 6.50 a.m. from Bathurst, departing Newbridge at 8.3 a.m. and arriving Orange at 9.4 a.m.

SPECIAL INSTRUCTIONS FOR RUNNING OF ROYAL TRAIN.

R.L. Royal Train will travel on the Down main line from Sydney to Westmead, thence on the Down suburban line to Blacktown and Down main line to Gresham excepting that R.L. Royal Train will run via the Up main line platform road at Bathurst. R.L. Royal Train will cross from the Down main line to the Up main line at Gresham and continue on that line to Newbridge, where train will proceed to the stock siding—see instructions shown herein.

On Thursday morning, 30th April, the R.L. Royal Train will propel from the stock siding to the Up main line at Newbridge, cross to the Down main line and proceed on that line to Orange—see also instructions shown herein.

SPECIAL WORKING FOR THE PASSAGE OF THE ROYAL TRAIN ON THE UP LINE BETWEEN GRESHAM AND NEWBRIDGE STOCK SIDING.

RL will travel on the Up line between Gresham and Newbridge and the following Special Working will apply:-

The guard and driver working RL must have in their possession when departing from Sydney, a copy of this circular covering the movement of the train in the wrong running direction between Gresham and Newbridge. Possession of the circular by the crew of RL will be authority for them to permit the train to travel on the Up Main line between Gresham and Newbridge.

The crew of RL is assured that every precaution has been taken to prevent an opposing movement on the up line between Gresham and Newbridge during the time RL will be passing over the section.

No train will be permitted to depart from Blayney, to travel towards Newbridge between the hours of 2.0 am. and 10.0 a.m. (except No. 86 two-car diesel departing: Orange at 7.10 am., passing Newbridge at 8.3 a.m.) the period of time that RL will be travelling on the Up Main line in the wrong running direction between Gresham and Newbridge and moving into and standing in the Stock Siding at Newbridge and from the Stock Siding to the Down Main line for departure and arrival at Orange.

The Block instruments at Newbridge and Gresham will be maintained in the "Train on Line" position for the Up line during the time RL occupies the section travelling in the wrong direction.

Before the departure of RL from Wimbledon, a Senior Traffic Officer at Gresham will satisfy himself that there is no train on the up line between Blayney and Gresham and that no train will be permitted to depart from Blayney until permission is give after 10.0 am.

When the Senior Officer is satisfied that there is no Up train approaching from Blayney, he will personally supervise the correct setting of No. 10 points at Gresham to lay from the Down main line to the Up main line, ensure that these points are secure with point clip for the passage of RL, and inform the officer in charge at Wimbledon. Upon receipt of this advice, the officer at Wimbledon will authorise RL to depart that station for Gresham by delivering the electric train staff to the driver and clearing the signals in the normal manner. The Senior Officer at Gresham will exhibit a green hand signal to the driver of RL to indicate that No. 10 points at correctly set and also to give authority for the driver to pass No. 3 down home signal in the "stop" position.

When RL is passing the signal box at Gresham, the station officer will exhibit a green hand signal to the driver and guard to indicate that there is no opposing movement on the up main line and to authorise the driver to proceed to Newbridge travelling in the wrong running direction on the up line, also to indicate that No. 1 points Blayney end, that lead from the up to down line are in the normal position.

At Newbridge an officer will exhibit a green hand signal 700 yards on the Sydney side of 2B points, up main line to up refuge siding, to indicate to the driver of RL that his train is approaching 2B points leading from the up main line to the up refuge and stock siding.

A Senior Officer, located at Newbridge, will be responsible for ensuring that No. 2B points, up main line to up refuge siding, C points leading from the up refuge siding to the goods siding, the set of throw over points leading from goods siding the Grain Siding and set of throw over points from the goods siding to the stock siding, the ball lever points leading from the stock siding to grain siding are correctly set and properly secured with point clip and SL lock for the passage of RL to the stock siding and its return to the Up main line via No. 9 points Up main to Down main line for departure to Orange. The stock siding from the dead end to the clearance point with the goods sidings is 732 feet only, the over all length of RL including the two engines is 583 feet.

RL is tabled at Newbridge from 2.50 a.m. to 8.55 am., during this time it will remain in the stock siding. A hand "stop" signal is to be exhibited in advance of Up dead end of the stock siding as a warning to the driver of the approach to the dead end. Particular care is to be taken to ensure that all points, for the movements in an out of the stock siding, are properly set and correctly locked.

The Special Instructions

As usual, many pages of the RTN were devoted to the Special Instructions— things such as the:

- Running of a Pilot Train;
- Staffing of all level crossings;
- Closure of level crossings between the Pilot Train and RL;
- Standby preparedness of breakdown trains;
- Standby Pilot Engines;
- Clipping of points. These were exhaustively enumerated in the RTN— 84 of them;
- Halting of trains running in the opposite direction;
- Refuging of trains running in the same direction;
- Supplementing of all safeworking with telephone or telegraph control and;
- Provision of standby signalmen.

Page 11 of the RTN, however, was devoted to the Extra-Special Instructions required to get the train in and out of the Newbridge Stock Siding.

A geographically accurate diagram of Newbridge in 1915 appears on our page 7 and a more recent post-tour diagrammatic one at the bottom of page 8. From these, it will be seen that the Stock Siding was a trailing connection off the Up line. How to get the Royal train into this without a lot of backing and filling? Easy— run it wrong line from Gresham, so that it could glide quietly and slowly into the siding.

At the time, the Western Line beyond Lithgow was a hodgepodge of double and single track worked variously by Automatic Signalling, Track Block, Standard Block, Tyers 1-wire Block, and Electric Staff. Gresham-Newbridge-Murrobo was a 20 km section of double track embedded between two single-tracked lengths of line. Probably it was this (and the diverging Cattle Siding) that led to the choice of Newbridge to stable RL. Gresham-Newbridge was worked with Tyers 1-wire block and Newbridge-Murrobo was an Automatic Signalling section. Newbridge was normally open continuously save for three short breaks on Sundays.

The instructions assert "*The crew of RL is assured that every precaution has been taken to prevent an opposing movement on the up line between Gresham and Newbridge during the time RL will be passing over the section.*". They then spend a page (our page 9) specifying how this assurance is to be met,

Apart from No. 86 Up Diesel Train, the Up line was closed to ordinary traffic for 8

hours. On a normal Thursday morning between 2 AM and 10 AM, the most recent (1968) WTT allowed for 11 Up goods and stock trains, but these were all Conditionals, so they simply did not run at all.

On the Down line, 15 trains were scheduled to pass Newbridge between these hours; 11 of them were Conditional (including 2 Relief *Mails*), leaving 4 "real" trains to be juggled around RL.

- No 49 *Forbes Mail* (due Newbridge 0333) was held back for 49 minutes at Lithgow, to allow RL to run past.
- No 59 *Through Mail* (due Newbridge 0217) ran as usual, but became the Pilot Train from Lithgow to Newbridge.
- The WTT shows No 99 Goods to be due through Newbridge at 0358, but the RTN makes no reference to this train. It may have been taken out of the WTT before 1970— or it simply have run as normal.
- No 65A Goods (due Newbridge 0220-0252, where it ordinarily worked the sidings) was delayed to be at Newbridge from 0800 to 0803, where it "crossed" No. 86 Diesel train. It then became the Pilot Train. This would be the sort of thing the Duke might take an interest in, but he was probably eating breakfast (NOT porridge I imagine).

ADJUSTMENTS TO DOWN COUNTRY TRAINS.

No. 49 Mail will arrive Lithgow at 12.8 a.m., stand on the Up platform road and depart at 1.5 a.m. running 49 minutes later throughout.

No. 189 Pass., 9.48 p.m. from Sydney to Mt. Victoria will run as tabled to Penrith arrive 10.36 p.m. (stand in No. 1 platform) depart at 11.10 p.m. and run 34 minutes later to Mt. Victoria.

No. 63 Mudgee Mail (10.15 p.m. from Sydney) will start at 10.20 p.m., Main line, Strathfield 10.31/10.32, Lidcombe pass 10.38, Granville pass 10.43 p.m., Parramatta 10.47/10.49 p.m., Suburban line at Westmead, Blacktown pass 10.58 p.m., Penrith 11.16/11.17 p.m., Glenbrook 11.30 p.m., Blaxland 11.36 p.m., Valley Heights pass 11.44 p.m., Springwood 11.49 p.m., Lawson 12.10 a.m., Katoomba 12.27/12.29 a.m., Blackheath "a", Mt. Victoria 12.48 a.m., Bell pass 12.59 a.m., Newnes Junction pass 1.4 a.m., Lithgow 1.19/1.29 a.m., thence 10 minutes later than tabled to Mudgee arrive 5.44 a.m.

Special goods train (No. 65a), conveying a limited bogie load will depart Bathurst at 6.50 a.m. on **Thursday, 30th April**, Georges Plains 7.9 a.m., Tumulla 7.18 a.m., Wimbledon 7.34 a.m., Gresham 7.40/7.50 a.m., Newbridge arrive 8.0 a.m., depart 8.3 a.m. (after the arrival of No. 86 passenger), Murrobo 8.20 a.m., Blayney 8.24, Polona 8.34 a.m., Millthorpe 8.42 a.m., Spring Hill 8.50 a.m., Orange arrive 9.4 a.m. No. 65a will be the Pilot Train from Newbridge to Orange.

The Royal Pay Bus

On April 11th, during the 1970 Royal Tour, Queen Elizabeth also travelled on the Royal Pay Bus—FPH7 (left) from Coffs Harbour Jetty to the station after disembarking from the Royal Yacht *Britannia*. All of the usual precautions—as detailed in the Newbridge article—were taken. She then went to Hannaford's banana plantation to gawp at a luvly bunch (right). Hannafords had a Banana Platform, but the Queen did not travel on the pay-bus to get to it.



Decisions, Decisions (Platform 1 or Platform 3?)

GEOFF MANN

I SOMETIMES CATCH AN AFTERNOON train from Malvern to the city, not long after 3:30pm.

Should I decide on catching the 3:49 pm train, I have a choice. Yes, there are two trains at 3:49, one (from Frankston) leaving from Platform 1, the other (from Cranbourne) leaving from Platform 3. Fortunately, the indicator on the overline course will (or should) show which one is

first to depart if either or both are not on time. Passengers at Armadale, Toorak and Hawkesburn are faced with similar dilemmas.

Are there any other examples in Australia of two trains timetabled in parallel?

An almost similar situation arises early in the day with stopping train departures from Caulfield only a minute apart (6:02 &

6:03am; 6:22 & 6:23am). However, one train of each "pair" enters the city via the Loop, the other direct to Flinders St.

In the "Down" direction, there are stopping departures from Flinders Street at 5:38am and 5:39, also at 5:58am and 5:59am.

I have used the 12 hour clock to emulate the Metro timetable.

		Monday to Friday																
Wheelchair Accessible Services		Ⓐ	Ⓐ	Ⓐ	Ⓐ	Ⓐ	Ⓐ	Ⓐ	Ⓐ	Ⓐ	Ⓐ	Ⓐ	Ⓐ	Ⓐ	Ⓐ	Ⓐ	Ⓐ	
Morning (am) / Afternoon (pm)		pm	pm	pm	pm	pm	pm	pm	pm	pm	pm	pm	pm	pm	pm	pm	pm	
Cranbourne Station (Cranbourne)		-	-	-	3:05	-	-	-	-	3:29	-	-	-	3:49	-	-	4:09	
Merinda Park Station (Cranbourne North)		-	-	-	3:08	-	-	-	-	3:32	-	-	-	3:52	-	-	4:12	
Lynbrook Station (Lynbrook)		-	-	-	3:11	-	-	-	-	3:35	-	-	-	3:55	-	-	4:15	
Dandenong Station (Dandenong)	ARR	-	-	-	3:19	-	-	-	-	3:42	-	-	-	4:02	-	-	4:22	
Dandenong Station (Dandenong)	DEP	-	3:04	-	3:19	-	-	3:34	-	3:46	-	3:56	-	4:06	-	4:16	4:26	
Yarraman Station (Noble Park)		-	3:07	-	3:22	-	-	3:37	-	3:49	-	3:59	-	4:09	-	4:19	4:29	
Noble Park Station (Noble Park)		-	3:09	-	3:24	-	-	3:39	-	3:51	-	4:01	-	4:11	-	4:21	4:31	
Sandown Park Station (Springvale)		-	3:11	-	3:26	-	-	3:41	-	3:53	-	4:03	-	4:13	-	4:23	4:33	
Springvale Station (Springvale)		-	3:13	-	3:28	-	-	3:43	-	3:55	-	4:05	-	4:15	-	4:25	4:35	
Westall Station (Clayton South)		-	3:15	-	3:30	-	-	3:45	-	3:57	-	4:07	-	4:17	-	4:27	4:37	
Clayton Station (Clayton)		-	3:18	-	3:33	-	-	3:48	-	4:00	-	4:10	-	4:20	-	4:30	4:40	
Huntingdale Station (Oakleigh)		-	3:21	-	3:36	-	-	3:51	-	4:03	-	4:13	-	4:23	-	4:33	4:43	
Oakleigh Station (Oakleigh)	ARR	-	3:23	-	3:38	-	-	3:53	-	4:05	-	4:15	-	4:25	-	4:35	4:45	
Oakleigh Station (Oakleigh)	DEP	-	3:23	-	3:38	-	-	3:53	-	4:05	-	4:15	-	4:25	-	4:35	4:45	
Hughesdale Station (Hughesdale)		-	3:25	-	3:40	-	-	3:55	-	4:07	-	4:17	-	4:27	-	4:37	4:47	
Murrumbeena Station (Murrumbeena)		-	3:27	-	3:42	-	-	3:57	-	4:09	-	4:19	-	4:29	-	4:39	4:49	
Carnegie Station (Carnegie)		-	3:29	-	3:44	-	-	3:59	-	4:11	-	4:21	-	4:31	-	4:41	4:51	
Caulfield Station (Caulfield East)		3:27	3:32	3:37	3:47	3:47	3:57	4:02	4:07	4:14	4:17	4:24	4:27	4:34	4:37	4:44	4:47	4:54
Malvern Station (Malvern)		3:29	3:34	3:39	3:49	3:49	3:59	4:04	4:09	4:16	4:19	4:26	4:29	4:36	4:39	4:46	4:49	4:56
Armadale Station (Armadale)		3:31		3:41	3:51	3:51	4:01		4:11	4:18	4:21		4:31		4:41		4:51	
Toorak Station (Armadale)		3:33		3:43	3:53	3:53	4:03		4:13	4:20	4:23		4:33		4:43		4:53	
Hawkesburn Station (South Yarra)		3:35		3:45	3:55	3:55	4:05		4:15	4:22	4:25		4:35		4:45		4:55	
South Yarra Station (South Yarra)		3:37	3:39	3:47	3:57	3:57	4:07	4:09	4:17	4:24	4:27	4:32	4:37	4:42	4:47	4:51	4:57	5:01
Richmond Station (Richmond)		3:40	3:42	3:50	4:00	4:00	4:10	4:12	4:20	4:27	4:30	4:35	4:40	4:45	4:50	4:54	5:00	5:04
Flinders Street Station (Melbourne City)	ARR	3:44	3:46	3:54	4:04	4:04	4:14	4:18	4:24	4:31	4:34	4:39	4:45	4:49	4:55	4:58	5:05	5:08
Flinders Street Station (Melbourne City)	DEP	3:51	3:52	-	4:07	4:09	-	4:20	4:29	4:35	4:37	4:42	-	4:54	-	5:00	5:14	-
Southern Cross Station (Melbourne City)		3:53	3:55	-	4:10	4:11	-	4:23	4:31	4:38	4:39	4:45	-	4:57	-	5:03	5:16	-
Flagstaff Station (Melbourne City)		-	3:57	-	4:12	-	-	4:25	-	4:40	-	4:48	-	5:00	-	5:06	-	-
Melbourne Central Station (Melbourne City)		-	3:59	-	4:14	-	-	4:27	-	4:42	-	4:50	-	5:02	-	5:08	-	-
Parliament Station (Melbourne City)		-	4:00	-	4:15	-	-	4:28	-	4:43	-	4:52	-	5:04	-	5:10	-	-

		Monday to Friday																
Wheelchair Accessible Services		Ⓐ	Ⓐ	Ⓐ	Ⓐ	Ⓐ	Ⓐ	Ⓐ	Ⓐ	Ⓐ	Ⓐ	Ⓐ	Ⓐ	Ⓐ	Ⓐ	Ⓐ	Ⓐ	
Morning (am) / Afternoon (pm)		am	am	am	am	am	am	am	am	am	am	am	am	am	am	am	am	
Cranbourne Station (Cranbourne)		4:26	-	-	4:46	-	-	5:06	-	-	-	5:26	-	-	-	5:46	-	
Merinda Park Station (Cranbourne North)		4:29	-	-	4:49	-	-	5:09	-	-	-	5:29	-	-	-	5:49	-	
Lynbrook Station (Lynbrook)		4:32	-	-	4:52	-	-	5:12	-	-	-	5:32	-	-	-	5:52	-	
Dandenong Station (Dandenong)	ARR	4:39	-	-	4:59	-	-	5:19	-	-	-	5:39	-	-	-	5:59	-	
Dandenong Station (Dandenong)	DEP	-	-	4:41	-	-	5:01	-	-	5:21	5:32	-	-	5:42	5:52	-	6:02	
Yarraman Station (Noble Park)		-	-	4:44	-	-	5:04	-	-	5:24	5:35	-	-	5:45	5:55	-	6:05	
Noble Park Station (Noble Park)		-	-	4:46	-	-	5:06	-	-	5:26	5:37	-	-	5:47	5:57	-	6:07	
Sandown Park Station (Springvale)		-	-	4:48	-	-	5:08	-	-	5:28	5:39	-	-	5:49	5:59	-	6:09	
Springvale Station (Springvale)		-	-	4:50	-	-	5:10	-	-	5:30	5:41	-	-	5:51	6:01	-	6:11	
Westall Station (Clayton South)		-	-	4:52	-	-	5:12	-	-	5:32	5:43	-	-	5:53	6:03	-	6:13	
Clayton Station (Clayton)		-	-	4:55	-	-	5:15	-	-	5:35	5:46	-	-	5:56	6:06	-	6:16	
Huntingdale Station (Oakleigh)		-	-	4:58	-	-	5:18	-	-	5:38	5:49	-	-	5:59	6:09	-	6:19	
Oakleigh Station (Oakleigh)	ARR	-	-	5:00	-	-	5:20	-	-	5:40	5:51	-	-	6:01	6:11	-	6:21	
Oakleigh Station (Oakleigh)	DEP	-	-	5:00	-	-	5:20	-	-	5:40	5:51	-	-	6:01	6:11	-	6:21	
Hughesdale Station (Hughesdale)		-	-	5:02	-	-	5:22	-	-	5:42	5:53	-	-	6:03	6:13	-	6:23	
Murrumbeena Station (Murrumbeena)		-	-	5:03	-	-	5:23	-	-	5:43	5:55	-	-	6:05	6:15	-	6:25	
Carnegie Station (Carnegie)		-	-	5:05	-	-	5:25	-	-	5:45	5:57	-	-	6:07	6:17	-	6:27	
Caulfield Station (Caulfield East)		-	5:01	5:08	-	5:21	5:28	-	5:41	5:48	6:00	-	6:01	6:10	6:20	-	6:21	6:30
Malvern Station (Malvern)		-	5:03	5:10	-	5:23	5:30	-	5:43	5:50	6:02	-	6:03	6:12	6:22	-	6:23	6:32
Armadale Station (Armadale)		-	5:05	5:12	-	5:25	5:32	-	5:45	5:52	6:04	-	6:05	6:14	6:24	-	6:25	6:34
Toorak Station (Armadale)		-	5:07	5:14	-	5:27	5:34	-	5:47	5:54	6:06	-	6:07	6:16	6:26	-	6:27	6:36
Hawkesburn Station (South Yarra)		-	5:09	5:16	-	5:29	5:36	-	5:49	5:56	6:08	-	6:09	6:18	6:28	-	6:29	6:38
South Yarra Station (South Yarra)		-	5:11	5:18	-	5:31	5:38	-	5:51	5:58	6:10	-	6:11	6:20	6:30	-	6:31	6:40
Richmond Station (Richmond)		-	5:14	5:20	-	5:34	5:40	-	5:54	6:00	6:13	-	6:14	6:23	6:33	-	6:34	6:43
Parliament Station (Melbourne City)		-	-	5:23	-	-	5:43	-	-	6:03	6:16	-	-	6:26	6:36	-	-	6:46
Melbourne Central Station (Melbourne City)		-	-	5:25	-	-	5:45	-	-	6:05	6:18	-	-	6:28	6:38	-	-	6:48
Flagstaff Station (Melbourne City)		-	-	5:26	-	-	5:46	-	-	6:06	6:19	-	-	6:29	6:39	-	-	6:49
Southern Cross Station (Melbourne City)		-	-	5:28	-	-	5:48	-	-	6:08	6:21	-	-	6:31	6:41	-	-	6:51
Flinders Street Station (Melbourne City)	ARR	-	5:18	5:32	-	5:38	5:52	-	5:58	6:12	6:25	-	6:18	6:35	6:45	-	6:38	6:55
Flinders Street Station (Melbourne City)	DEP	-	5:21	-	-	5:43	-	-	6:04	-	-	-	-	-	-	-	-	-
Southern Cross Station (Melbourne City)		-	5:23	-	-	5:45	-	-	6:06	-	-	-	-	-	-	-	-	-

Odd Spot – the movable staff ticket box

JIM WELLS

PUFFING BILLY'S (Emerald Tourist Railway, Victoria) current Pink Timetable is shown below right.

Our interest is the 1.15 pm departure from Belgrave and the 1.23pm arrival at that station.

How could this be, you say? It looks like the time tablers have scheduled a cornfield meet at the famous trestle bridge.

The answer is that there's a new crossing loop to enable these trains to cross. It is located within Belgrave yard limits. You can't see it from the platform as it's around the sharp right hand curve opposite the engine shed and beyond the Old Monbulk Rd level crossing.

So the 1.15 pm leaves the platform as scheduled with a shunting signal authorising the movement and goes into the loop to await the arrival of the 12.30pm ex Lakeside.

Puffing Billy uses the staff and ticket system of single line safe working so presumably the 1.15 train waits for the signalman at Belgrave to receive the staff from the Up train, write a ticket (needed as there's a following 2.30 pm service) and walk down to the end of the loop with both the staff and the ticket. The driver must sight the staff when

accepting the ticket.

But no, Puff is smarter than this. The signalman rides the 1.15 pm train carrying the ticket box with him. He takes the staff from the driver of the Up train on the fly and then inserts it into the box, writes the ticket, and deals with the driver of the down train which then departs. The signalman walks

back to the office with the staff and the ticket box.

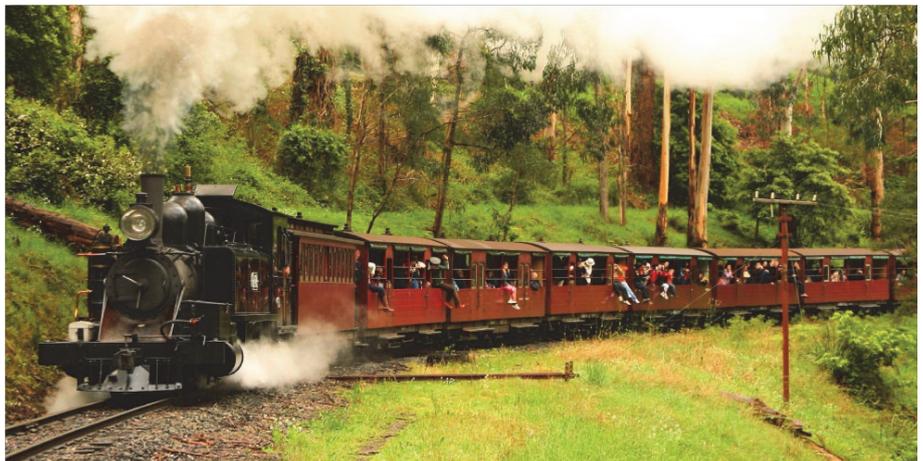
Normally ticket boxes are a bolted down fixture in station offices or signal boxes. Safe working arrangements on colonial railways in the 1900's were governed by the Board of Trade [not in Australia– Ed]. Would they have approved of the movable ticket box?

FROM BELGRAVE

Belgrave dep:	10.30	11.10	12.30*	1.15	2.30
Menzies Crk arr:	10.53	11.33	12.59	1.47	2.53
Menzies Crk dep:	11.05	11.38	1.05	1.55	3.05
Emerald dep:	11.20	11.53	1.20	2.10	3.20
Lakeside arr:	11.30 ^c	12.08	1.40	2.20	3.30
Lakeside dep:	....	12.20	....	....	....
Cockatoo dep:	....	12.35	....	....	....
Gembrook arr:	....	1.00	....	....	....

FROM GEMBROOK

Gembrook dep:	....	....	2.45	....	....
Cockatoo dep:	....	....	3.05	....	....
Lakeside arr:	....	....	3.20	....	....
Lakeside dep:	12.30	2.30*	3.40	4.15	4.50
Emerald dep:	12.45	2.45	3.55	4.25	5.00
Menzies Crk arr:	12.57	3.02	4.07	4.37	5.12
Menzies Crk dep:	1.03	3.05	4.08	4.38	5.13
Belgrave arr:	1.23	3.25	4.32	5.05	5.40



Getting There—eventually

Oh! ye'll take the high road and I'll take the low road

Jim Wells

NOT EVERYONE NEEDS THE RUSH of a high speed train to get to where they want to go.

Tourists and first time travellers often prefer to take the slow option – more travel time for the \$ spent, greater opportunity to see things on the way, no need for reservations, trains often less crowded etc. For rail fans there's the opportunity to appreciate the atmosphere of stations en route and watch the trains go by.

It's equivalent in driving to using back roads or the old road rather than the free-way. One negative is that luggage handling can be tiresome.

It's been suggested that at the height of the interurban boom in the United States, it was possible to go from Chicago to New York by rail avoiding the main railroads.

A good source for this is *Interurban Railways in America* by Hilton and Due, an extract of which appears below. This makes it clear that it wasn't possible—but you could get close.

The April 2014 edition of *Trains* magazine has an interesting diagram which suggests that it's possible to go almost the whole way (735 km) from Washington to Boston on 'commuter' trains rather than Amtrak's high speed services.

What are we waiting for? – let's go!

First of all, the distance is too great to contemplate doing it all in one day and why would we want to anyway? The logical place to spend the night is New York, but far less expensive options exist, e.g. Newark, NJ.

But for convenience we'll make the split at New York. Train service on commuter services at weekends is often poor so we'll do this trip on week days.

For the southern leg we'll be using:

- MARC – Maryland Area Regional Commuter
- SEPTA - South-eastern Pennsylvania Transportation Authority
- NJT – New Jersey Transit
- and maybe
- PATCO – Port Authority Transit Corporation

Any process is only as strong as its weakest link and maps reveal that for the southern leg there's no commuter service between Perryville, Md. and Newark (Davis), Del., a distance of about 45 km.

So is there a bus service between these two? – no. Does Amtrak stop at both? – Perryville no, Newark yes but only twice a day. A further factor is that MARC's service to Perryville is poor; there's only one daytime service arriving at 2.13 pm.

So the main alternative is Amtrak from Baltimore, Md. to Wilmington, Del. - \$33 for a 39 minute 101km ride. Services are quite frequent but a reservation is necessary. You don't get a reserved seat; just the right to travel. Speeds will be high – over 200km/h even on an Amfleet loco hauled service.

GoTo Bus advertises 90 minute trips for \$12 but we would need to check the convenience of the stops.

Getting to Baltimore from Washington on MARC is no problem – roughly hourly services, 59 minute trip for the 65 km –

fare \$7. Train will probably be bi-level (double deck) cars with a diesel locomotive. (timetable top of page 14)

From Wilmington on it's straight sailing provided we get there reasonably early as SEPTA only runs midday around every two hours to Philadelphia (30th St. station) – trip time 48 minutes, 50 km \$6.50. The train will be an emu.

Philadelphia is well worth spending time in. Even if time is limited the station's waiting room and exterior are must-sees. (Wiki images, page 16). The Liberty Bell is a major tourist attraction .

Incidentally the route that SEPTA takes through Philadelphia is not the same as Amtrak's. SEPTA uses the East West high level tracks at 30th St.

Our next transfer point is Trenton, N.J. Perhaps we are sick of SEPTA; it's of interest that NJT advertises services from Philadelphia 30th St. station. This is primarily for the Atlantic City line but their North East Corridor timetable shows connections from Philadelphia to Trenton with their own services to New York. See page 14, lower right.

Be warned – not all SEPTA services are shown and obviously the intermediate stops are not shown. SEPTA shows connections via NJT to New York. So our SEPTA journey takes about 50 minutes for the 52 km – fare \$6.50. The train will be an emu.

But wait, there's an alternative; an interesting one at that. Philadelphia is on the west bank of the Delaware river. The North East corridor route follows this bank of the river to Trenton, N.J. crossing it about 2km from the Trenton Transit Centre (TC). Running from the Trenton TC is the River Line all the way down the other side of the river to Camden, N.J. Where's that, you ask. Well it's right opposite Philadelphia.

The good news is that Broadway station on the River Line has an interchange with PATCO's line from Philadelphia to Lindenwold, NJ.

So to make this work we have to get to a PATCO station in Philadelphia from the 30th St station. The answer is to ride SEPTA to 8th and Market East station which is a short walk from PATCO's 8th and Market St. station. Indeed our train from Wilmington can take us directly to Market East if we want to skip 30th St.

PATCO's services are frequent; the ride to Broadway will take 8 minutes and the fare is a give away \$1.40. It will be underground in Philadelphia and in Camden; the crossing of the Delaware river is by way of the magnificent Benjamin Franklin suspension bridge. Broadway station is otherwise known as the Walter Rand Transit Centre.

The longest continuous trip one could take by interurban was, naturally, in the Northeast and Middle West. Between 1910 and 1922 it was possible to travel by interurban from Elkhart Lake, Wisconsin, on the Wisconsin Power and Light Company, to Oneonta, New York, on the Southern New York Railway, a distance of about 1,087 miles. There is no recorded instance of anyone's taking such a trip, but in 1910, as a demonstration of the growth of the interurban, 22 businessmen of Utica, New York, chartered car 502 of the New York Central Railroad's Oneida Railway for a round trip on interurban track to Louisville, Kentucky. Traveling by day and spending nights in hotels, the passengers were royally entertained by interurban executives en route. Although long trips were taken by individual enthusiasts, this was probably the most extensive organized trip ever taken entirely by interurban. The fact that the trip was made in a piece of equipment owned by one of the railroads most hostile to the interurbans is not without irony.

It was never possible to travel by interurban from Chicago to New York; gaps between Little Falls and Fonda and between Hudson and Tarrytown, both in New York, were never filled.

PENN LINE NORTHBOUND Monday through Friday Only

TRAIN NUMBER		554	400	502	404	406	408	610	612	412	414
			S		S			S	S		S
		AM	AM	AM	AM	AM	AM	AM	AM	AM	AM
Washington	DP		5:50	6:15	6:35	7:10	7:20	7:50	8:20	9:05	9:30
New Carrollton	DP		6:01	6:26	6:46	7:21		8:01	8:31	9:16	9:41
Seabrook	DP		6:06	6:30		7:25		8:06	8:34	9:20	9:45
Bowie State	DP		6:12	6:35		7:31		8:12	8:40	9:26	9:51
Odenton	DP		6:19	6:42	7:00	7:38		8:21	8:47	9:33	9:57
BWI Marshall Airport	DP		6:27	6:50	7:07	7:46		8:29	8:56	9:41	10:05
Halethorpe	DP					7:51		8:34	9:00	9:46	10:10
West Baltimore	DP							8:41	9:06	9:52	10:16
Baltimore/Penn	DP	5:40	6:45	7:07	7:26	8:10	7:57	8:54	9:15	10:03	10:29
Martin Airport	DP			L7:17				T9:19	d9:40		
Edgewood	DP	5:58		L7:35							
Aberdeen	DP	6:06		L7:44							
Perryville	AR	6:15		7:54							

The River Line is run by NJT with half hourly services taking 59 minutes to the Trenton TC which, for the distance, is not much slower than SEPTA. The fare is \$1.50 so going this way is cheaper than SEPTA.

The River Line is a diesel tram train service using German sourced Stadler cars running on basically rail road tracks with some on street running at both ends of the line. The Stadler cars are quite like the Walker 280hp rail cars the Victorian Railways operated from the 1950's. They have a central power unit with the passenger units hanging off the ends.

NJT will now get us to New York, 94 km away in about 80 minutes if a fast train for a fare of \$15.50 using either a single level emu or bi levels top and tailed by electric locos. Time now to relax, no more worries with connections and tickets, just sit back and enjoy the scenery.

Scenery you say. What scenery? The North East Corridor passes through a heavily populated area. It's quite flat; the scenic highlights are the crossings of rivers and inlets most of which are south of Philadelphia. Generally the line passes through urban areas. If one sees a field it's more likely to be brown field rather than a green one [in winter, anyway—Ed.].

So now we are settled in our hotel in New York it's time to reflect on the day – maybe send a postcard home.

For the 362 km our in train travelling time



was just 4h 36m which compares quite well with Amtrak's typical 3 hours (fastest 2 h 47 m). Our overall time will reflect transfer times which would add at least two hours. It should be possible to do the trip comfortably between breakfast and

dinner time.

Cost was \$68.50 which compares with Amtrak's \$84. One has to be careful here as Amtrak operates the way the airlines do – fares vary over time and depend on the service. We could have reduced our fare substantially by busing between Baltimore and Wilmington and a little bit by using the River line.

Day 2 – New York to Boston

Our train operators will be:

- Metro North – Metropolitan Transit Authority (New York). (NYC– New Haven).
- Shore Line East (SLE) - Connecticut Department of Transportation (New Haven—New London).
- Amtrak (New London—Providence).
- MBTA – Massachusetts Bay Transportation Authority (Providence Boston South Station).

We start off at Grand Central Terminal. Note it's a terminal, not a station, depot or transit centre – a terminal. It is perhaps the

	TRAINS	3954	3256	3856	3858	3260	3860	3960
Departing from:		Q						Q
via SEPTA from Philadelphia								
Market East		1 43		1 43			2 55	3 19
Suburban Station		1 48		1 48	2 32		3 00	3 24
30th Street Station		1 52		1 52	2 37		3 04	3 28
arrive TRENTON TRANSIT CTR		2 44		2 44	3 25		3 56	4 19
TRENTON TRANSIT CENTER		2 57		3 11	3 35		4 03	4 28
Hamilton		3 03		3 17	3 41		4 09	4 34
via Princeton Shuttle		2 45		3 14	3 37			4 18
arrive Princeton Junction		2 50		3 19	3 42			4 23
Princeton Junction		3 10		3 24	3 48		4 16	4 41
Jersey Avenue								
New Brunswick		3 26		3 41	4 04		4 32	
Edison				3 45	4 09		4 36	
Metuchen				3 51	4 14		4 41	
Metropark				3 56	4 18		4 46	
Rahway			3 48	4 02		4 43	4 53	
Linden			3 51	4 06		4 47	4 57	
Elizabeth			3 57	4 12		4 53	5 03	
North Elizabeth						4 56		
Newark Int'l Airport		NJTRANSIT.COM/EWRCLOSURE FOR DETAILS						
NEWARK PENN STATION		3 54	4 06	4 22	4 38	5 06	5 14	5 21
via PATH		4 07	4 15	4 31	4 47	5 15	5 23	5 27
arrive World Trade Center		4 29	4 37	4 53	5 09	5 37	5 45	5 49
Secaucus Junction		4 01	4 14	4 29	4 45	5 15	5 22	5 28
NEW YORK		4 15	4 27	4 43	4 58	5 28	5 35	5 41

most famous railway passenger service facility in the world. Is this because of the magnificence of its architecture, the imposing position on Park Avenue, its size (once over 60 tracks on two levels), or the importance of trains served?

On the latter point it is no longer used for long distance trains; Amtrak uses Penn. Station only. The only operator is Metro North so the terminal is quiet except at peak times.

Our train to New Haven on Metro North will be a dual voltage emu: 700 v third rail until where the line from Penn St. via the Hell Gate bridge comes in at Pelham, high voltage AC with overhead after that. Distance is about 80 km – fare \$21.50 (peak) but slightly cheaper if bought on the web. Frequency is quite good; we can leave at 8.04 am if we wish. Note the way transfers are displayed; the 8.10 am ex Stamford is an SLE service.

The SLE timetable is shown below. It also shows Metro North connections, in our case the 8.30 am from Grand Central, which arrives at New Haven at 10.25 am. The best fit of services would be SLE train 1616 departing New Haven at 10.45 am and arriving New London, Conn. at 11.48 am.

Shore Line East is a strange service. It was introduced only in 1995. Operations are outsourced to Amtrak using diesel locomotives and three car trains. With the whole route electrified one would have thought a better source of rolling stock would have been Metro North. A possible factor may be that Metro North has no short trains suitable for a very low volume (11 trains in each direction - 2,200 passengers a day) service. Some SLE trains run to / from Stamford.

Of interest is that SLE Multi Ride ticket holders can use certain Amtrak services. There's also a footnote that says that trains may leave intermediate stations five minutes ahead of time.

Continuing on SLE from New Haven, distance to New London is 82km. The fare is a much cheaper \$9.50. The 10.45 am train is quite fast, taking just over an hour

EASTBOUND Monday-Friday			
CONNECTING METRO-NORTH TRAINS FROM:			
Grand Central Terminal	1502 AM	1514 AM	1522 AM
Greenwich	148	830	1105
Stamford	c	914	c
South Norwalk	234	922	1151
Bridgeport	250	933	1207
Stratford	319	956	1236
Milford	325	1002	1242
West Haven	331	1008	1248
New Haven - Union Station	338	1015	1255
	405	1025	105
OFF PEAK			
TO: OLD SAYBROOK and NEW LONDON			
New Haven - Union Station	1600 AM	1602 AM	1616 AM
Commuter Connection Bus	538	630	1045
New Haven - State Street			1048
Branford			110
Guilford	550	650	1107
Madison			123
Clinton			136
Westbrook	604	702	1107
Old Saybrook	610	710	1126
New London	630		1148

Departs GRAND CENTRAL	Notes	Arrives NEW HAVEN	Notes	Travel Time In Minutes	Transfer(s)	Fares
5:55 AM		7:52 AM	H	117	THROUGH TRAIN	PEAK
6:23 AM		8:22 AM	H	119	THROUGH TRAIN	PEAK
6:37 AM		9:11 AM	H	154	TRANSFER AT STAMFORD (AR 7:46 AM & LV 8:10 AM)	PEAK
6:59 AM		9:00 AM		121	THROUGH TRAIN	PEAK
7:02 AM		9:11 AM	H	129	TRANSFER AT STAMFORD (AR 8:02 AM & LV 8:10 AM)	PEAK
7:35 AM		9:30 AM	H	115	THROUGH TRAIN	PEAK
8:04 AM		10:04 AM		120	THROUGH TRAIN	PEAK
8:32 AM		10:24 AM	H	112	THROUGH TRAIN	PEAK
9:01 AM		10:58 AM		117	THROUGH TRAIN	OFF PEAK
10:08 AM		12:04 PM	H	116	THROUGH TRAIN	OFF PEAK

for the journey with two stops.

As with the southern leg we now have to deal with a gap not served by commuter trains and we need to use Amtrak to bridge this gap. In this case the gap is New London, to Wickford Junction, R.I., a distance of about 60km. Wickford Junction is not served by Amtrak but Providence, R.I., two stations further along, is. The connecting Amtrak train is No. 172 at 1.28 pm, arriving at Providence at 2.19 pm. The Amtrak service will cost \$16.00. A reminder – reservations required.

Regrettably, we have quite a wait for the next MBTA service, nearly two hours (see below), but it's only seventy minutes for the 69 km journey to South Station with a fare of just \$10. The train will be push-pull diesel loco operated with the possibility of bi-level cars.

There's an interesting quirk in MBTA's operations. According to the diagram on page 16, there's a stop on the Providence line at Readville, a station also served by the Fairmount line. Not so according to the timetable and not so in practice. Readville has a bi-level station with the Fairmount line crossing over the Providence line.

The map is also difficult to interpret with respect to Forest Hills. Providence trains do not stop there, but Needham line ones do; contrary to the map these run to and from South Station. The Orange line is a 'subway' using third rail which runs alongside the Amtrak route as far as Back Bay.

So at last we've arrived at our destination. Train travelling time from New York has been 4 h 55 min which is longer than yesterday even though the distance is shorter (373 km). Amtrak takes about 4 h 15 min. Cost has been \$57 which compares with Amtrak's typical \$73.

The overall journey by commuter trains could have been lengthened by starting in Martinsburg, VA. which is 119km from Washington (Virginia Railway Express) and crossing Boston to the North Station and continuing on MBTA to somewhere like Fitchburg, Mass., 81 km away. Doing so would have made the overall journey over 935 km or greater than Melbourne - Sydney.

A couple of observations to conclude – the fares differed quite a lot in rate per km terms but with the exception of Metro North out of New York were quite cheap. Surely the Americans can afford to pay more? The problem is that petrol (gasoline) is also very cheap in America and parking is often cheap and plentiful.

It was interesting that three of the trains were diesel operated yet the whole journey was under the wires or with third rail. In MARC's and MBTA's case the reason is that much of their networks is not electrified and they don't want dual equipment. In SLE's case, as mentioned, it appears to be the lack of suitable electric equipment that can be formed into small sets.

Providence/Stoughton Line - South Station : Weekday Effective 07/01/13

Train Number	800 AM	814 AM	912 AM	816 AM	818 PM	914 PM	916 PM	820 PM	918 PM	920 PM	822 PM
Wickford Junction		09:10			01:10			03:40			
TF Green Airport		09:26			01:25			03:54			
Providence	05:07	09:45		11:15	01:41			04:10			05:12
South Attleboro	05:17	09:54		11:25	01:52			04:20			05:22
Attleboro	05:27	10:04		11:34	02:02			04:30			05:31
Mansfield	05:36	10:12		11:42	02:12			04:38			05:40
Sharon	05:44	10:21		11:51	02:21			04:47			05:48
Stoughton	)		10:40			02:20	03:23		05:00	05:45	
Canton Center	)		10:49			02:27			05:08		
Canton Junction	05:51	10:28	10:52	11:58		02:30	03:33		05:10		05:55
Route 128	05:56	10:33	10:57	12:03	02:30		03:38	04:58	05:16		06:00
Hyde Park	06:01	10:38	11:02	12:08		02:39	03:43				06:06
Ruggles	06:11	10:48	11:12	12:15	02:42						
Back Bay	06:15	10:52	11:15	12:20	02:45	02:49	03:53	05:15	05:27	06:08	06:17
South Station	06:20	10:57	11:20	12:25	02:50	02:54	03:58	05:20	05:32	06:13	06:22

In Britain it's interesting how much diesel operation takes place under the wires. Out of London's Kings Cross there's a stream of diesel HST's going to places like Bradford, Sunderland and Aberdeen; in the latter case with over 600 km under the wires.

Electrification is being extended in Britain. The new IEP trains will have both diesel and electric traction. It's a pity that the diesel equipment will be under the floor like most modern railcars. This always adds to noise and vibration for passengers.

So let's skip across to London and see if we can get to Edinburgh by local trains – yes, it can be done. One route is London – Kings Cross – Peterborough – Sheffield – Leeds – Carlisle – Kilmarnock – Glasgow – Edinburgh.

In NSW one can ride commuter trains from Goulburn to Scone – total 624 km.

A note on Junction Stations

Wickford Junction must be one of the few 'stations' in North America with *Junction* as part of its name. There's the nearby Canton Junction on the same line, as well as Princeton Junction. Grand Junction in Colorado derives its name from a junction of rivers. Thomas Cook used to refer to Williams, Ariz. as Williams Junction and Amtrak still does. Williams was a junction on the old Phoenix line of the AT&SF for the Grand Canyon line, but was never called Williams Junction. In later years, Williams was bypassed by a line to the north, to avoid difficult country to the west. There are now both a West Williams Junction and an East Williams Junction on the BNSF line east of Williams. West Williams Junction is where the single track old main line and the twin track by-pass line part company. At East Williams Junction, half a mile further east, there is a crossover in the BNSF twin tracks and some sidings. This is probably why BNSF uses the word "Junction". The Amtrak "Williams Junction" station (there is no building) is at East Williams Junction. Passenger for Williams are carried by a bus running on a dirt road into town.

In the British sphere the word "junction" seems to be limited to railway localities without stations, for example Illawarra Junction in Sydney. Bondi Junction railway station is not a junction at all but is named after the suburb it serves which once had a major tramway junction. We still have Neutral Bay, Cremorne and Spit Junctions for exactly the same reason.

The great exception is South Asia where all major railway stations that aren't stub end termini seem to be called "xxx" Junction. The main station in Delhi is Delhi Junction.

