

THE BREAK- OF- GAUGE – A SOCIAL HISTORY

My next book is well advanced and I am aiming for it to be released late November There has been a lot written about the Australian gauge problem but not since Eric Harding's - *Uniform Railway Gauge* in 1958 has there been anything with it all in the same volume.

John Wilson

12 June 2023

TIM FISCHER *This book is dedicated to the memory of the late Hon. Tim Fischer.* 4 pages, which include comments by Judy Brewer Fischer, and recollections by Bob Sampson OAM, of Tim's association with the National Railway Museum.

MISSION STATEMENT *5 pages.*

There are two pages that describe the mission. Followed by two pages that give a condensed history of the break-of-gauge using the Trove search facility as a proxy for the amount of noise (or havoc) in any year. And the fifth page is 'etcetera' which includes an inventory of the major gauges and their measurements and their nomenclature. And there is a piece for those who love or hate hyphens!

CHAPTER 1 *The Track to the Centre of the Earth.*

We can't deal with gauges until we have dealt with track. We talk about gradients, the structure gauge and the loading gauge and introduce the concept of the 'right of way'. The right-of-way being unlimited as to depth and hence the title of the chapter. I deal with the problem of contamination of the railway corridor and what to do with the corridors of dismantled railways that are not of tourism potential. The Clare Valley Riesling Trail is an outstanding example of rail trail excellence. Third-rail and gauntlet track. The concept of threats to the integrity of the track where I start the list with rabbits and floods, and finish with members of Parliament. I have been greatly assisted in preparing this chapter by Des Smith, previously Chief Civil Engineer of Australian National Railways

CHAPTER 2 *The Cantankerous Business of Railway Curves and their Cant.*

Having dealt with track, we can't deal with gauges until we have looked at curves. There are examples of reverse curves. Curves impact on tractive effort and result in increased wear and maintenance. We learn about circular curves vs transition curves, and the application of cant (super elevation of the rail on curves). And there are vertical curves as well as horizontal curves The tilt train and wheel squeal get a mention. These pages contain a lot of Des Smith's wisdom.

CHAPTER 3 *The Origin of the Irish Broad Gauge in Australia.*

Previous researchers or historians have attributed the schism between the 4 ft 8½ in and the 5 ft 3 in to Francis Webb Wentworth Shields, who was the engineer of the Sydney Railway Company, or alternatively Lt Governor LaTrobe. I submit considerable references to arrive at the conclusion that both were innocent and the culprit was Governor General, Sir Charles FitzRoy. There has also been a near universal problem surrounding Gladstone's 1846 advice to the colonies. It seems that the misinterpretation of this has been copied from one researcher to the next. This chapter has been deeply researched and runs to 10 pages. I admit that it is not easy reading, but it was necessary to straighten out history gone wrong.

CHAPTER 4 *Fitzgibbon, Fox and the Queensland Narrow Gauge. 10 pages.*

Nearly every book or article that I have sourced has painted Abraham Fitzgibbon as the archetypal hero who got the railway across the Main Range to Toowoomba and his faith that the 3 ft 6 in gauge, previously unproven, would see Queensland right for its main trunk railways. I am inclined to challenge that view and am still researching this. I think the real heroes were the engineers who followed Fitzgibbon and made the 3 ft 6 in work. The Fox mentioned above was Sir Charles Fox, the engineer who was engaged by the Queensland Government as the consulting engineer. This chapter reads more like a 'who-dunnit'. I am expecting some spirited correspondence from Queensland.

CHAPTER 5 *Praise be to the '5 FOOT 3'. 5 pages.*

The origins of the 5 foot 3 in gauge were in Ireland and are presented. It also looks at the 5 ft 6 in gauge in Spain and Portugal. The BART system in San Francisco adopted the 5 ft 6 in gauge in 1972 in preference to the standard gauge. The prime reason driving the wider gauge was the desire to give commuters a better quality of ride. We have presently, in Adelaide, a Metro system that is self-contained. It has, by default, evolved into a BART system but with 5 ft 3 in gauge instead of 5 ft 6 in. There has been upgrading of track in recent years with gauge convertible sleepers but there is presently no plan to convert the gauge from the 5 ft 3. I put the case that we are better sticking with the 5 ft 3 in from the operational perspective and financially. We don't seem to have heard much from the South Australian Department about passenger comfort. This topic also has some relevance to Greater Melbourne. And why did Brazil change from 5 ft 6 to 5 ft 3?

CHAPTER 6 *The Curse of the Great North-South Transcontinental Railway Part One.*

As early as 1858 there were people in South Australia who had a dream of great wealth flowing from the Northern Territory, despite the fact that no white man had crossed the continent. As part of that dream in the 1860s they would have an overseas syndicate build and operate the railway in exchange for a sizeable area of South Australia. The offer was with the condition that they would run one return mixed train journey each week. Now we meet Captain Charles Harvey Bagot, an elder statesman of the South Australian Legislative Council who fancied himself as a railway expert and hoodwinked the Legislative Council into changing the gauge for the line from Port Wakefield to Hoyleton. Sir William Jervois was the Governor who, in 1878, turned the first sod of the new railway at Port Augusta. It was only to go 200 miles to Government Gums (Farina) but Sir William announced that it would go all the way to Port Darwin.

CHAPTER 7 *Robert Fairlie and his Double Engines. 7 pages*

Fairlie was a Scottish engineer who invented a double-ended engine, but his business plan was to sell narrow-gauge systems to the colonies with the slogan that 'Slow railways are better than no railway.' He published a book in 1872. He was a prolific letter writer to newspapers and journals in Australia and England and they willingly copied it. He had an agent in Victoria and that colony was at the top of his hit list in 1869 – 1872. Regional newspapers and railway committees throughout Victoria badgered members of Parliament. Thomas Higinbotham, the Victorian Engineer-in-Chief, was not convinced. Fairlie also sought to sell his system in New South Wales and mounted a vigorous campaign. We meet John Whitton who was the Chief Engineer of the New South Wales Government Railways and was one who could match Fairlie's capacity for letter writing, word for word. He was a fierce defender of the 4 ft 8½ in gauge in New South Wales and supported Higinbotham in Victoria. Whitton was not one for niceties. Herewith his response to one of Fairlie's swipes at his reputation. "It sickens me to see intelligent communities to be led by the nose by persons whose sole object of maintenance of a wasteful system seems to be to make inordinate profits for somebody, or to impede the traffic of a whole country, which they are willing to do for their own pitiful ends."

CHAPTER 8 *A Portent of Doom.*

The first two break-of-gauge locations in Australia had little immediate impact. The first was at Evandale Junction in Tasmania. The second was at Kadina in South Australia. The Cousin Jacks were the Moonta miners who had come from Cornwall and brought with them stories of piskies and tommyknockers who had an arcane underground existence and warned the miners of dangers underground. They could also cause mischief if things were not to their liking. Maybe they could see what havoc would descend upon the country with the coming of the break-of-gauge, but when His Excellency arrived at Kadina by special train to open the railway, these mysterious creatures from the deepest underground workings let it be known that they were most displeased.

CHAPTER 9 *Crying Over Split Milk.*

Hamley Bridge was the first break-of-gauge that brought with it the chaos that had long been anticipated. Just when it seemed that things couldn't get any worse there was Terowie to deal with. The Engineer-in-Chief had chosen Balaklava as the break-of-gauge station, because there was plenty of space and level ground. But there were some in Parliament who were more concerned with the constituency of Port Wakefield. The Balaklava break-of-gauge would have seen the wheat from the area go to Port Adelaide and not to Port Wakefield. So, the Government disregarded the recommendation of their Engineer-in-Chief. Hamley Bridge was a congested site between two valleys and proved to be a very unsuitable location for a break-of-gauge. At the opening of the railway between Balaklava and Hamley Bridge there was an unofficial admission that a mistake may have been made but "there was no point in crying over spilt milk". The situation at Terowie was that it became a 'one-industry town' with hundreds employed, directly or indirectly in the 'break-of-gauge industry'. To fix the gauge problem would have been to throw hundreds out of work and condemn Terowie to a ghost-town future.

CHAPTER 10 *Bordertown Both Ways.*

There was a narrow-gauge network in the south-east of South Australia. It was deliberately run as close as possible to the border with the intention by South Australia of enticing trade from Victoria. Victoria responded to this with differential rates. The terminus of this network was at Bordertown which was reached by a roundabout route. Then the long running tensions between South Australia and Victoria briefly entered a truce because the fast transit of the English mails demanded their concurrence. The broad-gauge intercolonial railway met the narrow gauge at Bordertown. Serviceton became a break-of-gauge station. Then the two colonies resumed their sparring and rate wars. There was a very interesting outcome. In 1892 the South Australian Attorney General was C C Kingston and instructed the Commissioner of the South Australian Railways to advertise discounted rates for farmers in western Victoria to send their produce. By this time the rate wars between the colonies had become quite fierce, particularly in the Riverina. The South Australian farmers made quite a ruckus that they had to pay more. There was the inevitable inquiry at which the evidence given by Kingston was entirely out of step with the evidence by the Railway Commissioner. Richard Baker was the President of the Legislative Council and supported the Commissioner. Kingston was enraged and sent a loaded pistol to Baker, with instruction to meet in Victoria Square and declared that he would either shoot or be shot.

CHAPTER 11 *The Train to Montezuma*

Tasmania has had more railway gauges than any other colony. But it is the only colony/state that has not had any 4 ft 8½ in gauge. In the 1890s there was mining activity centred on Zeehan. By this time the 3 ft 6 in gauge was well established in Tasmania but even that proved to be too wide for the te

rain of the west coast, where there were curves as sharp as 1½ chains. The North-East Dundas tramway was built to the Montezuma mine with a gauge of 2 ft. Meanwhile there was a new generation of politicians in Victoria who had not learnt the lessons of the past and eyed the 2 ft gauge in Tasmania to be the answer to their needs for cheap railways.

Almost as an afterthought they changed the gauge of their new narrow-gauge line to 2 ft 6 in. The Commissioner of the Victorian Railways was Mathieson who was against this development, but the members of Parliament got their way. Mathieson was proved correct. The lines operated at a loss, and worse still, any attempt to have them operate more efficiently by increasing the traffic only resulted in greater losses. But there would not be a railway enthusiast in the land who would not respond with a warm feeling deep inside watching the children aboard the one surviving 2 ft 6 in gauge line. Puffing Billy.

CHAPTER 12 *Section 51. (Section 51 of the Constitution).*

In 1888 Sir Henry Parkes delivered what is now called his Tenterfield Oration. It was a call to Federation based on the shortcomings of the colonial defences, and the need for a unified railway gauge to transport the troops and armaments that would be needed to respond to any hostility. 10 years later the colonies were nearly ready to vote (some colonies more than others) Section 51 was the part of the constitution that listed all the functions that would become Commonwealth instrumentalities. There was currency, the Post Office, statistics, lighthouses, and many more and importantly, of course, defence. But not the railways. There is little doubt that if the railways had become a federal entity, the gauges would have been sorted out long ago. So, what went wrong? My research is ongoing. This will probably be the longest chapter in the book. It was the intercolonial railway links in the 1880s and 1890s that had facilitated travel between the colonies and as the mixing of populations proceeded, the notion of not proceeding with Federation was almost anathema. But the railways were then dumped.

CHAPTER 13 *BOG (Break-of-Gauge) Devices.*

As early as 1846 the Great Western Railway in England announced that all efforts at gauge changing trucks had failed. But it has not stopped the inventors and still they come. This is really a South Australian story, because it was the only colony that had break-of-gauge stations within its boundaries in the 19th century. The latest is the 'Train from Spain' which the Spanish have offered on loan so that the people in the Adelaide Hills community of Mount Barker can escape the congested freeway. This train can shift between broad gauge and standard gauge in minutes. Now, standard gauge is 4 ft 8½ in all over the world, but when the Spanish are talking 'broad gauge' and Australia is talking 'broad gauge' they ain't the same. This chapter will include bogie exchange that has been useful but is not the whole answer. There have been some innovations that have filled the need in specific situations. There was the piggyback train in 1955-56 to shift the Leigh Creek coal.

CHAPTER 14. *The Curse of the great north-south transcontinental railway. Part 2.*

This chapter is still being completed but it is likely to come close to chapter 12 in length. The short version is that South Australia had expected the Commonwealth to promptly complete the north-south transcontinental railway. South Australia became very obstructive in its dealings with the Commonwealth in relation to gauge matters. The construction of the other transcontinental railway required some determination regarding the 4 ft 8½ in gauge being mandated as the national railway gauge. Most States agreed but South Australia couldn't. In 1923 Premier Barwell made known that there would not be one inch of standard gauge until the Commonwealth honoured the deal. He became quite paranoid about the standard gauge coming anywhere near Adelaide. In the 1930s, Premier, Sir Richard Layton Butler* weakened and let the standard gauge come a little closer to Adelaide, at Port Pirie. We haven't yet finished with the Curse of The North-South Transcontinental Railway. *Our present Federal Minister of Health, Hon Mark Butler, is a grandson of Sir Richard but is on the other side of politics. His great grandfather on his mother's side was a proud unionist and locomotive driver who has as special place in history as the man who named *The Ghan*.

CHAPTER 15. *The shameful case of Pinnaroo and other border railways.* There was a time when trains travelling between Victoria and South Australia could use this route and there is an unconfirmed report that even *The Overland* has once been sent through Pinnaroo. But the old colonial mentality has prevailed and whilst the line has been converted to standard gauge the two ends are not connected. It has even required a trip to Pinnaroo and Murrayville (in Victoria) to see for myself. And talking about trains using different tracks, on 31 January 1971 the Indian Pacific was diverted via Roto and Narrandera. We also deal with the disgraceful situation regarding the railway from Victoria into Mount Gambier. Deniliquin, Tocumwal are also explained. And there were the border lines that never linked up. Goondiwindi and Boggabilla. And the railway from Port Augusta to Hay.

CHAPTER 16. *Locomotive matters.* Having a railway network with two gauges brings about inefficiencies with locomotives and rolling stock in that there must be at least one locomotive of each gauge at the break-of-gauge station for shunting and there is a doubling up of rolling stock. This chapter also looks at gauge conversion of engines and rolling stock and the design of steam locomotives that could be converted from one gauge to another.

CHAPTER 17. *Defence considerations.* There has been a recurring theme in Australia, that has acknowledged we have a gauge problem and the reliance on only one mainline linking the mainland capitals is a weakness in our national defence. The response has been much along the lines that "we'll worry about that when it happens". And when the nation has been under threat, either by good luck, or good allies, we have pulled through. To which the response has been that we have got through OK, so we don't need to worry about it.

CHAPTER 18. *The Curse of the Great North-South Transcontinental Railway – Part 3.* We have not yet finished with the saga of the curse of that railway. The Commonwealth made an attempt at a peace deal with South Australia which involved the construction of the railway from Oodnadatta to Alice Springs, which was completed in 1929. South Australia reneged on the part about completing the direct route from Port Augusta to Adelaide.

GAUGES OF WOES. A single-page insert that is a light-hearted look at gauges gone wrong. It is posted on the website by way of invitation to any who may be able to add some further stories. The following 'bloopers' are described. The NSW colliery with the mistake gauge of 3 ft 8½. The member of Parliament in SA who moved an amendment for the Port Augusta railway to be 5 ft 8½ in. The Burra dining car that was the subject of a gauge muddle. And of course, there was the recent "Train from Spain" saga in South Australia.

CHAPTER 19. *Came to South Australia a Teetotaler – Left a whisky drinker.* This is not intended as a slur on the man's reputation but is a reflection of the malignant forces within the South Australian administrations of the 1920s. W A Webb and the Western system of the SAR. Webb was a traffic man and not an engineer. He supported the plan to run express trains into Adelaide on mixed broad and standard-gauge track. The one tangible outcome of the gauge conversion of the Western System is that it permanently put to rest any plan to run narrow gauge from Hamley Bridge to the Adelaide Railway Station.

CHAPTER 20. *The Royal Commission of 1921. Brisbane and Port Pirie.* The best thing to come out of the Royal Commission was that they took a photograph of the delegates- so we now know what they looked like. It did get NSW and Qld taking to each other, so there was an indirect outcome of the standard-gauge to South Brisbane. I'm not sure if Port Pirie really belongs here but it seems a convenient spot to slip it in.

CHAPTER 21. *The Clapp Report and the standard gauge to Melbourne.* The Clapp plan was the closest Australia came to a scheme that may have worked but in the end, there was not one inch of track that resulted. There were two fatal flaws which guaranteed the failure of the plan. South Australia was never going to agree to a plan that denied them the promise of the north- south transcontinental railway and it would have NSW paying but receiving nothing. In the wake of Clapp there was Bill Wentworth, who was more interested in flash passenger trains than worrying about the subsidiary lines that connect with the main routes. Wentworth seems to have been a 'love him or hate him' sort of character. The Clapp Report will irritate many with its standardization (with a 'z').

CHAPTER 22. *Uncle Tom.* Thomas Playford (later Sir Thomas Playford) was South Australian Premier from 1938 to 1965. He was an astute negotiator, and his favorite ploy was to take on the Commonwealth and walk away with special financial deals that left the other states dismayed. It was a tactic that involved some connivance with another South Australian politician, Senator George McLeay. In 1949 Playford stitched up two deals that were in the name of standardisation. The legacy from that is there is not one inch of the present operating railway map of Australia to show for it. The Commonwealth paid to have the narrow-gauge lines of the South-East (Mount Gambier) converted to broad gauge 5 ft 3 in. The agreement was that South Australia would convert those lines to standard gauge at its own expense when the connecting lines were converted to standard gauge. That should have been in 1995 but the broad-gauge line to Mount Gambier remains a disconnect and South Australia has shown no indication of its intention to honour its part of the deal. The Leigh Creek coal line with its extension to Marree was the other. There is 6-page tabular chronology that looks at the politics of standardisation in the Playford era, and a bit before and after.

CHAPTER 23. *Ron Fitch, Flash Harry and the Ceremonial Scissors – As told by Bob Sampson.* Bob Sampson began his railway career in the early 1970s as a youth porter with the South Australian Railways at a time when Ron Fitch was Commissioner. Bob has been the Executive Officer of the National Railway Museum for many years. Ron Fitch had a long and productive retirement and lived to be over 100, and there developed a unique bond between the two. There were many discussions about the standardisation of the Broken Hill to Port Pirie line. Ron Fitch advocated for the standard gauge into Adelaide as part of that project. *Flash Harry* was the early nickname of the *Indian Pacific* but it never caught on.

CHAPTER 24. *The Westlander.*

CHAPTER 25. *In the wake of Whitlam.* Australian National, Alice Springs and Darwin. This includes Adelaide to Crystal Brook, the disintegration of South Australian rural lines, Adelaide to Melbourne and the Adelaide Metro.

CHAPTER 26. *The Inland Rail and the Murray Basin project.*

BIBLIOGRAPHY

APPENDIX

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EPILOGUE *I traditionally write the Epilogue the day before going to the printer.*