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Spring Creek Sawmill, Victoria

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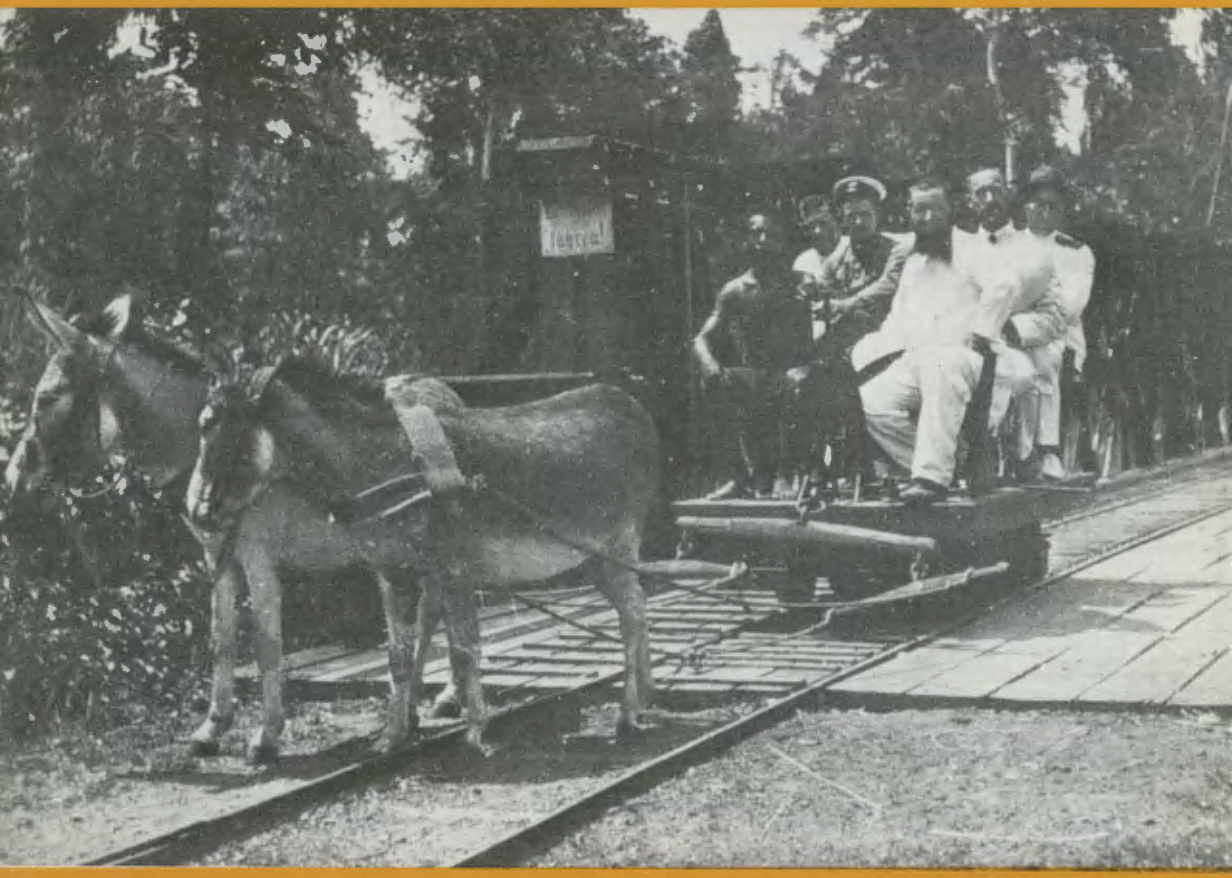

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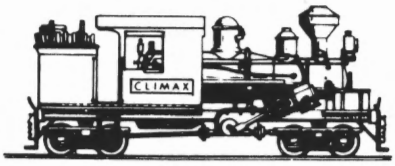

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EDITORIAL

The LRRSA 25th Anniversary celebrations in Melbourne over the Easter weekend provided an opportunity for group activities of a light railway nature, including a Conference of LRRSA delegates and some memorable experiences on the Puffing Billy railway.

The Conference was held at Warburton in the heart of Victoria's early timber industry which provided the initial inspiration for our Society. Representation from all states, including three from Western Australia, symbolised the national character which the LRRSA has now achieved. The overall theme was that the Society can be well pleased with its progress as a research body of professional repute. *Light Railways* was generally recognised by delegates to have made a major contribution to this reputation.

The Conference endorsed the policies which have evolved over the years for *Light Railways.* The objectives of the journal are twofold: to improve the standing and recognition of the Society through publication of light railway history to high standards of research and presentation; and to provide a vehicle for the exchange of information and views between Society members. In pursuit of these objectives we will continue to encourage an approach to research which gives a total historical account of the setting for a railway and the industry it served, including its impact on the area and community, and to uphold professional standards of presentation. *Light Railways* will continue to give emphasis to general issues offering a range of articles, comments (through the letters column) and photographs of interest to LRRSA members. We will also continue to publish some 'special issues' presenting longer articles on particular railways.

Cover: This donkey team hauling a "passenger carriage" on the Mission of the Divine Word 70 cm tramway at Alexishafen, German New Guinea sets the theme for Michael Pearson's review of Papua New Guinea tramways which commences in this issue.

Photo: WH Lucas Esq.
Aust. War Memorial Collection

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A CHRONOLOGY OF TRAMWAYS AND RAILWAYS IN PAPUA NEW GUINEA

by Michael Pearson

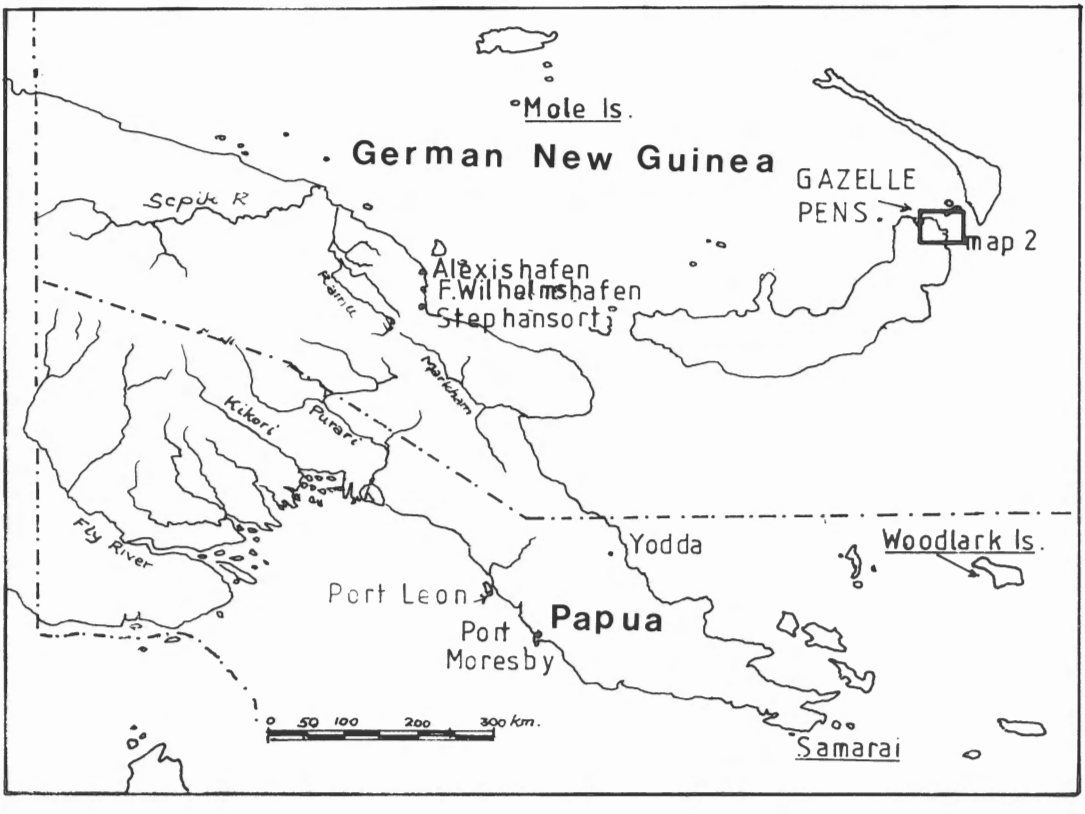
PART 1: 1888-1914

Introduction

Papua New Guinea (PNG) was a late entrant to the development of transport systems and, for the most part, the country has remained on the periphery of advances in transport technology. This is particularly true of railed transport which has provided the basis of modern transport networks elsewhere. However, although many people regard PNG as a country without railways, there have been a surprising number of light tramways and railways over the past century, as the following chronology amply illustrates.

There was limited development of transport in PNG prior to European intrusion. Owing to the lack of any suitable animal, coupled with the low status of women and limited social development, most land transport was handled by the New Guinea beast of burden — women. Journeys were made by foot, with the man walking ahead carrying weapons, while the women laboured behind with heavy loads.

Water transport required canoes which varied greatly in their manner of construction. Some of these canoes were very large, and it was in their manufacture, always by men, that the first organisation of land transport emerged. Large trees, up to 30 m tall and 4 m in girth, were cut in the forest and



transported to the coast. Often whole clan groups were required to pull the log. Saplings were cut and placed as rollers under the log, and vines were used to pull it to the shore, where the canoe was carved from the log.

Such was the evolution of transport in PNG when Europeans first began to arrive by sea from 1794. Various traders, missionaries and adventurers landed on the shores over the following decades. The Brothers of the Society of Mary were the first missionaries, arriving on Woodlark Island in 1847. The Rev George Brown, a Methodist missionary settled at Port Hunter in the Duke of York Islands in 1875, the year an Australian trader, Andrew Goldie began operating at Port Moresby. Five years later Emma Forsayth established a trading station at Mioko in the Duke of York Islands. In 1884 Germany proclaimed North-Eastern New Guinea as a protectorate and Britain responded with a similar claim over South-Eastern New Guinea (BNG) in the same year. In 1885 a charter was granted to the Neuguinea Kompagnie (NGC) to administer German New Guinea (GNG). Initially the company established its main station at Finschaffen.

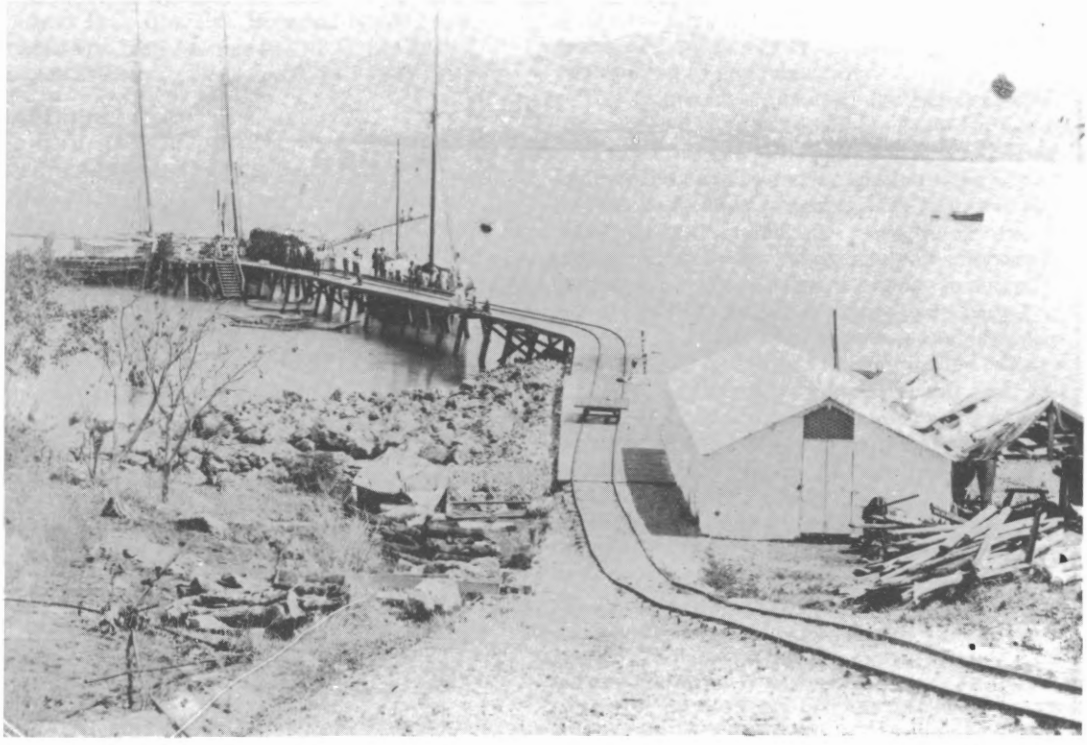
The First Tramways

1888 The NGC built the first recorded tramline in PNG[1] on Mole Island (in the Purdy Group, south of Manus Island). It was constructed to convey phosphate across the reef of this isolated island to ships.

1890 The London Missionary Society had a rail wagon built at Cooktown, North Queensland.[2]

Burns Philp & Coy (BPs), after purchasing Goldie's store, lay a tramline on their wharf at Port Moresby and up to the store.[3] The gauge was 3 ft 6 in, and its gradient 1 in 6. The trucks had to be hand pushed over the 200 m length of the line. At this time labour was cheap (and was to remain so until after the Second World War), but pushing railways trucks did not have the status of a canoe voyager or even a carrier, and was heavy work.

Railway materials (approximately 100 yards of track) valued at £18/5/- were im-



The 3 ft 6 in gauge tramway constructed to the Port Moresby wharf by Burns Philp in 1890.
Photo: University of PNG Library

This tramway on Mioko Island constructed to the D.H. & P.G. trading station may have been the first railway in New Guinea. Photo: National Library of Australia

ported to Samarai island.[4]

1891 The NGC, after finding Finschhafen a tropical death trap, moved their administrative centre to Stephansort, but found little relief from the ravages of disease. By this time, a rival company, Deutsche Handels-und Plantagen Gesellschaft (DH&PG), had built a tramline between their wharf and store on Mioko Island.[5] (NB. This line may have been built before the Mole Island tramway, possibly in 1886, but, as yet, there is no evidence to support this.)

The Most Sacred Heart Mission sent out post cards of their new mission station at Port Leon, Yule Island, showing the pier and station buildings. A tramline for transporting cargo[6] is clearly evident on the pier.

Sir William MacGregor, Administrator of BNG, initiated investigations for the purchase of rails from Cooktown for use in construction of tramways at Samarai and Port Moresby.[7] They finally arrived in 1894.

Plantations and Mines

The 1890s were a period of gradual expansion by both the Germans and the British administrations. Trading pioneers had found the rich volcanic soils of the Gazelle Peninsula much more suited to agriculture than the harsh conditions of the mainland, and extensive plantations were established from 1881 by pioneers such as Emma Forsayth ("Queen Emma") and Richard Parkinson.[8]. Transport improvements included the introduction of both horses and mules and the building of bridle trails and cart roads around the main centres. Narrow gauge tramways were constructed to serve the expanding plantations and infant mining industries.

1892 Materials were ordered for a narrow-gauge tramway at Herbertshohe (Kokopo) station to link the landing place with a cotton store. The tramway was to be 300 m long and 3 sets of points were planned.[9] A later report indicated that 1000 m of tramway was completed by November 1894.[10]. In 1896 a landing jetty, 30 m long, was completed with a new transit shed which "makes it possible to bring the narrow-gauge railway trucks with goods from the jetty into dry storage quickly."[11]

In Friedrich Wilhelmshafen the NGC established a few hundred metres of light

tramway to link the wharf to the store. This 60 cm line was later extended 5 km to serve tobacco plantations at Jomba, but plans for a further 23 km of track to link the tramway with those at Erimahafen did not eventuate.[12] The tramway was operated by oxen and remained in use until the thirties.

1893 A 60 cm gauge railway was completed between Stephansort and Erimahafen to service NGC tobacco plantations. This tramway system, which was to total over 17 km of track and used oxen as its motive power, is described in *Light Railways* No 81.[13]

1895 In British New Guinea, gold was discovered on Woodlark Island by R Ede and C Lobb.

Mr Charles Abel, of the London Missionary Society mission at Kwato near Samarai used a tramline to carry out swamp reclamation and to build a cricket field.[14] He was a pioneer in introducing cricket to Papua.

1898 Raniolo Plantation on the Gazelle Peninsula was recorded to have a funicular railway across a steep sided valley to the plantation.[15] Importation of railway material into BNG amounted to £221 in the period 1898-1900.[16]

1900 The gold mines at Woodlark Island in British New Guinea built a tramline from the harbour to Kulumadau, a distance of about one mile.[17]

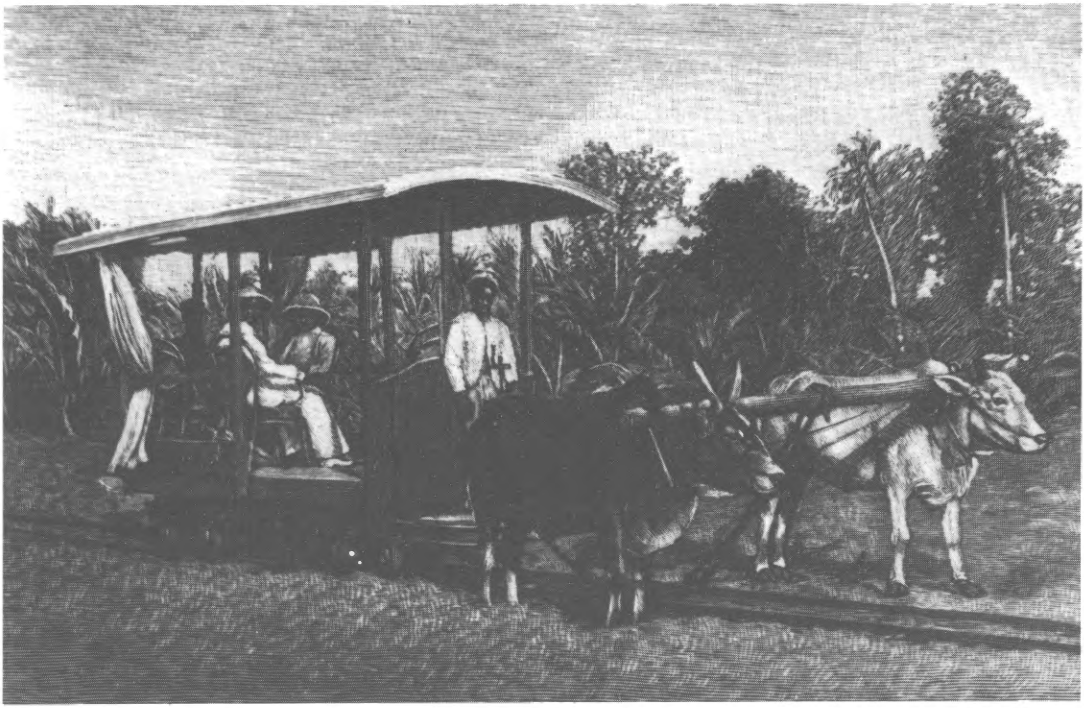
Traders and Missionaries

By the turn of the century the growing demands of administration and trade stimulated the growth of early settlements into townships. Mission societies were also expanding and the provisioning of their stations required improved transport links. These centres relied heavily on sea transport and short tramways were built in a number of locations to transport goods from warehouse to ship.

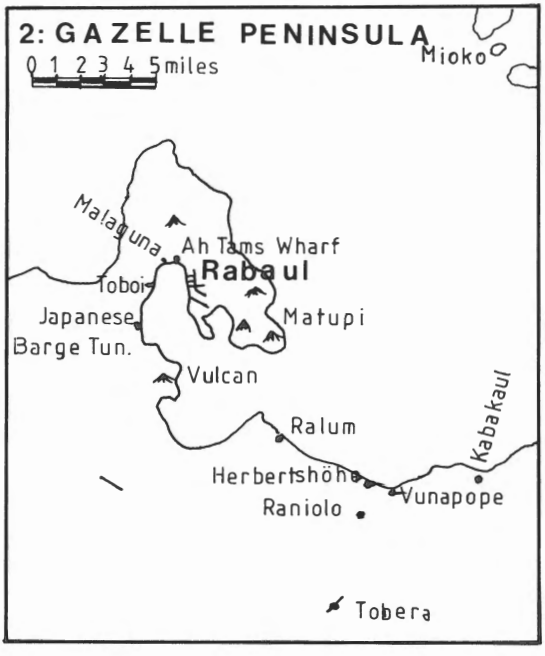
1901 On Samarai Island, BNG, Burns Philp and the Administration constructed a 2 ft gauge tramway to carry coal and goods from ships to the stores.[18]

1902 The Catholic mission established a 70 cm gauge timber/logging tramway at Toriu River on New Britain Island.[19] In 1917 it was moved to Kuriendal.

1904 In Port Moresby the administration laid down 200 m of 2 ft gauge tramline to connect their store to the wharf. It was used until 1918.[20] Imports of railway materials to BNG



An ox drawn passenger coach on the 600 mm gauge Stephansort tramway in German New Guinea, c1900. Photo: courtesy Mitchell Library



in 1904/05 were valued at £106/14/3.[21]

1905 Nord Deutsche Lloyd (NDL) established a settlement and wharf at Simpson Harbour (Rabaul). A 60 cm gauge Rabaul tramway network was built up from this site to connect with various stores and administration departments. In 1914 the *Sydney Mail* reports "it is a curious fact that each residence in the settlement has a line like this (photograph of a hand pushed wagon conveying mail) connecting it with the wharf, so that goods can be conveyed direct from the boat side".[22] Although damaged by fire in 1923, the tramway was used until 1945.

At Alexishafen, the Societas Verbi Divini (SVD) established a steam powered sawmill and an associated 70 cm gauge tramway which used donkeys and buffalo as draught animals.[23]

Mineral Wealth?

In 1906 British New Guinea was handed over to the Australian Commonwealth and became known as Papua. The Astrolabe mineral field outside Port Moresby was proclaimed after discoveries of copper in the area. This led to hopes for economic development in Australia's infant colony and more ambitious proposals for railway construction were soon put forward.

1910 In Papua the Astrolabe mineral field was being developed, but the high cost of transport by mules was a major limiting factor and proposals were made for the construction of a railway to the area.[24] The British New Guinea Development Company (BNGDC) indicated willingness to take on the proposal if it could also negotiate the rights to the hydro-electric potential of the Rouna Falls.[25] The first mechanised road vehicles were introduced about this time in the form of steam tractors.[26]

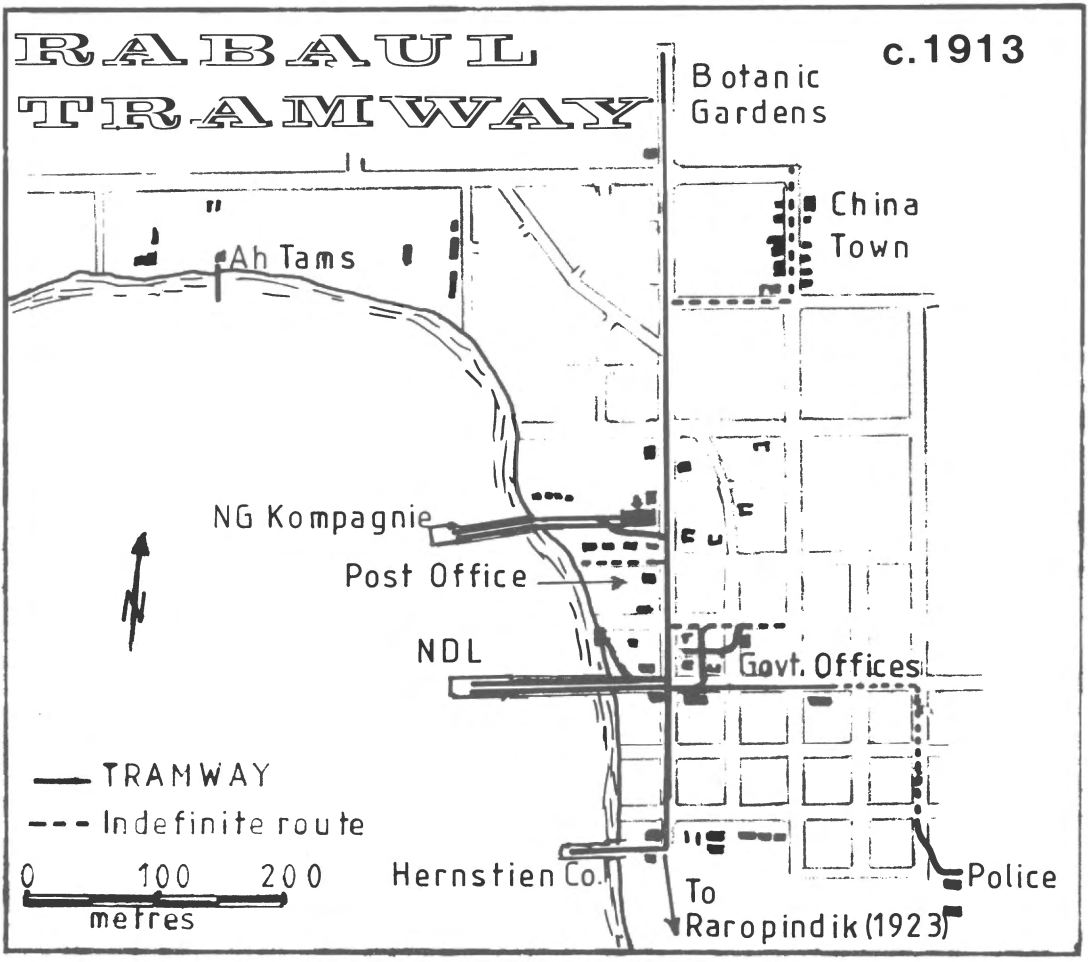
In the Northern District of Papua a gold mining venture established a portable railway, a mile long, to transport equipment from the coast to the Yodda mineral field.[27] The line had to be continually relaid ahead of the moving equipment. The project failed to anticipate the terrain and weather, and collapsed before it had proceeded many miles.

1914 The Administration in Papua began construction of a light 2 ft gauge railway from Ela Beach to Rouna, a distance of 17 miles.[28] For this purpose the Railway Ordinance, 1914 and the Port Moresby to Rona Railway Ordinance, 1914 were passed.[29] Clearing commenced along Ela Beach, but work stopped with the outbreak of World War I.[30]

Donkey hauled passenger truck on the Alexishafen tramway c1914.
Photo: Missionhaus St Michael, W. Germany

A water buffalo hauls a hopper wagon on the Alexishafen tramway in 1906. Photo: *New Nation*

Rabaul tramway tracks to the New Guinea Company's store. Photo: courtesy Mitchell Library



The Rabaul tramway map is based on the following sources: UPNG Library photos AH 16-23, AH 25-13, AH 25-17, AH 39-21 and AH 41-3; Reeves, *Australians in Action,* photo 812; Gash & Whittaker, *Pictorial history of New Guinea,* plates 426, 427, 430; *The official history of Australia in the War of 1914-18,* Vol X, facing pp76, 85, 108, 340, 350; Burnell, FS *Australian Vs Germany,* facing p192; Burnell, FS *How Australia took German New Guinea,* facing p15; MacGregor, A *PNG Independence 1975,* p12; report by T. Bishton.

By the beginning of World War I the German colony had established permanent tramlines at Mioko, Herbertshohe, Erimahafen, Ralum, Modilon, Raniolo, Kabakaul, Toriu River, Alexishafen and Rabaul. In Papua tramlines were operating at Port Leon, Port Moresby, Woodlark and Samarai. During the War there was no further development in either the occupied territory or Papua.

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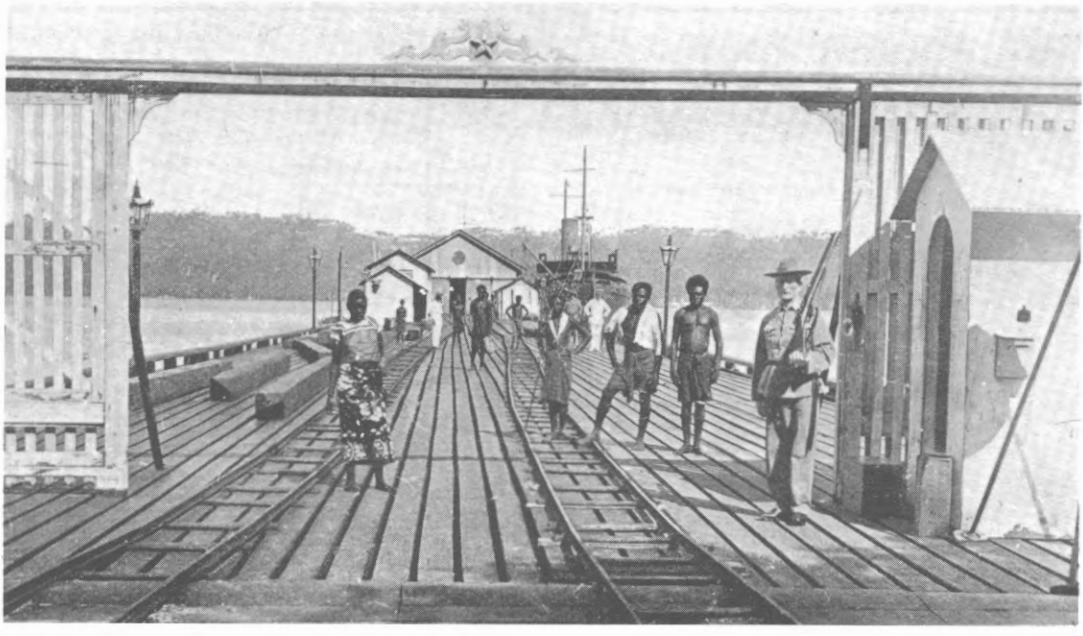

600 mm gauge tramway tracks on Rabaul wharf, c1914. Photo: TJ McMahon, courtesy Mitchell Library

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THE SPRING CREEK SAWMILL

by M.J. McCarthy

Background

The opening of the Benalla to Tatong Railway in North-East Victoria in 1913 provided the means by which timber from the valley and environs of Holland Creek could be economically extracted in quantity for the first time. Prior to this, the nearest acessible railway station was Benalla 35 kms away. The timber, consisting of Narrow Leaf Peppermint, Messmate and Blue Gum,[1] was not of the highest quality and did not compare favourably with that found in the Upper Yarra and Otway forests in the south but, nevertheless, for the developing north-east and for the Riverina of New South Wales, it was a valuable asset.

Several mills were moved into the area following the opening of the railway, including those owned by McCashney and Harper[2], Lyell and Thompson, Howes and the small plant operated by Hill and McPherson on the Watchbox Creek about 8 kms from Tatong. Hill and McPherson sold their mill in 1915 to Carter Brothers, Timber Merchants of

Benalla, who placed the plant under contract to WJ Thompson.

Thompson was not happy with the site his predecessors had selected. The mill was situated on Kennedy's property amidst a forest of overmature and largely useless Messmate and faced with an order from Carter Brothers for 40,000 super feet of bridging timber he sought and obtained permission from the Conservator of Forests to move the mill into a better patch of timber on the Spring Creek about 14 kms south of Tatong.

Spring Creek

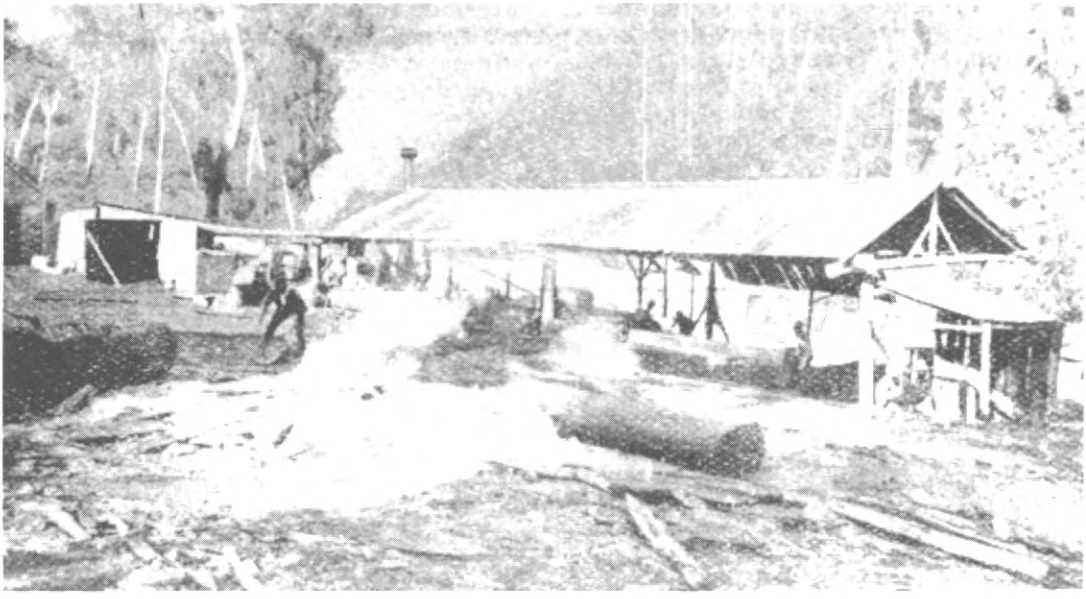
The shift was made in April 1916 before the onset of winter when the rains would have prevented the movement of heavy equipment. Thompson placed the mill on the flat beside the creek, an unfortunate decision in retrospect as he was flooded out several times during the following winter. The wet conditions not only made the working of the mill difficult they also seriously impeded the transport of timber. By the end of 1916 Thompson, unable to get his produce to the buyers, was in serious financial trouble.

Because of the war, Thompson had great difficulty in finding suitable men to work the mill, further adding to his strife. He could not even find a single faller to provide him with mill logs. As a result he largely did his own falling, as well as managing the mill, although at one time he purchased logs from local property owners who felled the trees for him.

The timber also proved to be a disappointment with only a small percentage of the available trees being suitable for sawmilling. Yet, tantalizingly, within 2 kms of the mill, there stood a considerable forest of Peppermint and Messmate. The problem was that it lay, seemingly out of reach, on a plateau 400 metres above the mill. An application to the Conservator of Forests saw much of the timber above the mill granted to Thompson in December 1916. He proposed to extract the timber by constructing a wood lined chute down the 1 in 2 grade to bring the logs to the mill. The logs would be hauled to the top of the chute and then allowed to slide down to the log-yard.

Thompson spent much of the winter of 1917 constructing the chute. He commenced using it when it had been extended about half way up the escarpment but it proved a failure. Many of the logs arrived at the bottom split or so badly damaged that they were worthless for sawmilling. It seems that Thompson's woes were limitless for he was able to send only a small quantity of timber to Tatong that winter not only on account of the road conditions, but also because he could find no-one willing to carry his timber.

The end for Thompson came in January 1918 when the mill burnt down and he was unable to raise the £120 necessary to rebuild the plant. By now a



Thompson's Spring Creek sawmill around 1921. Photo: Dept. of Cons. Forests and Lands

Messmate logs at the Spring Creek mill around 1922. Photo: Dept. of Cons. Forests and Lands

broken man, he passed the mill back to Carter Brothers. They rebuilt the mill and worked it for another two months but without success and subsequently, in April 1919, shut down the plant and offered the mill for sale.

For the next three years the mill lay idle while a buyer was sought. Several indicated interest including Alfred Stone from Gembrook who went as far as paying a deposit but then withdrew his offer before the sale was completed. Cowan Gardner and Company from Ballarat took possession of the mill for a while but did not complete the purchase.[3]

Clearly, it seemed, the answer to making a success of the venture lay in three directions. First the transport problem to Tatong had to be overcome. Next the mill had to be expanded beyond the "spot mill" configuration with a single bench that Thompson had installed and, finally an efficient means had to be developed to enable the forest on top of the plateau to be exploited.

Both Stone and Cowan Gardner and Company had proposed to lay an incline tramway up the escarpment to bring the logs to the mill. But it seems, like Carter Brothers before them, the size of the task and, possibly, the capital backing necessary to carry out the job, were beyond the means of the potential buyer.

McClelland Arrives

Finally, in July 1921, Carter Brothers sold the plant to David J McClelland from Canterbury, a suburb of Melbourne.

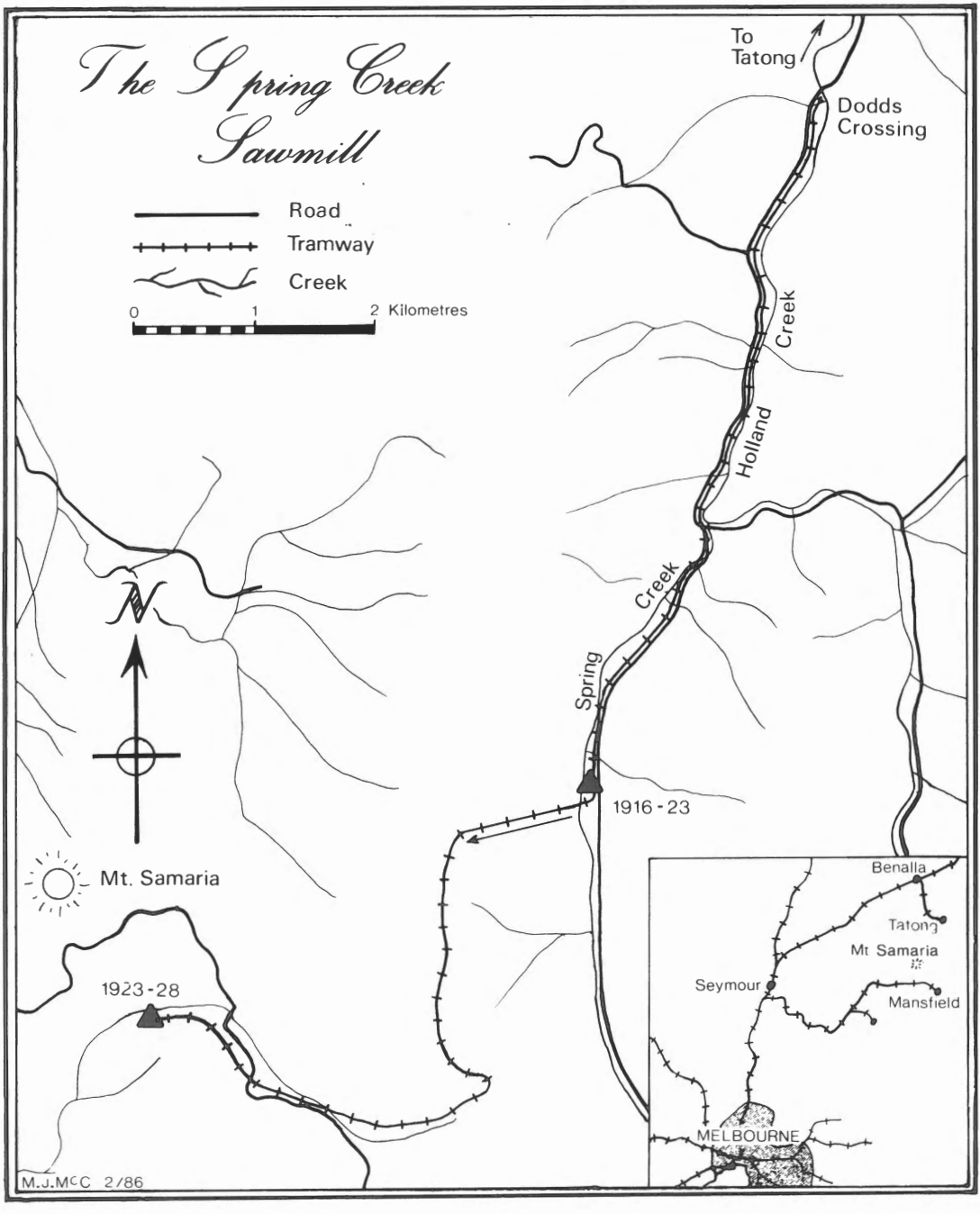
For McClelland capital and engineering expertise were not problems. An engineer and surveyor by profession he had carried out a number of road surveys for the Country Roads Board in the area and knew the region well. He impressed his backers with his enthusiasm, knowledge of the terrain and his engineering experience. Consequently he amassed a considerable financial backing to carry out his proposals.

Tramways

McClelland set about expanding the enterprise as soon as he took possession. Tramways were laid in two directions from the mill. The timber outlet line was laid north to the Tatong Road while a log tramway was constructed south west from the mill to the foot of the escarpment in preparation for the installation of an incline to the plateau above.

The timber tramway was built to a gauge of 3 feet with wooden 5 inch by 3 inch rails nailed to sleepers 3 feet apart. Instead of the usual wooden packing between the sleepers to allow for horse traffic, McClelland packed the tramway with earth to offer some protection from damage by bush fires. Culverts were provided at frequent intervals to guard against washaways.

The tramway was 8 kms in length. At the mill it started within the mill-shed, at the running-off bench so that timber could be loaded onto the trucks as soon as it came away from the saws. The



tramway terminated at Dodd's Crossing, about 9 kms south of Tatong where a staging was erected to stack the timber from the mill and provide a transhipping point for timber being despatched by road to Tatong Railway Station.

Grades over the line were fairly easy with the

steepest section being 1 in 15. But this is not to say the line was constructed without any engineering difficulty. The bridge over the Spring Creek was an impressive 24 metres in length and was erected on trestles. About 1.5 km past the bridge, the tramway had to pass through a swamp. McClelland employed his engineering skills and drained the section of the swamp through which the line passed. To provide a stable formation across the spongy earth a log "raft" was laid through the area and an earthen embankment was built on top of this to take the rails.

If McClelland's timber tramway was impressively engineered and well constructed his log tramway was a masterpiece. The normal grade tramway was constructed to the same standard as the timber line but at its terminus was incorporated an unusually well built three rail incline. The incline carried the logs from the plateau down to the mill. It was constructed with wooden rails and operated on the principal that a loaded truck coming down would haul an empty truck up. A four rail section was provided at the half way mark with fixed automatic points to allow the trucks to pass. In such an arrangement a braking mechanism is required to control the speed of the trucks and McClelland met this need by setting his braking machinery in massive reinforced concrete foundations at the top of the rise.

McLelland's incline at the Spring Creek mill c1922. Photo: Dept. of Cons. Forests and Lands

The brake consisted of two steel wheels set horizontally next to each other. Each wheel was grooved to take the wire rope and flanged to provide a surface upon which the brake blocks were applied. The man in charge of the brake would put it into operation by pulling back on a long lever which, in turn, would force the blocks against the flanges on the horizontal wheels. The total length of the rope was about 1700 metres while the length of the incline itself was around 750 metres.[4] The grade was certainly steep averaging around 1 in 2.5 over the length of the line which rose in altitude by in excess of 300 metres and incorporated bridges over gullies near the bottom. The incline could handle logs weighing up to 14 tons (equal to about 5000 super feet of timber) at a time.[5] Considering that an average mill produced approximately 4000 to 5000 super feet of sawn timber each day so, allowing for waste, the incline could potentially keep the mill running to capacity with only 2 or 3 lowerings each day. A single trip on the incline took 8 minutes.

At the top of the rise McClelland, in keeping with his penchant to construct everything in a substantial way, erected a massive gantry to load logs onto the tramway trucks. Two men were employed here to load the logs and by using the gantry were able to load eight tons in half an hour.[6] The trucks were solidly built with outside frames and axle boxes.[7]

At the bottom of the incline the trucks were disconnected from the rope and a horse team hauled the load over the remaining 300 metres to the mill.

The 1922 Mill

McClelland changed the mill to such an extent that it was substantially a new plant that went into operation in January 1922. The capacity of the mill in Thompson's time was around the 2000 super feet per day. McClelland increased this to 5000 super feet by installing a new 16 hp Marshall portable engine in addition to the 10 hp[8] unit that Thompson had used. He also expanded the machinery by introducing twin breaking-down saws, a rip bench and a picket bench.[9] In all, by the time the mill recommenced operations, a total of £10,000 had been spent on expanding the plant and providing improved means of transport. McClelland directed his efforts to other aspects of the mill as well. He employed 14 men who, with their families, gave a

Log loading gantry at the terminus of the Spring Creek sawmill log tramway c1922.
Photo: Dept. of Cons. Forests and Lands

total population at the mill of around 30 people. He built houses for them and, in a complete departure from normal practice at bush mills, he installed a piped sewerage system to keep the village, as he called it, a comfortable and healthy place to live. For the children at the mill a school was constructed early in 1922 and a house was built for their teacher. McClelland established communication with the outside world by installing a telephone and lines were also installed to the top of the incline and log gantry.[10]

McClelland had hoped that farmers along the route of the tramway would make use of it to carry goods and produce to and from their farms but no evidence could be found to suggest that they did so.

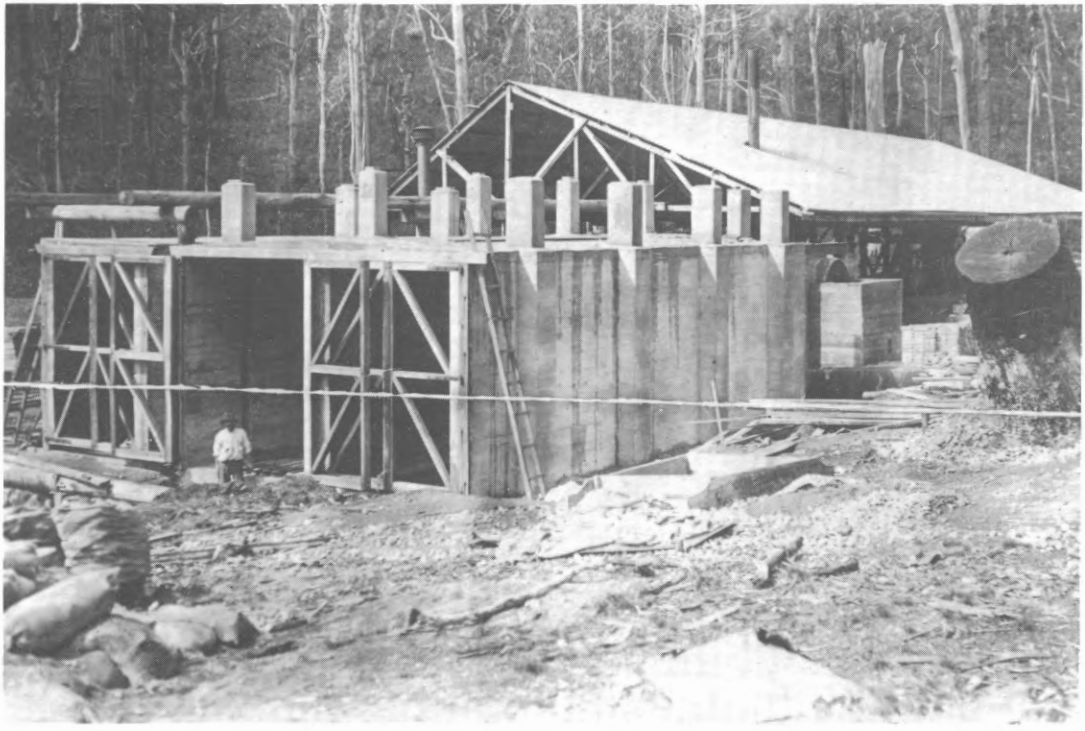
Mt Samaria

By the middle of 1923 the area around the mill and the immediate vicinity of the summit of the incline had been cut out of usable logs. In search of additional log supplies McClelland proposed to shift the plant 6 kms to the south west onto the Wild Dog Creek below Mt Samaria. The move would involve the extension of a tramway which was then in use for the purpose of extracting logs from the head waters of the creek. The line had been constructed into the area from the top of the incline during 1922. This tramway would become the outlet line for the sawn timber produced by the relocated mill.

With the proposed move coming so soon after his purchase and expansion of the mill he found himself short of capital and, as a consequence, formed the Spring Creek Sawmills and Timber Seasoning Co. Ltd to improve the financial standing of the firm.

With the influx of additional capital McClelland moved the mill to its new location around December 1923 and soon after constructed seasoning kilns to produce flooring timber.[11]

The kilns were based on the design of those owned by Cumming Smith at Warburton and Grant and Sons at Healesville.[12] They represented an attempt by McClelland to expand the market for his timber beyond the North-East region of Victoria and the Riverina district of New South Wales to include metropolitan Melbourne where there was strong demand for kiln dried timber. The kilns came into operation around June 1924 and within a short time the workforce had expanded to around thirty men. The mill now boasted of a seven room boarding house, six houses for the married workers and teacher, as well as eighteen huts for the single men. The operations in the bush were also expanded with the construction of a log tramway and the installation of a large log winch at its terminus.[13]



The mill and kilns under construction at Mount Samaria in 1924. The remains of the kilns can still be found at the site. Photo: Dept. of Cons. Forests and Lands

Decline

Despite the extensive capital investment, by 1924 all was not well with the Company. The plant was regarded as an excellent one but it had been established with a distinct lack of appreciation of the costs associated with transporting the produce to the railway station at Tatong. These costs were crippling even when travelling conditions were favourable. But in winter it was far worse as it was not only expensive to haul the timber but at times it was impossible to find anyone willing to make the trip such was the state of the Tatong Road.

To make matters worse McClelland had no previous experience as a sawmiller and, although he was adept at designing, constructing and installing machinery he failed to appreciate that the forest that he was working was not a very good one. In practice the yield of sawn timber from the logs was very low and only a relatively small percentage of the trees available to him were worth milling. They were found scattered throughout the area making necessary the continual construction of additional log tramways and constant shifts for his log hauling winch. All this meant more cost and it was not long before the continual losses of the Company forced the shut down of the mill.

The first sign of trouble came in August 1926 when the plant and machinery were offered for sale as a going concern. A month later, and with no-one at that time interested in buying the plant, the mill was closed and the Company was placed in liquidation.

The liquidator employed the services of Edward Jones, a Melbourne Broker, to try and find a buyer and for the next eighteen months he canvassed sawmillers and the government trying to find someone willing to purchase the plant. On several occasions it was rumoured that he had been successful and the mill was to reopen shortly or else that the plant had been sold and was to be dismantled and moved away but all turned out to be false.

Finally, in February 1928, the mill was sold . . . to McClelland! It seems that he had also been searching for a buyer and had found Clarke and Pearce at Alexandra interested in acquiring the machinery. McClelland duly purchased the mill off the Company he had established and resold it to Clarke and Pearce. Subsequently over the following month the plant was dismantled and taken to

Alexandra.[14] Clarke and Pearce were constructing seasoning kilns in Alexandra at the time[15] so it would appear likely that equipment from the Mt Samaria kilns went there. The Mt Samaria mill was installed by Clarke and Pearce on the Royston River and it became their No 4 mill.[16]

Conclusion

Why did the Mt Samaria mill fail? The reasons for its decline are given above but other mills both in this area and other remote regions of Victoria seemed to prosper during the early 1920s when faced with similar difficulties. What was different about the Mt Samaria mill then? The answer probably lies with McClelland. It would appear that his desire to build a high standard clouded his judgement in terms of what was critical to profitable operations and what was not. A practical sawmiller will say that to successfully run a mill you must be able to get your timber to the markets and keep transport costs to the absolute minimum. McClelland attempted to minimise his transport costs by constructing both his tramlines and the incline to a high standard. In doing so he lost sight of reality in terms of the quality of his bush and what was really required to make a profit. He need not have invested so heavily in the incline: a much more rudimentary construction would have done the job. Money would then have been available to solve the major problem facing the enterprise, that of transporting timber to Tatong. He could have extended his timber tramway or perhaps purchased his own horse teams to get the timber away. In the event, his log extraction system was rarely used to anything like its capacity yet his ability to get timber to Tatong was fatally restricted.

For all David McClelland's grandiose constructions there are few relics remaining today to remind the visitor that one of the more elaborate sawmilling schemes to be found in Victoria in the 1920s was located in this area. Along with the capital that was invested in the enterprise it has all but disappeared beneath the scrub. New trees have grown to replace those milled and a large part of the Spring Creek logging area now forms part of a National Park. Amidst the bracken, however, remnants of the sawmill workings can still be found.

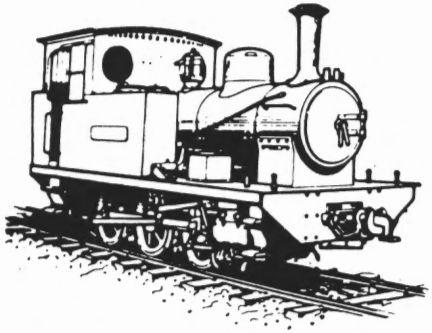
The kilns at the Mt Samaria mill-site are a landmark alongside the road and a close examination of the nearby scrub will reveal formations of the former logging lines. At the top of the incline the concrete foundations of the winding-gear and some of the metal work can be found. The incline can also be discerned with sleepers on the ground and some of the iron rollers still in place. At the Spring Creek mill-site the sawdust heap can be found and a clearing through the trees marks the route of the tramway to the base of the incline. To the casual observer little evidence remains of the line to Dodds Crossing; its formation seemingly obscured by the present-day road.[17]

Acknowledgements

The author would like to thank Colin Harvey, Greg Kirk and Ted Stuckey for their assistance in the preparation of this article.

References

1. Forests Commission of Victoria File 28/722.
2. Interview with C. Waters 24/6/80. Charlie was a long time resident of the Tatong area and worked for McCashney and Harper for 32 years. See also *Light Railways* No. 91.
3. As for Note 1.
4. *Australian Forestry Journal*, March 1922.
5. Spring Creek Sawmilling and Timber Seasoning Company brochure.
6. As for Note 4.
7. As for Note 5.
8. As for Note 1.
9. As for Note 5.
10. As for Note 4.
11. As for Note 1.
12. As for Note 5.
13. As for Note 5.
14. As for Note 1.
15. *Light Railways* No 36.
16. As for Note 1.
17. Site visit by Greg Kirk January 1986.



BOOK REVIEW

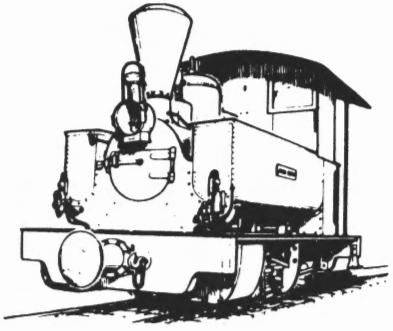
THE BRANCH LINE - A HISTORY OF THE WODONGA-TALLANGATTA-CUDGEWA RAILWAY by Lloyd Holmes. Published by the author, Albury, 1985.

This slim stiff-covered 104 page volume presents in readable detail what might be termed a social history of the now closed Victorian Railways branch line in the north-eastern corner of the state. The author has covered the early settlement of the Upper Murray district leading to demands for transport access to markets.

The eventual culmination was the opening of a branch railway, initially to Huon Lane (later Ebden) and, in later extensions, to Tallangatta, Shelley, Beetoomba and finally Cudgewa was reached in 1921. Besides providing access to and from this formerly isolated region, the Cudgewa line had its moments of glory: as during the construction of the Hume Reservoir from 1919-1936; during the Second World War; for post-war migrant transport; and finally for the transport of vast quantities of cement and steel for construction of the concluding stages of the Snowy Mountains Hydro-Electric Scheme.

Mention is made of the network of construction railways used in building the Hume Dam and some interesting illustrations are included, together with station track diagrams and a gradient profile. At its modest cost of $10.00 posted, this booklet should be of interest to readers of *Light Railways.* Copies are available from Lloyd Holmes, 224 Fletcher Street, Albury, NSW, 2640.

El Pocono



LETTERS

ZEEHAN TRAMWAYS, LR.90 On page 4 of *LR.90* you published a photograph of the Venezia Hotel in Zeehan with a train running past the front of the building and requested information on which line was depicted. In his article "Zeehan's Twenty-Six Hotels — Fact or Fiction?", Tasmanian Historical Research Assoc *Papers and Proceedings,* Vol 20, No 3, 1973, Lindsay Witham published a map showing the location of 19 hotels, together with the tramways along Main Street. The Venezia was the westernmost of the hotels depicted and operated as the Royal, Venezia and Queen hotels at different times. Both the Zeehan Tramway Company and the Argent tram lines ran past the hotel as indicated on the map.

Ambrose Canning
Hobart, Tas.

LOCOMOTIVE ELISA, LR.91 Since sending in the photograph published on p20 of *LR.91*, I have had the opportunity of consulting the Orenstein & Koppel builders list.

The locomotive *ELISA* (not *ELIZA*) is O&K No 5714, a 600 mm gauge 30 hp 0-4-0T outshopped in December 1912 for the Societe de Chrome Elisa, New Caledonia. Cylinders were 165 mm x 300 mm, wheel diameter 580 mm, pressure 12 atmospheres, weight in working trim 6.65 tonnes. Just where the company operated is still a mystery to me.

Norm Houghton's query on the *Makatea* phosphate operation in French Oceania is also partly answered by the O&K list. O&K No 5898, a 600 mm gauge 80 hp 0-8-0T with tender locomotive, was built for the Compagne Francais des Phosphates de l'Oceanie at Makatea in December 1912.

Ron Grant
Christchurch, NZ

REVIEW OF THRA ARTICLES, LR.91 I was very pleased to see the reviews of my two articles in *LR.91,* but there is a slight error I would like to correct — and I have news of a price reduction.

The reprints I sent for review were from a very limited number I had printed at my own expense to distribute gratis, mainly to people who had helped in the course of my research. The only copies available for sale are the complete issues of the THRA *Papers and Proceedings* which contain my papers, among others, and the price had been fixed by the Association.

However, as a concession to members of a kindred organisation, a price concession is now available to LRRSA members — $2.00 each post free — provided they forward their orders direct to me (with cheques payable to L Witham).

As regards the maps in the T-rail article, I was very disappointed too. The figures were prepared for full-page presentation and when it was reduced to half-page (without my knowledge) the running-together of letters etc. was inevitable.

Lindsay Witham
Mt. Stuart, Tas.

ERRATUM

Due to the editor's temporary insanity, the photo on p. 23 of *LR. 91* was incorrectly captioned. The photo shows the Scandia Coy built Rowan car with Kitson motor.

ROUS SUGAR MILL TRAMWAY, L.R. 88 One photograph in this article was captioned incorrectly. The photo on page 8 should be dated 1899. In addition on the same page, "Point Lockout" should read "Point Lookout".

Since writing the article, more information has come my way about the tramways of the Alstonville Mill. A copy of a Decauville catalogue, dated about 1887 and made available to me by Peter Medlin contains a list of sales of "Decauville's Patent Portable Railway and Rolling Stock". Included in the list is the "Alstonville Sugar Company" which had purchased 3,500 yards of track.

Other Australian customers shown are as follows (my comments in brackets):

Colonial Sugar Refining Co., Sydney	
(Homebush Mill)	53,000 yards
Queensland Sugar Co.	
(Inneshowen Mill, Innisfail)	2,500 yards
Swalow and Derham	
(Swallow & Derham, Hambledon Mill)	7,000 yards
Loridan)	
(both Pyramid Mill, Aloomba,	(2,500 yards
Pyramid Sugar Co.) near Cairns)	(4,000 yards
Coueslant	
(any ideas)	100 yards

In the catalogue, track gauges available are given as 20 inch and 24 inch gauge. Although Homebush Mill had a 2ft gauge line, the track gauge at Hambledon and/or Pyramid appears to have been 500mm (19.67"), so it is not clear if metric or imperial measurements were generally used for Australian customers.

John Browning
Mackay, Qld

NAURU AND OCEAN ISLAND TRAMWAYS, LR.88 & LR.91 Since the appearance of Ray Ellis' article on the locomotives of Nauru and Ocean Island a definitive history of these phosphate operations has been published — *The Phosphateers: a history of the British Phosphate Commissioners and the Christmas Island Phosphate Commission* by Maslyn Williams and Barrie MacDonald (Melbourne University Press, 1985). Although this study focuses on the politics of the metropolitan powers and provides little detail of mining or railway operations, it does provide a background setting which allows us to piece together some more details of these fascinating light railways.

The patriarch of the Pacific phosphate industry

was John T Arundel, an adventurous English businessman who established a guano mining operations across the Pacific from 1871, trading as John T Arundel and Company. In 1897 the company was reconstituted as the Pacific Islands Company (PIC). In 1899 a chemical analysis of a rock brought to Sydney from Nauru showed it to be 78 per cent phosphate of lime and PIC representatives immediately set out on a secret expedition to investigate the island and reports of similar deposits on Ocean Island. Albert F Ellis made an "agreement" with the "king and natives" of Ocean Island for the mining of phosphate rock in May 1900 and he returned to commence mining operations in August of the same year. In 1902 the Pacific Phosphate Company (PPC) was registered to take over leases and other rights to mining on Ocean Island and Nauru.

Initially the phosphate mining methods were primitive with the rock being dug by hand with picks and carried by wheelbarrow to tram tracks for transport to drying areas. The first locomotive was introduced on Ocean Island about 1905 when production reached 107,950 tons. A photograph of this loco is presented in the book. This must have been O&K 1688/1905 (which was possibly later numbered 2). The choice of a German builder by a nationalistic British company was unusual, but Arundel was already engaged in negotiations with German interests for mining rights on Nauru and the selection was obviously linked to a wider strategy. The PPC turned to Bagnall for their next Ocean Island locomotive in 1908, but O&K supplied their third locomotive in the same year (*LR.91* p19).

For mining operations on Nauru the PPC entered into an agreement with the Jaluit Gesellschaft (J-G) for a 99 year lease and £25,000 in shares to the German company. It was decided that a more substantial investment would be made in mining equipment from the outset and German engineers were appointed to install the machinery. Mining commenced in 1907 with the first shipment on the 6 July. The 0-4-0WT Krauss ordered through Arthur Koppel was therefore probably the first locomotive on Nauru, with the three O&K 2 ft gauge locos being delivered in 1908 and 1909. These fit Avery's recollection of three 2 ft gauge locomotives on Nauru, which suggests the Krauss was sold or retired at an early date.

With the advent of the First World War, Nauru was occupied by a landing party from HMAS *Australia* in September 1914. Following the war, William Hughes, the Australian Prime Minister, insisted that phosphate mining should be controlled by a joint commission representing Australian, British and New Zealand interests. Formation of the British Phosphate Commission, with a 42 per cent share holding by Britain and Australia and 16 per cent by New Zealand, was negotiated during 1919 and it commenced operations in late 1920. Production rose to 800,000 tons per annum by 1928, but the depression reduced demand to less than 400,000 tons by 1931. Production then rose to 800,000 tons in 1935-36 and the Commissioners decided to upgrade mining equipment on Nauru. This included a new drying plant and regauging of the railway to enable the operation of more powerful locomotives. This was undertaken in 1937, necessitating the importation of five new O&K locomotives as listed by Ray Ellis.

The British Phosphate Company was also involved in the Makatea operations (*LR.91,* p22), having a 51 per cent share in the Compagnie Francaise des Phosphates de l'Oceania formed in 1908 to mine phosphate there. In December 1940 the German raider *Orion* attacked the phosphate installations on Nauru and inflicted heavy damage. Both Nauru and Ocean Island were occupied by the Japanese on 22-23 August 1942 and Makatea became an important source of phosphate for Australia and New Zealand. Nauru, in particular, suffered from heavy US bombing during the war and on reoccupation, in September 1945, the plant was reported to be in "utter destruction". Production on Nauru did not resume until July 1946 and did not reach pre-war levels until 1950. In 1948 the BPC was appointed as managing agents of the Christmas Island phosphate operations and a major expansion of mining operations there was undertaken in 1955.

I can also advise that I am now the 'honorary custodian' of George Bond's Pacific files, including those mentioned by Ray Ellis in his article. If any member is interested in undertaking further research on these railways I would be pleased to supply them with copies of the material.

Bob McKillop
Castlecrag, NSW

WEST MELBOURNE GASWORKS TRAMWAY, LR.90 I have spent hours fascinated with the layout of the West Melbourne Gasworks tramway trying to figure out how it operated. Enclosed is what I think is a reasonable reconstruction of the ORIGINAL track layout at the Yarra Wharf where the loaded colliers from New South

Wales were docked.

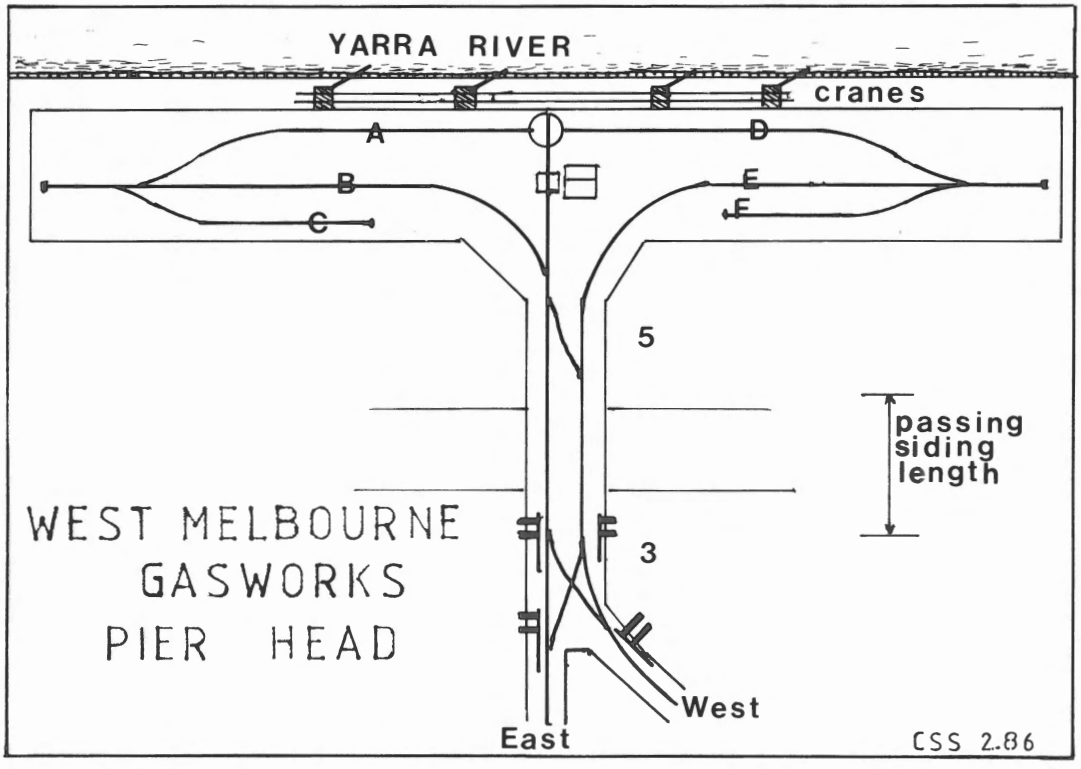
Let us assume that the tubs were loaded on the tracks marked 'A' and 'D' on the plan. They were then pushed to the turntable and out to point '1'. When enough tubs were loaded and marshalled, the loco backed on and the train headed for the works on the East line from 'A', or West line from 'D', as the case may be.

I am handicapped here by having no idea of the trackage behind the Retort House. At the beginning I would doubt that it was as elaborate as shown in the drawing on p16 of *LR.90*. Certainly, originally there was no elevator to the top of the retort house: probably there was just a loop which ran over the top of the coal pile and, perhaps, an engine shed. In early years the coal was brought into the retort house by the little 500 mm gauge dump wagons illustrated on p15. This shows an inside elevator which took the wagons to the top of the retorts which were comparatively small.

If the coal was dumped at ground level, beyond Point '3' could be operated clockwise or counter-clockwise. Returning with empties, the locomotive stopped with the train between '3' and '5'. The engine then ran round and pushed the wagons onto track 'B' or 'E', depending on direction around the loop. I am not sure whether the engine then backed round the loop or that the loaded tubs were hand-pushed out on either main track until the loco had been turned on the turntable. In either case it was now headed chimney first for another trip. None of the available photographs show locomotives in any aspect except chimney first towards the works.

Every Decauville-constructed layout I have seen dating from this period involved plenty of human shunting and there were many strong backs and weak minds available in those days at relatively low wages. Tracks 'C' and 'F' would have been storage sidings for surplus wagons or those needing repairs. Whether the wharf trackage remained the same, in the absence of official Gas Company plans, can never be resolved.

Charles S Small
Cos Cob, USA



KANDOS LIMESTONE QUARRY, LR.91 The photograph on p15 of *LR.91*, believed to be of the limestone quarry at Kandos, shows similar features to the one in the Department of Mineral Resources collection. This latter photograph is positively identified as Kandos.

As part of the re-equipping of the limestone quarry at Kandos, a standard gauge electric railway around the quarry face commenced operations in 1923/24. There are brief published references in the Department of Mines Annual Reports for 1923, 1924 and 1947. The operator during this period was Kandos Cement Co Ltd.

A retired engineer, Mr GT Fox, recalled four General Electric (USA) mine type locomotives with trolley pole current collection and welded cabs for quarry use. Weight was 5 to 6 tons, and there were two axles, each with a 20 hp 240 volt DC motor. Keith McDonald lists the locomotives as GE builders numbers 8951, 8952 of 1923 and 9517, 9518 of 1924. The limestone wagons were steel side tippers with two axles and 12 tons capacity.

Tony Weston
Ardlethan, NSW

COCOS (KEELING) ISLAND RAILWAYS, LR.78 I refer to David Burke's brief article on a "ghost" tramway on North Keeling Island in *LR.78*.

I thought that members may be interested to know that photographs exist of other railways in the Keeling Island group, having been published in the book *German Raiders in the South Seas 1914-1917,* by Robin Bromby, 1985, Doubleday.

A chapter concerns the attack on the Island by the raider *Emden* and photographs of flat top wagons appear on pages 112-113, while photographs of the railway, wagons and wharf are published on pages 116-118. The gauge appears to be either 2 ft 6 in or 3 ft.

Jim Walker
Artarmon, NSW

CUDGEN TRAMWAY, LR.91 I first "discovered" the then isolated Chinderah-Cudgen cane tramway during an initial visit to the far North Coast of New South Wales on a fishing trip in November, 1940 when I stayed at nearby Fingal. My curiousity was aroused by the warning sign and the rails crossing the Pacific Highway, which led me to investigate.

I found the loco shed at the site of the long abandoned Cudgen Mill at which three locomotives were based. They were:

Krauss 0-4-0WT (B/No 2195 of 1889) which had originally been owned by John Robb and reacquired, ex the Happy Valley Dam construction near Adelaide in 1896. It was scrapped in 1933, but bits and pieces were still in evidence.

Fowler 0-4-0ST (B/No 6554 of 1892) which was in steam.

Torpedo, a Decauville 0-6-2T (B/No 245 of 1892), likewise in steam.

The latter I was told (and subsequently confirmed) had been transferred from the CSR Knockroe mill in the Childers district of Queensland, where it had been ordered by Penny & Co as *Sunbeam.* It had gone to Cudgen about 1913, long after CSR had taken over Knockroe and closed it down. In 1940, both *Torpedo* and the little Fowler were in poor condition.

According to such records as I have, the fourth engine at Cudgen, *Sunlander,* which David Burke rode upon and photographed, was a Fowler 0-6-0 (B/No 7244 of 1894) which was transferred ex-Goondi mill, probably as a replacement for *Torpedo,* which became a stationary steam plant in the 1940s. This locomotive was originally at Childers mill, Huxley from 1895-1913. It was transferred to Homebush mill until 1922, after which it went to Goondi and thence Gudgen.

On rereading John Armstrong's article on the Cudgen Tramway in the *ARHS Bulletin* No 464 of June 1976, it seems that there was a fifth locomotive at Cudgen, if only briefly. This was an elderly Fowler 0-4-0ST (B/No 5429 of 1887) which came from CSR's Nausori mill in Fiji. It was similar to

Fowler 0-4-0ST (6554/1892) in steam at Cudgen, November 1940. Photo: JL Buckland

Torpedo (Decauville 245/1892) in steam at Cudgen, November 1940. Photo: JL Buckland

B/No 6554, with which it was later rebuilt as a composite loco and used for a season prior to the withdrawal of steam from the Cudgen tramways.

JL Buckland
East Brighton, Vic.

(Ed. There are differing records on the journeys of JF 7244/1894 between Childers and Cudgen.)

NOTES ON THE GREAT COBAR LOCOMOTIVES, LR.92 Would it be too much to suggest that the John Fowler 2-4-0T *Parrot* on Sanderson's Tramway (photo *Tall Timber & Tramlines* p31) was that originally supplied to John Spiller for his River Estate Sugar Mill in Mackay, Queensland? This was builder's number 4150 of April 1881, for 3 ft 6 in gauge. I have seen a very old faded photo of Spiller's loco, which appears to show that it was of this type. An examination of the photos in *LR.92* shows that in this type of loco, a gauge widening and the resulting displacement of the cylinders would mean an alteration in the elegant line of the smokebox saddle casting. In Sanderson's loco, this has not happened, supporting the idea that the loco was built to 3 ft 6 in gauge. John Spiller sold River Estate in about 1883 and the mill there closed in 1891, so the subsequent whereabouts of the loco, known as *Emma Ruth* could perhaps be clarified if in fact it became *Parrot* around 1899.

EARLY JOHN FOWLER LOCOMOTIVES, LR.87 The John Fowler works list shows that builder's numbers 6338-40 for the Merchant Banking Co have no link with Australia and probably went to South America. Furthermore, correspondence from Richard Horne has established that the John Fowler 0-6-0T *Lord Hopetoun* is of a type not constructed before 1896 (drawing 42549). In a list of Queensland private locomotives produced about 20 years ago, Charles Small placed a loco of this name at the Hambledon Mill of the Colonial Sugar Refining Co Ltd and identified it as 8734 of 1896. The Fowler list shows that this is of the appropriate type and was built for CSRs Childers Mill. Hambledon was acquired by CSR in 1897. As Lord Hopetoun was our first Governor-General and the flags shown displayed on the loco on p24 of *LR.87* appear to include a striped flag similar to the "federation flag" is there some link to January 1st 1901 when the Commonwealth of Australia was inaugurated?

THE FIRST SUGAR TRAMWAYS (FIJI), LR.77 & THE VANCOUVER - FIJI SUGAR COMPANY LTD, LR.78 Information available from the Decauville maker's records shows that builder's number 38 was not supplied to the Deuba Sugar Estate. It was in fact supplied to the Fiji Sugar Co and was Couillet 811 of 1884, built for Decauville. It would appear unlikely that Vancouver - Fiji number 1 was ex Sharpe Fletcher & Co, as we now know that Sharpe Fletcher received John Fowler 4788 of 1884 which later went to Lambasa Mill (see *LR.81* p22). It is possible that Vancouver - Fiji number 1 was ex Deuba Sugar Estate, but I doubt if it was a Decauville. Deuba had its loco by August 1883, but of the handful of Decauville locos supplied by this time there does not appear anything remotely likely to have gone to Fiji. As Deuba Mill was supplied by Mirrlees Tait & Watson, it is possible the loco was supplied to them as agents.

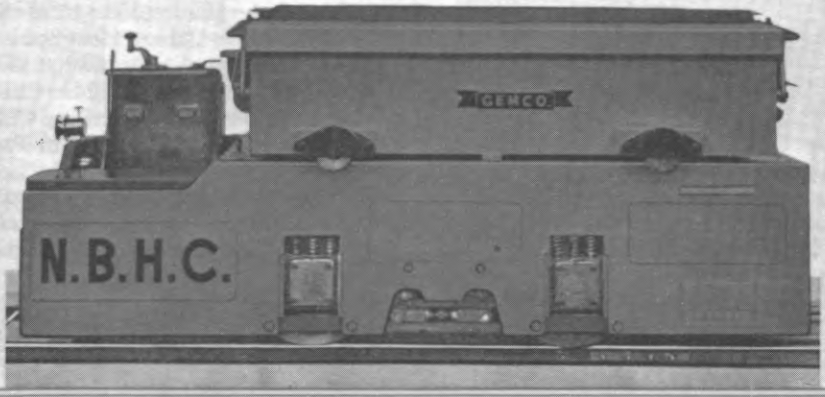
THE WEST MELBOURNE GASWORKS TRAMWAY, LR.90 Jeff Daly has pointed out to me that Peckett 0-4-0ST *Sir John Grice* (1711 of 1926) is not a member of Peckett's *Jurassic* class. Although resembling a Jurassic 0-6-0ST in some details, the loco is in fact a member of the *Cranmore* class. The current edition of the guide to the Puffing Billy Museum at Menzies Creek states that only four such locos were ever built, and that the other three were scrapped in the UK in 1935.

John Browning
Mackay, Qld.

Back Cover: Advertisement for George Moss *Gemco* 8-ton electric battery locomotive, c1965. Photo: courtesy Keith McDonald

GEORGE MOSS PTY. LTD.

Engineers PERTH WESTERN AUSTRALIA



THE GEMCO Mainline

8 TON ELECTRIC BATTERY LOCOMOTIVE

Each Gemco Locomotive is built to exacting specifications with careful consideration to individual requirements of track gauge, haulage capacity, dimensions, etc. Any variations from standard are carefully planned to meet special applications or usage. Locomotives can be supplied with battery and box, plug and socket, charging equipment, etc., or are available bare ready for fitment of own accessory equipment. Sanding gear is available when required.

We are ready at any time to consider your requirements for surface or underground haulage and to submit a quotation for the most economical and reliable unit. To obtain a firm price and delivery, send us details of tonnage to be hauled, distance, gradients, track gauge, type of current and any other special requirements.

SPECIFICATION

Rated Drawbar Pull	2,000 lbs.
Starting Drawbar Pull	4,000 lbs.
Normal Speed	4-5 m.p.h.
Two Motors – Total Horsepower	40
Track Gauge	24 to 42 ins.
Diameter of Wheels	22 ins.
Wheelbase	42 ins.
Minimum Curve Radius	30 ft.
Battery: Lead Acid – 48 cells Alkaline – 80 cells	96 volts (nominal)

DIMENSIONS AND WEIGHT

(STANDARD MACHINE)

Overall Length with Buffers	135 ins.
Overall Width with Battery Box	Varies from 39 to 56 ins.
Overall Height with Battery Box	Varies up to 58 ins.
Battery Platform Height above Rails	30 ins.
Normal Working Weight (approx.)	8 tons

DIMENSIONS AND WEIGHT VARY ACCORDING TO TYPE OF COUPLING OR BUFFER, BATTERY SIZE, BATTERY MOUNTING ARRANGEMENT, SPECIAL MODIFICATIONS, ETC.