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Light Railways is the journal of the Light Railway Research Society of Australia. The Society's members are undertaking research into the history of light railways in Australia and her territories. These include railways and tramways serving the timber industry, sugar mills and mines, construction tramways, industrial railways and narrow gauge passenger-carrying railways.

Articles, letters, book reviews, maps, photographs and drawings on topics of relevance to *Light Railways* are required for future issues. Comments on previous articles offering corrections or additional information are welcome for inclusion in our "Letters" columns. Written material should be typed with double spacing. Material should be sent direct to the editor.

Cover: The Puck Hafflinger which was used as motive power on the West Launceston sewer tramway. See story page 12.

Photo: A.J. Parnell

LIGHT RAILWAYS

GEELONG MISCELLANY

by Norm Houghton

The City of Geelong has been served by a variety of tramways in its construction, industrial and agricultural business ventures. The light railways operated by the Fyansford Cement Works, the Cheetham Salt Co., and Harbor Trust are generally known, but an interesting variety of lesser tramways have existed in most parts of Geelong at one time or another. This article examines some of these.

Geelong Grammar School

That august educational institute known as Geelong Grammar School moved from Central Geelong to its present location at Corio in February, 1914. The school's original situation in McKillop Street had become overcrowded, so 262 acres of open farmland was acquired north of the city for a complete new school.

The site was 1½ miles east of the railway stationthen named Cowie, but now known as Corio - and was completely undeveloped. No proper roads were in existence in the area. Indeed, when the school foundation stone was laid drivers of both motor and horse-drawn vehicles were advised "to take the track through the gap in the fence at the triangular corner of the school territory, where there is solid ground."

Architects for the new school were Messrs Wight & Hudson, who designed a stately pile of brick buildings. The problem of conveying the huge amounts of construction material onto the building site led the architects to consider a tramway from near the Cowie station.

The Geelong Grammar School Council approached the Victorian Railways to install a siding on their behalf at what is now known as School Road. The VR agreed, and laid a dead-end siding from the main line on the north side of School Road with the rails curving east towards the alignment of the road. The siding was staff locked and opened for use on 19 April 1912.

The architects then arranged for a 2ft 6in or 3ft gauge steel rail tramway to be laid more than one



Geelong Grammar School construction tramway, c1913.

Geelong Historical Records Centre

mile east from the siding to the building site. Ganger Seymour was borrowed from the VR to supervise the tramway laying. Work began in mid-May, 1912, and was finished two weeks later.

Thomas Quayle of Brighton was the successful building contractor, and he commenced work early in 1913. It would therefore appear that the tramway remained unused for several months, until the contractor appeared. Numerous four-wheel tramway trucks of varying designs were employed, and on these were carted bricks, timber, cement etc...

Over the next five years, more than 10,000 tons of materials were conveyed over the tramway. Horses and gravity were the motive power employed. The loaded trucks were gravitated down the slope from the siding before horses were attached to two trucks to surmount the next rise, where gravity was again employed for a short section until the horses took over into the school grounds.

The tram remained in use until around 1920. The alignment of the siding appears to have been straightened at some stage and this was the arrangement existing when the siding closed in 1959.

Phosphate Co-operative Co. Wharf

The Phosphate Co-operative Co. of Australia Ltd. was established in 1924 when construction of a factory was commenced at North Shore. The company entered into an agreement with the Geelong Harbor Trust to provide a wharf adjacent to the company's Geelong factory.

The Trust then erected Lascelles Wharf and made it available to the company on September 1928. Phosphatic rock and sulphur was delivered into the factory by means of a tramway system. Raw materials were fed from the ships into wharf hoppers, or elevated bins, and under these were propelled rakes of six tramway skips. Once filled, the skips were attached to an endless belt, hauled to the south end of the wharf and then west up a trestle mounted incline to the storage area in the factory.

The trackwork on the incline was altered at least twice over the years and in its final form had twin rails throughout its length. The tramway system remained in use until 1965 when the wharf was reconstructed and a road delivery system introduced. **King's Wharf Construction**

In 1951-1952 a wharf was built next to Lascelles Wharf and came to be known as King's. The Geelong Harbor Trust contracted the work to the English firm John Howard & Co. Ltd. This company imported its complete plant and equipment plus a prefabricated hostel and other buildings.

Part of the plant was a narrow gauge light railway system comprising track, hoppers, skips and a motor driven tractor. The contract was completed

late in 1952.

Birmid Casting Plant

In 1956-1957 the English firm of Birmid Auto Castings established an engine block plant at North Shore. The construction contract was awarded to local builders JC Taylor & Sons. At that time the now familiar ready-mixers mounted on motor trucks were not in vogue so alternatives were used to move large quantities of mixed concrete.

The concrete was prepared at fixed locations in large capacity mixers and delivered to the site of the pour over a monorail system. Portable sections of track were laid on blocks and over this track travelled a self-propelled, one yard capacity, side tipping skip. The skip was powered by a petrol driven motor mounted at one end of the frame.

Corio Brick & Tile Co.

During 1889 the newly formed Corio Brick & Tile Co. established a brickmaking plant at North Geelong at the corner of Victoria and Roseneath Streets. A clay pit was opened on the site and a system of tramways employed to move raw materials into the works. The operation remained in business on a spasmodic basis until the mid-1920's.

Australian Portland Cement

When the Australian Portland Cement Company was established in 1890 raw materials from the quarry were carted two miles by horse-drawn wagons. There were no proper roads and serious transport problems were soon manifest. The company went into liquidation during 1902 but was reconstituted in 1905 and produced re-commenced.

At this stage a tramway was laid from the edge of the quarry south-east for 1¹/₄ miles across a paddock to meet the nearest road reserve where, presumably, road cartage took over. This system remained in service until 1911 when an aerial tramway was installed direct from the quarry to the works.

Batesford Lime Kiln

Early this century a lime kiln operated on the banks of the Moorabool River at Batesford, practically opposite the cement works quarry. The lime was excavated high on the river bank and sent down to the kilns over a 400 yard tramway.

Fyansford Starch Mill

The Fyansford Manufacturing Co. took over an abandoned flour mill on the Barwon River around 1885 and converted the place to a starch mill. Access to the mill was only possible via the Geelong to Fyansford road, on the opposite side of the river, and as there was no bridge at this spot, an aerial tramway had been thrown across many years before. This extremely crude device was unsuitable for anything but single passengers and was exchanged for a more robust conveyance by the



Above Tramway on Kings Wharf during construction, 1952. Note the tractor. Below: Monorail at Birmid Casting Plant, 1956.

Photos: Geelong Historical Records Centre.



Manufacturing Co. The new vehicle was little more than a large wooden box but it was a considerable improvement on its predecessor.

The tramway was of simple construction, and limited capacity. Its operation, as described at the time, "involved such an amount of labour that it was ultimately necessary to find more convenient access". By 1889 a very rough road had been built and the tramway ceased to be used, although it remained intact until the mill was dismantled in 1908.

Donaghy's Rope Works

The rope manufacturing firm of M Donaghy & Sons operated tramway systems in its rope walk at two factories. The original plant in Fyans Street, Chilwell from 1852 to 1872 had a rope walk 900 ft long in which a twisting machine mounted on rails was used to form the flax yarns into rope by drawing out the strands.

The company moved to new premises in Pakington Street, West Geelong during 1873 and here erected a rope walk 1600 ft in length. A contemporary report describes the twisting machine as "being worked in an exceedingly simple manner, running on rails and a little boy alone being required to attend to it..." Cable traction was used to move the machine up and down the track.

The walk was extended to 2800 ft by the 1890's, but improved techniques led to a shortening of the walk in its later years. The firm closed in 1978.

Geelong Railway Tunnel

Contractors Overend & Robb employed a mining tramway system for the initial excavation of the Geelong railway tunnel in 1874-1875. A line of shafts was sunk along the tunnel route, connecting drives put in, and a light-gauge tramway laid throughout to remove the spoil prior to opening out to the full size.

Gordon Avenue Subway Construction

Early in 1914 the Railway Terrace crossing at the Warrnambool end of the Geelong platform was eliminated by provision of an underpass a little distance to the South.

Excavation began using wheelbarrows, but a tramway was laid down when the cut became deeper and the distance to solid road surfaces at La Trobe Terrace and Fenwick Street lengthened. A single line of rails, plus a rake of side tipping skips was employed to remove the spoil and build the road approaches to the underpass.

Walker's Stable

In 1888 Geelong omnibus proprietor William Walker erected a large bus and livery stable in Yarra Street between Corio Terrace (now Brougham



Tramway on Donaghy's rope walk.

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Street) and Corio Street. The building was 366 feet in length, and along a substantial portion of it were sited the stalls and loose boxes. Fodder for the horses was delivered by a tramway built above the stalls, and dropped off into the mangers. This set-up was described by *The Age* correspondent *Vagabond* in 1889 as "a very cunning arrangement". The stables were demolished in 1900-01 to make way for the Geelong power house.

South Geelong Ballast Tram

Railway contractors Topham, Angus & Smyth, in need of ballast for constructing the South Geelong to Queenscliff railway during 1878-79, secured a supply of stone at Scott's Quarry, Newtown. The quarry was situated some 2¹/₂ miles West of the future site of the South Geelong railway station (this station being erected in 1883). The contractors sought permission from the local municipal councils to lay a tramway between the Yarra Street railway crossing and the quarry, and this was granted in September 1878.

A stone-crushing machine was erected in Yarra Street, right beside the railway crossing, and the tramway laid South to Fyans Street, then due West along the Street for two miles to the quarry situated near the present Elco Street, West of Shannon Avenue. The stone was trucked to the crusher, broken into ballast, and loaded into rail trucks for use along the line of works.

Tannery & Fellmongery Tramways

Since the foundation of Geelong various sites along the Barwon River have been used for woolscouring and tanning. Short lengths of tramway to perform a variety of transport tasks, both within and with-out the works, have been employed in some establishments.

Chapman's Sunnyside Fellmongery in Tucker Street, Breakwater, used a tramway to move bales of wool from the street into the works. A similar arrangement existed in the adjoining fellmongery.

James Munday's tannery had a tramway system in the bark mill to assist in the deposit of ground bark into bags.

Moolap Mushroom Industries

During the latter years of World War II a mushroom farm operated on the Queenscliff Road at Moolap, 5 miles from Geelong. 100 feet of light tramline and a trolley were located on the site, but its purpose is not known to the writer. The farm, plant and buildings were sold for removal in 1945. **References**

Geelong Advertiser; Geelong Harbor Trust Annual Reports, Geelong News of the Week; Victorian Railways Annual Reports; Photographs and Maps in the Collections of the Geelong Historical Records Centre.

THE IMPERMANENT WAY: SLOCOMB AND WALKER TRAMWAY, NAYOOK WEST

by R. Alger

Introduction

Many people, particularly railfans, will be familiar with the term "Permanent Way" which is the name of the formation on which a railway is built. It is thought that the term originated with the builders of railways to denote the "permanent" route as distinct from the various temporary lines used in construction. Whatever its origin, the words give a very satisfying sensation to the lover of railways, for it gives a vision of a proud formation forged across the countryside, through mountains and over valleys which would seem to last forever.

Even the formations of light railways such as the Powelltown Tramway are dignified on some maps as "permanent way". However, not all railway formations are permanent. As a general rule, the more difficult the terrain the more likely the formation will be permanent, while lines laid without ballast in flat country will disappear quickly. Shallow formations in forest can be quickly obliterated by forest litter and the scratching activities of wombats and lyrebirds. A formation in hilly country can last a long time - usually until it is destroyed by activities such as road making.

Every rule, it is said, has an exception and a good candidate for the honour of exception in this case would be a short railway laid between two timber mills in the forested and rocky mountains between Powelltown and Noojee in Victoria. This tramline, deserving of fame, was built by Slocomb and Walker in 1929 to extend their logging and milling activities from their mill site on the saddle between Dick's Hill and The Sisters to a site on the Bunyip fall about a mile to the south.

The Tramway

The route of the tramway lay round the western flanks of The Sisters in a part of the ranges where the solid granite is only thinly covered with soil, the bare rock protruding here and there. (This, however, does not inhibit luxuriant growth of scrub and mighty Mountain Ash trees). Probaby to avoid costly blasting in the granite, the line was fabricated above the surface, the rock and soil covering being hardly touched. Where the transverse slope was slight, the sleepers were levelled up by having one end resting on the soil and the other end resting on a log of suitable size, as shown in the section drawing.

Most of the construction was like this, but where the slope was too great for this method anything available was used to pack up the outer log, be it a tree-stump, a convenient boulder, or a short length of log as shown in the second drawing. Means had to be found to stop the whole paraphenalia from slipping down the slope and again, anything convenient was used, usually protruding rocks or living trees.

It would appear that wooden rails were used, even though a solitary steel rail is still in place about 200 yards from the first millsite. All these wooden rails have rotted away, as have most of the sleepers, but many of the outer logs are still in position (1982). The close spacing of the nails in these logs indicates that the line was fully decked, which suggests horse operation. Between the mills two small creeks were crossed on bridges about 3ft high. From the lower mill a logging line less than a mile long ran out in an easterly direction. As the depth of soil here was greater, this line had a normal earth formation.

How does this should-be-famous permanent way fare today? In just over 50 years the rails and sleepers have gone. Many of the outer logs with



Section drawing of tramline.

their rows of nails are still there, but they are very rotten. In a few years those logs will return to dust and the rusty nails will slide gently beneath the humus. There will be nothing to show that flanged wheels once rolled this way.

Slocomb and Walker Milling Operations

Timber from the Slocomb and Walker mills was transported by steel tramway to Nayook West on the Latrobe River and then by the Powelltown Tramway through "The Bump" tunnel and down the Little Yarra valley to the rail siding at Yarra Junction.

In 1936 the milling activity returned to the first site and, probably at this time also, a steel logging line just over a mile long was laid to the west of the mill. Judging from some of the dead trees still standing in this area in 1960, the Mountain Ash must have grown to near record heights.

In the early 1940's a road, Walker Road, was constructed to the mill site, coming off the Gilderoy-Labertouche road near Seven-Acre Creek and, for some of its length, running next to and on the south of the steel logging line. By this time Walker's mills would have been closed and removed.

During the 1950's Walker Road became disused and overgrown, but was cleared again in the early sixties. Later a bulldozer was let loose in the area and, true to form, had to go at the inoffensive tramline. Steel rails, tied in knots, can still be found reinforcing the scrub at the foot of Dick's Hill. By 1980 Walker Road was again overgrown and reduced to a foot-track. The site of Walker's first mill in the area is still marked by its large sawdust heap, but relics of the mill on Bunyip fall, if still there, are not readily discernable.

For the following summary of Slocomb and Walker's milling activities in the area I am indebted to Mike McCarthy of the LRRSA. Queries in brackets are my own:

- 1914 Slocomb and Walker had a mill at Drouin.
- 1921 S&W erected a mill at the head of Pioneer Creek (or tributary, Bjorksten Creek?). A tramway to the site was built April-June and included one large bridge (over Pioneer Creek or Bjorksten Creek?).
- 1926 Mill and tramway destroyed by fire (14/2/26). The tramway as far as Sharp's mill on Pioneer Creek was rebuilt by April. Part of this tramway was used for logging to the Old State Mill which S&W purchased from Germano in May. (As this tramway was on the Latrobe-Pioneer divide, well above the mill on lower Pioneer Creek, were logs snigged down from one tramway to the

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other?).

- 1929 S&W reliad the tramway up to and through the old mill site at the head of Bjorksten Creek to take logs from southern or Bunyip fall of Bunyip-Pioneer divide. The mill was moved to a new site late in 1929. Slocomb left the partnership about this time and Walker purchased Sharp's tramline which he had been using.
- 1930 The mill closed because of the Depression. Walker went to work for Yelland at the No. 3 Britannia Creek mill.
- 1932 Mill recommenced working (on Bunyip fall?).
- 1936 The mill moved back to the site burnt out in 1926 at the head of Bjorksten Creek.

1938 Walker moved his activities to Tanjil Bren, some thirty miles to the east.

Ed.: A letter in L.R.80 (p21) provides details of a Nattrass rail tractor purchased by JD Walker for his Nayook West tramway in 1927. This tractor operated successfully until destroyed by bushfires at Nayook West in 1939.

A Note On The Map

Maps of areas with rampant forests, such as this one, should be made in layers; a new layer being superimposed each time works such as tramlines, roads, or mills were constructed, burnt out, grownover or reworked. Only geographical features, the valleys and ridges are constant. Thus the map, which covers a period of about twenty years, shows some features which did not exist together.



Sketch of arrangement to pack up the outer log on steep slopes.

R. Alger



In 1929 there were no formed or metalled roads at all in the area. There was a road of sorts between Powelltown and Noojee, but its route was different from the present road and its was earth surfaced throughout. Any other "roads" were merely firebreaks or wheel tracks. By 1950 most of the present network of formed road was in place. No attempt has been made to show these roads on the map, except in the area around Walker's mill site.

Sources

Except for the information supplied by Mike McCarthy, the article is based on my own observations over the years which were aided by reference to the Rover Scouts Jamboree Map of 1935. My approximate dates could be made more exact by reference to official records, but this hardly seems necessary for the subject of the "Impermanent Way".

WEST LAUNCESTON SEWER TRAMWAY LAUNCESTON, TASMANIA

by A.J. & R.R. Parnell

Introduction

Launceston, Tasmania's second largest city is the industrial gateway to the north of the island state. Close to the centre of the city the North and South Esk Rivers join to form the Tamar River. The South Esk, the larger of the two tumbles along the rocky bottom of a deep gorge and finally forms the start of the Tamar River. In contrast, the North Esk flows through undulating country and adds its waters to the Tamar River north of the South Esk junction.

In the early seventies the rapid expansion of the West Launceston housing estates above the South Esk Gorge placed a great strain on the existing sewerage trunk line leading to the city outfall. To overcome this the Launceston City Council decided early in 1975 to call tenders for the laying of approximately 2¹/₂ miles of trunk sewer pipe.

The Sewer Contract

The route chosen by the Council was the southern side of the Gorge Cliff grounds, a beautiful, rugged, rocky reserve through which the South Esk flows. Because it was a reserve there had to be a minimum of environmental disturbance by the winning contractors. The Gorge's marginal timbered face consists of dolerite rock with a slope of 25° to 60° to the bottom for at least two miles of the route. The fall of the pipe was to be 1:200, except for a decline at the city end of 25° to 35° .

Steel Mains of Hobart made the 30ft long by 16in diameter concrete lined steel pipes. These were to be buried where possible or cradled on concrete piers rising from the rocky terrain: the ends of the pipes to be electric welded. Dillingham Constructions Ltd won the tender and a contract was signed in June 1975.

The Tramway System

Because of the difficulty of access to the route and the fact that any roads built would have to be removed at completion, it was decided to build a tramway parallel to and slightly higher than the proposed pipeline on its outer or lower side. After some teething troubles the system proved successful not only for the laying of the pipes but also for the minimum effect on the environment.

It was envisaged that the tramway would be built on trestles with a planking road bed and 4in x 3in timber guides for the tram wheels. For motive power two Jeep type four wheel drive vehicles were chosen to be put under test: a Hafflinger and a Suzuki. The test track was in mud and the Hafflinger won hands down by towing the bogged Suzuki out.

During July a trial section of the planking tramway was built but proved unsuccessful as the side walls of the rubber tyres gripped the timber guide rails and caused the wheels to mount them. These rubber tyred wheels were replaced with single flanged steel wheels using the 4in x 3in timber as a rail. This also failed as the Hafflinger's independent suspension caused the machine's track to vary enough to drop all the wheels inside the rails.

In August it was decided to try a steel rail system and modify the Hafflinger to reduce the risk of derailment. This was done by replacing the steel, single flanged wheels with steel double flanged wheels with the inner flange tapered to 80°. The LIGHT RAILWAYS

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independent suspension was made rigid by metal straps, and as a further precaution the steering was restricted to 15° . Derailment devices were fitted to the Hafflinger's front and rear which prevented it from dropping more than $1\frac{1}{2}$ in. These modifications proved satisfactory. The Company issued instructions that the Hafflinger was to be driven at no more than 5 miles per hour and always in four wheel drive gear.

Trouble arose with the wagons on the sharp curves of the line due to their 10ft wheelbase. This was overcome by pivoting the front wheels to a triangular arrangement on the drawbar, as well as fitting each wheel with roller bearings and splitting the axles.

Tramway Construction

It was decided to start the job in the middle of the proposed pipeline and lay its lower section towards the city first. A quarter-mile gravel access road was built from an existing city road and a base camp set up at this junction. Later this camp was moved to the pipeline end of the access road. When the lower section was completed, including the decline, the tramway was dismantled and rebuilt for the upper section. This meant that at no time was there more than approximately 1¹/₄ miles of tramway in use.

From the access road 'Cyclone' tubular towers were built at 20ft spacings and joined together by parallel 'Davis' trusses. Vertical steel brackets were clamped to the top chord of the trusses at 3ft centres. 4in x 3in hardwood sleepers were fixed to these brackets by nails which were bent over. On top of these, at 3ft 6in gauge to suit the Hafflinger wheels, 14lb Bullhead rails were dog spiked upside down and the bottom flange used as the running surface.

3000ft of this Bullhead rail was leased from Mr E Clothier's store at Distillery Creek. It had come originally from the Cornwall Coal Company's mine at St Marys on Tasmania's east coast. Another 1000ft of 25lb normal rail was leased from various farmers in the Camden-Scotsdale area. This rail was from the Camden Sawmills and had initially come from the Beaconsfield tramway.

The tramway in following the contours of the cliff had several curves with a radii as little as 33ft. On



General view of the tramline near the centre access. Note the long steel bolts to tie the rails together on curve.

Photo: A.J. Parnell



Pouring concrete into pier boxing. Note train of one side dump wagon and one flat wagon with kipple.

Dillingham Construction.

the sharper curves long threaded bolts tied the rails together to prevent spreading. An allowance of $1\frac{1}{2}$ in over the gauge was given on these curves.

The last 540ft of the lower section was a decline of 25° to 35°. A separate line was built from close to the end of the Hafflinger tramway down to Basin Road at the same gauge. The motive power was a petrol winch situated at pavement level in Basin Road. The haulage rope passed over the tramway sleepers then around an 8in diameter pulley block at the top of the incline and connected to the coupling of a side dump hopper wagon.

Operation

It had been thought that two Hafflingers would be needed but one was found sufficient. Four wagons were used, three flat tops and one side dump hopper type. All wagons were fitted with steel double flanged wheels and a similar derailment device at each end as for the Hafflinger.

There was only one accident that could have been serious. Fortunately no damage or injury was sustained when a tower collapsed under the weight of a train and derailed the Hafflinger. On inspection it was found that 15 scaffold ties had worked loose causing the collapse.

In working the tramway, timber and light materials were loaded by hand. For heavier materials including the sewer pipes, a 10-ton Austin Western Rough Terrain crane based at the access road point was used. However, large compressors used for rock drilling power were dragged to their site by a bulldozer.

The tramway was utilised not only for carrying materials, but also as a working platform. For instance, when the piers were boxed, 'Ready Mixed' concrete was poured down shutes from either, the side dump truck or a 'Kibble' held in a framework on one of the flat trucks. The side dump truck proved ideal for back filling the buried pipe section with gravel.

The sewer pipes were conveyed to their site position resting on 4in x 3in timber bolsters on a flat truck. To unload these a mono-rail gantry was set up above the middle of the truck and the pipe was lifted from the flat truck by a chain hoist. A single rope sling was centred around the pipe and when the



Lowering pipes into position from tram. Dillingham Construction.



pipe was free of the timber bolsters the hoist and its load were pushed along the mono-rail. The now swinging pipe was lowered in the cradled top of the piers ready for welding.

Completion of Contract

Work on the tramway started in August 1975 and finished in March 1976. The tramway was the conception of Mr Edward Hyrenski of Melbourne, Dillingham's Senior Estimator. The task of developing this brilliant idea into practice and bringing it to a successful conclusion was the responsibility of Mr David Doyle, Site Manager and Engineer. He was ably assisted by his foreman, Mr Peter Bird.

Technically and in practice the tramway was an ideal solution to a difficult problem. It achieved the desired minimum of environmental disturbance, enabled the contract to be finished well within the stipulated time and was financially advantagous to the contractors, Dillingham Constructions Ltd.

Acknowledgements

Our thanks to Mr David Doyle, Dillingham's Launceston Engineer for the supply of information, photos and the checking of the script.

BLACK HAWTHORN 0-4-2ST WESTERN

by R.F. Ellis

Western was a square saddle tank 0-4-2 built by Black Hawthorn & Co of Gatehead on Tyne, England, and carried their works number 1134 of 1897. The little 2 foot gauge locomotive was typical of the products of Black Hawthorn supplied mainly to industrial railways at home and overseas. The engine had $6\frac{1}{2}$ in x 12in cylinders, driving wheels of 22½ diameter, trailing wheels of 18in diameter, rigid wheelbase of 3ft 2in, overall wheelbase of 7ft 3in, boiler pressure of 130lb, water capacity of 150 gallons, coal capacity of 3 cwt, and weighed about $6\frac{1}{2}$ tons empty.

It is worth recalling that Black Hawthorn had ceased trading in 1896 and the firm was bought by Chapman & Furneaux who carried on building locos to the same BH designs. Despite the liklihood that *Western* was completed after this event had taken place, the works plate clearly shows the name of Black Hawthorn as builder.

Western was supplied new to the Western Silver Mining Co's Zeehan Western Mine which was located 1½ miles north-west of Zeehan on the west coast of Tasmania in an area that was rich with narrow-gauge mining tramways. Zeehan Western had commenced operations in 1888 but did not purchase their first locomotive until about 1892 - a Krauss 0-4-0WT, supplied through the agents Bloomfield Bros. The purchase of the loco is likely to have been prompted by the opening of the first section of the Zeehan Tramway Co line to Western Mill in 1892 and no doubt the mining tramway made a connection with the ZTC line. Western Silver Mining Co ceased operations in 1901 and the leases were taken over by a British company, Zeehan Western Ltd, who also purchased both locomotives. The latter company worked the leases until surrendered by them in 1918.

In the meantime the Krauss was sold in 1907 and *Western* became the sole motive power. Presumably the engine kept mainly to its home territory, but there are varying reports that locos owned by the mining companies in the Zeehan area did venture onto the Zeehan Tramway on occasions and it is possible that *Western* was one such loco and may even have got as far as Zeehan.

Zeehan Western presumably closed their tramway about 1916 as *Western* was sold in that year to Sydney agent, JE Toole. It would appear that the locomotive was shipped to Melbourne, most likely on a vessel of the Union Steam Ship Co of New Zealand which held a virtual monopoly of the Tasmanian west coast trade at the time. The loco



Builders photo of Black Hawthorn 0-4-2T Western.

J.L. Buckland Collection.

was stored by the Melbourne Harbour Trust at Williamstown to await a buyer. It was advertised for sale in 1918 but nothing eventuated and it appears that the Melbourne Harbour Trust, in an effort to recover substantial storage fees, disposed o of the locomotive.

At this time the Victorian State Rivers & Water Supply Commission had began a major statewide rural water supply project which involved the construction of weirs and dams at a number of locations. To work on construction site tramways the SR&WSC purchased a number of 2 foot gauge locos, including the Black Hawthorn *Western* in April 1920, which was first sent to Thompson & Co at Williamstown for complete overhaul.

The story of *Western* becomes complicated from here on due to a lack of records as to its movements. Firstly it can be stated that the SR&WSC only had ONE Black Hawthorn 0-4-2T and not two as stated by some sources. The so called second BH loco is quoted as works number 1173 however confirmation has been received from overseas that this was a standard gauge 0-6-0T sent to Sweden. Outside framed locos built by Black Hawthorn are rare and only three are known to have been built. The other two have different wheel arrangements and were supplied elsewhere.

The first project claimed to have been home to the locomotive was that at Torrumbarry Weir on the Murray River northwest of Echuca. Here an 8½ mile tramway had been constructed to connect with the Victorian Railways at Torrumbarry Weir Siding and was used to convey materials to the weir site. The locomotive arrived here late in 1920. The author has only seen two photographs reputed to have been taken at this site neither of which show the nameplate which presumably had been removed previously. One of these photos shows the Black Hawthorn but with side tanks, and the number 22 on the visible tank side.

Work at Torrumbarry was completed in December 1923 and it is claimed that BH 1134 was then transferred downstream by river, no doubt on a barge or the deck of one of the famous Murray River paddle-steamers, to the construction site of No. 11 Lock and Weir near Mildura. Work on this project had commenced in August 1923 and the locomotive was presumably used to move material and spoil around the construction site. The lock was first used in August 1927 so construction was no doubt completed mid-1927.

The next project to lay claim to BH 1134 was at Yarrawonga, but as there is a gap of some eight years between the start of work at Yarrawonga and completion of the Mildura project, it could be that the locomotive may have been elsewhere in the interim. Claims have been made variously that the loco was at SR & WSC projects at Mafra, Heyfield or Glenmaggie, but due to a lack of firm evidence to this effect, the author is inclined to discount these theories and it seems likely the engine may have remained in storage. If any readers can clarify this, the editor would be pleased to hear from them.

In 1935 the SR & WSC commenced construction of the Yarrawonga Weir, approximately midway between Torrumbarry and the Hume Reservoir near Albury, also on the Murray River. This was quite an extensive project and no less than six 2 foot gauge locomotives are claimed to have worked here, including the Black Hawthorn. It is speculative what date BH 1134 arrived here, although 1936 has been suggested as a possible date by some sources, and involved yet another river journey for the loco. The tramways here were mainly used for the removal of waste and overburden and the carriage of construction materials around the site.

A third photograph of the engine on an SR & WSC project is available. This shows the engine obviously in later life as side tanks have been removed and water supply is provided by a small galvanised iron tank carried on 4-wheel flat truck behind the locomotive. The author is inclined to think this was taken at Yarrawonga, but has no firm evidence to support the theory.

Work was sufficiently advanced at Yarrawonga to dispose of most of the tramway equipment in June 1939 and the weir officially came into operation the following month. BH 1134 was sold for scrap in June, but was noted as late as February 1941 still standing in a scrap yard at Ratcliffe Street, West Melbourne. The boiler is claimed to have found its way to Johnson's Tyne Foundry in South Melbourne where it was still noted as late as 1959.

The author acknowledges earlier issues of *Light Railways* for information on this locomotive, and extends thanks to John Buckland, who also supplied the photo, Charles Small (USA) and Eric Maxwell (UK) for additional information on this attractive little engine.

AN UNUSUAL LOCOMOTIVE

by K. Neal McDonald

Beginnings

Early this century, my father, AH McDonald set up his *Imperial* Engine Works in Hawthorn, a suburb of Melbourne, moving to Richmond (then known as Burnley) in about 1910. The growth of the business for those days was nothing less than phenomenal. Starting with an initial capital of $\pounds 10$ in 1902, McDonald was well established by 1904 when he took his younger brother Ernest into partnership under the name of AH McDonald & Co. By then he had designed, and was producing in quantity, two basic petrol engine models in single and multi-cylinder versions.

Petrol Engines

This was the beginning of a period of tremendous growth in the popularity of the internal combustion engine which McDonald saw as the power unit of the future, replacing the traditional steam engine which he considered outdated. The future of the world, he believed, would be increasingly influenced by the IC Engine. McDonald allowed no opportunity to pass in finding new uses for the engines he was building. He had served his apprenticeship as an electrical engineer, so from the beginning, engine driven generator sets constituted an important part of the factory's output, but he continually sought other machinery of which the heart and soul was the engine. By 1908 McDonald built his first farm tractor, and numerous road rollers also started to emerge from the assembly bay.

Locomotive

In 1911 he was approached by a sawmiller near Warburton who was interested in a petrol driven locomotive to replace his steam locomotives. McDonald immediately set to work to design and build a locomotive based on his standard twin cylinder 20 HP D type petrol engine coupled with an adaption of the tractor/roller transmission.

The locomotive was delivered and put to work hauling trucks of sawn timber from the mill to the



The locomotive as it first emerged from the factory. The gauge appears to be about 3ft.

railhead at Warburton. The track would have been a typical bush tram track consisting of rough sawn timber sleepers and rails, poorly supported on existing ground, without any ballast. In the wet winter weather the area would be virtually waterlogged with creeks running high, so the tracks and wooden trestle bridges could be subject to considerable instability. Whatever the cause, within a short time the locomotive ran off the rails and rolled into a steep gully. Evidently the sawmiller could not or would not pay for the locomotive, so McDonalds somehow rescued it and returned it to the factory for repairs.

In the stocktaking list at 30th June 1911 the locomotive is shown valued at $\pounds 274.8.0$. It was still in stock at 30th November 1912, value now $\pounds 287.6.5$. This seems to be its last appearance as a stock item.

In 1913 the locomotive was sold into South Australia where it worked on the jetty rail tracks at Kingston, hauling trucks of wool from the woolsheds to ships' sides. Kingston had at least three woolstores, probably Elder Smith, Dalgety, and Goldsborough Mort, all having spur lines to the jetty in addition to being connected to the SA Railways goods siding.

The railway connected Kingston with Naracoorte, and a large amount of wool produced in the South East was shipped out via Kingston on small coastal ships by which cargo was carried between Port Adelaide, Kingston and other South East ports. In addition wool was often loaded on to ships bound for Britain and Europe. The jetty was then 1460ft long plus a 450ft embankment. Nowadays it is much shorter.

Confirmation of part of the locomotives history was kindly supplied by Arnold Lockyer who discovered that the driver shown in the photo was Syd Pincher. A careful look at the wool bales clearly shows the branding *HYNAM SA*. Hynam is, of course, a small town with a siding near Naracoorte.

The locomotive worked for many years at Kingston until just before or after World War II. I saw it in the back of WY Scrutton's machinery yard in North Terrace, Adelaide, after the War. It was cut up for scrap when Scruttons sold the property to Kodak around 1950. Scruttons were SA agents for AH McDonald & Co for many years.



The locomotive working wool trucks at Kingston, South Australia. Driver Syd Pincher is shown in the enclosed cab. The locomotive had been rebuilt to 3ft 6in gauge by this date.

Perhaps readers of *Light Railways* may be able to throw more light on the history of this unique locomotive. I am presently engaged in research preparatory to writing a history of AH McDonald & Co. If any reader has any information that may assist I would be happy to hear from him. My address -KN McDonald

5 Grosvenor Street Frankston 3199

LRRSA SALES ITEMS	
Trestle bridges and tramways: the timber industry of Erica	
District, 1910-1950. by Mike McCarthy	\$3.50
MAP PACK No.1 - Upper Yarra District	\$2.50
MAP PACK No.2 - Erica & District, including Tyers Valley,	
Thomson Valley, etc.	\$2.50
Fiji's Sugar Tramways, 1882-1982	\$4.65
Back Numbers of Light Railways - Nos. 69-72 - Nos. 73-82	\$2.05 \$2.55
Available from: LRRSA SALES PO Box 32, MORNINGTON, Vic. 3931	

LIGHT RAILWAYS



BOOK REVIEWS

MOUNT MORGAN: GOLD COPPER AND OIL by John Kerr. Brisbane, JD & RS Kerr, 1982. \$9.95 posted from LRRSA Sales, PO Box 32 Mornington, Vic. 3931.

Australia's history has, to a remarkable degree, been shaped by events on mining fields. The stories of individual fields tell of frustration for many and fortune for few, of social conflict and capitalist speculation, of entrepreneurship and the pioneer spirit that shaped a continent. One of the most remarkable stories of Australian mining history, and one which has received scant attention by historians, is Queensland's "Mountain of Gold", Mount Morgan. John Kerr now makes the story available in this excellent book. As the preface states:

Mount Morgan: Gold, Copper and Oil is the story of one of the world's greatest gold mines. Mined for nearly a century, its discovery is shrouded in mystery, its early ownership a matter of intrigue and legal battle; and its enormous wealth the downfall of many of Queensland's leading citizens in speculative greed.

John Kerr's detailed history of the Mount Morgan mine and company was commissioned by Peko-Wallsend Limited, who acquired the mine in 1968, to commemorate the centenary of the discovery of the rich lode of ore in July 1882. Its 248 pages, amply illustrated with 116 photos and drawings and 3 maps, tell a fascinating tale spanning the mine's early phase as a fabulously rich gold deposit; the formation of the Mt Morgan Gold Mining Company in 1886; exploitation of the underlying copper lode from 1905 and the expansion

of the company into a vast integrated mining empire; the post-war metal price collapse and the 1921 strike which resulted in closure of the mine; its reopening in 1922, but with continuing industrial conflict; the 1925 fire, the flooding of the mine and liquidation of the company in 1927, followed by record floods in 1928 which threatened an early end to the mine. Kerr views the mid term crisis in these terms: "the worst excesses of mob action had closed the Mount Morgan mine: now self-sacrifice and cooperation was to set it back on its feet" (p.185). A new company Mount Morgan Limited took over the assets and developed the famous open cut to extend the life of the mine until 1981, 99 years after the first ore was mined. By then the mine had yielded 225 tons of gold, 360,000 tons of copper and 50 tons of silver.

My one criticism of this book relates to the authors analytical approach to the historical process, which may stem from the books origins as a company-commissioned history. At one level the author takes a strongly promanagement company position, particularly on industrial issues. At a deeper level, history is viewed largely in terms of the individual actors rather than the underlying economic and social forces which shaped the behaviour of the actors. As a result the book is disappointing for the railway enthusiast. Apart from a section on the building of the Government railway, which was opened in 1898, and its significance for company profits, the text offers little on the role of the 'iron way' in making the mining venture possible. Of the direct railway contribution

to mining operations we are told very little: there is brief mention and photographs of the use of small tramway trucks from 1863 and reference to a locomotive operated two-foot gauge tramway operating in 1897 to provide "a grand oreway through the mountain to convey material for the new plant at the south side of the mountain" (p.93). Otherwise we have to turn to the excellent photographs for evidence of the substantial contribution by railways to the Mount Morgan operations including underground tramways, quarry tramways, electric surface railways and heavy duty ladle cars.

RFM

BHP LOCOMOTIVES by David Griffiths. Railmac Publications, 1982.

The BHP Group today operates the largest and most varied locomotive fleet apart from those of the Government systems. Rostered are the products of all major modern Australian builders with the locomotives ranging from large main line units to small shunters.

The latest Railmac publication is a status report on these engines, bringing together an amount of previously published material with current (late 1982) observations.

The locomotives of BHP, AIS, Commsteel, Mt Newman Mining, Lysaghts as well as Tubemakers and Blue Circle Southern Cement are covered. The latter two companies, while BHP has an investment in them, are not subsidiaries or under BHP management control and their inclusion as such can only be wondered at.

Each different locomotive design is grouped by owner with basic data such as engine type, power output, etc given. Of interest to loco spotters is a comprehensive rundown on liverys and numbering. Additionally an abbreviated background and details of current operations are given. This is the most pleasing aspect of this book as a concerted effort has been made to give up-to-date information.

A mixture of historic and current photographs illustrate the book, though notable omissions are the Commsteel & Tubemakers locomotives. This is regrettable as both are unique among their builders products.

The disappointment to this reviewer was the authors opting out of covering BHP's equally large and varied fleet of underground battery and diesel locomotives and the electric locomotives serving the steelworks coke ovens. From the early Malcolm Moore to the Baldwin bogie underground locomotive these equally deserve recording.

For those unfamiliar, but interested in, with BHP's surface diesel fleet and wanting up-to-date data this book can be recommended. However anyone wanting a knowledgable insight into the purchasing, development and technology of these varied locomotives will have to await another publication. 32pp. Colour cover. RRP \$2.90.

CLW

MYALL LAKES Creation to controversy: an intimate story by HK Garland and Joy Wheeler. Palms Press.

The authors have really done their homework, and much leg-work as well to produce such a fine book with a vast amount of historical in its 172 pages - 140mm x 205mm, good quality paper which contain 4 maps, 37 colour photographs and 32 black and white scenes.

Creation to Controversy: an intimate study; so says the front cover and so very true of the contents which span from the creation period of 280 to 350 million years ago, through to the controversy of sand mining and the National Parks of the present age. There is detail on the early Aboriginals, through the invasion of the white man, the fate of the original occupants, settlement and consolidation by pioneer settlers, their families, marriage and education of the young generations and the trails and tribulations of those early, and later settlers. The flora, bird, insect, mammal and reptile life are embraced, as well as information on the growth, prosperity and demise of local industry.

All this has been put into enjoyable and interesting reading to the extent that once started one wants to read on and learn more about the area.

For the light railway enthusiast there is brief detailed history of the horse-drawn wooden-railed tramway era, the steam lines and the life of those who created and operated them - of the timbercutters who supplied the tonnage hauled, of the sawmills and the steam timber punts that plied their trade on the waterways of Myall Lakes. In respect of this topic one is given the "taste of the meat" just to whet ones appetite for more. I was left with the feeling that there is much more detail for the researcher to uncover - more to be put into print to preserve the history of our early years of nationhood.



LETTERS

GAZETTEER OF INDUSTRIAL STEAM LOCOMOTIVES: LR76 Doubtless many readers will have written in disputing the reference on page 102 to Baldwin 5159/1880 being the first locomotive of the Berrima Coal Mining & Railway Co. Apart from the fact that the smokebox door "number plate" on Baldwin 6114/1882 was blank and NOT No. 2, which would have been appropriate if it had in fact been the second loco, the Baldwin records show that 5159 was a 2-6-0, No. 2 of the Pratt Coal and Coke Coy.

JOADJA LOCOMOTIVES: LR62 & 78 On page 22 of LR78 Allan Watson raised the question of where Andrew Barclay 211/1879 was originally used. While he implied that it COULD have been used at Joadja, I would stress that although this cannot be proved or disproved, there is absolutely no evidence to substantiate such speculation. Indeed, since I wrote on the Joadja locos in LR62, I have come across a further reference in the AB records. This relates to AB job No. 4770 of 1886 which was for the supply of new steel tyres for the AKOM Co's locomotives. This clearly identifies FOUR locos, quoting their builders number as 180, 222, 237 and 253 (and, incidently, showing that AB 222 had flangless centre driving wheels by this time, as did the other two 0-6-0STs). So, as AB 211 was NOT there in 1881 nor in 1886 (and note that having bought one 4-wheeler loco in 1881 the AKOM Co reverted to a 6-wheeler for its 1882 purchase) I find it difficult to believe it would have purchased AB 211 secondhand after this date.

TASMANIAN SCENES: LR80 The locomotive shown on pages 15 and 16 is undoubtedly (from a comparison with the general arrangement drawing held by the Science Museum, London) Sharp Stewart 2030/1870, the Mersey & Deloraine

Ty. Co's 4ft 6in gauge 0-4-0ST.OC. The only discernable differences compared to the makers drawing are the addition of a brake pipe, substitution of centre buffer couplers for a hook and chain drawgear with side buffers, and provision of rudimentary canvass awnings (with rectangular lookouts?) attached to the corregated iron cab roof. A full history of this locomotive was given by Ray Ellis on page 7 of LR78. What is curious is that the photograph, if not taken on the Mersey & Deloraine line, which seems unlikely in view of the altered couplings, must show the loco as converted to 3ft 6in gauge. How this was done with so little apparent alteration is not clear, especially as the firebox was 3ft 7in wide and not only lay between the frames, but also between the rear part of the trailing wheels. But, whatever was done, the locomotive was quite clearly, in the first instance anyway, converted to a 0-6-0ST.

Richard Horne Surrey, UK

AUSTRALIAN SEASONED TIMBER CO, BALDWIN 0-4-OST: LR65 Thanks to research and on-site investigation by Colin Harvey, it can now be stated categorically that the engine formerly owned by this organisation and operated on their Comet Creek mill log line was Baldwin B/No 7556 and *not* 7111 as hitherto supposed. According to the half-yearly report of the company (to 31/12/1895), now held at the Public Records Office, Melbourne, their loco was in constant use bringing logs to the mill.

Later annual reports provide the following information:

- Loco derailed during 1899, requiring heavy repairs;

- Comet Mill was destroyed by fire in November, 1899;
- The Mill was rebuilt and operating in 1900 and ceased operating in September, 1903 when the plant was sold to go to Western Australia when the Company went into liquidation. An account by the liquidator dated 7/8/1904, shows the same of "an engine" to Lugton Bros (engineers and boiler-makers) for £228 5s 6d.

It seems certain that the locomotive was at Comet Mill from early 1895 until *at least* late 1899, as the loco was used for long haulage and photographic evidence indicates that the main log line(s) had undecked bridges and therefore was unsuitable for horse haulage. It is considered likely that the loco was used until the mill ceased operations in 1903. Since B/No. 7111 has been recorded as in Western Australia at Millar's Denmark Mill) in November, 1898 (*LR65* p 21) the Wandong Baldwin must have been either B/Nos. 7108 and 7556.

Photographs of the Australian Seasoned Timber Co. operations were taken in mid-1898 for a number of presentation albums. Two are held by the Forests Commission Library and another is in the City of Hawthorn Library in Melbourne. In none of the illustrations is the loco builder's plate clearly legible; the angle is such that deciphering is extremely difficult, but both the late Andrew Lyell and Charles S Small independently identified this as 7111. For myself I was never entirely convinced; actually favouring 7556. (LR65 p 9 - top).

The locomotive depicted had these distinguishing features:

- ornamental filler lid on saddle tank missing;
- smokebox number plate (blank) missing;
- front headstock extended downwards;
- additional front sandboxed fitted behind headstock;
- two small handrails fitted to front of saddle tank.

A series of later photographs by JD Gillespie show the AST Co loco after the original sandbox had been lost and a full length roof added (LR65 p9 - bottom). Photographs reproduced in LR65 of Baldwin 7111 in Western Australia (p22 - the caption was wrongly located on p 21) and 8130 in South Australia (p 24 and 25) and of the Tasmanian Hardwood Timber Co loco (7108) (p 12) all taken after closure of Comet Mill, show locomotives with their original ornate sandboxes and tank filler lids, which would indicate that these are not later photographs of the Wandong Baldwin. Hence, since the Tasmanian engine is B/No. 7108, the Wandong engine must have been B/No. 7556. As a result of the disastrous bushfires that swept central Victoria in the summer of 1983/83, the entire Mt Disappointment State Forest was burnt by a wild fire in November 1982. This fire consumed most of the undergrowth in the forest and revealed a number of tramway relics and formations. The photographs taken by Colin Harvey in March 1983 during a visit to the site of the former 'engine camp' (right next to Engine Camp Road on the map!) show scattered remains of scrap. Most easily identifiable are portions of the cast base of a locomotive sandbox.

These remaining parts, although not positively identifiable as parts of BLW class $4-10\frac{1}{2}$ C28, may be taken as having belonged to B/No. 7556 damaged in the 1899 derailments and which have remained where dumped ever since.

I am deeply indebted to Mr Harvey for his interest, research and the photographs.

JL Buckland East Brighton, Vic.



Locomotive debris in the forest, March 1983. Photo: Colin Harvey