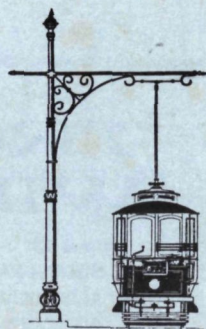


TROLLEY WIRE

Journal of

AUSTRALIAN TRAMWAY MUSEUMS

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APRIL 1973



SPECIAL ISSUE : 30TH ANNIVERSARY OF CLOSING OF LAST N.S.W.
STEAM TRAMWAY

50¢*

TROLLEY WIRE

Journal of

- SOUTH PACIFIC ELECTRIC RAILWAY
- AUSTRALIAN ELECTRIC TRANSPORT MUSEUM
- WESTERN AUSTRALIAN ELECTRIC TRANSPORT MUSEUM
- BALLARAT TRAMWAY PRESERVATION SOCIETY
- ILLAWARRA LIGHT RAILWAY MUSEUM SOCIETY
- STEAM TRAM PRESERVATION SOCIETY

APRIL 1973

New Series

Vol. 14

No. 2

Issue No. 145

ABOUT THIS ISSUE....

In keeping with a policy of bonus issues of TROLLEY WIRE, we present yet another "Blue Cover" issue. This time we present an article prepared to mark the thirtieth anniversary of the closure of the last steam tramway in New South Wales, that between Redbank Wharf and Parramatta Park on 31st March 1943. The aim in this article has been to bring to light aspects of this form of traction in Australia, previously unpublished, rather than represent the better known points which have been adequately covered by other publications in the past.

* * * * *

The success of these special issues of TROLLEY WIRE are due in no small part to the growing number of member and non-member subscribers who continue to show approval of our work by their continued support. Our thanks go to all our readers and we hope you enjoy the reading in this issue.

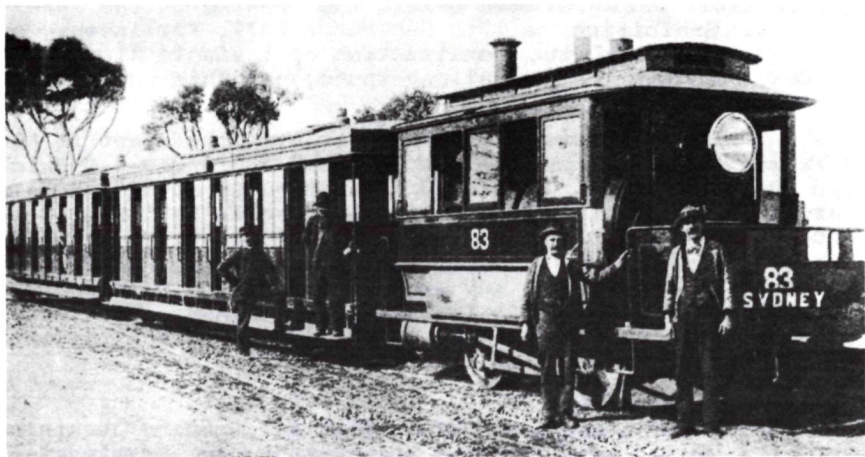
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FRONT COVER: Motor 11A (not 11N) at Parnell Place depot in Newcastle in 1906. This motor was the first converted to diagonal dual controls for oneman operation, the conversion adopted for all motors retained in service after that date.

--Ken Magor collection

The Era of the Steam Tramway

by KEN McCARTHY



The 31st March, 1973 marked the 30th Anniversary of the closure of the last passenger carrying Australian steam tramway..... at 5.15 pm on Wednesday 31st March 1943, steam motor 31A hauling trailers 1 & 3 left Parramatta Park Gates on the last $2\frac{3}{4}$ mile journey to the sheds at Redbank Wharf on the Duck River, thus bringing to a close the transportation network of some 64 years worked by steam trams in the state of New South Wales. The opening of the era in 1879 had one thing much in common with the closure of the last remnant in 1943; neither occasion was marked by public ceremony.

INTERNATIONAL EXHIBITION OF 1879 & CITY RAILWAY EXTENSION

The official need for the construction of the first steam tramway in Sydney was the staging of the International Exhibition in the huge Garden Palace Pavilion erected in the Botanical Gardens grounds, adjacent to Macquarie Street, and south of Bridge Street. Major exhibitions had been staged regularly in Europe and North America since the pioneer extravaganza of 1851 held in the Crystal Palace in London under the patronage of Prince Albert, Queen Victoria's Consort, but except for the Intercolonial Exhibition held in Prince Alfred Park, Sydney, in 1870, the 1879 function was the first of this type to be staged on these shores. The date selected had no bearing on any commemoration; it seems that Melbourne was building a large Exhibition Building for such a display in 1880 and the Sydney function was rapidly launched as the leading citizens felt that the oldest Australian city should be the one to stage such an international activity first.

Since the establishment of the railway from Sydney in 1855, pressures had been made on the Government to ex-

tend the line from the Redfern terminal, through Hyde Park to a point in the city at Hunter Street. In February 1879, the first reading of the "City Railway Extension Bill" was made in Parliament and construction seemed imminent, but due to the short period of time before the opening of the International Exhibition on 17th September 1879, Parliament, on May 7th, approved the construction of a single line steam tramway adjacent to the railway route, and this would serve the Exhibition.

With seven months in which to act, the agent in New York was cabled to arrange the purchase of four 0-4-0 Baldwin (Burnham, Parry, Williams) steam tramway motors and six large, bogie double deck trailers to work the line. Some records show the cars as having been built by Brill while others name the Gilbert Bush factory; due to the hurried nature of the order, it may well have required both factories to participate in the trailer construction. These items left New York on 15th May 1879 on the 1035 tons sailing ship "Dryad" under the command of Captain Evans.

BALDWIN STEAM TRAMS

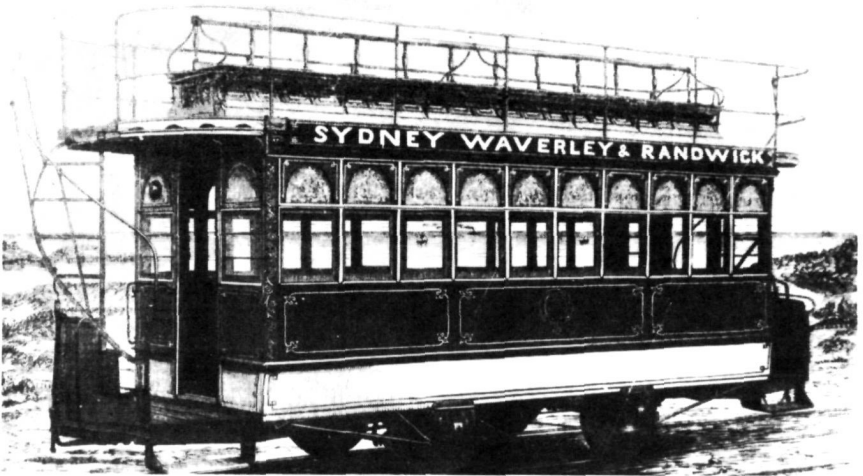
In 1875, Burnham, Parry, Williams Company ventured into the steam tram field by constructing an experimental, self contained, four wheel saloon vehicle which underwent trials in Philadelphia and Brooklyn. A satisfactory performance was recorded with speeds of 16 miles per hour and a fuel consumption of eight pounds of coal per mile. Between June 1876 and the end of that year this experimental tramcar worked on the Market Street Railway at Philadelphia serving the Centennial Exhibition.

Although this experiment was encouraging it seemed impossible at the time to manufacture successfully the front crank axle to withstand the working thrusts while the wooden body was not strong enough to withstand the torsional chassis strains. The next variation in this experiment resulted in the construction of a separate steam tramway motor and this machine operated on grades as steep as 1 in 15 on the Citizens Railway of Havana, Cuba shortly after. Between 1877 and 1880 some 107 steam motors and 12 combined steam cars were manufactured by Baldwin, and by 1890 steam motors were in use on some 75 city and suburban undertakings.

TRAMWAY CONSTRUCTION

Ground was broken on the tramway construction on 15th May 1879, in Pitt Street, Sydney at the Benevolent Society, opposite the present rear entrance to Christ Church, and by 20th August the gang of 120 workmen had completed the single track (with siding at Hunter Street and passing loop at Liverpool Street) from Pitt Street, across Belmore Park and along Elizabeth Street. Following this, activities reverted back to the starting point and the remaining short section south along Pitt Street into the Station Yard at Devonshire Street was completed by the end of August.

The Railway Department had prudently ordered two



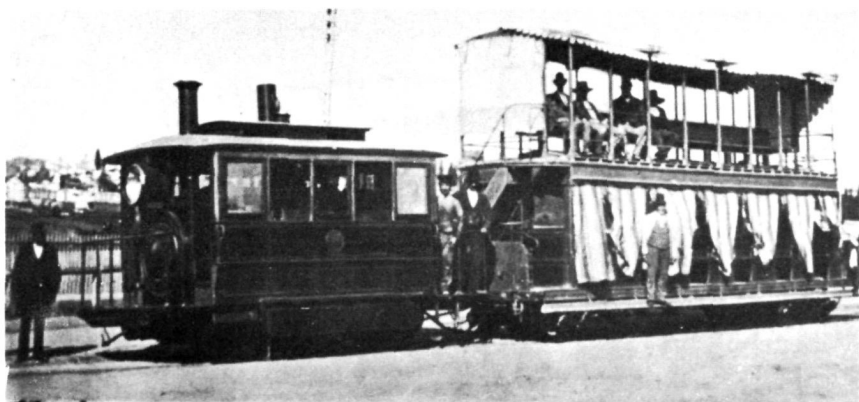
Hudson double deck tramcar, one of two built in 1879 for the Sydney tramways. These cars were probably built to the plans of the 1861 trams. --C.B. Thomas collection

tramcars from Hudson Brothers of Redfern in case "Dryad" should arrive late from New York and by 20th August these were reported to be rapidly nearing completion. These local vehicles were almost identical to the Starbuck (of Birkenhead, England) trams used, with two similar additional local cars, on the shortlived Pitt Street tramway which linked Redfern Station with Circular Quay between 1861 and 1866. The main departures from the now, by this, archaic design were the indian rubber "springs" or blocks, the nine windows on each side of the saloon and the vertical end platform steel ladders giving access to the upper deck on the 1861 trams which were replaced by metallic springs, ten windows per side and primitive helical metal staircases on the Hudson version. It would seem, therefore, that the urgency of the situation left little time for new designs to be evolved so the 1861 drawings were used again for the 1879 products.

At this stage, two of the four Pitt Street tramcars (former No.3 and possibly 2nd No.2) were still in existence as Second Class car 48 (renumbered composite brakevan No.6 in 1875) and First Class car 9 on the NSWGR and it is surprising that these two vehicles were not recalled back to temporary tramway service. By this stage, however, they are believed to have been attached to the Blacktown-Richmond railway which was still operating over very light track with trains hauled by specially designed small locos, so it is possible that no other light rolling stock could be obtained to free these former trams from the Richmond district.

TRIALS

The decision to order two local tramcars was sound as the "Dryad" did not arrive in Sydney until Wednesday 3rd



Steam motor 3, one of the four original units with trailer car No.7, both in original condition in Pitt Street, near Railway Square.

--C.B. Thomas collection

September 1879, two weeks before the Exhibition was due to open, and not until 11th September was the "Sydney Morning Herald" able to report that several packages forming part of the four steam motors received from America had been removed from the ship and arrangements made to fit them together as speedily as possible. The first running trial took place with one of the Hudson cars hauled by two horses on the afternoon of Friday 5th September and the entire route was traversed without trouble.

At 11 am on Monday 15th September full scale trials with the two Hudson tramcars were conducted. These were successfully concluded, with the inward and outward trams crossing at Liverpool Street hauled by four horses each. Regular horse operation on the tramway commenced the next day at 7.30 am when the first car departed from Redfern Station for Hunter Street inaugurating regular tramway operation in Sydney which was to continue until 25th February 1961.

INITIAL WORKING

The initial timetable allowed for 36 trips each way per day with a base half hourly service, improved at busy periods to one of 15 minute frequency by the use of the second tramcar. The time of journey with horse traction was 15 minutes each way for the 1 mile 33 chains distance allowing no standing time at terminals.

Mr. Gjedsted occupied the position of supervising engineer during the construction of the line and due to the efficient way in which the work was undertaken, he received the appointment of traffic manager as well on 20th August, with offices in Temple Court, on the western side of Elizabeth Street north of the King Street intersection.

The Hudson tramcars seated 30 passengers on longitudinal lower deck seats and a further 18 on the upper deck

knife board benches. A contemporary report described the vehicles as "painted in the style of the omnibuses, the inner seats were fitted with cushions of red plush and the small wheels enabled the end platforms to be located at a convenient height to the pavement. The trams were comfortably roomy and ran as smoothly as a first class railway carriage. When used as horse cars a crew of four accompanied each vehicle; a driver, conductor, brakeman and another". The role of 'another' is not defined in reports of the day!

Fares amounted to 3d. cash per journey (the same rate as used on the 1861 tramway) or 2d. if pre-journey tickets were purchased. A 10% saving was made if tickets were pre-purchased in books to the value of 10/-. The conductor registered the fares on a bell device carried in his hand on receiving cash or tickets. Tickets were available for sale from Monday 15th September, the day prior to regular operation.

Under the Act - "42 Victoria No.18" a correspondent to the "Herald" on 4th September 1879 pointed out, the rail tops had to be located level with the adjacent road surface, while the Commissioner was responsible for applying metal to the road between the rails and for a distance of one foot on each side. Due to wet weather the rails at that time were standing well above the road surface in Pitt Street, and this correspondent no doubt held fears that the same difficulties may present themselves, caused by rails above the road surface, that had contributed to the closure of the Pitt Street tramway in 1866.

During the afternoon of Tuesday 23rd September, one week after the horse tram working commenced, Mr. Gjested supervised the trial of the first steam motor. The steep hill in Elizabeth Street between Campbell and Liverpool Streets was negotiated with ease while vacuum brake tests proved that the tram could be halted with ease and held on the steep sections of track. On the level section between Bathurst and Market Streets, beside Hyde Park, the movement of the engine was hardly perceptible while the journey along this section proved quite noiseless. The average earning over the first week amounted to £20 each day, a figure which would ensure the financial success of the venture.

Mr. Gjested originally planned that steam traction would be introduced on this tramway in October when an influx of country visitors was expected due to railway excursion fares being available, but on Saturday night, 27th September 1879, one of the horse cars left the rails five times due to a wheel becoming loose on the axle and the passengers had to be retrieved by the second Colonial car. Next morning a steam motor hauling one of the 90 seat double deck American bogie trailers replaced the faulty horse car and due to the novelty of the event, capacity loads were handled until the last trip of the day. On the following Monday morning on 29th September, the service was entirely handled by steam traction, employing two motors, with a reduction of the

journey time to 12 minutes. The "Sydney Morning Herald" reporter remarked that "the proportions of the new cars are magnificent. They give a smoother ride than the colonial cars but this was perhaps due to horse haulage of these smaller vehicles". Steam traction "will establish the tramway in public favour".

"CITY RAILWAY EXTENSION BILL"

Although evidence has not been discovered in reports of the day, it is possible that the practical John Whitton, Engineer-in-Chief of the NSW Government Railways, recognised a cheap alternative in the proposed tramway, to serve the Exhibition, to the expensive and grandiose suburban railway schemes being discussed in Parliament at the period when he was first asked to comment on the tramway scheme in February 1879. It is possible that, if the tramway proved popular, Whitton visualised this cheaper mode of transport being extended throughout Sydney, thus retaining funds for the more important country railway routes. It is worth recalling that a strong lobby existed in Parliament at that time who felt that rural railways should be horse worked along light tracks, but fortunately Whitton was able to successfully fight these proposals and have locomotive worked rural extensions constructed, but in many cases using light rail, "pioneer line" technology.

From time to time, letters appeared in the "Sydney Morning Herald" under the name of John Lucas, presenting detailed points of view on current railway matters of the period. This was possibly the Hon. John Lucas, MLA who owned the property served by the Lucasville platform on the Lapstone Zig Zag railway. One wonders if this gentleman was a strong supporter of Whitton's ideas in Parliament. On 13th September 1879 during the second reading of the "City Railway Extension Bill", Mr. Lucas drew the conclusion in the "Herald" that if the proposed one mile railway extension from Redfern to north of Hyde Park in Sydney would cost £1,181,085 (\$2,362,170) while the tramway construction only amounted to £14,000, then over 80 tramways could be constructed for the price of this one railway. The first section of the Sydney tramway cost a total of £22,269: made up of £15,227 for track work; £6,547 for rolling stock; £287 for machinery; and £208 for furniture.

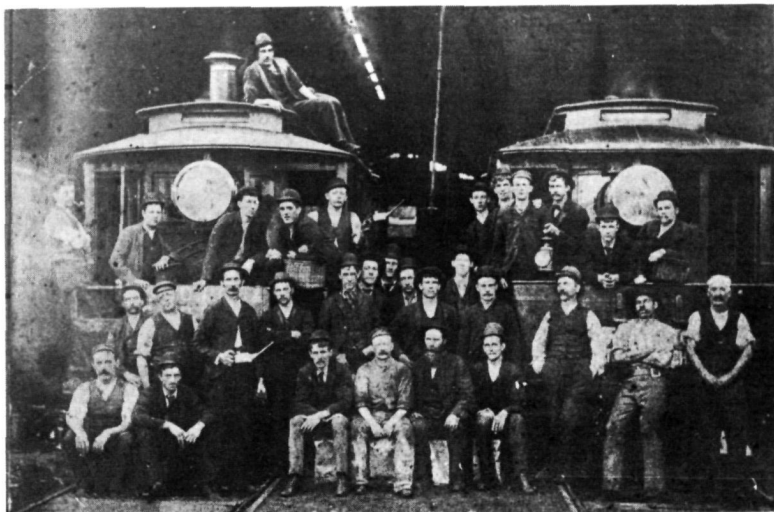
As the International Exhibition was only to occupy the spring-summer-autumn period from September 1879 to May 1880, the six double deck tramcars were of the open design "intended for summer use, open at the sides, well adapted to this climate and unlike those in use in America" according to a "Herald" reporter. Sixty passengers could be accommodated in six cross bench compartments, with a further thirty seated on two longitudinal seats located back to back on the top deck. When the order was lodged for rolling stock in early 1879 the tramway was then planned to be lifted after the Exhibition, but on Wednesday 30th July 1879, tenders, were called for the erection of car and engine sheds, trav-

erser, fencing, etc., for the Redfern to Hunter Street tramway, tenders to close on 5th August. These facilities were erected on a piece of ground, approximately 300 ft by 100 ft near the present south east corner of Eddy Avenue and Pitt Street, but the first facilities on this site were not available for occupation until late 1879, the tramcars being stored in the Redfern station yard in the meantime, with routine maintenance and repairs conducted in the Redfern Railway Workshops. This would therefore indicate that the decision to make the tramway a permanent facility was made between May and July 1879, prior to the actual opening date, and prior to any practical trial being conducted.

STEAM TRAMWAYS ACCEPTED

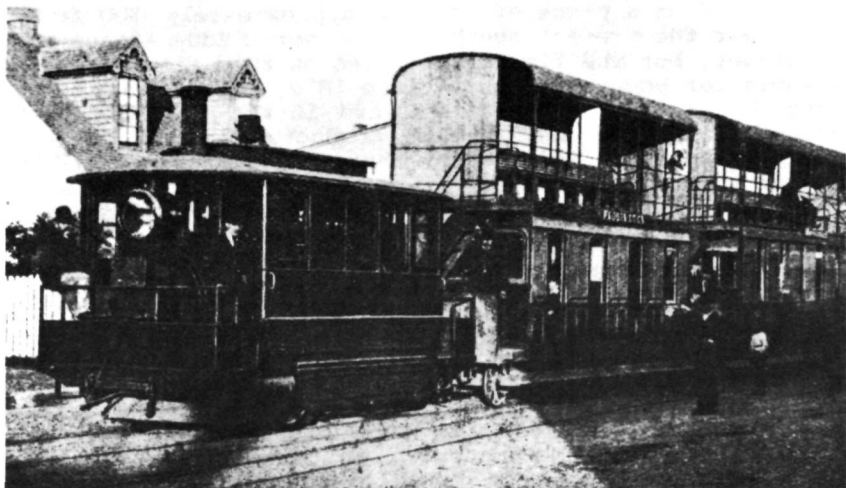
By 6th October 1879, the tramway had proved such a success to the public that the "Evening News" reported that a petition was being signed at Surry Hills praying that the Government would immediately take steps to extend the tramway in that direction while just over a week later a deputation waited upon the Minister for Works pressing for a tramway extension to Randwick Racecourse and the Cricket Grounds. On 25th November a meeting was held at Waverley promoting a tramway extension into that eastern district.

Both the Sydney United Tramway and Omnibus Coy. and the Sydney Tramway and Omnibus Company were alarmed at this state of affairs as during the 1870's both had submitted



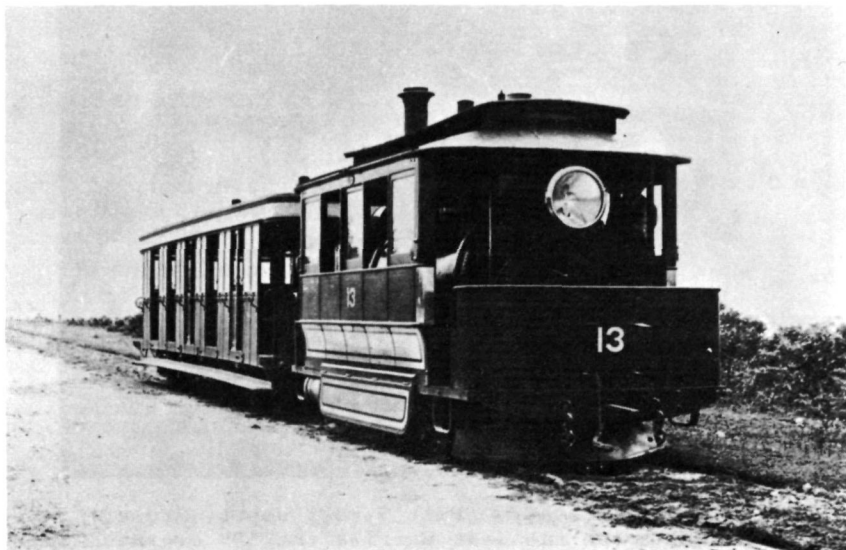
Two motors and shed staff at Pitt Street depot, Sydney about 1893. The motor on the left carries the "B" overhaul date of 26-9-1893 and the "Randwick and Coogee" destination board while that on the right displays "Camperdown, Annandale and Leichhardt".

--Ken McCarthy collection



No.3, one of the first four steam motors, on the Paddington line in Sydney, hauling two types of enclosed double deck trailer cars, circa 1882. This motor appears in its second stage, with the front apron partially covered.

--"Staff" magazine



Steam motor 13 (Railway roster) and 60 seat trailer on the Sans Souci line during the 1890's. The motor's condition shows the appearance prior to conversion to one man control.

--NSW Railway Department

plans to the government for privately operated tramway franchises along their bus routes, but these were refused and although both undertakings retained the word "tramways" in their corporate titles their operations were limited to horse buses. On 28th October 1879 the Sydney City and Suburban Tramway and Omnibus Company listed proposed tramway routes in the "Evening News" for which they intended to petition the Legislative Assembly, and such a Bill was presented on 25th November, only to be rejected when the Parliament decided to investigate the possibility of constructing and working such tramways as a Government Department. In April 1880 a Bill was formulated for extensions to the Government Tramways to the near eastern, southern and western suburbs of Sydney together with a country branch line between Campbelltown and Camden from the Great Southern Railway.

The proposal to build a tramway to link the Redfern Station with the Exhibition as only a temporary facility, without the possibility of its retention and later extension would certainly have been an extravagance when one considers that the entire seating capacity of the eight trams only amounted to 816 passengers, well within the capacity of the horse buses available. A random figure taken during the third week in November 1879 reveals that only 1847 passengers were averaged each day with a total income for the week of £264 while earlier on 18th September 1879 the "Herald" stated that on the first day of the Exhibition the trams were crowded but the omnibuses were deserted.

In answer to this competition the Sydney Tramway and Omnibus Company inaugurated a lottery competition based on its current ticket numbers. The first drawing took place on Wednesday 1st October 1879 but the offers of the bus companies to operate tramways and other enticements failed to prevent the steam tramways taking over the trunk public transport services in Sydney, while the extension of the electric tramway system two decades later drove the remaining horse bus operators in the city area out of business; not until the arrival of the reliable internal combustion engined buses in the 1920's was the trams' position again threatened.

EXPANSION

The first extension to the steam tramway system was opened on 14th September 1880 with an extension of 2 miles 50 chains from Liverpool Street to Randwick Racecourse and during this period the original line was duplicated. The steam tramway network gradually extended throughout the state and the NSW Government Tramways grew into one of the largest steam tramway networks in the world covering a route mileage of 148 miles 76 chains and employing 132 steam units, all on 4'8½" gauge.

Two further steam passenger carrying street tramways were constructed by private enterprise and brought the total route mileage to 153 miles 54 chains and the total steam units to 140.

SEPARATE ISOLATED SYSTEM	MILEAGE OPENED STEAM WORKED (see note 1)	STEAM OPERATION	ELECTRIC OPERATION CLOSED
Sydney system	53 miles 28 ch	1879 to 1905 (2)	1961
Newcastle	33 " 35 "	1887 " 1932	1951
Broken Hill	10 " 4 "	1902 " 1926	--
Enfield	8 " 38 "	1891 " 1912	1948
Sutherland - Cronulla	7 " 32 "	1911 " 1932	--
Parramatta - Castle Hill	6 " 55 "	1902 " 1926	--
Sans Souci - Kogarah	5 " 45 "	1887 " 1937	1959 (3)
Maitland	5 " 11 "	1909 " 1926	--
Manly	3 " 13 "	1903 " 1911 (4)	1939
Arncliffe - Bexley	2 " 50 "	1909 " 1926	--
Fassifern - Toronto	2 " 25 "	1910 " 1911 (5)	--
East Maitland - Morpeth	2 " 75 "	1893 " 1913 (5)	--
Campbelltown - Camden	7 " 65 "	1882 " 1884 (5)	--

Rockdale - Lady Robinson's Beach (Brighton-le-Sands)	1 mile 72 ch	1885 to 1900 (6)	1949
Parramatta - Redbank Wharf	2 miles 66 ch	1883 " 1943	--

Details of the steam units employed are briefly tabulated:-

SYSTEM	BUILDERS	NUMBER	PERIOD	BUILT	NOTES
NSWGT	Baldwin, USA	105	1879-1891		Includes 6 combination cars
	Mereweather, Eng.	1	1883		
	Bayer Peacock, Eng	1	1884		
	Kitson, England	3	1881-1882		Includes 1 combination car
	Ambrose?, England	2	1889		Combination cars
	H. Vale, Sydney	11	1890-1891		
	T. Wearne, Sydney	2	1884-1886		
	Randwick Workshops Sydney	7	1916-1923		
ROCKDALE	Fowler	1	1886		Small railway loco
	Hudswell Clarke	2	1887-1888		Small railway locos
	Hudson?, Sydney	1	1887		Combination car
PARRAMATTA	Kitson, England	1	1887 (7)		
	Mereweather, Eng.	1	1895 (7)		Small railway loco
	Baldwin, USA	1	1877 (8)		
	H. Vale, Sydney	1	1912		

NOTES:

1. Sidings, depots, workshops, not included in these route mileages.
2. Steam traction used after 1905 on special workings.
3. Trolley buses used 1937 to 1959.
4. worked by horse - 1903 to 1907 - during steam period.
5. worked as a railway with railway rollingstock other than for the periods shown.
6. Electrified 1900, bought by Government Tramways in 1914.
7. Parramatta arrival dates, used elsewhere prior to this.
8. Arrived Parramatta 1885.

Although the highest numbered steam motor in the NSWGT fleet was 132A, the fleet list underwent considerable renumbering until a state-wide roster was adopted between 1903 and 1905. Out of the shambles of renumbering we find that the highest numbered steam tram motor tallied with the total number of units, even though many were discarded before the standard numbering list came into operation. This is not co-incidence as in the NSWGT electric tramway fleet, in spite of some numbers being issued twice and former cable tram trailers receiving electric numbers, the total number of passenger cars in service and the highest numbered car, 2087, balanced.

OTHER SYSTEMS

In other Australian states the steam trams never gained the popularity generated in New South Wales. The following table illustrates their limited use:-

LOCATION	PERIOD	STEAM UNITS*	ROUTE MILES	GAUGE	UNDERTAKING
Bendigo, Vic	1892-1902	5 Baldwin and 3 Phoenix	4½	4'8½"	BTCo & ESCoV
Rockhampton, Q	1909-1939	9 Purrey comb	6½	3'6"	RMT
Port Adelaide, SA	1879-1882	1 Mereweather	2½	5'3"	PA&A PTCo
Adelaide, SA	1879-1885	1 Baldwin	4½	4'3½"	AU&MTCo
Glenelg, SA	1879-1880	1 Kitson-Rowan combination	5	5'3"	G&SCT
Adelaide-Gooodwood	1883-1900	x	2	5'3"	GRCo & SAR
Brisbane, Q	1883-1910	3 Kitson	(+)	3'6"	QGR
Belmont, Q	1912-1924	1 Baldwin	4½	3'6"	BSC & QGR

NOTES:

- * Separate steam motors unless otherwise shown.
- © Sold to Parramatta in 1885.
- x GRCo and SAR used the former Port Adelaide Mereweather motor hauling the Kitson-Rowan car from Glenelg as a trailer car with the steam unit removed on the Adelaide-Gooodwood section.
- + Built in 1882 for the proposed Ann Street tramway which was not constructed. Units used as shunters and on some miners' services in the Ipswich district.

ABBREVIATIONS:

Bendigo Tramway Company; Electric Supply Co. of Victoria; Rockhampton Municipal Tramways; Port Adelaide, Queenstown and Albert Park Tramway Company; Unley and Mitcham Tramway Company; Glenelg and South Coast Tramway Company; Glenelg Railway Company; South Australian Railways; Queensland Government Railways; Belmont Shire Council.

TOTALS

The grand total of steam trams in Australia therefore stood at 163 units; these being made up of 141 separate motors, 18 combination cars and 4 small conventional locos used on street type public tramways. The various Public Works jetty lines in NSW and Western Australia as well as the Sorrento line in Victoria have been left out of these totals as these were scaled down railways rather than being general public



Kitson steam motor shunting at the South Brisbane wharves.

--Ken Magor collection

street tramways. Mention should be made at this juncture that the Rockdale tramway purchased one steam motor from the NSWGT fleet, while the Parramatta — Redbank line bought five units from the Government Tramways to supplement the four units shown in these lists.

OVERSEAS STEAM TRAMWAYS

Steam traction was used in many centres where tramways operated, but in most cases only on single routes not suitable for the dominant traction forms (such as horses) due to steep grades or lengthy lines, but networks could be found in Europe, Great Britain, South America, New Zealand and Indonesia. Some remnants are still in operation in Indonesia and South America and could still be found in Europe in recent years. In USA steam "dummy" lines were generally of a specialised nature. The popular application was on "Land Boom" routes of the 1880's.

Horse tramways enabled large tracts of suburban lands to be opened for settlement in the USA provincial centres in the 1870's, but land beyond the 20 minute travel time limit was difficult to sell. Land speculators in the 1880's extended this 20 minute travel radius by the introduction of steam trams into nearby unsettled areas but most of these lines ended in bankruptcy when the "land boom" burst in the 1890 depression.

Approximately 500 steam units operated on tramways in Great Britain, but their potential was not fully exploited due to stringent conditions placed on their efficient operation by municipal and Board of Trade regulations. In Britain the steam motors had to have all moving parts above 4" shrouded from the gaze of horses, had to be free from

noise, the maximum speed allowed was 10 mph which prevented momentum runs at hills, exhaust steam could not be blasted into the atmosphere and unless terminals were level the trailers could not be uncoupled from the motor unit. British steam engineers overcame these difficulties with some success but this resulted in the English motors being a failure in Sydney where such conditions did not hamper steam operation, so the unfettered Baldwin tram motors were received with favour.

The largest steam tramway network in Britain centred on Birmingham with 200 engine units and 180 cars on 3'6" gauge but this group of tramways reached into adjacent cities and were controlled by various authorities, the largest of the group being the City of Birmingham Tramway Company, which operated 102 motors and 76 cars, formed from amalgamating companies spanning the period 1882 to 1906. The Manchester, Bury, Rochdale and Oldham tramway worked 90 motors over 30 miles 23 chains of route, the largest trackage in Britain, while Huddersfield Corporation followed with 36 motors and 26 cars on 29 miles 45 chains. The proportion of steam units to cars is striking when comparing the NSW roster with England when it is realized that NSW had 132 motors and approximately 350 cars over the entire period of operation.

SUCCESS

Why was it that NSW could successfully operate steam tramways while other undertakings employing this form of traction quickly changed to electric propulsion or reverted back to horse working on some lines? The answer perhaps lies in the following considerations:-

1. The Australian systems had relatively easy access to cheap coke and black coal supplies.
2. The services operated on long headways with powerful steam units hauling several trailers, instead of low powered engines pulling one trailer only.
3. The tramways being generally government operated in NSW and council controlled in Queensland were not shouldered with restrictions like those imposed overseas.
4. After 1906 the steam units were controlled by a fireman-driver alone, instead of a dual crew, while even on trams consisting of a single motor and four trailers (in Newcastle) only a driver and conductor, a crew of two, were needed to operate a tram providing seating for 210 and capable of standing at least 290 more.
5. In NSW steam trams lasted well into this century on "pioneer" type lines to provide services into lightly developed areas. The low volume of traffic or unfavourable financial returns did not justify later planned electrification, so steam traction was retained well beyond the intended period.

FUEL SUPPLIES

Generally, in NSW and Rockhampton, the trams were fired with coke fuel, which was available at reasonable cost,

but in limited quantities, as a waste by-product from local gas plants.

Prior to large scale domestic electricity reticulation, the output from gas works seemed to cater for the coke demand but at the end of World War I Rockhampton and Newcastle, for example, were experiencing difficulties. Rockhampton experimented with oil firing without much success, while Newcastle was purchasing coke from gasworks along the entire Hunter Valley. The relative costs were:-

Coal = 11/- (\$1.10) per ton ex colliery	
Newcastle Gas & Coal Co. coke	= 18/- (\$1.80) per ton
Maitland Gaslight Co. coke	= 15/- (\$1.50) per ton
Singleton Gas Co. coke	= 12/6 (\$1.25) per ton
Waratah Municipal Council coke	= 14/6 (\$1.45) per ton

The Waratah and Singleton undertakings had the most attractive prices, but their output was small, and the freight costs from Singleton too uneconomical to compete with the others. The difficulties in Newcastle were partially solved by using coal fuel on the long country lines to West Wallsend (15 miles 45 chains) and Speers Point (14 miles 19 chains) beyond Wallsend Depot.

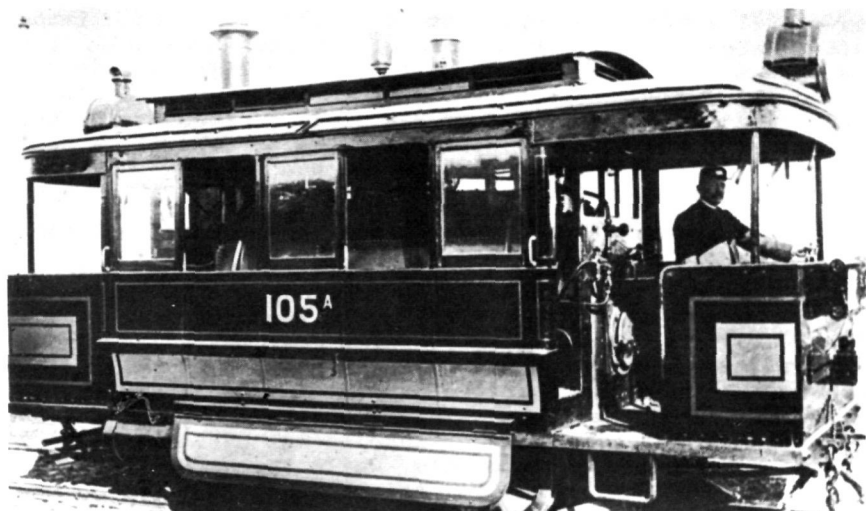
ELECTRIFICATION

If the capital costs could be carried, electrification was the solution to high running costs and fuel problems. During 1904 the comparative running costs in Sydney were:- electric cars = 6.59d. per mile; steam trams = 13.68d.; with cable at 10.55d., while in 1920 these figures had risen to 23.19d. for electric and 55.24d. per mile for steam operation. After the electric trials at Waverley in Sydney between 1890 and 1892 and the success of the small suburban electric operations launched in North Sydney in 1893 and Rose Bay in 1898, the NSWGT planned the gradual extension of electric traction to most steam lines. This timetable gradually fell behind



Steam motor 92A and trailer, both in final standard form, at Speers Point terminus, Newcastle, on the last day of regular service, 2nd November 1930. The line was reopened on several public holidays until May Day 1932.

--Ken Magor



Motor 105A, the unsuccessful first conversion to one man control.

--NSW Railway Department

schedule due to certain difficulties while private bus competition and the trolley bus "craze" resulted in tramways being closed before the conversion was belatedly completed.

Until the closure of the NSWGT system the electric routes that were extensions of former steam tram lines generally still worked with coupled cars on long headways in off peak periods while those along former cable routes, such as the King Street line, worked the slack time services with single trams on close headways.

CREWS

With the exception of the self contained combination steam tram cars, the NSW steam motors prior to 1906 were manned with a separate driver and fireman. When using good grade coke, the fire required little attention so the fireman was mainly occupied as a "lookout" man on the front motor platform ready to sound the bell and drop the steel plough type life guard should a pedestrian be run over.

From 1905 the steam motors were made suitable for one man operation. Randwick Workshops in Sydney altered motor 105A by lengthening the roof and end platforms, by placing dual controls at each end of the unit, and providing roller type destination boxes on each end apron in place of the heavy boards. On trials in Newcastle this motor proved unsuccessful as the vehicle was badly balanced and the driver had to spend a great deal of time with his hands above his head working the roof mounted controls.

In answer to this problem the Newcastle staff turned

out motor 11A suitable for one man control but with little structural alteration. To improve visibility the head lamps were mounted on the roof instead of the end bulkheads, the end windows were enlarged, self tripping life shields replaced the manual release types and diagonal dual controls were fitted whereby the driver was still located inside beside the boiler but now near the front on the right hand side each journey. Some motors later had part of their end aprons cut away to further improve visibility.

This Newcastle conversion was the standard adopted.

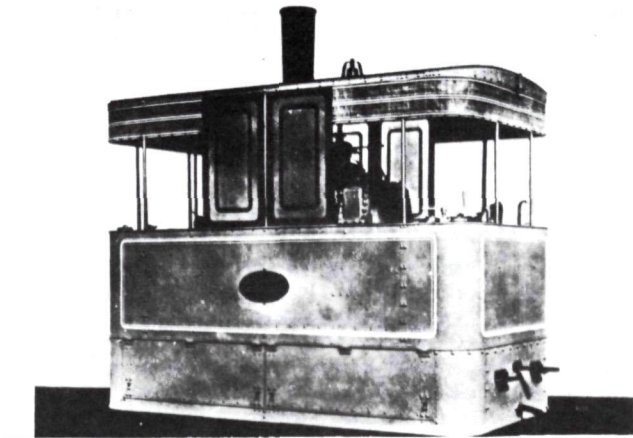
Although four English steam motors suitable for one man operation gained trials in Sydney, all proved unpopular when compared with the Baldwins due to restricted speed devices, cluttered driver's space, high fuel consumption, and exhaust prevention gear which was expensive to maintain. The two Kitson motors, although fitted with 11½" diameter cylinders (½" larger than the Sydney standard Baldwin) saw little service, the Mereweather machine was banished to goods working and per-way haulage only, while the Wilkinson unit (built by Beyer Peacock) after trials in Sydney and on the isolated Wollongong to Clifton railway was returned to the manufacturer.

On conversion to the state-wide numbering roster bearing the "A" classification between 1903 and 1905 some order was made out of the chaotic separate system. In 1903 during the transition period some motors in Newcastle carried numbers under the local scheme while others carried the state-wide numbers. During 1910 the Morpeth steam tram trailers still carried their independent numbers 1 and 2, this caused some difficulties as an official memo of that time stated that Morpeth trailer number 1 should not be confused with car 1 B then attached to the Newcastle system. The conversion of the motors to one man control took place about this period of renumbering, but several received the new "A" classification prior to the conversion, while some of the 9" diameter (cylinder) motors allocated new numbers never carried these as they were disposed of by sale in 1905 to satisfy a policy that as far as possible only 10" and 11" units would be retained in service.

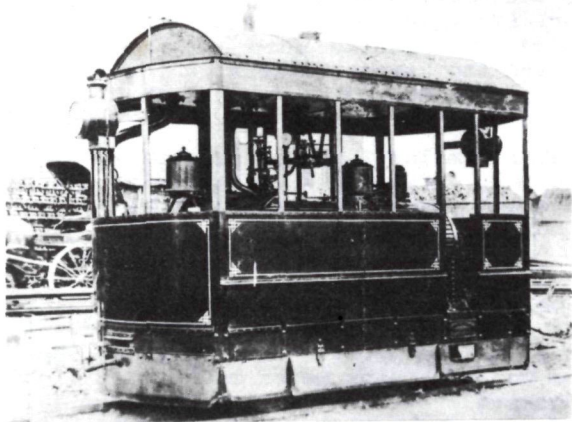
LIGHTING

In Rockhampton during 1916 the original acetylene gas lamps, provided from a generator on the steam cars, were replaced by battery powered electric lamps. In NSW the motors carried large kerosene headlamps and the single deck standard trailers received illumination from two internal, ornate kerosene lamps, the centre windows in the end bulkheads being arched to allow the light to shine into the last compartments. By 1912 coal gas, stored in underfloor tanks, illuminated the Newcastle trailers through rooftop pipes which seemed to have supplied four outlets.

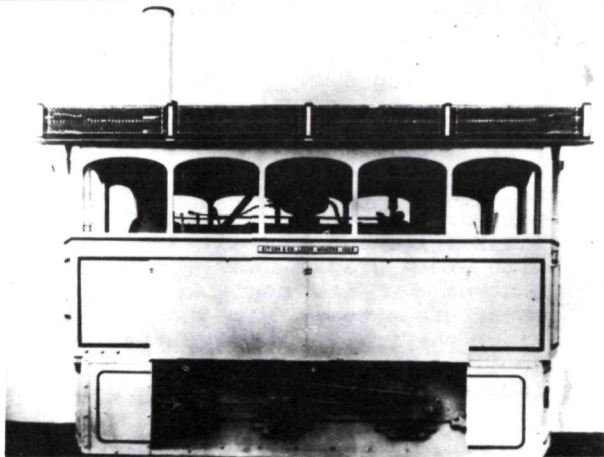
Gas cost 16/- (\$1.60) per 1,000 cubic feet delivered into the cars' tanks, the rate ex. gasworks amounted to 4/2



"John Bull"



The
Mereweather loco



O-6-O Kitson, NSWGT
fleet No.43.

The three types of English built tram engines which were
tried on Sydney lines and were found to be unsuccessful.

--C.B. Thomas collection

(42¢) less 10% from Newcastle Gas Company, 7/6 (75¢) from the Wallsend Gas Company, 4/- (40¢) from Waratah Gas Works and 6/3 (62¢) from the East Maitland Council plant. The bulk gas was transported to the depots in railway gas truck L467 suitably adapted for tramway service with link and pin couplings and small contour wheels.

An improvement in lighting resulted from a trial conducted in July 1921 with a type "E" Pyle steam turbo generator. The Department found that an average capacity of 26.8 volts, 40 amps, 1072 watts at 2092 rpm could be obtained at 115 lbs steam pressure from the apparatus rated at 32 volts. These sets were later fitted to 28 motors enabling smaller, but more efficient head lamps to replace the kerosene ones on the motors and electric globes to be located in the trailers. Mainly used on the outer Newcastle lines as well as Arncliffe, Kogarah and Cronulla, the generators caused a drain on the boiler's steam capacity when the tram fought against heavy grades, and the kerosene lamps in the trailer cars had to be turned up when the motor was detached at the terminus.

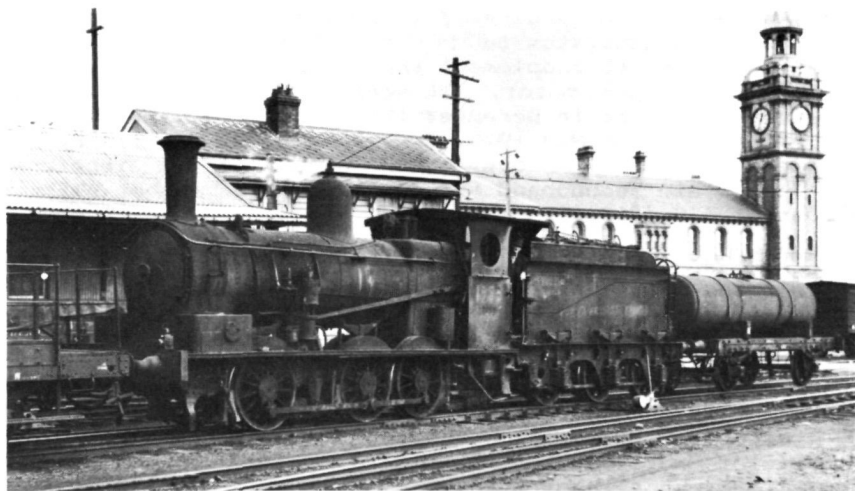
During the 1920's similar turbo-generators received a trial in Rockhampton cars 9 (ex-15) and 8 but these proved inefficient as little steam was available for this auxiliary when the tram was in motion.

GOODS OPERATION

The Camden, Morpeth and Rockdale tramway rolling stock was fitted with railway profile wheels to cope with the coarser standards of railway pointwork with which these lines were laid. The Kogarah - Sans Souci route used light railway locomotives between 1887 and 1891 and was also laid to railway track standards. Railway goods rolling stock was hauled regularly along these tramways, the difference in couplings being accommodated with four wheel "match truck" or "coupling dummy" fitted with dual railway and tramway draught gear and vacuum worked brakes.

When constructed in 1911, the Sutherland to Cronulla tramway was also made to railway track standards and from the opening a considerable volume of freight was conducted in railway trucks, this amounted to 6750 tons during 1912, the first full year of operation. The Cronulla tramway suffered with steep grades, one of these at Miranda required a momentum run for its negotiation, and as the braking power on these goods trams was that provided by the motor and match truck the traffic men at Sutherland in August 1913 threatened to limit the goods loading to 15 tons each trip if the improvements in braking were not carried out.

In November 1912 this topic had been discussed with the traffic and engineering branches of the Tramway Department and the possibility of using a small railway locomotive capable of negotiating 5 chain radius curves received consideration but would then demand railway rates of pay and the return of a fireman to the footplate. In February 1913



Z19 (formerly A) class loco 1955 shunting a gas truck at Newcastle yard in 1948. This truck is similar to the one used as a gas car on the Newcastle tramways.

--Ben Parle



Interior of steam trailer 74B showing the kerosene light fitting. The roof brackets for the Hold-on straps for standing passengers can just be seen.

--Ken McCarthy

approval was finally given for the fitting of Westinghouse air pumps and apparatus to two motors and one match truck for Sutherland, to supplement the vacuum brakes, at a cost of £180 (\$360) per motor. It seems only one motor, 101A, received this gear in December 1913 for the Sutherland line, and not until after May 1920, when approval for similar treatment of goods traffic over the Kogarah line was received, did 75 A obtain secondhand air equipment in September 1922 at a cost of £50 (\$100).

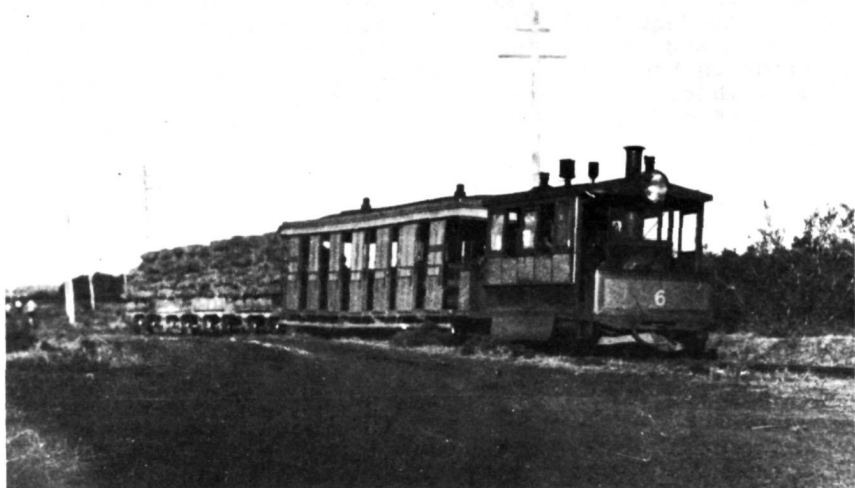
PARRAMATTA - REDBANK WHARF LINE

The last NSW steam tramway in operation was the private line between Redbank Wharf and Parramatta Park Gates. By 1880 the larger craft being used on the Sydney to Parramatta ferry service and the silting of the upper reaches of the Parramatta River caused the public wharf to be relocated some two miles downstream near the junction of the river and Duck River. Mr. Charles Jeanneret, an enterprising ferryboat proprietor had the "Jeanneret Tramway Act" passed on 9th August 1881 which approved the construction of a single line of steam tramway between Parramatta and the new wharf.

Some of the details of the Act make interesting reading, as do the agreements with Parramatta Council. A minimum of six trips each day had to be operated, £48 (\$96) per annum rental was paid each year to Parramatta Council for the right-of-way in their area, passengers were not to pay more than 3d. per head each way while goods charges should not exceed 1/- (10c) per ton.

An early opening was prevented by the loss at sea of the two steam motors ordered from Kitson of Leeds, but this firm assisted by dispatching its works shunting motor to Parramatta immediately enabling the service, along the track laid by the firm of Thomas Wearne (see TW, Aug and Oct 1970) to open on 5th October 1883 hauling two bogie trailer cars hired from the NSWGT.

Except for extensions of sidings into adjacent industrial areas, (the major goods working being the traffic handled on behalf of Meggitt Ltd. at Parramatta) the tramway remained in its original form until closure in 1943. The "Sydney Morning Herald" for 12th August 1895 reported that Captain Donald of the Parramatta River Steamer Company visited Parramatta during that week to interview the Mayor as to the possibility of his Company building a tramway from Parramatta to Castle Hill. The Company planned to issue 2,500 public shares to finance the extension if approval was given. The Government, no doubt, stepped in here as the Railway Department did not want freight originating from Castle Hill reaching Sydney by way of the Parramatta River craft, accordingly, in 1902 the first section of the Parramatta Station to Castle Hill government worked tramway was opened and a considerable quantity of goods traffic developed, mainly in fruit and other agricultural items, handled by standard tramway open bogie "v" trucks.



Parramatta motor No.6, car No.5 and four low sided goods wagons set out for Meggitts and the Park Gates.

--C.B. Thomas collection

Except for a period when this Parramatta Wharf tramway was in the hands of the Union Bank, it remained under the control of ferry interests. From 15th December 1900, the expanding Sydney Ferries Limited purchased the tramway from the Parramatta River Steamers and Tramway Company, the purchase price being £16,500 (\$33,000). The original company continued to operate the undertaking on the account of the new owners for a short time after this date. In later years, Sydney Ferries worked the venture under the title of "Harbour, Land and Transport Company Limited."

Of the nine engines which worked on the tramway between 1883 and 1943, all except number 5, a local product of H. Vale in 1912 and identical to the standard NSWGT Baldwin type, had seen use elsewhere, and five were former NSWGT steam motors.

In June 1903, the Company purchased motor 15 A from Randwick; this was a Baldwin 11" unit and became No.4 at Parramatta. Motor No.6 was former 108 A, an identical engine to No.4, being purchased from Newcastle on 14th February 1926 for £750 (\$1500) delivered to Rose Hill. On 28th July 1925 Mr. Kidd from the Parramatta Tramway had inspected 116 A and 49 A at Newcastle but nothing further was done about the purchase of these units. During the following month the Tramway Department offered 118 A to Parramatta but no reply was received to this correspondence, 108 A being finally selected by Mr. Kidd on 28th October 1925.

With the closure of the last Government steam tramway, that at Kogarah on 4th July 1937, the entire remaining steam

tram fleet of the NSWGT became available. Sydney Ferries selected 11" motors 5 A, 31 A and 103 A which arrived at Rose Hill during August 1937 and were transferred to the tramway by jacking and slewing on one of the diamond tramway/railway crossings in the area. The last two mentioned units had been fitted with electric lighting in Government service but this was removed before delivery to Parramatta and the kerosene headlamps restored.

With these three recently acquired steam tram motors the Parramatta undertaking entered the World War II period with reliable motive power, and with petrol restrictions it seemed that this tramway would continue in service for the duration of the conflict. On the morning of 30th March 1943, however, the "Sydney Morning Herald" published a brief news item stating that the Parramatta steam tramway would close after the last trip on Wednesday 31st March, and no substitute road transport would be provided for the 160 workers at local industry who regularly used the line. The reason given for the closure was that the service had been recently running at a loss but reporting was such during the conflict that it was difficult to separate the chaff from the grain. Rumors of the day gave two reasons for the closure: one was that the US Army had taken over the area adjacent to the Redbank terminus making part of the tramway and the wharf a restricted area, the other was that the lighters bringing goods to the Redbank Wharf had been requisitioned for wartime service thus cutting off the freight supply route to the tramway.

Whichever the reason, and the second one seems the most feasible, the Parramatta tram, the last example of the once large steam network in NSW, just faded away without ceremony on the evening of 31st March 1943. In fact, so unobserved was the closure, that many middle aged people who remember the twilight of the steam tram period, as well as the press in its reminiscences, hold that the last tram on the steam system ran at Kogarah on 3rd July 1937, this being mainly due to the great "Last Day of the Steam Tram and the First Day of the Trolley Bus" act staged at Kogarah and Rockdale on that occasion.

The trailer cars on the Kogarah tramway had been readily disposed of by allowing the local unemployed to smash up the woodwork for domestic fuel during September 1937 at Sandringham loop. Fourteen of these were then burnt on the spot on 16th September and the remaining five were similarly treated soon after and the metal which remained was sold to Port Kembla steelworks as scrap.

The rollingstock at Parramatta was auctioned. "The Sun" for Thursday 17th June 1943 wrote "forlorn, windowless, paintless they stood on the rails at Redbank, Parramatta to be sold at auction on Monday. Here is a chance for somebody to buy a whole steam tram service complete with three steam tramway locos, 36 cargo trucks and 6 old tramway cars, a tramway waiting shed, a galvanised iron tram shed and a verandah". A photo accompanying this article indicated that some wrecking had already been undertaken on cars 2, 3 and 4,

the cedar side panels having been wrenched away, leaving car 1, and the former Government trailers 5 and 6 in reasonable condition.

"The Sun" for Monday 21st June 1943 reported "the old Parramatta steam tram stuck today; not at a hill but at £150, the highest bid offered at the disposal sale of the historical rolling stock". Mr. K. Huenerbein was the auctioneer and the three motors realised a total of £375, five tramcars £45 and two heaps of coke £10!

Thanks for aid in the preparation of this article are due to Messrs K. Magor, D. Estell, B. Parle and V. Solomons, Reverend C.B. Thomas, and also to the Late J. McCarthy who, on several occasions, found time to take his small son to Parramatta to ride on the steam motors around Meggitt's yard.



--Paul Nicholson

Some months ago the Hunters Hill Bus Company in Sydney purchased, from Adelaide, one of their surplus 3-door buses. The bus, which had been part of the fleet which replaced the trams, had been narrowed to fit the Motor Transport Department requirements, but retained the large Adelaide route boxes. The manager of HHBC, a tramway enthusiast himself, arranged for the bus to be fitted with a destination blind on the style of the old Sydney tram blinds, even, as our photo above shows, with the correct (tramway) colour symbol for Gladesville!

SPER - NOTICE OF MEETINGS

The next meeting of the South Pacific Electric Railway Co-operative Society Limited will be held on Friday 27th April, in the Railway Institute, Devonshire Street, Sydney, at 7.30 pm.

The Annual General Meeting will be held at the same location on Friday, 29th June 1973 at 7.30 pm. Members are reminded that nominations for election of directors must be made in writing, and sent to reach the Secretary at Box 103 GPO, Sydney not later than 5.00 pm on Friday 18th May 1973. Details of qualifications, etc., for nomination are available on request.

*** MUSEUM****Notes & News**

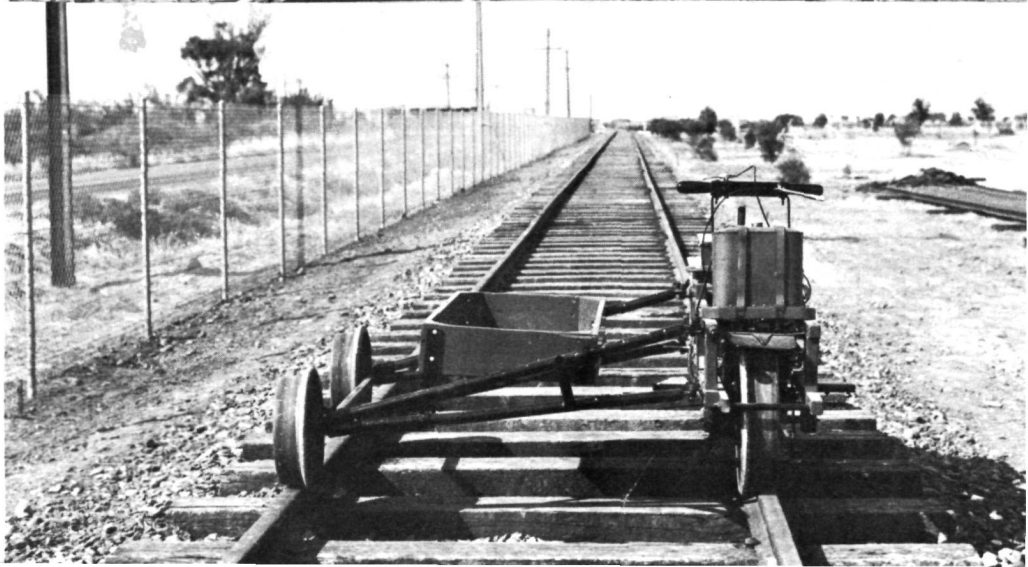
from **St. KILDA**

MAIN LINE WEST

The Australian Electric Transport Museum (SA) Inc. recently became one of the first voluntary transport museums in Australia to receive major Government recognition. The Corporation of the City of Salisbury has been given a grant under the Metropolitan Unemployment Relief Scheme, by the SA Government to enable a track gang of 20 men to be employed for six months to build a tramway track from the Museum towards St. Kilda. The line will be laid in single track with a loop near the Hotel at Mangrove Street. The route is essentially as shown in TROLLEY WIRE for October 1969. There will be two road crossings, one at Samphire Road on the eastern side of the ICI evaporating basin and the other at Mangrove Street to the west of the basin. It is proposed that the line will traverse Shell Street from Mangrove Street to Fooks Terrace inside-of-road reservation, and that Fooks Terrace will be closed where the line crosses it. Initial work is being

OPPOSITE: Top; Salisbury Council employees preparing the Lines Road level crossing, Middle; the end of the Museum line, the council line will continue from this point, and Bottom; the track between, with the petrol engine quad in the foreground and the depot at centre top.

--Adelaide "Advertiser (top), John Hoffman (others)



concentrated on building the line from the Museum to Fooks Terrace.

Work commenced on 2nd January 1973 and in the first two months, the gang had pulled up a quantity of secondhand rail from the Weapons Research Establishment at Salisbury and had laid approximately 1,000 ft of track from the Museum over the former Lines Road and inside the Engineering and Water Supply Department tree reserve to Samphire Road. Meanwhile the Council has constructed an earthfill embankment parallel to St. Kilda Road, alongside the evaporating basin to Mangrove Street. Span poles have been erected along the embankment prior to laying the track. The poles are former steel tramway poles obtained from the Electricity Trust of SA. Some aspects are being carried out cooperatively by the Museum and the Council. A number of specialised components are prepared by Museum members at weekends for installation by the council gang the following week. The council gang is being led by AETM member Chris Steele.

Ownership of the main line will remain vested in the Salisbury Council, but it is intended that the Museum will be authorised to operate a service over the Council's line. The cars, depot, power station and other assets on the Museum's leased land, Section 129, Hundred of Port Adelaide, will remain the property of the museum and will be under the direct control of its members.

Plans are being prepared for the installation of a solid state rectifier to operate the line. Valuable design advice has been given by SPER officials, and officers of the ET of SA are currently advising on power availability.

OTHER NEWS

F1-class car 282 is now in full operating condition becoming the fifth car to run at St. Kilda. Due to the limited power supply currently available, it is necessary to run the car with one set of motors cut out. Some major re-wiring of the car has been carried out, and the PC5 control equipment has been serviced. A replacement brake cylinder has been fitted, and the three air tanks were steam cleaned at Hackney and subjected to static testing before being re-installed. City Depot foreman Blair Howell recently visited St. Kilda to advise in the servicing of this car which is in many ways similar to the H-class cars used on the Glenelg line.

Restoration of the interior woodwork of car 111 was recently completed with the re-installation of the last remaining veneer. An order has been placed for new moquette for the No.2 end saloon. Components of the air system of this car have all been serviced, but they will not be returned to the car until it can be moved into the workshop.

The Villiers quad is now again available for track use, the unit having recently been overhauled. The motor was pulled down and rebuilt by Ron Jenkins, and the quad has since seen service over part of the Council's new line.

At the Annual General Meeting held in March of this year, the following members were elected:

President.....	Dr. J.C. Radcliffe
Vice President.....	Mr. O.L. Jenkins
Secretary.....	Mr. R. White
Treasurer.....	Mr. J.W. Hoffmann
General Manager.....	Mr. J.R. Pennack
Assistant General Manager.....	Mr. P.C. Keynes
Operations Manager.....	Mr. L.M. Fenner
Trustees.....	Mr. C.J.M. Steele
	... Dr. J.C. Radcliffe
	... Mr. J.R. Pennack

Congratulations to all those readers who spotted the error in TROLLEY WIRE, February 1973 issue. That magazine issue was in fact Tw's 21st Birthday issue, and we did in fact enter the 22nd year of publication.

from **LOFTUS**



Work at Loftus has in the main centred on minor repairs to the trams with the Tuesday nights effort concentrated on N728 with footboard renewal and 180 with general overhaul.

Offsite, as the photo above indicates, the weekend workforce has been at Enfield loco, to carry out maintenance on the three cars stored there. Several members recently travelled to Queensland and returned with some "goodies" including one Four Motor tram cab front, two trolley bases, air tanks and seat components, the cab front making the restoration of the damaged end to 548 somewhat simpler.

Now that the cooler weather has returned, the workforce will be transferring to Rozelle to continue the point lifting. Members will be advised as soon as possible of the coming work program.

from **WOLLONGONG**

LEFT: Salvaging wagons up the temporary incline, and TOP: Peter MacDonald provides motive power for ex-Newnes wagon 110 over a new trestle. --Ken McCarthy

During February the AIS Company which is transferring property adjacent to its Illawarra mountainside mines for eventual public use as an escarpment park made representation to the National Parks and Wildlife Service to ascertain whether the ILRMS proposal to establish a working narrow gauge railway museum in the area would be in keeping with the eventual planned utilization of the park. A reply has been received that the Society's proposals are acceptable, and that we should be able to set up a museum when the park is gazetted. In the meantime, the search continues for a temporary site where a shed can be erected to enable the museum rollingstock to be restored prior to moving to a permanent site.

During January, the manager of the Victoria Sugar Mill at Ingham, N.Q. replied to a request for rollingstock: although the bogie passenger car on his 2 ft gauge line had recently been donated to a local school, the ILRMS could have the General Manager's Inspection Railcar and a four wheel insulated meat wagon for preservation at a cost of \$1! The motor trolley, believed to be a Drewry railcar, arrived in

Sydney on 20th February, and is now undergoing preliminary repair in a member's workshop while the meat wagon was off-loaded in Queensland to await transportation to Sydney.

Work at Corrimal on lifting the 2 ft gauge railway is still aimed at resleepering and clearing away lantana to enable the line to be reopened, so that rail can be carried from each extremity to the reclamation area near the centre of the route. On the southern end skips continue to be reclaimed from the gorge by block and tackle along a steep track laid down the side at 60° to the horizontal, while work pushes on at the northern end on bridging the last 40' wash away and reopening the track. Due to the labour required to carry the sleepers to this washaway to make a temporary "pig sty" bridge, the excavation is now being spanned by a pair of "A" frames located in the centre carrying the track by cantilevered arms. By early March the two "A" frames were in position and work was pressing on with preparing and bolting the cantilevers in position.

Two former 2 ft gauge wagons from Newnes are being used at Corrimal as works wagons, being more suited to the task than the local skips due to their lower sides. No.110 was the first to be used while a second one, number unknown, has been fully replanked by member Peter MacDonald making the second relic to be fully restored by the Society.

50 YEARS AND OUT

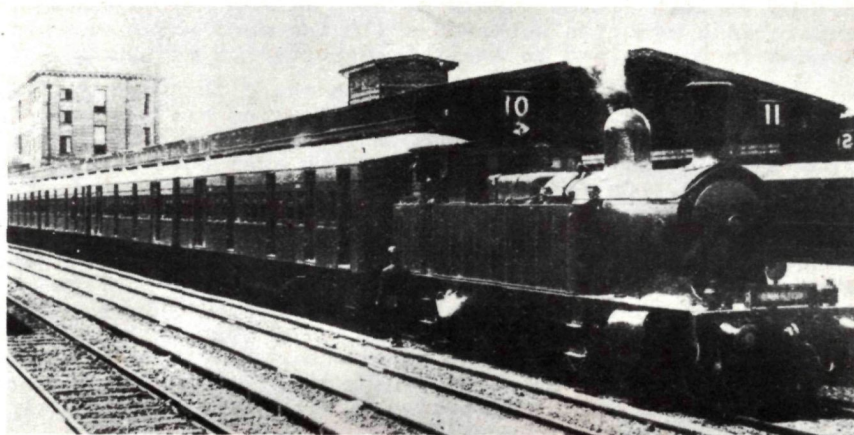
December 1972 saw the commencement of large scale scrapping of the 1921 type wooden motor cars of the Sydney suburban electric railway system.

Introduced late in 1921 the 101 cars of this group are usually called the "Bradfield" cars after the eminent designer of the Sydney Underground for which they were intended although when first in service they were steam hauled. The first of the 10'6" wide stock, they were restricted to the North Shore and Bankstown lines in steam days.

After 50 years of arduous service the cars are being replaced by the new stainless steel double deck motor cars now entering service.

As at 31st March 1973, 39 cars have been taken to Port Kembla. Three were previously written off, 5 have been converted to parcel vans, 2 are used as instruction cars, 1 is a works shunter at Elcar and 1 an office. One of the cars will form the basis of an overhead line car, 1 is to be preserved while 19 are stored pending disposal. This leaves 29 available for traffic.

The back page photos show loco hauled Bradfield cars: the top one, S-class loco 1233, later 3105, stands at No.10 platform at Sydney with six of the then new cars, and the tramway type destination indicator in use for a short time. The bottom photo shows six cars, loco hauled, en route for Port Kembla and the scrap heap.



--Bob Harvey collection

--Laurie Gordon



*50¢ - Recommended maximum selling price in Australia.

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