

CHRISTCHURCH TRAMWAYS.

STEAM AND HORSE

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TRACTION.

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----- With additional alterations by G.R.G.Field. 2/1950. -----

Of the three cities in New Zealand which have been served at one time or another by steam tramways, Christchurch had the only system on which steam motors as they were called (small steam locomotives with a totally enclosed cab form of body over the whole engine) were in use right up to the time of electrification. The other two cities Wellington and Dunedin reverted back to horse drawn trams on economic grounds before electrifying their tramways.

In the 1860's Mr. William White arranged to transport timber by tramway from Little River along the Lincoln Road. This was a wooden track. Surveyors to-day come across evidence of this old tramway on the survey maps. In Christchurch although street tramway transport had been suggested as early as 1854 no real attempt appears to have been followed until 1872, when the "Lyttleton Times" Chronicle published the following on October 23rd 1872.

"A public meeting held to consider the construction of a tramway in the City passed the following resolution; 'That in the opinion of this meeting a Tramway running through the streets of the City of Christchurch is objectionable to the rate payers for the following reasons:-

1. A Tramway is not required. 2. The streets are not wide enough. 3. A Tramway would retard the railway station being brought into a more convenient place for the citizens.

It was not until 1878 that a regular city transport service was attempted when the Canterbury Tramway Company was formed. This company proposed to build tramways from the railway station north to Papanui, south as far as Sydenham, and west to Addington. This company proposed to build the tramway to the 4 feet 8 and a half inches gauge, using 45lb grooved strap section rails. During this same year the company obtained its first Order-in-Council for the Tramways to the three Railway stations (Addington, Christchurch and Papanui) the route to the latter being Whatoly Road, now called Papanui Road. The fourth route was to the Show Grounds at Sydenham, now Sydenham Park. Three trips per day had to be guaranteed, the first not later than 8 a.m. the last not later than 6 p.m. extended to 8 p.m. in the summer months. The "turning of the first sod" took place with due ceremony and liquid encouragement on December 11th, 1879 "on the bolt nearly opposite the Railway Station.

The first section of line opened was at 7.5 a.m. on March 9th, 1880, when a steam tram service provided by motors Nos. 1 and 2 commenced to operate between Cathedral Square and the Railway Station to meet all passenger trains. The distance being about a half a mile. The depot was situated in the Square on the site of the present Government Buildings.

Other lines were opened in quick succession during 1880; Papanui (3 miles from Cathedral Square) being reached on August 2nd, Sydenham on August 6th, and Addington in September, while a line along Ferry Road (in a south-easterly direction from the square) was opened to Woolston on 1st December. With the foregoing routes as the nucleus of an expanding system, the 'eighties saw further extensions - the Addington line to Sunnyside, the Sydenham line to Cashmere, and finally, in 1888, the Woolston line was extended to reach Sumner, on the coast and 8 miles from the Square. This line was laid with 40lb. flat bottom rails without grooves. By 1888 there were 17 route miles of street tramways in operation.

The first two steam motors placed in service by the Canterbury Tramway Co., in 1880 were built by Kitson and Company, Leeds England, in September 1879, and were the original examples of a standard type of which over three hundred were built. They were diminutive 0-4-0 well tanks completely enclosed by a wooden cab, reason for which it is said so as not to frighten other horse road traffic. Their weight in working order as quoted by the Christchurch Tramway Board in 1946 was only four tons. Length over headstocks was 10' 4 5/8" and a wheelbase of 4 feet 6 inches. Cylinders were 6 1/2 inches by 12 inches, wheel diameter of 2' 3", and boiler pressure of 100lbs per sq. inch. The boiler, which contained 72 one and a half inch diameter tubes contributing 99.0 sq. feet of heating surface, was 2' 5" in diameter and 3' 6" between tubeplates. Total heating surface with 22.5 sq. feet added by the firebox, was 121.5 sq. feet. The tank held 175 gallons of water. The valve gear, which was a modified Walschaerte Gear known as Kitson Gear, which specially designed for steam trams, was actuated by the connecting rods.

connecting link. The feed pumps were worked off the "D" slide valves. On the roof was a four banked condenser. The motor was arranged for one man operation and could be driven from either end. Brakes were applied by hand or automatically by steam by closing the throttle. Speed was restricted to 10 m.p.h. and governors were fitted at first to enforce this, but it was not long before they were removed. The loads hauled were at times as much as six trailers or 55 tons.

The original cars, which were built in July 1879 by John Stephenson of New York, were single-truck (four wheel) double deckers open on top and with an end loading saloon on the lower deck entrance to same being gained from each end platform which also gave access to the top deck by end stairways. There were nine of these cars seating 46 passengers on longitudinal seats, those on the lower deck being arranged on either side of the car facing inwards, whilst the top deck seats were mounted in the centre of the car back to back the passengers facing out to the roadway. Length over headstocks 26 feet, body bulkheads 16 feet, while the overall width was 6 feet 7 inches. A glimmer of light inside was provided by two kerosene lamps suspended from the ceiling of the lower deck. After electrification these cars were still used as electric trail cars and up to the present day may still be seen in service on occasions as such.

To work the new extensions opened later in 1880, three more steam motors Nos. 3; 4; and 5, and five more double deck trail cars were imported, while five other cars were built by Moor and Sons of Christchurch. All this additional stock had similar dimensions to those quoted earlier. Also about this time an 11 foot lowside wagon was built to provide means for a daily goods service on all lines.

In 1881 Kitson's supplied three more steam motors which received Nos. 6, 7 and 8. These were slightly larger than Nos. 1 to 5, having cylinders 7 1/4 x 12 inch, and wheels 2 feet 4 and a quarter inch in diameter. About five years later, on Sunday, November 21st, 1886, motor No. 7 was involved in an unusual mishap when its boiler exploded. "The Press" on the 22nd stated - "An accident happened to No. 7 tramway engine on the Ferry Road Branch yesterday morning at a quarter to twelve. The engine was standing on the rails opposite the Heathcote Arms Hotel attached to cars Nos. 3 and 7 being ready to make the return journey to the city at noon when an explosion took place. The driver and the guard were standing about ten yards distant and the former was just in the act of going to the engine when the firebox blew out quenching the fire. The boiler was blown from its bed across the road, in a diagonal direction, a distance of about 50 yards. The body and condenser being badly damaged. The front end of No. 7 car was damaged, the splashboard, door and panelling being blown in and several windows smashed. The driver and guard fortunately escaped without a scratch. The cause

Later, the Inspector of Machinery gave the cause as "over pressure". An interesting point is that, about this time, the company was having a great deal of trouble with corrosion in the copper fireboxes due to impurities in the gas coke which was the usual fuel used to avoid the smoke nuisance as found with a coal fired engine. No. 7 was repaired and back into service shortly afterwards.

Before long it was found that it would be more economical to use horses instead of steam motors on the lighter journeys and, as traffic on some of the branch lines was insufficient to warrant a steam tramway service, the Company made enquiries concerning a one-man type one horse car. It was duly ordered and, in 1887 it arrived from the makers, Mason, Stevenson and Company of New York. It was a four wheel "California" type - that is, with a centre saloon with face inwards longitudinal seats, and extended open ends in which two open cross seats were fixed. Twelve passengers being carried on the seats in the saloon whilst a further seating accommodation was effected with the open cross seat portions of which 20 could sit down. However this type of car was found to be quite unsuccessful in local conditions as a one man type of car, although four more of this type of vehicle was constructed in local workshops. About this same time another type of car was introduced, which was a double decker end loading saloon on the lower deck, the top deck being open with transverse knifeboard type seats, of which 15 were built. They seated 48 passengers and when electrification came in were converted to electric cars and later again as electric trailers with their top decks removed.

By 1888 the Canterbury Tramway Company's system had reached its peak, but the Company was not doing very well financially, partly owing to the cut-throat competition with the New Brighton Tramway Company - to be mentioned further on in regards to the beach traffic. It is interesting to note here that the eight mile journey from the square to Sumner at the time the line was opened through out in 1888 took a full hour, whilst the electric trams of to-day are allowed 35 and 36 minutes for the same journey. The competition was apparently too

For changes resulted from the re-organisation of the old Company, no new rolling stock being put into service, and the Christchurch Tramway carried on until 1905 when, on May 17th, the Christchurch Tramway Board took over. This Board was constituted in 1905 with the intention of consolidating all tramway transport in Christchurch and electrifying all routes. The price paid for the Christchurch Tramway Company's assets amounting to £25,910.

Other lines in and about Christchurch had been built by the City Council, the New Brighton Tramway Company, and the Christchurch City and Suburban Tramway Company.

The City Council's line was constructed in 1885, being a length of two miles from the then City Councils Yard, but now being occupied by the Scott Memorial. Laid across the square and along Worcester Street through Linwood whose Town Board extracted £30 yearly for the privilege, thence onto the public cemetery, along Linwood Avenue, Buckley's Road to Slaughterhouse Road and onto the council's Night Soil Reserve.

Provision for passengers was made in the Order-in-Council but none were carried, the line also being intended for the conveyance of Dust and rubbish and also for funerals. A horse-car-hearse, which was probably unique in New Zealand, was provided. This had accommodation for up to four corpses but, as nobody wanted to use it, it was run off the rails and used as a powder magazine. The line was leased to the Canterbury Tramway Company from 1885 to 1891 when the lease was transferred to the New Brighton Tramway Company. The N.B.T.Co., controlled the line until 1905 when the Christchurch Tramway Board acquired it for £1,200.

From an end on junction with the City Council line in Linwood, the New Brighton Tramway Company built a line to New Brighton in 1885 along a chain wide private right-of-way its general direction of travel being east-north-east. The Company was obliged to acquire the freehold on a strip of land 66 feet wide extending from Breeze's Road to Boxley Road on which to lay the line. Adjacent residents were given an easement over this land for access purposes. Apparently the free hold of this land was connected with a Mrs. Knight who held some sort of a grievance against the Company and exercised this right-of-way by leisurely driving horse and drey along the Tramway track while business men on the business tram trip into town impatiently followed in her train. On other occasions she and her sons barricaded the road. One moonlight night with tram thus held up the war like lady put gorse stick to shoulder so effectively that the outside tram passengers sought cover with haste. The old lady chuckled gleefully when reciting this incident later on. The Clerk of the Magistrates Court crouched under the tram stairway. A leading Customs Agent of the day dived headlong for the ditch emerging later when all was quite again, in a humorously bedraggled state. At first these three miles were worked by a steam motor hired from the Canterbury Company whose motor with a trail car No. 13 had the honours of making the first trip over the line. However as traffic was light, soon after the opening horse trams were introduced with double deck cars which were similar to the original C.T.Coys' cars. On August 1st, 1905 this line came under the control of the C.T. Board which was taking over all the other lines. £7,267 being paid for this line.

Another Company, "The Christchurch City and Suburban Tramway Company operated horse cars from Linwood to North Beach, and thence along the Esplanade to New Brighton, a distance of some 5 miles. This line served Richmond, Riversleigh Shirley, Windsor and Burwood as well, and traversed Stanmore Road, North Avon Rd, Wood Street, Midway Street, alongside Dudley's Creek, Canal Reserve Road, along Shirley Road through Windsor to Burwood, thence into Francis Street, Bassett St., Travis Road and Bowhill Road to North Beach where the line turned south along the Esplanade to terminate near the New Brighton Coy's line New Brighton. As most of the line at this time served a sparsely populated country traffic was light, the Company acquiring six primitive open type double deck cars on which the lower and upper decks had a back to back longitudinal face outwards type seat affixed, all of the car being open to the weather, and although not used nowadays, three of them Nos. 1, 101 and 104 were stored in the Per-way Yard. As with the other lines it became the property of the Board after much discussion owing to its light patronage, and in 1907, the Board bought it for £7,982.

During the regime of the Christchurch Tramway Company the motors required reboiling and, when this was carried out motors 2, 3 and 5 received new cylinders 7 1/4" x 12" and thicker wheel tyres making the wheel diameter 2' 4 1/4". For some reason or other No. 4 never received these modifications but was scrapped in 1895. The new boilers contained 70 one and a half inch tubes with a heating surface of 92.5 sq. feet, and a steel fire box (instead of copper) with a heating surface of 22.0 sq. feet, giving a total heating surface of 114.5 sq. feet.

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When the Christchurch Tramway Board had taken over all the fixed and mobile equipment of the companies, the rolling stock totalled seven steam motors and sixty-one trailer cars also a wagon, together with a number of new electric tramcars and trailers procured in connection with the electrification scheme. As electrification proceeded, the steam motors were used mostly on construction and maintenance trams, although as late as 1912 they were still in regular passenger service on the New Brighton and North Beach lines. After these lines were electrified they only appeared in traffic at rush periods and racecourse special trams until in 1925 when they gave way to only an occasional per-way requirement.

Shortly after the C. T. Board had taken over, in 1906, an additional tram motor was bought - curiously enough, at this time, seeing that steam traction was on the outer, but apparently bought in case of a power failure this mishap having happened on other tramway systems elsewhere. This engine was a second hand one, having been built originally as an 0-4-2 type saddle tank by the Baldwin Locomotive Works U.S.A. in 1881 for the New South Wales Government Tramways who later during 1887 altered it into an 0-4-0 type motor also providing 10" x 14" cylinders instead of its 11" inch cylinders as originally fitted. It is not definitely sure but highly probable, that this motor was former N.S.W.G.Tys No. 25 which was withdrawn from traffic in Sydney during 1906 and reputed to have been scrapped but from other sources it appears that this No. 25 was acquired by the C. T. Board, who remembered it going into service with 10" x 14" cylinders, wheel diameter of 2' 11" and a working boiler pressure of 150 lbs. per sq. in. with a load rating of 60 tons although it has been observed that this same kind of motor in Sydney has shifted 200 tons on a shunting duty. It was equipped with a copper fire box, kerosene head lights, and vacuum brakes. Although the straight air pressure brake was standard equipment on C.T. Board rolling stock, the vacuum brake was practically no disadvantage at that time as few trailers had then been equipped with air brakes.

When reboiling became due, in the twenties, some of the steam motors were placed out of service and scrapped. First to go was the former N.S.W.G.Tys now No. 9 which went in 1925. It was followed No. 2 in 1925 and later by Nos. 1 and 5 in 1928. During 1928 the remaining motors 3, 6, 7 and 8 were overhauled reboiled and the cylinders were bored out to 8" x 12". The new boiler contained sixty-eight, one and three quarter inch tubes and had a total heating surface of 150.5 square feet. Working pressure was increased to 140 lbs. per sq. in. The motors now been rated to haul up to 40 tons. A live steam injector was fitted but the feed pumps were retained. These four remaining steam motors continued their ballast tram duties until 1935 when they were superseded by lorries and tractors for this work, since then they have only appeared on special celebration occasions. Until 1943 they were stored behind the Gas Works at the City depot and at the Per-way yard Malgrave Street. During October 1944, No. 3 was scrapped, whilst in 1945 Nos. 6, 7 and 8 together with a Mason Stevenson Horse car, as C. T. Board No. 50, were towed down to Sumner shed behind and electric tramcar. Since then they have stored at Sumner although more recently No. 7 was removed to the workshops. It is intended to maintain No. 7 and trailer No. 50 in working order for gala occasions.
