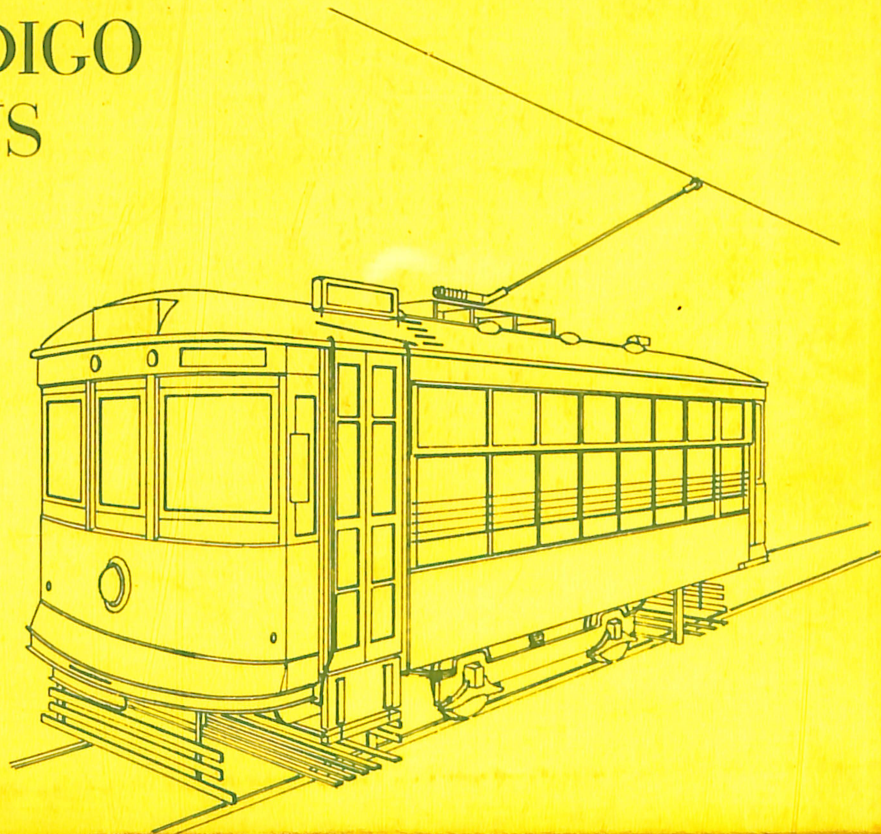
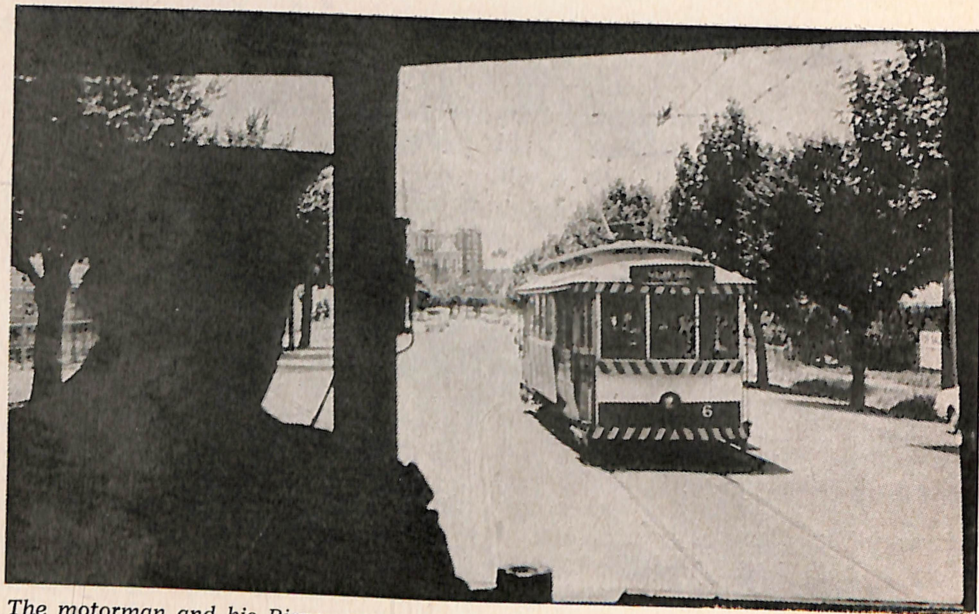


THE BENDIGO TRAMWAYS

An Illustrated History

K. S. KINGS





The motorman and his Birney pause on the Myrtle Street loop to pass one of the ex-Ballarat cars on its journey to Golden Square.

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AN ILLUSTRATED HISTORY

by
K. S. Kings

AUSTRALIAN RAILWAY HISTORICAL SOCIETY
VICTORIAN DIVISION, MELBOURNE

In conjunction with Australian Electric Traction Association
and The Tramway Museum Society of Victoria

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Foreword

THIS BOOK . . .

. . . is the companion volume to "The Ballarat Tramways — An Illustrated History," produced last August by these three Societies to mark the closure of that City's tramway system. "The Bendigo Tramways — An Illustrated History" will be released on 12th February, 1972, during a chartered train tour to Bendigo. The trip was organised by the Australian Railway Historical Society Victorian Division and the Tramway Museum Society of Victoria Limited to enable members and friends to travel for the last time over the complete system, before its closure.

The writers' other commitments have made it difficult to produce the text, and the problem was partly solved by the Editor of the Australian Electric Traction Association's monthly magazine, "Electric

Traction," who readily gave his permission to reproduce any portion of "A Brief History of the Tramways of Bendigo." This article had been compiled by the writer and appeared in the May and June, 1965 issues, which are now out of stock. Again, this book is thus the combined efforts of several people from three Societies.

The text does not purport to be the ultimate detailed history of Bendigo's trams. It is but a precis of information gleaned and research carried out to date. The writer is aware of the old adage: the more one knows, the more one knows one does not know. To compress over eighty years into a few pages creates a two-fold problem: what to include and what to exclude. This book is therefore presented as an interim source of information and a mark of commemoration to BENDIGO TRAMWAYS.

December, 1971.

KEITH S. KINGS

CHAPTER 1

The Battery Trams

Genesis

Bendigo is the fourth city of Victoria, being situated almost 100 miles from Melbourne on the main northern railway line. The population of the greater urban area at present is approximately 46,000 people. Bendigo is the service centre of the surrounding agricultural areas and also contains a number of secondary and tertiary industries. The city and suburbs have expanded steadily during the last two decades after the population had remained steady at almost 31,000 people for several years. The urban area comprises the City of Bendigo, the Borough of Eaglehawk, and portions of the Shires of Marong, Huntly and Strathfieldsaye.

Gold was first discovered in the area in 1851 and the usual "rush" followed. It was reported that some 25,000 people were in the district by the following year. The Municipality of Sandhurst (later to be renamed Bendigo) was proclaimed in 1855, being declared a City in 1871. Its population reached 28,700 in 1881, and has increased very slowly since to reach almost 32,000 at the present

time. The remainder of the present population (some 14,000 people) reside in Eaglehawk and the housing areas which have overflowed into the three surrounding Shires. Bendigo flourished on its rich goldfields for many years, but since the turn of the century has changed relatively little apart from the new buildings and "modernisation" of the last few years.

The twin communities of Sandhurst and Eaglehawk were relatively early in considering the possibility of operating street tramways within their boundaries. One such proposal was made to each Council in April, 1887, for a system of horse tramways from Charing Cross (the main city intersection) to Sandhurst railway station (40 chains), Eaglehawk (3 miles 70 chains), Lake Weeroona (1 mile) and Maple Street, Golden Square (1 mile 30 chains), a total of 6 miles 60 chains. Other interesting proposals were made on behalf of the "Creusat Foundaries Patent Tramway Lines," and by a resident of Quarry Hill West who proposed to form a "Sandhurst Cabowners' Tramway Company" which

would convert the horse cabs to horse trams. Nothing came of these proposals. The general public took quite an interest in these events and petitions were lodged requesting variations to the suggested routes or protesting against the installation of trams. Other residents urged that any concession should not be granted to Melbourne "capitalists" as the profits would be taken out of the district as well as the cab men suffering loss of their livelihood. The cab industry was sizeable, consisting of nearly 150 cabs valued at about £6000 and 220 horses valued at about £3000, with some £10,000 per year spent to feed and shoe the horses.

The first positive move towards a tramway took place late in May, 1887 when the Sandhurst and Eaglehawk Councils held a combined meeting called a "Tramway Conference." Details were decided at subsequent meetings and tenders called. The latter were opened in late September and disclosed the following proposals:—

(a) Woolf and Mendell, of Melbourne, offered to lay a double track cable tramway from Sandhurst railway station to Eaglehawk Town Hall, a single track horse tramway from Lake Weeroona to Maple Street, Golden Square, and construct later extensions to the latter to White Hills and Kangaroo Flat.

(b) Thompson, Moore and Co., of Ballarat (who were then constructing the horse tramways in that city), offered to instal horse trams between Sandhurst railway station and Eaglehawk Town Hall.

(c) Mr. Bourke, on behalf of the Creusat Works, offered to build a horse tramway from Sandhurst

to Eaglehawk, and White Hills, using their patent system.

The Conference decided to ask Woolf and Mendell to amend their tender. It was suggested that enquiries should be made from Mr. Walter Prince, of Dunedin, concerning battery tramcars, as he had purchased the colonial rights to the Weiss system, and was about to conduct experiments with one of his trams in Sydney. In January, 1888, Mr. Mendell withdrew his tender, while Messrs. Booth, Ellson & Co., civil and electrical engineers, of Melbourne, advised that they represented certain English firms, and that they would be pleased to visit Sandhurst to discuss the construction of a tramway system. A translation from French giving details of M. Julien's system of battery tramcars was tabled at the April tramway conference, together with an offer to tender from W. Masters, electrical engineers, of Melbourne. Subsequently, a tender from Booth, Ellson & Co. was the only one received, and it was accepted. Briefly, it contracted to operate battery tramcars between Sandhurst and Eaglehawk for a 30-year period, using track constructed of 45 lb. rail on transverse sleepers with metal ballast and macadam surface. They also planned to build a line from Kangaroo Flat to White Hills. The tramcars were to seat 16 passengers, and the partnership was to be permitted to transfer the contract to a company then in course of formation. The Eaglehawk route was to be double track to the corner of View and Barnard Streets and then single track off the crown of the road (to allow for duplication) with passing loops. Mr.

Ellson subsequently left for England to investigate equipment available and to place the necessary orders.

Construction

The Sandhurst and Eaglehawk Tramway Company Limited was registered on 9th October, 1888, to take over the concession from the partnership of Booth, Ellson & Co. Unfortunately, negotiations with the Councils and Government Departments concerned became rather protracted, and Councillors were complaining about the lack of progress by early in the new year, even though the Company had called tenders for local work. The Company originally planned to build three passing loops on the long single track section, but this was altered to four to allow a 10-minute service to be operated. They were to hold two cars on each track and be situated on as near level ground as possible. A shareholders' meeting in March, 1889, resulted in much argument and a number of charges being made about the soundness of the administration. Apparently the Company had paid £6000 and allocated 5000 shares for the rights to build and run the tramway, but the Councils had not yet delegated their powers to the vendor. In the previous few weeks, the Company's 5/- shares, which had been selling at 6/6, had failed to attract buyers when offered at 1/3. The powers were eventually delegated at the end of May, at which time Mr. Ellson returned from his overseas trip. He gave details of his journey, stated that he had ordered six cars and the necessary equipment, and had tested one car himself on severe grades and under

heavy load. It had been shipped in April, and the remainder would follow in June and July.

Work now proceeded quickly on the local scene. Track construction began on 4th June at the railway station, and buildings for the car shed and charging house (for the batteries) were commenced in Mollison Street. It was hoped to have the first section of the service running in September and to reach Eaglehawk in November. Unfortunately, events were to prove such optimism quite false, and this relatively brief period of rapid local construction was to be the only bright spot in the Company's history. The buildings and track were completed by late October, and the boilers received, but most of the remainder of the plant and equipment was long overdue. The delays were blamed on strikes at the docks in England and to a glut of orders held by the manufacturing companies. It was subsequently revealed (during recriminations after the Company had failed) that proper contracts were not entered into (with penalty clauses for late delivery), because no supplier would undertake work under such conditions. The plant comprised water tube boilers from Babcock and Wilcox, of Glasgow, compound vertical engines and dynamos of the E2 Victoria type from the Brush Electrical Engineering Co. Ltd., who also supplied the electrical equipment for the tramcars. It had been stated at the end of July that eight tramcars were on order (instead of six). The first of these was received and assembled by the end of October. Due to the incomplete power house, this tram could not be operated under power, so it was proposed to haul



Company staff pose for the only photograph known to exist of the battery tram era. Above the truck with its railway type suspension, the hinged side panels for access to the batteries are clearly visible.

it over the route by horses to enable the track to be tested and accepted from the contractor.

The remainder of the plant eventually arrived and was assembled. The first trial run was held at ten o'clock on the night of 10th April, 1890, and ill fortune continued to haunt the enterprise. The car derailed on the curve leading from the Depot to Mollison Street, but was re-railed and then ran quite well along the track towards Mitchell Street. It was then driven up the gradient towards the station, during which there was much arcing from the motors. It was feared that the floor of the car might catch fire so the test was abandoned and the car returned to the Depot. Another trial was held on 24th of the same month when the car ran quite well for about two hours along the level in Mollison Street. Four more cars arrived about the middle of April and were followed by the remaining three. All cars were assembled before the end of September.

Operation . . . and Cessation

A half-hourly service was commenced on Saturday, 14th June, 1890, between the railway station and the corner of Barnard Street and Mt. Korong Road. It was extended to Ironbark Hill on Wednesday, 25th, and reached Eaglehawk before the end of July. The journey time was reported as 40 minutes whereas it had been hoped it would be 35 minutes. The first reported accident was of a minor nature on 7th July, but a more serious collision took place on Sunday, 27th, when a crowded tram, estimated to be carrying about 70 passengers, entered the Job's Gully loop at speed (on a down

grade) and derailed. The service apparently operated every day, but was far from successful. Breakdowns were continuous and there are reports that horses were used to tow disabled tramcars back to the Depot. Apart from electrical and mechanical failures, the severe gradients on the line severely taxed the batteries and many cars did not have enough power to complete the return journey. The Directors of the Company withdrew the service on 23rd September, 1890, after some 13 weeks of running.

Four days previously the Company had told the Sandhurst Council that the battery trams were a failure and sought permission to convert to overhead wire power supply. Various offers were made to the Company to convert to cable, steam or horse haulage, and offers for conversion to overhead electric wires came from a Mr. C. Flesch, of Melbourne, who proposed the Thomson-Houston system, and from the Union Electric Company of Australia Ltd. A stormy meeting of shareholders on 29th September was told that Messrs. Booth, Ellson & Co. had originally favoured overhead wire power supply but that the Sandhurst Council would not allow it, and therefore, the Company had need to obtain the next best arrangement available — battery tramcars. It was also revealed that the Brush Co. had tested only one car before they were shipped from England. Finally, a Committee of shareholders was appointed to confer with the Directors on the future of the Company. Enquiries were made of the pioneer overhead power supply electric tramway at Box Hill, Melbourne, and the Randwick-Waverley

line in Sydney.

The Company tried to raise additional capital in April, 1891, but very few shares were sold. It was consequently decided to go into voluntary liquidation, and the Councils agreed to release the Company from its contract provided another body was found before 30th June which would enter into a similar agreement. Tenders were called, but none were received by the closing date of 30th May. Eventually the Bendigo Tramway Company Limited was registered and purchased the assets of the Sandhurst and Eaglehawk Tramway Company Limited. (The name of Sandhurst had been changed to Bendigo on 18th May.) The latter Company was not wound up until July, 1893. The 55,000 issued shares, already called up to 15/-, received another call of 1/- each to enable the liquidator to carry out his task, and only a very small sum was returned to the shareholders. It appears that the shareholders lost virtually all of the £44,000 that they subscribed for shares in the Company.

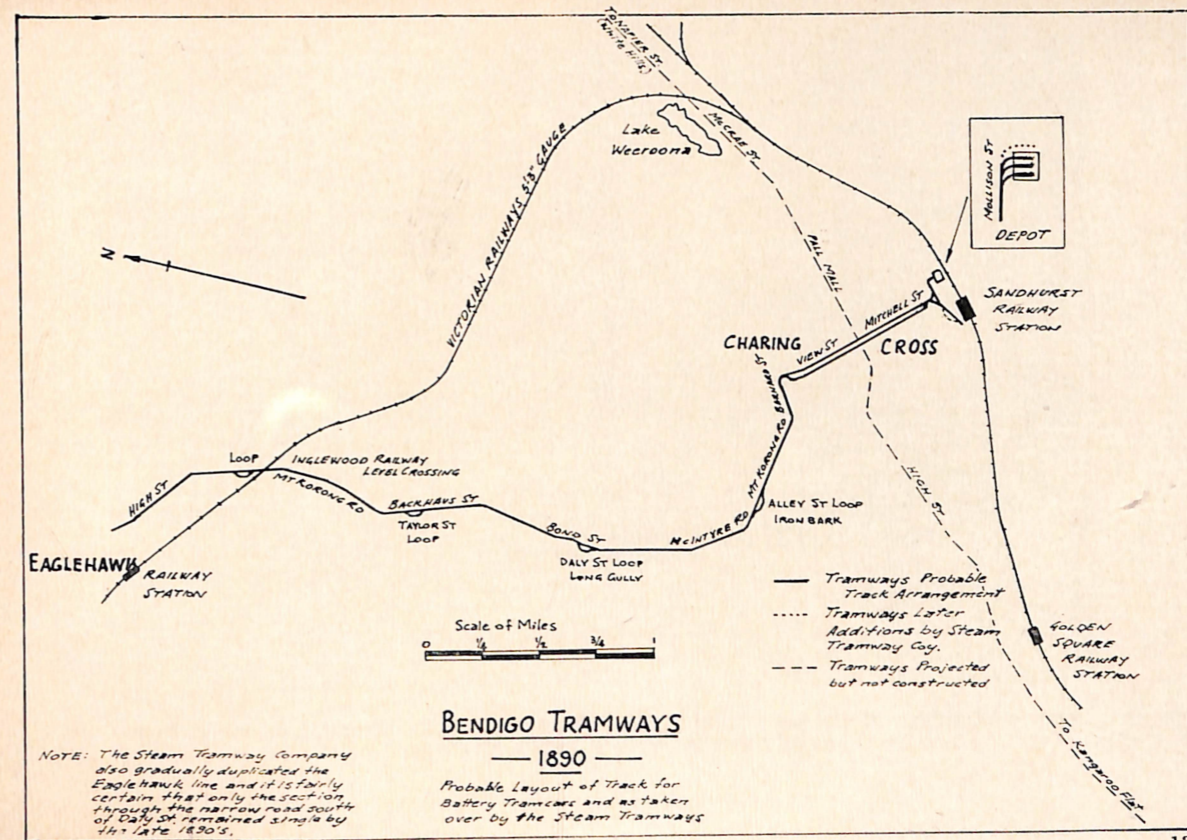
Rolling Stock

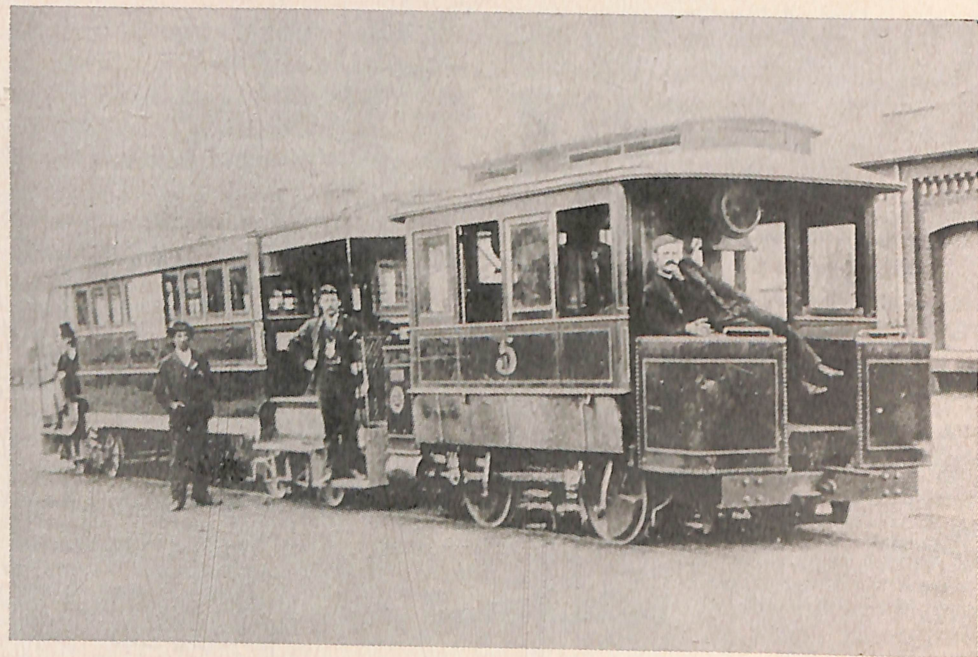
The first battery tramcar for the Sandhurst and Eaglehawk Electric Tramway Co. was fitted up at the works of Messrs. Stephen, Smith & Co., Millwall, U.K., the body being built by Mr. George Milnes, of Birkenhead, to "the best American two horse pattern." It was a six-window saloon car with open end platforms, and weighed about 5½

tons. The car was driven by two Reckenzaun motors, each of eight horsepower, through 45° worm gears to the two axles. The 72 cells, each of 17 plates of 160 ampere hours capacity, were placed on long boards on rollers beneath the seats. The car had a controller on each platform and was fitted only with hand brakes.

The next five cars were nine-window saloon vehicles with open end platforms, supplied by the Brush Engineering Co. Each had 56 cells, mounted on six trays, which powered the one motor. They weighed approximately six tons each, and possibly seated 22 passengers. They were found to be some 15 cwt. heavier than expected, less advanced than the first car, and in need of much re-wiring and modification.

The remaining two cars were also supplied by the Brush Co., and had the same electrical equipment. Their body design is not known, but they are referred to as "Summer Cars" and "Dummies." An old report states that a small, lightweight, rather open car was constructed about the time the service ceased. It is reported to have worked well, but could not carry enough passengers to cover its operating expenses. It is possible that this ninth car was a smaller version of Nos. 7 and 8. The livery of the battery trams is not known but might have been that subsequently used by the steam trams.





Imported Baldwin Motor No. 5 and Trailer No. 4 outside the Bendigo station during a respite before the next run to Eaglehawk.

CHAPTER 2

The Steam Trams

Take-Over

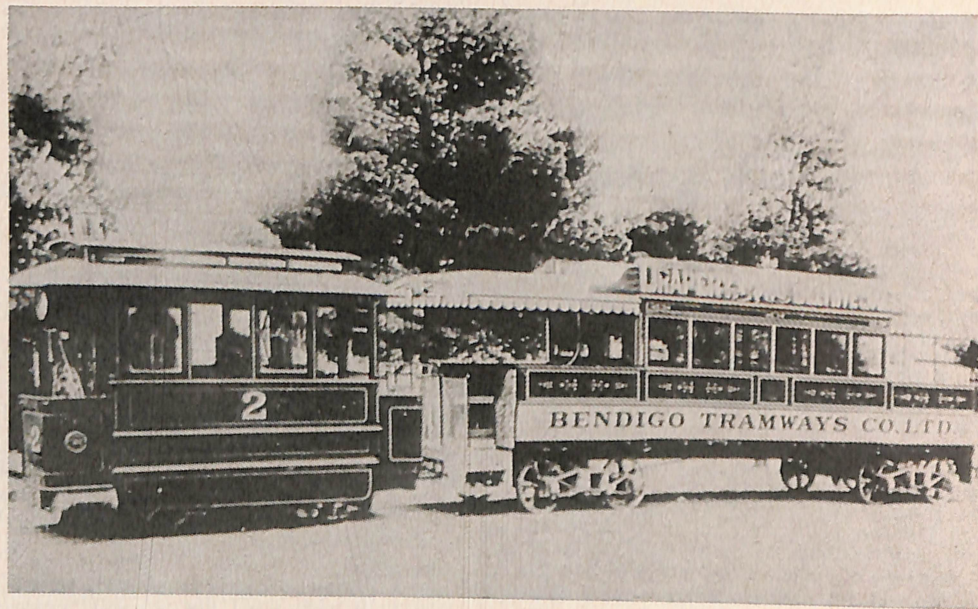
Having concluded their contract with the Councils, together with the necessary delegation of powers, the Bendigo Tramway Company moved swiftly. The Councils agreed to allow the operation of steam trams, and five small locomotives (referred to as steam tram motors) were ordered from the Baldwin Locomotive Works, U.S.A. They arrived in Bendigo on 8th and 9th of January, 1892, and were quickly assembled under the guidance of engineers from the builders. The Bendigo Rolling Stock Company contracted to rebuild the battery trams for use as steam tram trailers by extending the end platforms and fitting bolsters and bogies. The first motor to be completed was tested by running it as far as the Garden Gully hill early on Monday, 18th January, and further trips were made later in the day, on some of which a trailer was hauled.

The trams commenced public service on 1st February, 1892, with five motors and five trailers available for use. They proved immensely popular and before the end of the first week, the Company had decided to order two more motors and three more

trailers as a matter of urgency. The Bendigo Rolling Stock Company was commissioned to produce the cars, and work was immediately put in hand on battery cars Nos. 1, 7 and 8. As the former had a shorter saloon than the first five cars already converted, it received longer end platforms, and became No. 6. The tender of the Phoenix Foundry, Ballarat, was accepted for three (increased from two) steam tram motors, and these were to be slightly larger than the first five motors and thereby capable of hauling two trailers. The first one to be completed was tested in Skipton Street, Ballarat, outside the Phoenix Company's works, on the horse tram line, on 29th September, and hauled two horse trams quite successfully. It was despatched to Bendigo and entered service early in October, followed by the other two units.

Operation

The Company opened negotiations with the Councils in June to vary the original agreement relating to the construction of the Kangaroo Flat to White Hills line. Accord was reached in September whereby the Golden Square to Gas Works (Lake Wee-



Baldwin motor No. 2 and the gaily decorative trailer No. 6 which was rebuilt from the unsuccessful battery tram No. 1.

roona) section would be built first, with extensions later, and the Councils applied for the appropriate variations to their powers. A shareholders' meeting at the end of July was told that the earning rate had been 15 per cent. for the five months of operation to 30th June, and that a 10 per cent. dividend could be paid. However, the Directors thought it best to wait until the end of the year before making a decision. The five motors had run 44,428 miles to 13th July and 252,055 passengers had been carried. The first reported serious accident happened at 6.15 p.m. on Wednesday, 20th July, when a tram from Bendigo descended the hill to Job's Gully level crossing and collided with a horse-drawn buggy in the narrow section of the roadway which formed the fenced approach to the railway line. The three men in the buggy were injured, one seriously.

On Tuesday, 1st November, shortly after the Phoenix motors entered service, six drivers and four conductors went on strike, alleging that the machines were not safe. The Company managed to run a limited service and began recruiting fresh staff. A District Locomotive Superintendent from the Victorian Railways tested the motors and found them safe. The Bendigo Trades Hall Council entered the dispute on behalf of the striking men, and the matter was referred to an Arbitrator, who subsequently ruled in favour of the Company. Thus ended the first industrial dispute on the Bendigo tramways with the Company refusing to re-employ the strikers.

Although traffic continued to increase (with 406,955 passengers carried and 71,613 miles run in the July to December period), shareholders were

told at the end of January, 1893, that the Company's position was not good. The Eaglehawk line urgently required duplication to enable a better service to be run, as many passengers would not wait 20 minutes until the next tram came along. The existing rolling stock and track could not handle the passenger traffic on football days and holidays. The Golden Square to Gas Works line should have been built within eight months, but all the share capital had been called-up and it was considered no use seeking to offer increased share capital to the public due to the prevailing financial conditions. The "boom" of the early 1890's had burst, the decline in traffic becoming quite accentuated during the latter part of 1893. The Councils were advised that finance to build the second line could not be found and that, if they insisted on it being built, the Company would most likely have to cease operations.

Duplication of the Eaglehawk line continued during 1894 in an effort to reduce operating expenses and retain passengers by providing a better service. By early 1895 it was stated that all duplicated sections were within visible distance of each other, and in reasonable condition. The light construction of the original track was proving inadequate for the motors and traffic offering, and was causing concern. In June, 1894, the Victorian Railways stopped the special freight rate for coke for the steam trams and a legal action followed resulting in the Company winning a verdict for £247. Coal was tried but proved unsuccessful. The Bendigo Gas Company was unable to supply sufficient coke so

wood was used, which soon brought complaints about sparks being emitted. On 29th February, 1895, the Victorian Railways notified the Company to stop running in the railway reserve (from Mitchell Street to the station), remove its tracks and reinstate the surface within seven days. Relations thus became very strained, with the Council supporting the Company. It was pointed out that the trams brought many passengers to the railway station, but appeals to the Commissioners failed. The Company said it could not afford to pay the £270 rental demanded by the Railways. Subsequently, the railway station terminus was abandoned and the track layout altered in Mitchell Street to suit the new arrangement, but details are not known.

The lowest point in the economic depression was reached during the second half of 1895, when only 313,761 passengers were carried. By the middle of 1896 the Company's acquisition of several additional cars was reported to have solved its rolling stock shortage, while rail re-laying and duplications had placed the track in reasonable condition, except for some rail laid during 1894. Fares varied from 6d. to 3d., but on 1st June, 1897, a 1½d. system of sections was introduced by pre-paid ticket. Bell registers had been used for fare collection but because of unreliability, were replaced by the Evans type of fare receiver. The Eaglehawk Council refused permission for the Company to erect sheds either on the Market Reserve or on Crown land behind the Town Hall, to enable operations to be transferred there so that savings could be effected by elimination of empty running. Subsequently, the

Company purchased the Mollison Street leasehold including land occupied by the Bendigo Electric Company. The Company advertised its operations for sale during 1896-1897, but received no acceptable enquiries. It was decided to keep the service running as it would be more attractive in this form than if the service was stopped.

Rolling Stock

The first five steam tram motors were built by the Baldwin Locomotive Works, U.S.A., and carried builders' numbers 12241 to 12245 inclusive. They received road numbers 1 to 5, not respectively. They were of the 0-4-0ST type (of 4 ft. 8½ in. gauge), with 9 in. x 12 in. cylinders, 30 in. diameter wheels, and were rated at 50 h.p. They could haul one bogie trailer. Built in 1891, they entered service in February, 1892.

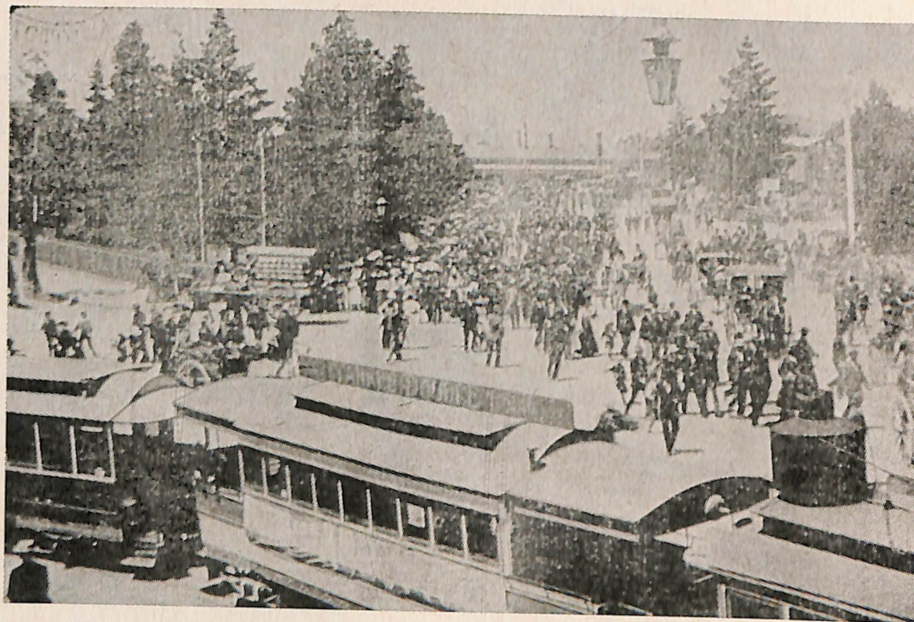
The other three steam tram motors were built by the Phoenix Foundry, Ballarat, in 1892, and entered service in October, 1892. They carried builders' numbers 315 to 317, and road numbers 6 to 8, not necessarily respectively. They were of the 0-4-0ST type, with 10 in. x 14 in. cylinders, 36 in. diameter wheels and were rated at 75 h.p. They could haul one bogie trailer and one four-wheel trailer. All eight motors were sold in 1903, and it is known that at least six went to timber mills and of these four were rebuilt to 3 ft. 6 in. gauge.

By February, 1892, trailers Nos. 1 to 5 had been rebuilt from battery tramcars Nos. 2 to 6. Bolsters and bogies were fitted and the end platforms extended, the latter carrying outward-facing longitudinal seats. Trailer No. 6 was rebuilt from battery



Phoenix-built motor No. 6 and trailer No. 5.
The 3d. fare advertised on car windows was pre-payable by ticket printed green on white paper.





From steam train . . . to steam tram. Crowds walk along the site of the former steam tram tracks as a motor, fitted with spark arrestor, waits with bogie and four-wheel trailers.

car No. 1 shortly after the steam tram service opened. As its saloon was shorter than the other five cars, its end platforms were longer, the longitudinal seats faced inwards and the sides were panelled. Nos. 7 and 8 were also quickly rebuilt by the Bendigo Rolling Stock Company from battery cars of the same numbers and, as far as can be ascertained, also became bogie cars.

Late in 1894 three tramcars were purchased which, "with slight alterations", were placed in service. They became Nos. 9 to 11 and were six-window saloon cars with end platforms. It thus seems that they were second-hand cars, and may have been three of the four built for the Caulfield Tramway Company in 1889 which were rejected by that company. Late in 1895 the Company constructed in its Depot, one, and subsequently two, new cars of light construction. They were small four-wheel vehicles and referred to as "umbrella" cars. They had four bench seats and seated 20 passengers. They were numbered 12 and 13, the former being the ninth battery car. At least one, and probably three additional saloon cars, slightly larger than Nos. 9 to 11, were acquired during 1896, but their origin is unknown. At 30th June, 1896, there were said to be ". . . about 14 . . . cars," but a former employee stated many years ago that the steam service had 16 cars (8 bogie and eight 4-wheel) in its later years. The steam tram motors were painted dark red with gold lining, except their boilers, which were green with brass bands. The trailers were red and cream with gold and blue lettering.



Four-wheel steam tram trailers amid the crowd around the Queen Victoria Fountain at Charing Cross. The troops are marching with reversed arms for the mourning of the death of Queen Victoria in 1901.