TROLLEY WIRE

Journal of
AUSTRALIAN TRANSPORT MUSEUMS

NUMBER 170
JUNE, 1977

THAT CURIOSITY- THE TROLLEY BUS

Registered for Posting as a Periodical - Category B

TROLLEY WIRE

Journal of

- Australian Electric Transport Museum
- Ballarat Tramway Preservation Society
- Brisbane Tramway Museum Society
- Illawarra Light Railway Museum Society
- South Pacific Electric Railway
- Steam Tram Preservation Society
- Tasmanian Transport Museum Society
- Tramway Museum Society of Victoria
- Western Australian Transport Museum

JUNE, 1977

Vol.18 No.3 Issue No.170

$1.00 *(Recommended selling price.)*

Deadline next issue – 28th July, 1977.

All copy must be in the hands of the editor on or before this date.

All correspondence concerning TROLLEY WIRE should be addressed to:

The Editor, Trolley Wire,
P.O. Box 103,
Sutherland. N.S.W. 2322.

Editor: Laurence Gordon

Production: Lynne & Paul Simpson

Published by: South Pacific Electric Railway

Printed by: Lynaul Press, Panania

Publication: February, April, June, August, October and December.

Subscriptions & Correspondence: Norm Chinn

Subscription Rates:-

Members: $5.00 per annum.

Non-member Subscribers:-

In Australia- $5.50 per annum

Overseas - Price on Application

CONTENTS

NEXT ISSUE

That curiosity- the Trolley Bus Pt.2 and more Silver Anniversary Articles

PLUS

Notes and News etc., from around Australian Museums

Comment . . .

The caption for the cover photo of February "TW" inadvertently ommitted to identify the tramway system. Whilst the distinctive lines of 132 and the springbow would readily identify Hobart for most readers we did not intend to make it a guessing competition. We are also assured that 132 is at the Lenah Valley terminus in Augusta Road near Pottery Road and not as stated.

However, in the article on traction modelling in this issue there are listed 26 track gauges used by electric traction. These are all given in millimetres. Can you relate the appropriate ones back to feet and inches and identify where they were or are used?

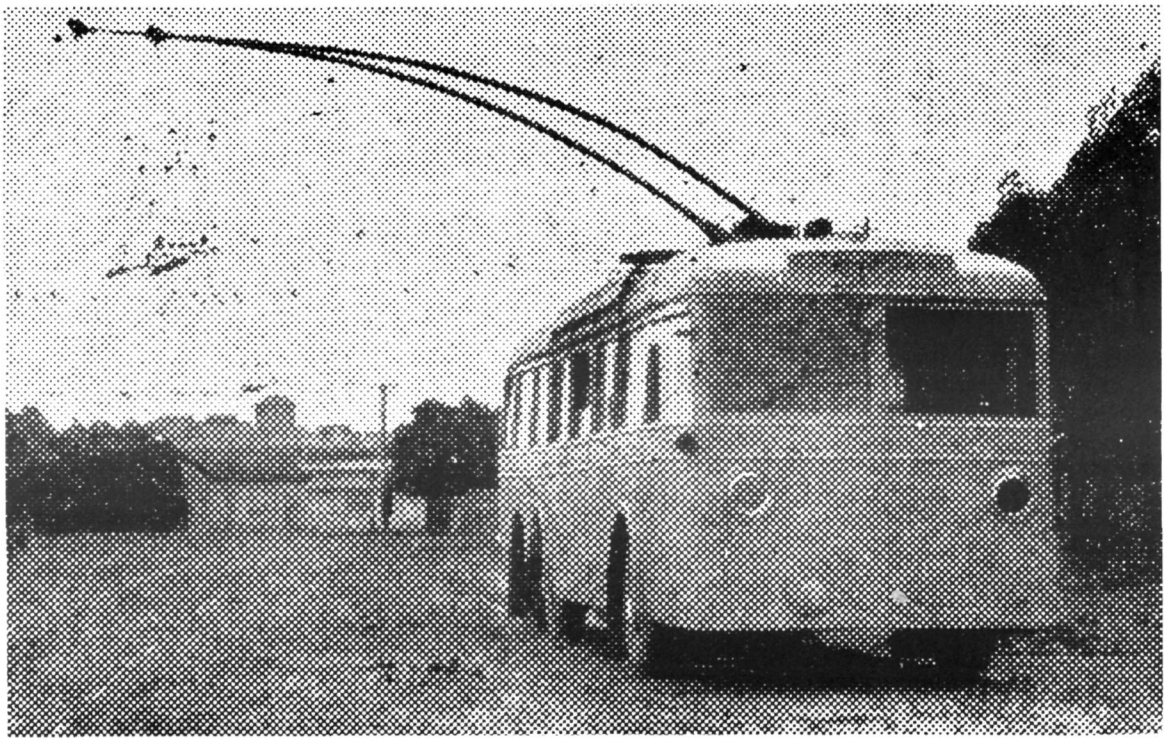
SUPPORT YOUR MUSEUM

ATTEND WORK PARTIES

AND PARTICIPATE !

FRONT COVER

The Official opening of the Kogarah Trolley Bus system on 3 July, 1937.



THAT CURIOSITY- THE TROLLEY BUS

Compiled by K. McCarthy.

"Modern Tramway", the organ of the Light Railway Transport League of Great Britain, published a favourable review of the SPER Tramway Museum publication "N.S.W. Tramcar Handbook Part II" in their January 1977 issue. In his treatment the reviewer stated . . . . "Mention of a steam tramway being replaced by trolley buses in 1937 (at Kogarah N.S.W.) is itself a curiosity" . . . . . .

July 3rd, 1977 marks the 40th anniversary of the passing of the Kogarah steam tramway and the inaugural ceremony of the replacing trolley bus system. Although the trolley buses were efficient vehicles and achieved most things expected of them, this curious traction form has not left much of a mark in the story of urban transportation in Australia.

Between March 1932, when the first trials were conducted in Adelaide, and August 1969 when the last two Perth routes closed, some 337 trolley buses traversed approximately 109 miles of route on eight trolley bus systems in Australia.

The Kogarah conversion of 40 years ago was preceded by the Adelaide trials and the small initial experimental lines in Perth, Sydney (King's Cross) and Hobart, but Kogarah was the location for the first large scale introduction in Australia of this traction form, employing a reasonable size fleet of uniform vehicles.

Trolley buses arrived very late on the Australian scene. In April 1882 Siemens operated a primitive trolley bus in Berlin supplied with current from twin wires through a troller (a small four wheeled device running along these wires, pulled by the prime mover by a cable) attached to a mast on the vehicle. (1) M.Schiemann is credited with operating a trolley bus

Trolley bus number 1, during first day trials on the Kensington Racecourse training circuit, December 18th, 1933.

P. Simpson collection.

system in Westphalia, Germany in 1888 (2) and in 1903 Schiemann and Siemens combined to introduce their pioneer vehicles into transport systems in various urban areas in Europe.(3) This phase of the art covered the period until World War 1. In USA there are reports of experimental demonstrations of trolley buses as early as 1882 when a Dr. Finney of Pittsburgh devised a system of running a bus with electric motors collecting power from twin overhead wires (4) but not until 1901 was a commercial operation introduced in Boston. This undertaking seemed to be transferred to other locations in the eastern portion of U.S.A., the last appearance being in Scranton, Pennsylvania during 1904.

In 1910 the successful Laurel Canyon line in Hollywood, California opened (5) and from that time the trolley bus progressed, (albeit very slowly over the first decade) at a steady, but not spectacular rate in northern America.

The trolley bus evolution can perhaps be divided into the following periods:-

1890-1910 - Primitive trials.
1910-1920 - Pioneer experimental installations.
1920-1930 - Primitive but positive commercial development.
1930-1945 - Mature expansion with a tradition system emerging.
1945-1955 - Post World War II expansion, tramway replacements in Australia.
1955-1975 - Wholesale closures.
1975-onwards Renewal of interest. New design vehicle appearing on remaining undertakings.

During the pioneer period Britain experienced two demonstrations of trolley buses in London in 1909, (6) and on June 20th 1911 both Bradford and Leeds opened permanent routes with buses collecting power from twin wires with a double head trolley pole. The Leeds system closed in 1938, but the Bradford system persisted until March 26th 1972 (7) to be the last trolley bus undertaking in the British Isles. During this pioneer period trolley buses appeared in the British cities of Rotherham, Stockport, Keighley, Ramsbottom, Aberdare, Brighton, Hove, Rhondda and Mexborougy.

Australia did not enter into the trolley bus scene until the 1930's when the pioneer development work for this form of transport was well completed. Except for some post World War II vehicles which enabled some of the earlier perth and Hobart buses to be withdrawn, the Australian scene was one of systems with single generation vehicles. The last trolley buses were withdrawn from the local scene just too early to experience the renewal of interest in this form of transportation which is now being experienced in North America where the remaining 5 systems in USA and the 5 in Canada are now receiving deliveries of new vehicles with prospects of later route extensions.(8)

EARLY AUSTRALIAN PROPOSALS.

During the early years of this century the possibility of trolley bus lines in Australia was the subject of editorials in the press. As the proposed electrification of the Newcastle steam tramway system seemed to recede further into the future during the 1900's, as more steam tramway stock arrived in Newcastle from Sydney as that city progressed with electrification, the "Newcastle Morning Herald" was vocal in pressing for "trackless tramway systems" to take the place of the steam trams. Looking back, however, it is doubtful if the editorial writer knew much about the trolley bus technology at that time to even suggest such a scheme.

In January 1911 a special committee investigated the possibility of using "trackless trams" in Sydney while in 1913, a proposal to use trolley buses along a planned short tramway route in Katoomba N.S.W. received attention.(9)

In January 1912, William (later Sir William) Goodman, the Manager of the Municipal Tramways Trust of Adelaide, investigated the possibility of trolley buses being used to replace horse buses feeding into the electric tramway system in the south eastern areas of the city, but these operations were later replaced by tramway extensions. (10)

During February 1913, Mr. John Kneeshaw, the Traffic Superintendent of the N.S.W. Government Tramways, attended a public enquiry at Lismore N.S.W. to ascertain if a proposed two route steam tramway system should be introduced by the NSWGT in that town. The estimated cost of the undertaking was expected to reach 18,000 Pounds. The annual operating expenses were expected to reach 3,000 Pounds per annum, the interest on capital 720 Pounds per annum while the income could only be expected to yield 1,500 Pounds per annum leaving a deficit of 2,200 Pounds per annum.

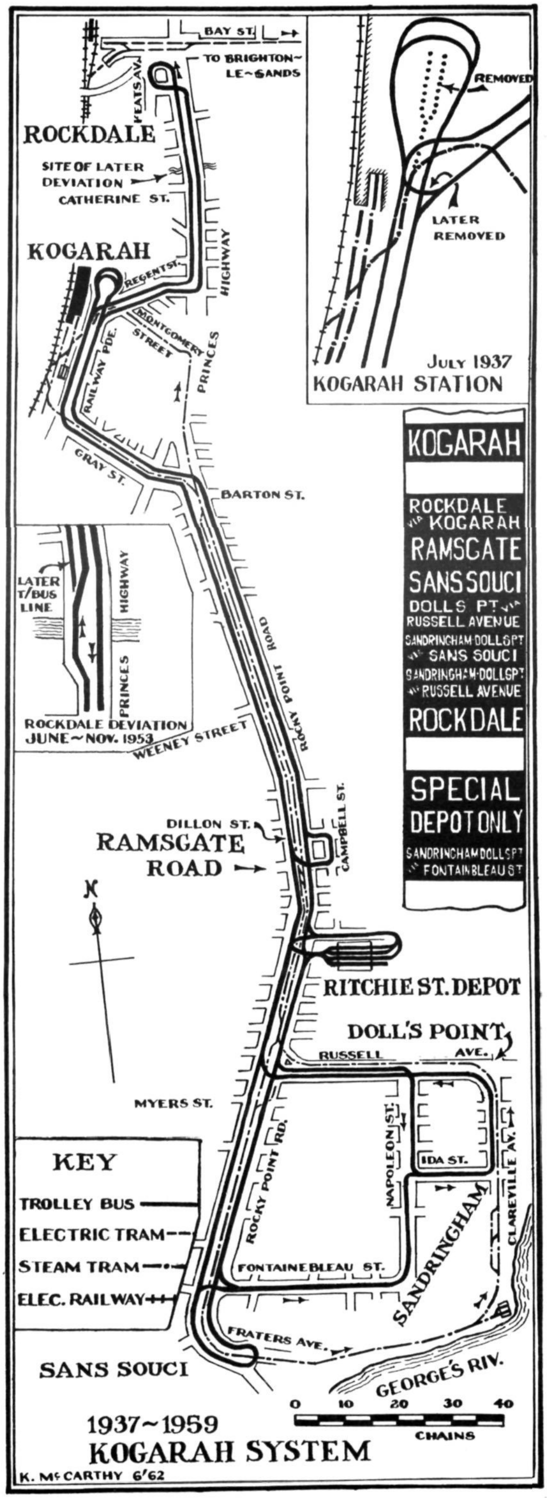
An alternate scheme proposed by a Mr. Grant envisaged trolley bus operation which would only require 8,000 Pounds to establish. The "Northern Star" reported that this proposal had received the recommendation from John

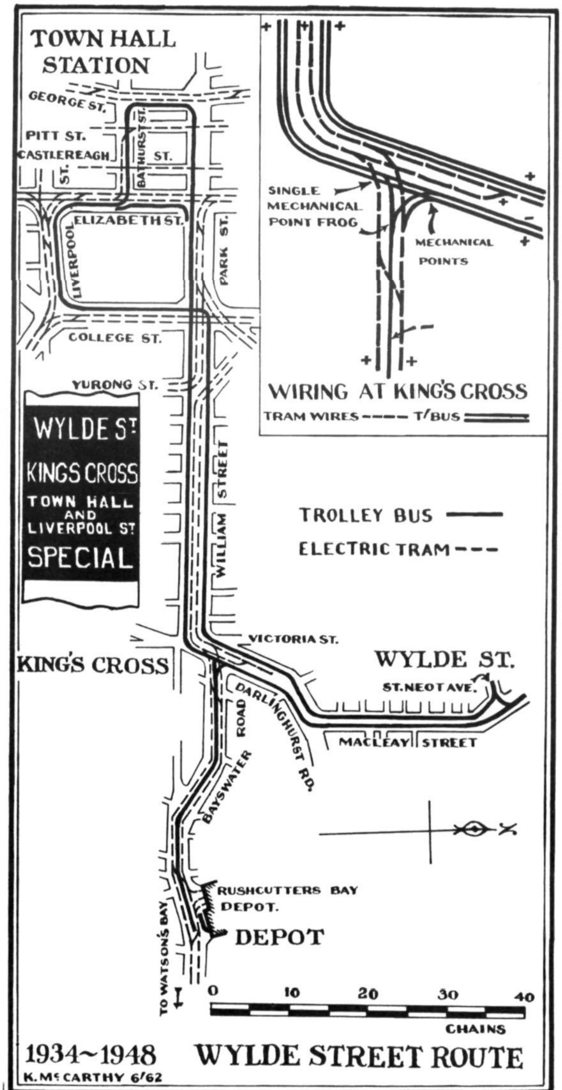
Adelaide double deck trolley bus number 407 crossed King William St. from Rundle Street while a "D" class tramcar waits for the traffic lights. August 31st, 1956.

K. McCarthy photo.

Wylde Street Trolley Bus No.3 in the depot at Rushcutters Bay. Note life guard and wandering leads.

Sydney Morning Herald.


BAY ST.
TO BRIGHTON-LE-SANDS
YEATS AV.
ROCKDALE
SITE OF LATER DEVIATION
CATHERINE ST.
KOGARAH
REGENT ST.
MONTGOMERY STREET
HIGHWAY
PRINCES
RAILWAY PDE.
GRAY ST.
BARTON ST.
July 1937
KOGARAH STATION
REMOVED
LATER REMOVED
KOGARAH
ROCKDALE VIA KOGARAH
RAMSGATE
SANS SOUCI
DOLLS PT. VIA RUSSELL AVENUE
SANDRINGHAM DOLLS PT VIA SANS SOUCI
SANDRINGHAM-DOLLS PT VIA RUSSELL AVENUE
ROCKDALE
SPECIAL
DEPOT ONLY
SANDRINGHAM DOLLS PT VIA FONTAINBLEAU ST
LATER T/BUS LINE
HIGHWAY
PRINCES
ROCKDALE DEVIATION
JUNE~NOV. 1953
WEENEY STREET
ROCKY POINT ROAD
DILLON ST.
RAMSGATE ROAD
CAMPBELL ST.
N
RITCHIE ST. DEPOT
DOLL'S POINT
RUSSELL AVE.
MYERS ST.
KEY
TROLLEY BUS
ELECTRIC TRAM
STEAM TRAM
ELEC. RAILWAY
ROCKY POINT RD.
NAPOLEON ST.
IDA ST.
CLAREVILLE AV.
SANDRINGHAM
FONTAINEBLEAU ST.
FRATERS AVE.
SANS SOUCI
GEORGE'S RIV.
0 10 20 30 40
CHAINS
1937~1959
KOGARAH SYSTEM
K. McCARTHY 6'62


TOWN HALL STATION
GEORGE ST.
PITT ST.
CASTLEREAGH ST.
BATHURST ST.
ELIZABETH ST.
LIVERPOOL ST.
PARK ST.
COLLEGE ST.
YURONG ST.
WYLDE ST
KINGS CROSS
TOWN HALL AND LIVERPOOL ST
SPECIAL
WILLIAM STREET
SINGLE MECHANICAL POINT FROG
MECHANICAL POINTS
WIRING AT KING'S CROSS
TRAM WIRES ---- T/BUS ====
TROLLEY BUS
ELECTRIC TRAM
VICTORIA ST.
KING'S CROSS
WYLDE ST.
ST. NEOT AVE.
DARLINGHURST RD.
ROAD
MACLEAY STREET
BAYSWATER
RUSHCUTTERS BAY DEPOT.
DEPOT
TO WATSON'S BAY
0 10 20 30 40
CHAINS
1934~1948
WYLDE STREET ROUTE
K. McCARTHY 6'62

Kneeshaw as it would be better than the tramway scheme to the tune of 18 Pounds per day. This possible indiscretion earnt Kneeshaw admonishments from his superiors. When the inquest re-opened on February 5th, 1913 Kneeshaw made a statement that he had never expressed any views on a proposed trolley bus system!

Mr. E. Doran, the NSWGT Traffic Manager, following Kneeshaw's death in 1914, visited USA in 1919 and from observations made there we see suggestions of American transportation methods being voiced during the early 1920's. At the Public Works Committee enquiry into a planned tramway extension between Haberfield and Dobroyd Point in Sydney during November 1922, suggestions were made that one man tramcars (Birney cars) and trolley buses should be considered as vehicles suitable for future public transport extensions.

During 1921-22 trolley buses were proposed as a cheaper alternative to a planned tramway system for the Queensland city of Toowoomba.(11) The money set aside for this facility, however, was used to establish a town sewerage system. At this time another plan was voiced to operate trolley buses between Hurstville and Dumbleton (Beverley Hills) in Sydney employing two buses for daytime operation and eight at times of peak loading. The suburban railway through that area to East Hill, opened in 1931, was the more efficient alternative adopted to open the land in the Wolli Creek-Georges River basins for settlement.

Between October 1924 and May 1932 (12) a single primitive, solid rubber tyred trolley bus worked from the edge of the Wellington city area in New Zealand along the Hutt Road to Kaiwharawhara in an area forbidden to tramway extensions to protect the nearby railway from competition. This was the only example of a "pre-maturity" trolley bus undertaking established in Australasia.

EARLY AUSTRALIAN UNDERTAKINGS.

The first Australian trolley bus venture was an experimental line organized by the Adelaide Municipal Tramways Trust along the outer end of the Paradise tramway beyond Payneham. Experimental operation commenced on March 2nd 1932 and after private and public trials during April, the line commenced regular off peak operations on May 18th, 1932. (13) The through tramway service operated to Paradise during peak periods, but during the day passengers were forced to transfer from tram to trolley bus at Payneham to complete their outward trip. A double decker Garford petrol bus No. 216 had the top deck and staircase removed and was fitted with an electric motor and trolley poles for this experiment and as such became the first trolley bus in Australia. The venture proved a success and the Trust obtained experience and economic proof which enabled the large system linking Adelaide to Port Adelaide to be established with confidence in 1937. The Paradise trolley bus route reverted to full time tramway operation from August 11th, 1934.

The second Australian trolley bus venture opened in Perth, Western Australia, on October 1st, 1933. (14) This line, served by three single decker buses, covered territory served by the East to West Perth tramway and extended from Trafalgar Road, East Perth to West Leederville Railway Station. Bus Number 1 arrived complete with a Leyland Chassis and a Park Royal body on June 10th, 1933, while the bodies for buses 2 and 3 were built locally on the imported three axle chassis. Expansion of this Perth system did not progress until 1938-9 when a further 19 similar vehicles entered service.

SYDNEY TROLLEY BUSES AND POLITICS.

The next Australian trolley bus activity occurred in Sydney and was partially bound up with the volatile politics of that era. From 1925 to 1927 and from 1931 until 1932 the late J.T. Lang was the Premier of N.S.W. heading a Labour Government. Lang was a champion of the transportation plans of Dr. J.J.C. Bradfield, and his Government presses on with Bradfield's plans which called for electrification of the Sydney suburban railway system, the construction of the Sydney Harbour Bridge and the digging of an underground railway system in the city area to allow the electrified railways access to the business district as well as a direct cross city connection between the main and the semi-isolated North Shore railway.

This expenditure could be undertaken at that time as the states, and not the central Commonwealth Government alone, could borrow money on the overseas money markets.(15) Bradfield's plans envisaged the use of some railway tunnels for tramway extensions until traffic increase could justify their upgrading to full size railway operation. Two of the four railway tracks as well as the underground section into Wynyard station were used to bring the isolated North Sydney tramways into the city between 1932 and 1958, but the scheme to submerge the eastern suburban tramways under Oxford St. and Hyde Park between Taylor Square and the unused centre platforms in St. James underground station was never executed.

During the 1927-31 period a non-Labour administration was in Government in N.S.W. with T. R. Bavin as Premier. Their conservative policiies, coupled with the economic decline of the period, caused the retardation of the city railway construction. With the return of the Lang administration in 1931 urgent activity had to be initiated to enable the western leg of the underground railway between Central Station and the Harbour Bridge to be completed in time for the opening of the bridge in March 1932.

Thus the Labour transport policy for Sydney at that period was broadly based on the expansion of the suburban railway system as the backbone of Sydney's future transportation needs. Trams would continue to serve the non railway suburbs until trains could be extended into such areas, and buses would be taxed so that competition could be controlled and these would serve as feeders into the railway and tramway system.

With the dismissal of the Lang government by Governor Game on May 13th 1932, and the resulting return of a non-Labour government (until 1941) in the ensuing elections, the Labour plans, including those for transportation, were reversed in the usual political pique. Thus the pendulum took a full swing and a trolley bus-diesel bus policy replaced the former trunk tramway-feeder motor bus policies of the former administration. Thus the "trolley bus craze" arrived in Sydney. (16)

THE KING'S CROSS (WYLDE ST., POTTS POINT) ROUTE.

The new Government established a Trolley Bus Committee consisting of Messrs. Maddocks (Transport Department Commissioner); Deering (Principal figure in motor trading circles); Garner; Timmony (Transport Dept Traffic Manager) and Neale (Deputy Transport Commissioner). On February 9th 1933 this Committee reported that trolley buses would be suitable for use on the following routes:-

a. Hurlstone Park - Summer Hill (tramway).
b. Ryde - Ryde Station (tramway).
c. MacPherson St. Waverley - Randwick (tramway).
d. Rosebery - Kensington via Gardeners Rd. (part tramway).
e. Drummoyne - Fivedock (almost built as a tramway in 1920's).
f. Wylde St. Potts Point - Taylor Square, Darlinghurst. (1905 steam bus route).

Steam Trams and Trolley Buses mingle at Kogarah at the official opening of the Trolley Bus system. – *A.D. Greenwald*

g. Pyrmont - York St. City via Pyrmont Bridge. (proposed 1911 tramway)
h. Enfield - Mortlake (tramway)
j. Rose Bay - Bondi Junction via O'Sullivan Road.

This committee recommended the Wylde St. to Darlinghurst route as the most suitable on the list for an initial trolley bus working and this would require a maximum of four buses.

On July 4th, 1933, the Transport Commissioner Mr. S. Maddocks announced that trolley buses would replace motor buses on the Darlinghurst to Elizabeth Bay route using two single deck vehicles to be provided by A.E.C. (Aust.) Pty. Ltd. for a 12 month's trial. In October the Commissioner announced that the route had been altered to extend from Wylde St. Pott's Point to Central Station by way of King's Cross, William Street, Hyde Park and Elizabeth Street.

The chassis for one single deck bus (No.2) arrived by sea on August 2nd, 1933 and this received a local body built by H. McKenzie. The complete bus arrived on October 23rd, 1933 with a Park Royal body. This vehicle later carried fleet number 1 and the evening press on December 18th, 1933 featured photos of this bus in operation on a special drivers' training circle at the Kensington tramway sidings.

The Wylde Street route was opened with due ceremony on January 23rd, 1934 when the two buses department from their depot in the old cable winding power house at Rushcutter's Bay along the wires shared with the trams up New South Head Road and Bayswater Road to King's Cross where the vehicles branched onto their own independent wires to make an official

opening circuit of the new undertaking. Only part of the proposed route was opened, from Wylde Street to Elizabeth St. near Hyde Park. The Central station portion was never constructed but the arrival of fully imported double decker bus No.3 on an AEC "Q" type chassis (16) enabled an extension loop into George Street Sydney at the Town Hall to be opened on September 30th 1934.

TROLLEY BUS INTRODUCTION TO HOBART, TASMANIA.

The next Australian city to experiment with trolley buses was Hobart, the capital of the Island State of Tasmania. On October 29th, 1935 a single bus opened a 2¼ mile line from Hobart to Huon Road, traversing grades as steep as 1 in 11. The success of this venture resulted in further buses being added to the fleet to work the next extension to Cornelian Bay via Newtown on October 19th, 1937.

THE KOGARAH TRAMWAY CONVERSION IN N.S.W.

A ceremony performed at Kogarah on July 3rd, 1937 propelled the transport technology of the district from the 1870's into the 1930's in one bound. The Kogarah tramway was the last Government operated steam tramway, a form of traction introduced to Sydney in September 1879. This was not the last steam tramway to operate in N.S.W., as the line operated by Sydney Ferries Ltd. from Redbank Wharf to Parramatta Park Gates continued to function with almost identical rolling stock until March 1943. (17)

The electrification of the busy isolated Kogarah to Sans Souci steam tramway had been planned to eventually follow the general tramway conversion scheme launched in Sydney in 1899. By 1905 the last of the Sydney steam workings on the main system, as well as the cable lines at King Street and North Sydney had been converted. The conversion of the Sydney system had taken longer than expected, however, mainly due to the need of providing greater generating capacity and tramcars than originally planned, owing to the remarkable popularity of the new transport mode, the lower fares charged, and the pressure to extend the electric services to areas beyond the original steam terminals.

The isolated Manly and Enfield tramways were electrified in 1911 and 1912. These projects were delayed by the earlier Spanish-American war holding up supplies from the USA and to a ship wreck which caused the loss of electrical equipment being delivered from overseas. The Newcastle conversion was originally planned for 1908-1910, but the difficulties associated with World War I prevented this work from progressing until 1923-26. This proved to be the last major work conducted on the NSWGT system and even at that stage serious consideration was paid to the possibility of replacing the Newcastle steam trams with motor buses.

The electrification of the isolated Arncliffe and Kogarah tramways were to follow the Newcastle project. The Arncliffe to Bexley line closed on December 31st, 1926 but some work for the conversion was undertaken at Kogarah. The steam tramway opened in 1887 as a single track trunk line heading southwards from Kogarah Station, branching into a large balloon loop serving the entire Sans Souci peninsular. In 1908, a smaller balloon loop was opened at the Kogarah end converting the tramway into an elongated "figure 8" route. When the trunk stem between Gray St. Kogarah and Russell Ave., Doll's Point was duplicated the junction facilities at the entry to both balloon loop sections were complicated by the fact that both loops were worked in an anti-clockwise direction, whereas a clockwise direction would have been more suitable for the "keep to the left" traffic rule.

During 1926-7 two rotary converters were installed in the small Rockdale tramway substation replacing a smaller single sunit, but these were never used to supply the Kogarah tramway, but were transferred to the Gray St. sub-station in 1937 to power the trolley buses. One of these converters is now located at the Sydney Tramway Museum at Loftus. At this time a parallel tram track was constructed on the inner side of the existing steam tram balloon loop from Loop Junction at Russell Ave., along Rocky Point Road past the Sans Souci steam motor shed to Sandringham. This was to provide a duplicated track for the electric trams, as the planned operation would discontinue the balloon loop around the peninsular and replace it with a "J" shape route terminating at Sandringham just short of Doll's Point. The track between Doll's Point and Rocky Point Road along Russell Ave., was to be abandoned. This new track was never used at Kogarah as it was constructed with clearances for the finer contour electric tram wheel flanges, whereas the steam trams at Kogarah used railway contour wheels.

When the Illawarra suburban railway was electrified in 1926 the frequency of the Kogarah tramway services improved to serve the railway frequencies. By the early 1930's the off-peak tramway service worked at a 10 minute inter-

val and considering the balloon loop situation at Sans Souci prevented an outer terminus standover in which lost time could be recovered, the staff were hard pushed to keep the elderly rolling stock co-ordinated with the electric train timetables.

In the late 1920's the NSWGT proposed using single truck "K" type tramcars for the peak services and the modern "P" type bogie electric trams for the bas operation at Kogarah. As an economy measure the old galvanised North Parramatta steam tram depot (at Woollen Mills) was to be re-erected at Ritchie Street to provide a shed for these electric trams. A further electrification proposal considered as late as 1934, when the economic climate was showing some improvement, suggested that the old "E" type trams, released from Sydney service by the introduction of the new "R" class saloon cars, should be used at Kogarah.

By the mid 1930's the Stevens Government, which had replaced the Lang administration in 1932, had formulated a clear plan for passenger transport. They would provide a "flexible system" and gradually replace trams with buses and trolley buses, but to keep fares at a reasonable level, this conversion would be gradual and no useful material would be written off until its economic life was exhausted. (18) Under this scheme the "R" and "R1" type tramcars were designed and constructed so that a relatively modern tram would be used on the tracks while the fixed equipment was gradually used to the limit.

In April 1936 Transport Commissioner Maddocks announced that the Kogarah steam trams would be soon converted to trolley bus operation. The first bus was expected to take up operation by December 1936 with a gradual reduction in the tram service until June 1937 when sufficient buses would be on the roster to cover all the timetable needs. The first bus planned for the conversion was No.5, a double decker bus with locally built body mounted on an imported AEC "Q" type chassis. A similar bus No.4 had been delivered on February 27th 1936 and introduced to the Wylde Street service on April 8th 1936, both being identical to bus No. 3 mentioned earlier.

Bus No. 5 was delivered for service on October 17th, 1936, but instead of being used for the Kogarah service it was employed at the reopened Kensington Racecourse training circuit for the Kogarah drivers. The reason for a complete changeover, rather than a gradual substitution as originally planned was no doubt governed by the fact that the replacement trolley bus route was several blocks away from the reserved track portion of the tramway between Sans Souci and Sandringham and a partial

Ritchie Street depot of the Kogarah trolley bus system, July 1st, 1950. Double decker bus 24 and single deckers 1 and 2 stand in front of the depot. *K. McCarthy photo.*

conversion would be most inconvenient for passengers living in that area.

Bus No.5 eventually entered service at Wylde Street (Sydney) on June 24th 1937. By this stage its driver training duties were no longer required at Kensington due to the arrival of the large, three axle double decker buses designed for the new Kogarah operation.

These Kogarah vehicles were based on a successful design employed at Newcastle-upon-Tyne and the contract specifications were compiled from details supplied by the London Passenger Transport Board. Additional information on the latest trolley bus design trends were received from Mr. A. Priddle, Traction Engineer of the A.E.C. Coy. Ltd. of Southall, Middlesex.

Chassis tenders received from A.E.C., Leyland Ruston and Hornsby and Commercial Steels, were opened on July 21st 1935 with variations between 1,270 pounds and 2,100 pounds each. Tenders were called on May 20th 1936 for the construction of 21 three axle and 1 two axle double decker bus bodies (the latter being "Q" type No. 5) Syd Wood of Bankstown received the contract for the "Q" type, Waddingtons and G. H. Olding & Sons being competitors. The same firms also quoted for the bodies for the larger Kogarah 3 axle chasses, in lots of 5, 10 or 21 batches. Ritchie Brothers were successful in the bid for the Kogarah vehicles, the final price on the road being 3,236 pounds each.

Kogarah buses 6 to 16 were mounted on Leyland chassis while identical bodies were fitted to the AEC underframes, which carried fleet numbers 17 to 26. The chassis eventually fitted to bus 15 was the first to arrive at Randwick Workshops on February 16th, 1937. Ritchie Brothers were not lacking in speed for the entire fleet was delivered to the Transport Department as follows:-

Date	No.	Date	No.	Date	No.
19.4.37 -	6	27.4.37 -	7&8	28.4.37 -	9
10.5.37 -	10	14.5.37 -	11	18.5.37 -	12
26.5.37 -	13	21.5.37 -	14	28.5.37 -	15
31.5.37 -	16	3.6.37 -	17	7.6.37 -	18
8.7.37 -	19	29.6.37 -	20	24.6.37 -	21
22.6.37 -	22	11.6.37 -	23	9.7.37 -	24
19.6.37 -	25	7.7.37 -	26		

Trolley Bus 12 stands at the Sans Souci terminus. — *V. Solomons*

Meanwhile, the construction of the brick bus depot at Ritchie Street had been approved by the Commissioner during September 1936, but this was not ready to receive buses until June, 1937. As the new buses arrived from the manufacturer they had to be stored at Randwick Workshops and Kensington Racecourse sidings.

The Kogarah wires were first energised on June 7th, 1937 and a bus was towed from Randwick Workshops for the first trial two days later and returned there at the end of the day.

On June 2nd 1937 the Chief Electrical Engineer notified his staff that the ceremonial opening would be conducted at Kogarah on July 3rd, and public operation would follow on the next day. Local Councils, politicians, service clubs, Chambers of Commerce planned to make the conversion a gala occasion. The timetable approved for the ceremony was as follows:-

2.15pm	Tramway Band arrives at Kogarah.
2.30pm	Musical programme by Tramway Band.
3.00pm	Premier officially opens service.
3.35pm	Official bus leaves Kogarah. Rockdale Junior Bands meet Trolley bus at Catherine Street and lead it into Rockdale.
3.45pm	Trolley bus arrives at Rockdale. Premier to be received by the Mayor of Rockdale.
4.15pm	Trolley bus leaves Rockdale for Sans Souci.
4.40pm	Reception and afternoon tea at Sans Souci.
5.30pm	Trolley bus leaves Sans Souci for Kogarah and Rockdale.

Five trolley buses were involved in the Kogarah ceremony. Bus No. 7, suitably decorated for the occasion, was stationed at the official platform at Kogarah near the corner of Regent and Montgomery Streets by 2.15pm with bus No. 17 drawn up behind. So that the last day of tramway traffic would not be blocked the following three buses, with No.23 at the head and 25 at the rear were parked in Railway Parade south of the station steps and were grad-

ually called ahead as the official cavalcade departed.

The new trolley bus route extended northwards to Rockdale beyond the old steam tram territory. This was later regretted by Kogarah business people; during the 1940's the Kogarah stop was eliminated from the schedule of most express Illawarra suburban trains, thus diverting some of the traffic previously handled at Kogarah to Rockdale. By the 1950's, however, the Kogarah stop again crept into the express trains' timetables, a procedure followed in the days of the steam tram services.

According to the press reports of the day (19) some 90,000 to 100,000 people witnessed the opening ceremony, or lined the route. The Premier, Mr. Bertram Stevens, cut the ribbon at Kogarah Station and a second one later at Rockdale. In his speech he revealed that the new system had cost 106,000 pounds and would be operated by 54 men compared with 56 on the old tram service. In half a century of operation the trams had lost 230,000 pounds but better results were expected from the new buses. He concluded that only 16 of the 21 buses would be required to work the system and that 50% of the vehicles' content was of Australian manufacture.

On the morning of this ceremony Ritchie St. Depot was a scene of activity. The inspector, staff and cleaners were present from 7.30am to prepare the five buses and two spare vehicles for that day's activities. During the afternoon's procedures the first bus was accompanied by Sub Foreman Stabb, the second by Sub Inspector Marr, the third by Sub Inspector Wakeham, the fourth by Inspector Smith and the last bus by Fitter Hunt. A Mr. Johnson and Electrical Mechanic Luckman followed closely behind the last bus in a motor car.

During the first week of operation a detailed roster for Inspectors, Sub Inspectors, Foreman and Electrical Mechanics was posted so that these experts would be near at hand to solve any teething problems which might arise.

Eighteen of the twenty-one buses were at Ritchie Street in time for the opening day, but vehicles number 19, 24 and 26 were stored at Randwick or Kensington until 12th and 13th January, 1939 when they were transferred to Kogarah for regular service.

On that last day of steam tram operation record crowds were handled, mainly in three car trams. The last trip, consisting also of three cars which departed from Kogarah shortly before 1 am on Sunday July 4th, 1937, was so overcrowded that motor 84A had to be assisted by 64A in order to negotiate the grades out of Kogarah. Souvenir hunters on that last day partially stripped the trailer cars which had been sadly neglected in maintenance during the last few years of service.

Historic steam motor 1A was transferred from the system for preservation prior to the closure, the other motors departed for Randwick Workshops soon after, no.103A being the last to leave. The 19 trailers were parked on the Sandringham loop and on September 9th, local unemployed people were allowed to strip this rolling stock of any useable timber for heating. On September 16th, fourteen of these trailer cars were pushed towards the Sans Souci motor shed and burnt on the tracks while the remaining five shared the same fate several days later. The scrap metal retrieved from the fire was despatched to the Port Kembla Steel Works.

The trolley bus wiring scheme at Kogarah not only allowed for the trunk service to operate around the peninsular close to the old tramway route, but also furnished facilities for turning back at Ramsgate Road, for returning direct from Sans Souci without traversing the Sandringham and Doll's Point area, and for short working buses to serve Doll's Point alone without passing via Sans Souci. Another connection existed at Kogarah to enable the through Rockdale-Sans Souci buses to enter the Kogarah turning circle to pick up passengers before continuing on their southwards journey. This link was removed soon after the inauguration.

THE PERMANENT SYSTEM IN ADELAIDE.

While the Kogarah preparations were underway the Municipal Tramways Trust in Adelaide was working towards the introduction of a permanent system linking the main city area with Port Adelaide. Until July 1935 the Trust controlled an isolated tramway system in Port Adelaide. With the expansion of private motor bus operations in the 1920's this tramway system fell victim to bus competition as tram passengers could not make a direct journey into Adelaide. Restrictive bus regulations aided the tramways into the 1930's until the Trust introduced regular bus services, some operating directly into Adelaide, in place of the trams. The MTT Manager, Sir William Goodman was hopeful that a tramway could be constructed along the wide reservation down the centre of Port Road using Glenelg type cars, but the Railway authorities were instrumental in preventing such competition to their parallel service.

The alternative scheme was to provide trolley buses into the Port area and this Adelaide project was based on this north western corridor as well as a short eastern leg to Tusmore

Adelaide trolley bus 503 crosses King William Street in Rundle Street, while "F1" tramcar 275 awaits the traffic lights. August 31st, 1956. B. Parle photo.

located between the Burnside and Linden Park tramway routes.

Initial contracts were placed in 1936 for 20 double decker, two axle, buses with AEC chassis and local bodies built by J. A. Lawton. These were delivered in 1937 and a further 10 identical units joined the fleet by 1938. Although the Adelaide tramways had gained vital experience with their 1932 experimental line, N.S.W. Archives reveal that many queries were directed to the Sydney Rolling Stock Superintendent, Mr. McBurney, concerning troubles and adjustments already experienced in Sydney.

One such request in November 1936 concerning trolley pole pressures, heights and retrieval methods, met with a detailed reply dated December 1st, 1936. One remarkable feature in the answer from Sydney was:-

"Experiments made with trolley cord retrievers on the first (Sydney) trolley bus indicated that there was a likelihood of injury to the hands of employees whilst manipulating the cords. Further it was considered that, unless special provisions were made, there might be fouling between a cord and overtaking vehicle when a trolleybus was at its extreme lateral range. The trolley bus supplied complete from England was not equipped with trolley cords or cord retrievers and there did not seem to be sufficient warrant for department from this principle. Subsequent experience has confirmed this."

Another request from Adelaide dated August 27th, 1937 requested details of insulation tests, routine braking tests, trolley wheel and shoe wear and electricity consumption. The detailed answers sent from Sydney, while interesting, are outside the scope of this brief article, but some points revealed were:-

The Kogarah buses consumed an average of 2.4 kwh per mile.

The main difficulties in the operation of the Wylde Street system were dewirements (trolley wheels were used here and shoes at Kogarah), compressor troubles due to their capacity being too small for the steep parts of the route.

At Kogarah, trouble was experienced with the trolley heads becoming caught in the overhead wires when dewired, while the wheel tyres tended to creep around the rims causing the inner tubes to tear.

During 1938, the Adelaide Tramways Trust received five Leyland, 3 axle trolley bus chassis and placed these in store until 1942 when locally built bodies, very similar to the large double decker Kogarah design were fitted. These five

buses were never popular with the maintainence staff in Adelaide due to rear bogie troubles. For some time vague hints have emerged that more than 21 chasses were imported for the Kogarah system conversion. A letter dated August 27th, 1937 from Mr. C. Hursthouse, the Adelaide MTT Rolling Stock Superintendent to Mr. Edwards, the Engineer for Tramway Workshops at Randwick N.S.W. gives a further suggestion that this assumption may be correct:-

> "We have found considerable difficulty in holding the insulation resistance of our electrical equipment to 5 megohms. . . . . Although the chassis left Sydney after good test, after standing here a few months in the open they have gone down very low . . . . . .

Plans had been formulated for extensions to the Kogarah system and as stated earlier the Premier had indicated that only 16 of the 21 buses were required. Recent research has shown that the chassis numbers of the Adelaide buses followed on from those in Sydney although Metropolitan-Vickers electrical equipment was used instead of English Electric as at Kogarah. Whilst the correspondence to Mr. Edwards suggests that the Sydney Tramways had an interest in these chassis they may have been imported by the distributors in anticipation of extensions at Kogarah.

After routine trials and full traffic tests the eastern leg of the new Adelaide trolley bus system, that from the City to Tusmore, opened on September 9th, 1937. The Port Adelaide section from Adelaide to Semaphore and Largs opened on April 3rd, 1938.

AUSTRALIAN TROLLEY BUS SYSTEM.

At the eve of World War II the state of the trolley bus networks in Australia was:-

Sydney	City to Pott's Point (Wylde St)	
	2½ route miles	5 buses.
Sydney	Kogarah to Sans Souci.	
	7 route miles	21 buses.
Adelaide	Largs, Semaphore to Tusmore.	
	17 route miles	30 buses
		plus 1 service vehicle
Hobart	Huon Road to Cornelian Bay	
	4 route miles	7 buses.
Perth	East Perth to Wembley & Floreat. Park, City to Claremont.	
	15 route miles	22 buses.

At this stage the only tramway substitution routes were the Kogarah buses; the East to West Perth, Wembley Park, and Claremont via Crawley routes in Perth; the outer end of the Port Adelaide lines in Adelaide.

THE ARGUMENTS IN FAVOUR OF TROLLEY BUSES.

The efficiency of modern trolley buses on steeply graded routes was amply demonstrated on the Hobart and Sydney (King's Cross) operations, and later in Brisbane as well. When the Sydney routes were being planned several British and USA undertakings were mentioned as providing economic arguments in favour of this traction form.

Road maintenance responsibility could be transferred from the tramway permanent way section to the local road making authority if trolley buses were substituted for trams. The Salt Lake City U.S.A. Transport Company avoided a $900,000 bill for impending road reconstruction around tram tracks by substituting trolley-buses in 1928. The N.S.W. authorities suggested that between 1923 and 1936, 500,000 pounds could have been saved by substituting trolley buses or buses for the Newcastle steam trams instead of upgrading the tracks and surrounding road surfaces for the electric trams.

Data from Wolverhampton in England revealed that money borrowed for the purchase of trolley buses could be paid off over 10 years but finance for motor buses had to be repaid in 8 years. During 1930 the Wolverhampton trams were costing 28.5d per 100 seat miles, motor buses 29.5d and trolley buses only 24.2d. The relative ages of the fleets, however, were not revealed. At this same time the Hull undertaking in England reported that trolley buses cost 12.8d per mile and motor buses 14.6d. (20).

By the late 1920's and early 1930's the electric tramways systems installed during the first decade of this century had reached the stage where extensive replacements of both rolling stock and trackwork were required. The labour and material shortages of World War I had caused maintenance to be neglected between 1915 and 1920 and the deteriorating financial situation during the late 1920's and early 1930's prevented major capital expenditure. Throughout Britain and USA the small tramway systems were abandoned and what started as a trickle in the lat 1920's became a torrent in the 30's.

The trolley bus substitutions offered economies when compared with tramway rejuvenation . . . Existing maintenance staff could easily

adapt from electric trams to electric buses; trolley buses combined the flexibility of the motor bus with the smooth acceleration of the electric tram; the trolley bus was silent and pollution free and did not consume fuel when stationary. Power could still be obtained from the established tramway power house, while sub-station facilities, feeders and much of the tramway overhead plant could be utilised. As with trams, the power house supplying current for the trolley buses need only generate one third of the maximum Horse Power rating of the fleet.

The trolley bus salesman and spare parts backing seemed to be more active and dependable at this stage than the corresponding tramway counterpart. Another saving experienced by some authorities was that trolley buses need not always be registered but all motor buses were confronted with registration fees.

Photos seem to indicate that the trolley buses in Sydney, Hobart, Launceston and Perth operated for their entire life without registration plates while Adelaide vehicles commenced operation without registration plates but were fitted with these from the early 1940's. The Brisbane buses did not carry plates in 1951 but by 1952 these vehicles were fitted with public transport license numbers.

to be continued . . . . .

AN INTRODUCTION TO TRACTION MODELLING. Part 2

by A. W. PERRY

If all you desire is an operating traction layout and are not unduly worried what you run on it, or your favourite cars are available as kits or ready made your choice of both scale and gauge will have been largely made for you. But if you prefer cars of Australian or some other prototype not available commercially you will have to build them yourself or have them built, if you can find a modeller you can afford who will do the job. In the former case workshop facilities and/or essential parts available will be a deciding factor in your decisions.

It is preferable that the correct model track gauge be used, e.g. 16.5mm for 1:64 scale Hobart (3'6") cars. The models illustrated in the December 1976 issue of "TW" were 1:32 scale, therefore their 32mm gauge represented narrow gauge, 1n 3½ rather than 0 gauge. In the pioneer days of traction modelling motors were large and obtaining the correct wheels and axles a problem. Today things are much better and one does not need to adopt a narrower than correct gauge, even when modelling Sydney footboard cars, to allow for bogie swing between car frames.

Should you like to be different there are quite a few proto-type gauges both narrow and broad used by traction around the world. Including industrial and main line electrifications we have:

600	610	750	762	800	900	914	
950	1000	1067	1100	1118	1219	1416	1422
1435	1473	1495	1524	1575	1581	1588	
1600	1638	1665	1674	1676	mm		

USA trolley modellers' acceptance of 1:48 scale for 0 gauge despite it representing 1524mm gauge systems is better understood when it is realised that, in addition to being easy to use for feet and inches plans, all the above gauges from 1435 to 1638mm were used by USA prototypes, plus 914, 1067 and 1219mm. A common scale was essential and 1524mm was roughly mid range.

Few, if any, layouts are an exact model of any given system or line. Apart from route length the track layout, overhead, buildings, car colour schemes and types would have to be correct for the chosen system and then usually only suit a limited period of the system's history. Most successful modellers use discreet poetic license when building a layout.

Where we decide to mix our prototypes by modelling a tramway museum, or imaginary system that bought second hand cars or used other's designs, or simply wish to allow for other modeller's cars operating, we will have to ensure adequate clearances for all cars.

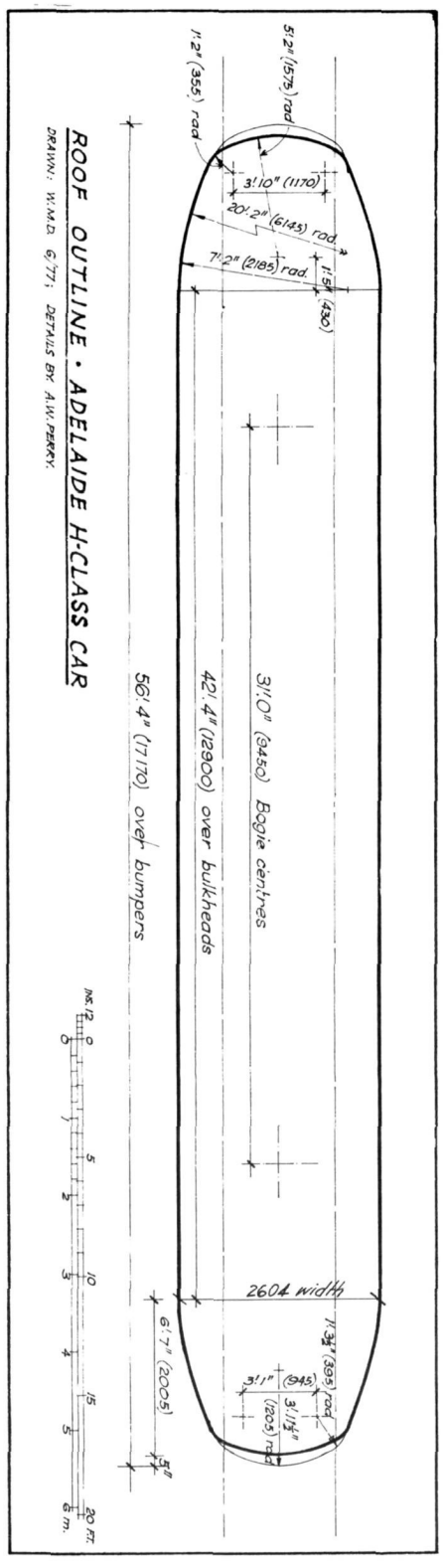
Mere car length and/or width can be a trap for the unwary, for the bogie centers AND the

car length PLUS the degree of taper of the car ends are major considerations. Brisbane FM cars are some 250mm narrower than a Sydney 'R' body and their bogie centers 356mm less, therefore the 'FM' overhangs far less on the inside of curve. But the distance from bogie center to nearest bumper is 483mm greater and the ends have a long fine taper on the 'FM'. Due to this, on curves of 100 feet radius or less, the throw out of the cars ends on the outside of a curve becomes increasingly greater for an 'FM' than an 'R' as the radius diminishes. Hence on a double track curve with radii less than 100 feet two 'FM's or two 'R's may clear each other safely BUT should an 'FM' using the inner curve try to pass an 'R' using the outer curve, clearance could become critical.

The Adelaide 'H' is Australia's largest tram and popular with fans. Provision of adequate clearance for these cars will suit all local prototypes and many USA interurban ones. The largest interurban in the USA is the 'Blimp' last used by Pacific Electric. It is 3200mm wide by 20422mm long on 13716mm bogie centers, but while this is the car to check clearances on the outside of curves if you intend to run any USA interurban, it is not the case on the inside of curves. For those clearances use an Illinois Terminal streamliner. These were 3048mm wide by 18898mm long on 15240mm bogie centers AND were designed to negotiate 47 feet radius curves, slightly sharper than Malvern Depot old shed and almost as tight as Queens Square balloon loop. As providing clearance on sharp double track curves for such large cars is very space consuming it might be more economical to create NO PASS curves for the largest cars and merely provide enough clearance between cars and lineside structures.

No matter what clearance car(s) you pick, do not overlook the fact that car heights vary considerably. In Sydney some classes of cars were route restricted due to their height. Also, double deck cars were used in Hobart and two, briefly, in Sydney, plus there are British examples to model. Australian normal overhead height will just accept these cars but not at low overbridges or where the overhead sags noticably.

The swing of bogies will determine your absolute minimum radius curve, but if you go visiting your car's bogie swing will also have to suit the curves on the other layouts. In the larger scales this swing is of less of a problem than in the smaller sizes such as HO due in part to the use of self contained power bogies rather than the use of body mounted motors. With footboard cars the bogies are largely hidden



from view and inside frames can be used in model applications.

The number of driven axles on a car will not only decide how steep you can have grades but also affect the performance of cars on curves. A bogie car with only one powered axle is usually very tricky to restart on a very sharp curve, or on level track. 50% driven axles seems adequate, but must still watch for the deadly combination of heavy grade with a sharp curve.

Long cars can pose problems on hilly routes at crests and dips by requiring more clearance under the car ends and center and between the tops of the wheels and the underside of the floor. With coupled cars vertical movement of couplers must also be considered. The writer can well remember the embarrassment at an exhibition over 20 years ago when a set of Hamo cars stuck in an underpass with the drawbars pressing up so hard against the bottom of the car ends that half the wheels were lifted off the rails. This was due to too severe a vertical curve in the dip.

If you build your own freelance designs you only need to use commonsense and observe proper engineering design principles. When you model some prototypical car type (individual cars do vary) it is satisfactory to model all that shows, which in the larger scales includes what can be seen through the windows, doors, etc. Working windows and doors can improve a car's appearance but are not essential, though movable lifeguard gates can reduce damage to a car. Similarly, power collectors which easily detach from their mounting whenever they snag the overhead or foul a structure can reduce damage to both themselves and the overhead. Wheels, collector shoes, etc, should always be to accepted standards.

When seeking advice from both fellow modellers and books it is good to remember that there is usually more than one 'correct' way to do anything with satisfactory results, so do not let apparently conflicting advice confuse you. They're all probably right, just try and pick the approach that suits your talents and facilities best. Also, few achieve near perfection in modelling, do your best, learn by your mistakes and try to improve with each car.

Running gear and power collectors are the things you must make a special effort at or get assistance with from the beginning, otherwise you could experience so much frustration when you try to operate your car(s) that you will abandon a worthwhile hobby needlessly. Wheels must be true at the correct back to back measurement (distance apart) on straight axles and the axles in bogie in square and parallel with each other and running freely. The wheelfaces should not bear against the sideframes as this increases drag and in two rail type situations causes short-circuiting. Single trucks may be sprung if so desired but even with fine scale wheels this should not be necessary if track is well laid. With bogies, equalisation is easier and usually just as effective. In cases hwere not all wheels are available for power collection springing may serve a dual function as collector brushes by-passing the electrical resistance of axle boxes to greatly improve operational reliability.

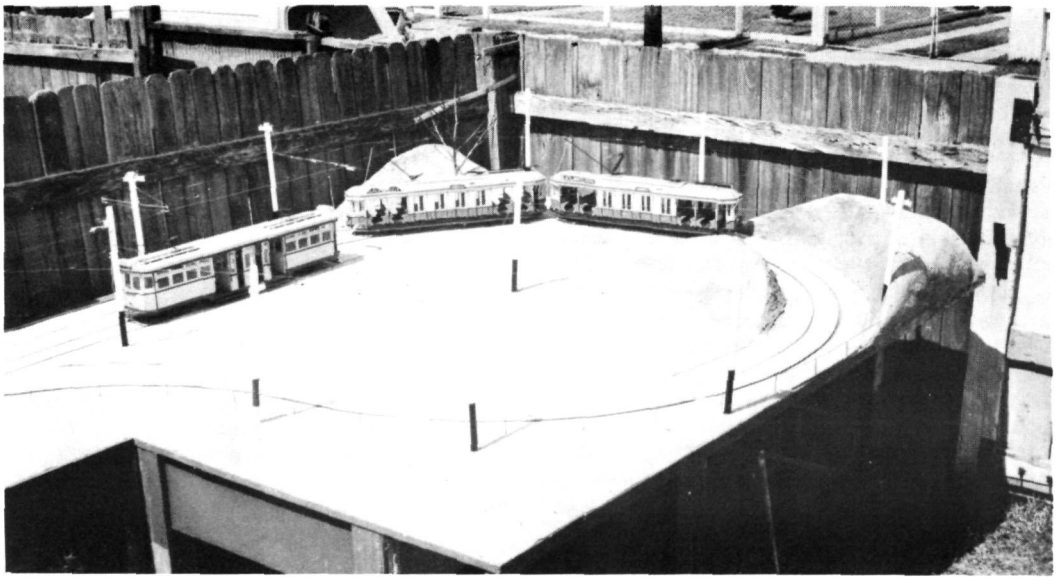
Voltage, current and adaptability to varying control systems should observe certain standards but how to mount your motors and arrange the drive to the wheels is a personal decision, particularly as it is out of sight. Though a point to remember is that model motors and particularly permanent magnet types, revolve at much higher speeds than those on the prototypes, so greater gear reductions or reduced voltage per motor are necessary for realistic operation.

Self contained underfloor motor bogies are quite possible for gauges of 32mm or larger. Right angle drives such as used in PCC cars can be used in bogies with a 50mm or longer wheelbase although slot car motors can be nose suspended, parallel to the axle, using a spur gear drive, in bogies with a wheelbase as short as 38mm, although their use for gauges under 45mm is difficult. The limited gear ratios available using spur gears may necessitate a double reduction drive if excessive speeds and wheel slip are to be avoided. Worm drive can be used with right angle mounting. This gives a useful ratio in one step within a reasonable wheelbase, but it lifts the motor to an awkward height under the floor. The contrate and/or bevel types of gearing used in slot cars would lower the motor in the bogie but requires an increased wheelbase.

Workshop Five, in Sydney, manufactures a low priced, simple gear box for the MTA. It suits the Hornby (Triang) 26:2 small worm set and MW 005, Airfix 1001 or similar HO motors.

When looking for wheels for your model bear in mind that the diameter shown on plans is usually the new size while in most cases fully worn wheels are 75 to 90mm smaller. Somewhat worn wheels can often solve clearance problems under a car.

The author prefers insulated (two rail) wheelsets under models, not merely for two rail test running or the like but to provide for use of Quadriplex (Detroit) control systems and/or simple car lighting. Remote reversing is sacrificed



1:16 scale model trams are best suited to outdoor operation.
A coupled set of Sydney "O" cars pass an Adelaide "F". *–B. Cox.*

with the former but trolley pole reversing can minimise this drawback or the compromise Duplex (Trix Twin) control system could be used to overcome this for the price of reducing the maximum number of cars permitted per block from 4 to 2.

Like techniques, the materials available to the modeller are varied. There are the old faithfuls, wood andmetal and there are plastics such as styrene. Cars may be entirely of one material or a combination of two or more. Care in selecting the right grade and thickness can help and judging by experience don't try laminating wood and styrene or dissimilar timbers as warping can occur as the job dries out. Try to avoid undue weight in your car bodies, it doesn't necessarily guarantee good running and may merely require bigger motors or increase the rate of wear. There is often enough weight in the running gear for adhesion and good tracking. Keeping the center of gravity low can also help car stability. The percentage of total weight available for adhesion is what matters, providing that idler axles are not so lightly loaded that they continually mount the railhead at curves and special work. Balsa, if used at all, is best restricted to seating and possibly car roofs.

Articles on car construction in model railway magazines can prove useful, but it is rather rare to find floors of tramcar types in railway vehicles. Modern trams often have one level floors, like the Melbourne 'Z' class, but others can have dropped end platforms or a drop center or a combination of both, as found on Sydney 'R' and 'R1' and Brisbane 'FM' cars. To maximise underfloor clearance the author uses, in 1:32 scale, a 1.2 to 2mm thick floor of wood to facilitate electrical insulation. The entire floor is made as a unit, one sheet of wood being marked out for the entire car with due allowance made for car side thickness. The drop center and/or ends are then built up on the one sheet, being carefully aligned with it. When the job has set properly it is turned over and the unnecessary sections of the one sheet cut out to complete the car floor. If the various sections of the car floor are cut out then glued together individually far greater care is necessary to avoid them getting at an angle to each other and a bent body possibly resulting. Next the car sides are attached, then the stepwells constructed and finally the roof.

The roof may be a carved solid block or largely made from thin wood or plastic shaped over ribs, with suitable strengthening where any power collector has to be mounted. The best location for these is just inside of the bogie centers for trolley poles, over the bogie centers for pantographs and halfway along the roof for springbows, though there are exceptions on prototypes, e.g. Brisbane center aisle and Sydney 'N' class cars are bogie vehicles with a single center mounted trolley pole. The easiest roofs to model are probably the Adelaide 'F' and Brisbane 'FM'. Though there are no absolutely EASY tramcars to model, the 'FM's front aprons, the 'R' and 'R1's and even the W5-6-7

driver's cab all offer a challenge, but not unsurpassable ones. Watch out for traps like the raised floors of compartments over the bogies in Sydney 'O', 'OP', and 'P' cars.

It is a wise move to plan (analyse) how a car will go together on paper before starting construction, then when you are in the right mood you can give it a go. Try and learn by your mistakes, correcting them where possible but not expecting too much from a first attempt.

★ Museum Notes and News

C.O.T.M.A.

News from the Council of Tramway Museums of Australasia

SUCCESSFUL ADELAIDE MUSEUM CONFERENCE

Fifty delegates from 11 of the 12 member museums of COTMA assembled in Adelaide over the 1977 Anzac holiday weekend to attend the Third Australasian Tramway Museum Conference.

The Conference opened with a smorgasboard lunch at the Enfield Hotel at noon on Saturday April 23. The opening paper was given by South Australia's Director-General of Transport Dr. Derek Scrafton, who discussed many of the museums he had visited and particularly described their more meritorious features. In the following paper, the Deputy Town Clerk of the Corporation of the City of Salisbury, Mr. David Williams, described techniques for obtaining community funds for developing museum operations. He discussed the decision making processes of Local Government and the responsibilities of the various elected and appointed officers. Subsequently, Mr. Geoff Spiers of the South Australia Museum considered the future for the specialist museum. He gave details of a survey recently carried out of 20 museums in South Australia and discussed their economic circumstances and likely long-term prospects. In almost all cases, their operations were not particularly profitable but depended on the enthusiasm of their operators for survival. During the evening session, representatives from each museum gave illustrated talks of their progress over the last year.

On Sunday April 24, proceedings were opened with a paper by AETM Operations Manager, Mr. Max Fenner, who discussed design, erection and maintenance of museum overhead. Mr. Fenner illustrated his talk with reference to a very considerable quantity of fittings and equipment brought into the Conference for the occasion. Subsequently reports were received from the COTMA Expert Panel on Car Acquisitions and Spare Parts and from the Publishing Departments of SPER and the Wellington Tramway Museum.

Conference delegates were then taken by bus, courtesy of the State Transport Authority, to the St. Kilda Hotel for lunch. From there a tram conveyed them to the St. Kilda depot of t the Australian Electric Transport Museum (SA) Inc. During the afternoon, the visitors participated in the operations of the St. Kilda Tramway.

A highlight of the afternoon was the presentation of a new exhibit, Melbourne W2 class car 294, to the AETM.

On Monday April 25, the Fire Prevention Adviser with the S. A. Public Buildings Department, Mr. Ray Emery, discussed fire prevention and was followed by the S.A. President of the Safety Institute of Australia, Mr. Ron Moulds, who described safety programmes for museums. He suggested that each museum should develop its own safety policy to cover its own style of operations and that this policy should be well publicised among members so that they are aware of their responsibilities. In a later paper, TMSV Chairman Mr. Tony Cooke gave an illustrated account of experiences which the Melbourne group has had in running exhibition displays. He indicated that above all,

a professional approach was required for an exhibit to be a success. Subsequently, COTMA Executive Officer, Mr. Bill Kingsley, presented some new ideas for museum operations based on recent overseas observations. He expressed particular enthusiasm for the approach of the Branford Trolley Museum in New Have, Conn. This museum, rather than allowing members to operate cars only after a long acceptance/ apprenticeship membership period, actually advertises for volunteer streetcar operators in the daily press. New members can qualify as motormen as soon as they join. Subsequently after they have come to enjoy the Characteristics of operation, they are encouraged to accept responsibility for helping maintain the facilities and restore the cars.

On Tuesday April 26, delegates went to City Depot to inspect the tramway operations of the Bus and Tram Division of the State Transport Authority. Hosts at the depot were STA Chief Engineer Mr. A. E. Aust and Depot Foreman Mr. Blair Howell. Visitors inspected a car dismantled for refurbishment, discussed operations in the truck shop, inspected the control and braking systems of the cars from the pits and looked through the convertor station and adjacent storerooms.

The formal Conference Luncheon was held at the Chesser Cellars at noon. Guests included the General Manager of the STA Bus and Tram Division, Mr. Frank Harris and Mr. Aust. The Salisbury Council was represented by the Mayor, Mr. harry Bowey, the Deputy City Engineer, Mr. John Gronow and Mr. Williams. The luncheon was addressed by the South Australian Minister for Tourism, Recreation and Sport, the Yon Tony Casey M.L.C.

The Conference concluded with the formal Council Meeting of COTMA, held at the South Australian Museum in the afternoon. After presentation of reports, a number of significant decisions were taken. A proposal was ratified that each COTMA affiliated museum would prepare a safety policy. The Auckland Regional Authority is to be approached on behalf of COTMA to set aside surplus equipment from

The "handing over" ceremony of "W2" car 294 by Mr. John Bremner of G.M.H.
Photo – Courtesy Advertiser Newspapers Ltd.

their trolleybus system for museum purposes under the local auspices of MOTAT. Two applications for COTMA membership held over from 1976 were processed. After considerable debate, one was ultimately rejected while the other lapsed for want of further information. It proved possible to halve the COTMA affiliation fees over those prevailing in the first two years. After Bill Kingsley indicated that he would be unable to accept nomination for a further term as Executive Officer, Kieth Kings was elected to that position. Dr. John Radcliffe was re-elected Chairman.

The Conference as a whole can be considered a significant success. Twenty-one workshop discussions were scheduled throughout the four days, with excellent contributions by delegates. Copies of the Proceedings will be available in September 1977.

The Conference continued to foster fellowship and understanding among members of the various museums. Those present agreed enthusiastically to continue annual conferences. The 1978 Conference is scheduled to be held in Christchurch over the Anzac weekend while preliminary planning has commenced towards holding the 1979 Conference in Brisbane.

ST KILDA . . .

Australian Electric Transport Museum

"It never rains if it doesn't pour", goes the old saying. And so it must have seemed to our regular members at St. Kilda, when in the space of just two weeks, the A.E.T.M. was host to two separate gatherings of transport enthusiasts.

A.E.T.A. Convention

Easter Day, 10 April, give the 30 or so delegates to the 23rd Annual Interstate Convention of the A.E.T.A. held in Adelaide, the chance to set aside their more serious deliberations of the transport scene and indulge in some playful tram-riding.

The interstate contingent, accompanied by local hosts, arrived at the museum in mid-afternoon aboard the State Transport Authority's first production-line air-conditioned bus, Volvo No. 1001, issued to traffic only 10 days previously. This vehicle was stationed at a prominent position in the car park, sporting its promotion advertising. Curious members of the public availed themselves of the opportunity to inspect Adelaide's latest bus.

Meanwhile, museum General Manager, Mark Skinner, escorted the A.E.T.A. members into the depot area to witness and sample the tramway operations provided for the public on a typical Sunday afternoon.

Near dusk, Christopher Steele, wearing yet another hat - that of a chef - organised a small group of people to cater for the evening barbecue. Tables of food were laid out, and fires lit under large steel hot-plates. Each gourmet cooked their own chops and sausages.

Concurrently, night tramway services to St. Kilda Beach had commenced in a variety of cars, and the lucky ones amongst our interstate friends were offered a few minutes as honorary motormen.

All too soon it was time to leave for the longer journey to Adelaide - in 1001.

Apart from those already mentioned, thanks must go as well to Roger Wheaton, Mike Church, John Eastaff, John Pennack and John and Aline Hoffman for their co-operation in making the event so enjoyable.

C.O.T.M.A. Conference.

The wider aspects of the 3rd C.O.T.M.A. Conference held in Adelaide over the Anzac weekend, 1977, are discussed more fully elsewhere in this journal. But, on 24 April, participants from represented museums in all Australian states and New Zealand departed the conference headquarters at the Hampstead Hotel for the A.E.T.M. to indulge in a full afternoon of tram-riding, photography and comparative study. First stop, though, was the St. Kilda Hotel where a luncheon was provided for the bus load of fans.

Then "F1" type tramcar, No.282, waiting at Mangrove Loop, whisked everyone up to the depot in time for a special ceremony.

This was the "handing-over" to the museum

of M. & M.T.B. "W2" class car No. 294 by the Manager of Corporate Relations for General Motors-Holden, Mr. John Bremner. No.294 actually arrived at the A.E.T.M. on 6 April and had been used in public service several times since then. Built circa 1924 at the Woodville, South Australian, plant of the then Holden Motor Body Builders, No. 294 was one of sixty cars exported to Melbourne.

After running 2,137,307 kilometres in that city over a period of 45 years, the return of No. 294 to South Australia was supported by a gift from G.M.-H of $200 towards its purchase and transport. A.E.T.M. President, John Radcliffe, accepted the car's controller keys from Mr. Bremner before chauffering our guest to St. Kilda Beach along with other keen riders.

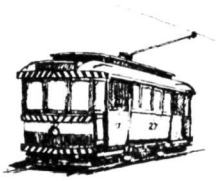
The evening repast on this, the second festivity, took the form of a chicken salad served in the tram depot by Malcolm Butler and his wife, Carleen. Capably assisting them were, again, John and Aline Hoffmann, Warren and Barbara Burt, and Beverly Whetter.

Perhaps the most memorable highlight of the day was the "Sprague Test" conducted after dark by Ron White and others. The A.E.T.M.'s eight fully-operational trams, lights blazing as best they could, proceeded one by one down the line into the township while electrician, John Pennack, scanned the meters in the sub-station to see how the installation was taking it! As usual, it performed admirably.

Afterwards, a somewhat smaller convoy of cars was despatched to enable the visitors to each drive a few chains under the supervision of A.E.T.M. motormen. And for those content with less, there was always the camp-fire to sit around and talk.

Member Graham Whetter performed the last major duty of the day. Attired in his S.T.A. uniform in a voluntary capacity, he drove most of us back to town, safe and sound, in the A.E.C. "Swift".

BALLARAT . . .



Ballarat Tramway Preservation Society

Tram No.33

The Society was pleased to receive former Ballarat tram No.33 from the Hamilton Pastoral Museum. The tram had been under roofed storage at Hamilton since removal from Ballarat in 1971. After successful negotiations the tram was made available and is in complete working order. This will form a valuable addition to the Ballarat fleet and is presently stored at the Sebastopol offsite depot along with the W3 and W4 former MMTB trams acquired last year.

Government Grant.

The Society was proud to receive a grant from the Victorian Government of $50,000.00 for construction of depot extensions and extra maintenance facilities to provide an assured future for the Ballarat tourist trams. The grant is on a two for one basis and subject to final approval from the Ballarat City Council for the building extensions, work should commence virtually immediately.

Incorporated in the depot extensions are two pits, an area allowing for trams to be repainted and car bodies to be worked upon and extra storage room for recent tram acquisitions.

School Holiday Traffic.

The trams ran every day from Saturday 7th May to Sunday 22nd May providing the many tourists with another addition to their visiting program in Ballarat. An average of 100 persons travelled on each weekday with slightly higher numbers on Sundays. A Charter tram was also provided on Friday 20th May for a pre-booked party from South Australia.

Tramcar Maintenance.

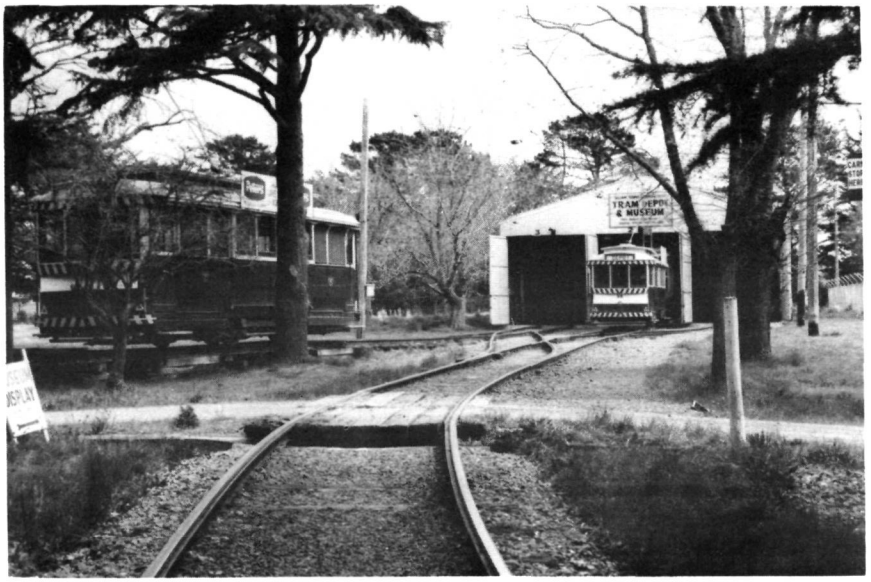
Tram No.28 is now mobile but is still awaiting final body work completion before being handed over to the Traffic Branch for revenue service. The newly white metalled armature bearing has been received from the foundry and been installed on the motor. It is hoped the axle brass bearings will shortly be received from the MMTB after whitemetalling allowing the tram to be returned to revenue service.

Warren Doubleday.

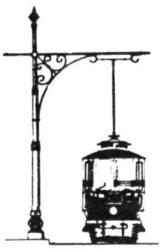
The Society was pleased to welcome back former Society Engineer Warren Doubleday who has been spending 2 years in South Africa working for a mining firm. Warren has been assisting our present Engineer Bill Kingsley in the design of the depot extensions over the past year and now that he is back with us the final plans can be viewed in each others company and the first construction effort take place with both Engineers on site.

The society's depot at Ballarat. Whilst No.40 is operating in Wendouree Parade, No.27 is being serviced on the pit track, by Rolf Jinks and other members. No.26 is the standby tram in front of "the barn".

Sunday, 19th September, 1976.
Bob Prentice.



LOFTUS . . .



South Pacific Electric Railway

EQUIPMENT

Three bogies from withdrawn Melbourne W3 and W4 cars and the PCM control equipment formerly in W5, 750 have been obtained from the M & MTB after negotiations through COTMA. This equipment arrived at Loftus on Thursday 12 May.

The bogies will be stripped to obtain the motors, wheel and axle sets and other smaller items for use under Sydney 33" wheel cars.

STORAGE

Two of the recently arrived LCL containers have been moved into the sid yard next to the ABV and will be converted for use as inflammable liquid stores.

ROLLINGSTOCK

Restoration work continues on "R1" 1979 with the aim of having it completed for its namesake year. A considerable quantity of interior body panelling and fittings have been acquired from "R1" 1987. Much of the interior bodywork deteriorated during the many years of open storage at Randwick after 1961 and the

parts now acquired will speed the task of restoration.

LADY HOPETOUN CRUISE

Forty members and friends took part in the second harbour cruise on the steam yatch Lady Hopetoun on Saturday 14 May. Despite the very inclement weather an enjoyable time was had.

'O' Class 1111 and Albion bus 1615 at Princes Highway terminus on 26.2.77. The bus is in the red and cream as originally used on the Government double deckers.

R. Hall

BYLANDS . . .

Tramway Museum Society of Victoria

CAR DEPOT.

Deep timber boards have been fitted across the front of the car shed, immediately above the door opening. They improve the external appearance of the Depot, and are another little step towards completion of the area. Still requiring attention are the fitting of bolts to secure the tops of the doors, and final adjustments to the doors to ensure a neat fit when closed. More storeage racks have been built along the west wall so that our "sort and stack" programme can continue.

ELECTRIFICATION

A small but positive step has been taken in this project by the selection of over a dozen single bracket arms from our stock-pile ex Ballarat. They have been wire-brushed to remove accumulated rust and to permit inspec-

tion for soundness. A metal primer paint was then applied and followed by a coat of bituminous black paint. Several of the double bracket arms for the first of the ex-William Street centre (steel) poles will follow.

GENERAL

Recent trailer and station wagon loadings have removed to Bylands from Keith Kings' father's garage quite a pile of heavy metal in various shapes of cable tram road boxes, fish plates, bars and yokes. These items were part of the cable tram track we secured from City Road, South Melbourne, late in 1963. Our so-called "camouflage green" paint has recently been unleashed again on the Store Shed/Toilets/ Seatainers complex with the desired improvement in appearance. The Australian Information Service arranged to visit Bylands late in May to take a series of publicity photographs. Unfortunately they had to postpone their visit, but we felt that we still had to honour the day's arrangements as we also co-ordinated visits by TV stations and the press. The A.I.S. visit was later scheduled for June. Four trams were moved outside and pupils from the Bylands State School were pleased to attend! So that 467 would look more like a tram, the trolley-base and pole were transferred from 680, as the latter contains displays and is unlikely to be moved outside the Shed for quite some time.

"W2" 673 sits on the southwards extension of No.2 road, while "Charlie" waits at the platform with 256 on the mainline. 18.7.76

GLENORCHY . . .

Tasmanian Transport Museum Society

TROLLEY BUS 235

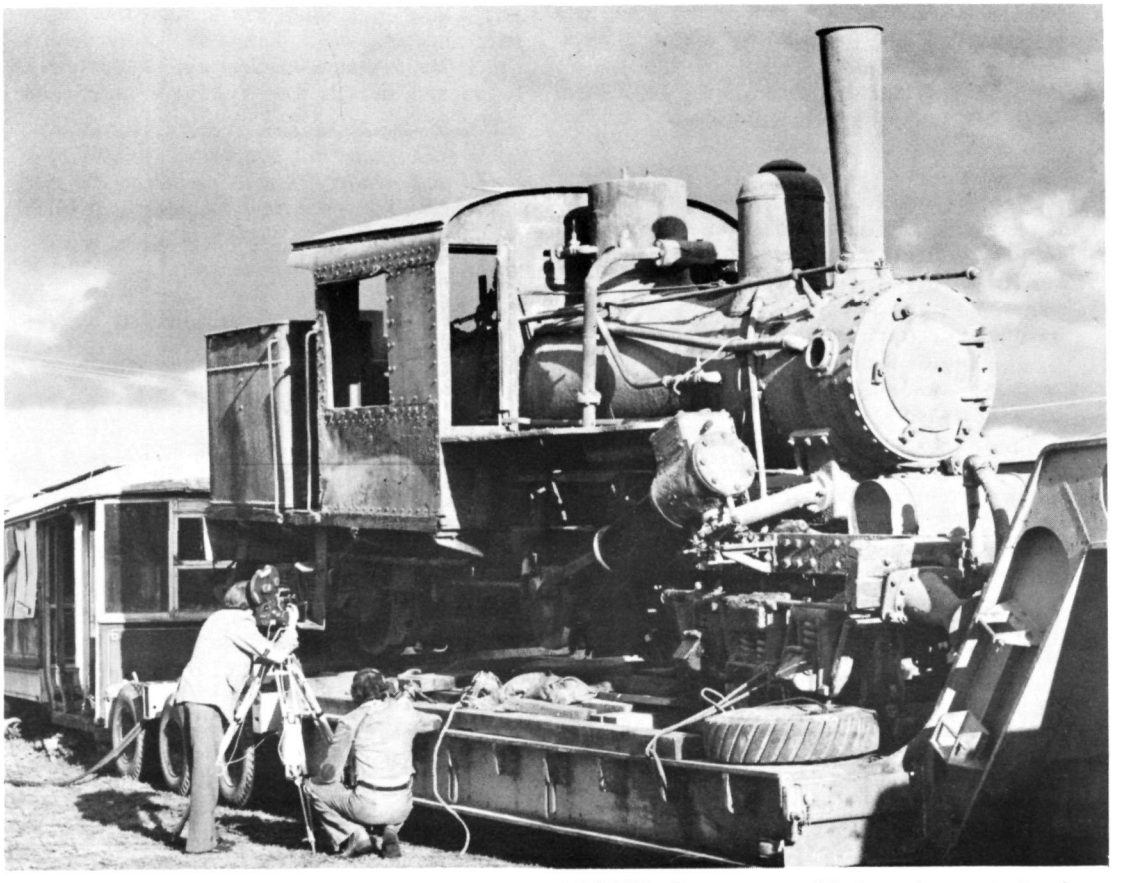
Society trolley bus No. 235 (the last to operate in Tasmania) was moved on the 12th April from open storage in a factory year to covered storage at the site of a future M.T.T. bus depot. The unit has been stored following its last run in 1968 pending transfer to the museum site. This will finally take place when a proposed building is constructed.

The bus is still operational and D.C. power was fed to the vehicle to help manouvre it from an awkward location. The move necessitated a journey of over 1 km along a busy main road. A pilot vehicle preceeded the bus and motive power was provided by a 4-wheel drive vehicle pushing at the rear. The move was accomplished without incident and ably supervised by Don Large, Society caretaker of electric vehicles.

CLIMAX LOCOMOTIVE

Another exhibit which made a journey recently was climax locomotive, B/No. 1653 donated to the Society some years ago by Australian Newsprint Mills. The locomotive which has been stored at Maydena 88km from Hobart for about 27 years was finally transported to the museum site on 6th May having been loaded the previous day by a 40 ton capacity log loader. Unloading however was not without incident and the loco suffered a broken main frame when first lifted by the two cranes. The water tank and bunker was hastily removed making the location of slings easier. A third crane was put into use and the loco was safely transferred to the proposed track.

Transport of the locomotive was the culmination of many months negotiation and



ABC-TV Cameraman filming the arrival of Climax locomotive at the Museum site 6.5.77 (Launceston tram car No.13 in background). Photo D. H. Jones.

planning. It is in fair condition but urgently requires a good clean and paint. It was encouraging therefore to see work commence the day after its arrival. Mr. Ted Lidster supervisor of restoration said this will involve removing the two bogies and fittings, repairing the main frame, replacing the cab floor, sand blasting and repainting.

The locomotive was built in 1923 by the Climax Manufacturing Co. Corry, Pennsylvania. It came to Australia possibly by way of New Zealand and commenced work at Simmsville N.S.W. in 1924 for Pines and Hardwoods Ltd. on that company's timber tramway. It was named "Soward" after one of the Company's Directors. In 1937 it featured in the Cinesound feature film "Tall Timbers".

The locomotive came to Tasmania in 1941 and was used by Australian Newsprint Mills on their logging railways until withdrawn from service about 1950. It is believed that only two Climax locomotives now remain in Australia, the other being preserved at the Puffing Billy Museum, Menzies Creek, Victoria.

SITE WORKS.

Maintainance of the Museum site continues to occupy a considerable amount of time particularly over the summer months to the exclusion of the more serious business of restoration.

A short section of temporary track was laid to receive the Climax locomotive. The installation of a set of points in the railway section is nearing completion. It is planned to install another set and when the turntable is installed all railway tracks will then be inter-connected.

Ex Hobart Trolley bus 235 near end of journey to new storage site. 12.4.77
Photo D. H. Jones.

ALBION PARK . . .

Illawarra Light Railway Museum Society

STEAM LOCOMOTIVES.

As announced in the last edition of this magazine, the Davenport steam loco No.1596/1517, arrived at Albion Park on Friday April 1st. Loco 1596, with 1595 was imported from Iowa USA in 1918 by the Public Works Dept. to work on the Douglas Park-Cordeau Dam construction railway. After the completion of the dam in 1926 the two steam engines were sold to the Menangle Sand Company and worked on the short 2 ft gauge line from the river bed to the railway station siding hauling sand for cement manufacture for the Harbour Bridge construction. After 1932 loco No.1595 was dismantled at Menangle, but 1596 (PWD No. 65) arrived at the Kiama quarry tramway in 1936.

In 1938 one complete, overhauled loco was constructed from Davenport 1517, which had been at Kiama since 1915, and No.1596, mainly employing parts from this latter engine. The loco stood disused at Kiama between 1941 and 1956 when it was donated to the Steam Tramway Preservation Society at Parramatta Park. With this group concentrating on standard gauge preservation the Davenport engine was given to the Marsden Museum of Historic Engines where it arrived in June 1967.

The Davenport loco was not placed to much work at Goulburn, the opening of that museum in April 1970 being one such occasion. As reported in the last issue, this loco had become surplus to the needs of the Goulburn museum and was made available to the ILRMS for $2,000. (Cash donations for this project

should be sent to P.O. Box 1036, Wollongong, 2500.).

On April 2nd, the Krauss-Leyland petrol loco was used to haul the Davenport into the rolling stock compound at Albion Park. During April the new loco was jacked up, the cylinder heads removed, the connecting rods disconnected and the driving wheels dropped so that the bearings could be removed. Two bearings proved to be badly worn, perhaps indicating that the loco once ran for some time at Kiama with broken springs. During May, member Keith Mayhew, the proprietor of Daniel's Engineering Coy of Wollongong had new bearing brasses cast for the engine.

The saddle tank was removed on Saturday May 7th and this has been taken to the Garnock Engineering plant at Port Kembla where the proprietors have generously offered to repair the rusted parts. The Society's boiler expert is of the opinion that the few defective tubes in the boiler of the Davenport may only need expanding to make them steam tight. The hydraulic test will, however, indicate whether these will need to be renewed.

While the ILRMS Perry loco is dismantled the opportunity has been taken to thoroughly clean and paint all parts of the underframe. Work has progressed on removing and cleaning the bearing brasses and journals. All wearing surfaces have been found to be in sound condition.

On Thursday April 28th an ILRMS Sydney member took delivery of the Goulburn Museum 0-6-2T Perry locomotive. This unit is the second last 2 ft gauge loco built by the Perry Engineering Coy of Adelaide in 1951 and carried works number 5643/51/1 and last operated on the Bingera Sugar Mill railway in Queensland. This is the second Perry being privately preserved by an ILRMS member; 0-6-2T 6776-1938 is also presently stored in Sydney.

Work is steadily progressing on the stripping, cleaning and repainting the Shay parts. The reversing links, eccentric rods and straps, and crank shafts have recently been so treated. In the near future the frame, bunker and boiler unit of Shay No.2, which has already received a prime coat, will be sprayed black. The opportunity will also be taken to complete the spray painting of the underframe of the ARHS standard gauge loco, "South Bulli No.2" when the spray equipment is at the museum.

LABOUR SAVING EQUIPMENT.

Members of the ILRMS have been active in tracking down labour saving machinery. Early in the 1970's the museum obtained a chain saw from McCullough's which greatly simplified the docking of standard gauge sleepers down to the main line 2 ft gauge size of 5 ft length. Since then the museum has obtained a steam cleaning machine, a heavy duty welder, sets of steam fitters tools, track laying tools, and a heavy duty power hacksaw.

The latest acquisition has been a 1958 model Fiat tractor. This was recently overhauled for use as a mower on a local golf course, but the

The Davenport loco being towed by the Krauss-Leyland petrol loco at Albion Park, April 2nd, 1977. *K. McCarthy photo.*

work speed was incompatible with the mowing equipment. While stored, vandals removed some vital engine parts. An ILRMS member judged that the missing parts could be replaced through museum contacts, so he was able to purchase the tractor for the museum for the value of its tyres!

AROUND THE MUSEUM

On May 5th the crane used to lift the saddle tank from the Davenport loco was also employed in some other routine jobs. The battery box of the Mancha electric loco was replaced onto the main frame. This was removed so that the motor and transmission gears could be tested. This unit was tested on April 16th, with a bank of car batteries, but several parts in the controller need to be repaired before it can be prepared for regular service.

The crane also carried the vertical boiler and two stationary steam engines to the east end of the compound where a machinery pad will be eventually located.

This vertical boiler was in use at Young N.S.W. before reaching Dapto. It appears that it has never been subjected to an inspection, so on May 7th the boiler inspector undertook preliminary inspection, and found that the plates are close to their original ½" thickness. The boiler has been stamped with a reference number and should be ready soon for a hydraulic test. A funnel extension, pressure gauge, gauge glass and new blower gear had been fitted by early May.

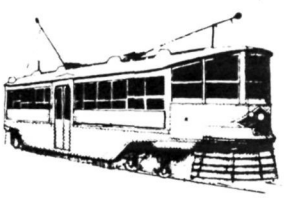
Work is continuing with the repainting of the guttering and down pipes on the former Yallah station building.

The task of burning back and repainting the body of the ARHS standard gauge CHG guards van has been completed. The undergear of this vehicle will be spray painted along with the above-mentioned locos. Timber is on hand to replace the worn footboards and platform floors, and this will be undertaken when more vital jobs have been completed.

OPERATION.

The ILRMS museum is currently covered with a third party accident policy which covers injury caused to non-members on the stationary equipment. An insurance policy has been negotiated which will also include cover for injury caused by operating machinery and rolling stock. With this problem in hand the Society hopes to inaugurate regular operating days towards the end of this year.

CANNINGTON . . .



Western Australia Transport Museum

OVERHEAD EQUIPMENT

Agreement has been reached with the Minister of Transport, Mr. David Wordsworth, to transport the overhead wire and fittings purchased from Melbourne, to Perth on the State Shipping Service vessel 'Beroona' at a lower price than that obtainable by rail or road.

TRACKWORK

Further work on the formation is to be done with a hired front end loader. This will then complete 600 feet ready for track laying.

The first delivery of 60 lb rail has been received from the Midland store of Westrail.

ROLLINGSTOCK

Another deliberate fire has been started, this time in K.126, in mid April. The car was severely damaged, but is restorable. It will shortly be placed on bogies and moved into the depot area.

Trolleybus 38 has been towed from offsite storage and placed in the tram depot area. Trolleybus 30 was repositioned at the same time; both vehicles are now in the East Bay.

Leyland Lion bus 22 has had its roof supported internally to prevent further sagging and the outside covered to afford some protection.

New Sign at entrance to depot. *Ric Francis.*

Ooops ! !

Corrections "TW" December 1976, Page 18

10.5mm model track gauge is used for HOn3 and Sn2¼. This is the only gauge listed that is not used for standard gauge models.

Note 2:
800mm prototype on 18mm is 1:45 scale.

Note 4:
950mm prototype on 59mm is 1:16 scale.

Relation of ratio and model gauge to prototype is determined by: e.g. 1:25 and 32mm gauge, 25 x 32 = 800mm.

CITY SECTION

News of the Melbourne and Metropolitan Tramways Board

The major track job in hand during May was in Malvern Road, Hawksburn, commencing at Chapel Street on both tracks and working eastwards. Temporary track is not in use, with most of the work being done during normal daylight hours under traffic conditions, with concreting at night (with buses providing a connecting service during the evenings).

It is reported that the work will eventually extend to Orrong Road. Track lights have been strung in Swanston Street, City in recent weeks, from south of Flinders Street to North of Lonsdale Street. This major relay is due to start in late June, and will replace the second lot of electric rails which were laid in this very busy thoroughfare during 1952-1953 (which replaced the original 1926 rails).

The M. & M.T.B. advertised a tender for pantographs last year, and has recently received three units, each of a different type, for evaluation. One is by August Stemmann of West Germany, the second by Siemens of Austria, and the third by Airmate of Sydney. The Stemmann pantograph has been fitted to W2 546 (not the Siemens as reported last issue), and had its first test run outside Preston Workshops on 12th May, along the West Preston route. Experimental overhead fittings have been placed on the trolleywire along Gilbert Road, and include droppers for straight-line and curve ears, skid bars at crossing frogs, traffic light contactors and section insulators (to carry the pantograph underneath the fitting), and a right-angle crossing "in the middle of no where".

Friday, April 29 saw the last useage of "Green" (or standard) type trams in Bourke Street. Subsequently the roster has provided for all "Z" car operation. Nos. 69 and 70 were commissioned over the week-end of April 30/May 1. As far as is known the last W6/W7 tram to leave the Spencer Street terminus was W7 no.1033 on run P.72 at 8.38 pm, to East Preston terminus and then into Preston Depot. The double track junction at the corner of Nicholson and Gertrude Streets, Fitzroy was renewed over the weekend of May 8-9. More of the new style concrete prow Safety Zones have been placed in Fitzroy Street, St. Kilda, Bourke Street, City and Nicholson Street, Fitzroy.

State Parliamentarians have recently given voice to pro-tram matters on many occasions during Debates and Questions. A Bill to increase the borrowing powers of the Board gave many Members the opportunity to say many things varying from constructive criticism to extremely optimistic, and included the inevitable selfish requests for new vehicles and routes to be placed in Members' electorates. In summary, a

much more pleasant situation than was voiced by Members a few years ago regarding public transport in general and the Tramways Board in particular.

Mr. J.A. ("Bill") Evans, Foreman Paint Shop, Preston Workshops, at the 50th anniversary commemoration day, after being one of four long-service men presented with fibre-glass models of 'Z-50', alongside 'Z-50' (with flaps raised for inspection by the public). He is the longest serving employee at the Work Shops, being in his 49th year with the M.& M.T.B.

Extra

A Word of Appreciation.

Our request for further Kiama Tramway photos has been very rewarding. As a result of reader co-operation we now have over 120 photos on hand dealing with the Kiama Harbour development and the gravel tramways covering the period from 1875 to 1962.

We particularly acknowledge the efforts of:-

a. Mr. Brian Holmes, Kiama resident and Operations Manager for the ILRMS for interviewing residents and locating approximately three dozen vintage views. This collection produced about half a dozen rare views relative to the quarry industry.

b. Kiama Municipal Council for allowing five Tramway photos to be borrowed and copied.

c. Mr. Col Ferguson of Sydney for lending over a dozen views of the tramway to be copied, taken on September 1st, 1939.

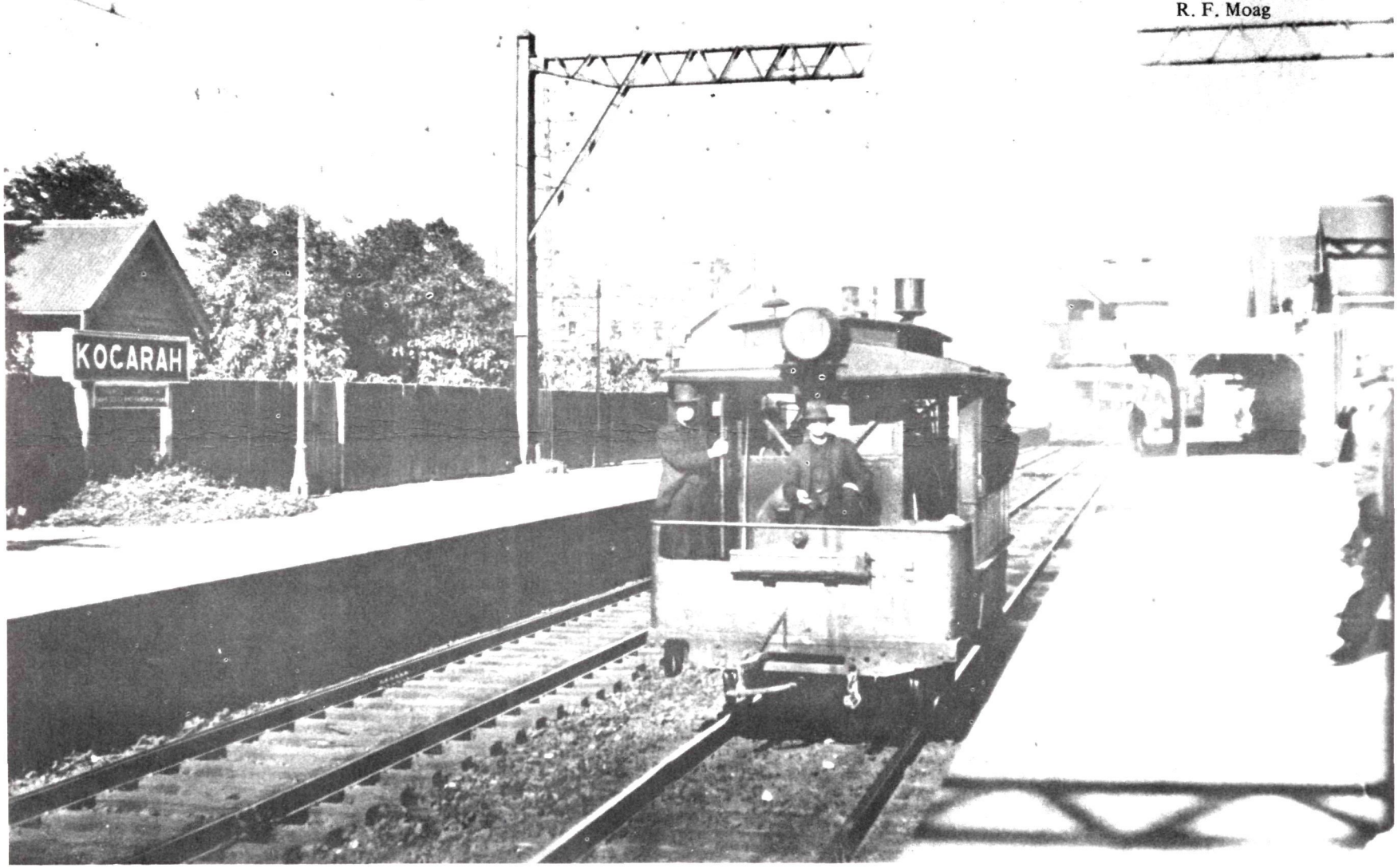
d. To Mr. John Thompson of Melbourne for some half dozen prints, some of which have been most helpful in clearing up several trackwork difficulties.

e. Mr. Bill Bayley of Bulli N.S.W. for lending over 300 Kiama negatives from which numerous street and harbour scenes have been printed. In this batch are two interesting views which have enabled some further details of the 3'6" gauge system to be obtained.

Much of this material will be used in the book dealing with "Kiama" Tramways" which should be released at the end of this year.

Correction.

Since the arrival and overhaul of the former Kiama "Davenport" locomotive at the ILRMS museum in April, we can now record that the cylinder dimensions of this loco are 10"d x 14" and not as quoted on p.8 of "TW" for December, 1976.



Steam Tram Motor 103A leaves Kogarah after the closure of the tramway in 1937. It is travelling on the electrified Illawarra Railway.

R. F. Moag