

## **Wheels, Skids, Pantographs and Bow Collectors**

**Chairman:** Dennis O'Hoy, Bendigo Trust

**Panel:** Dennis Bell, Bendigo Trust

Craig Tooke, Melbourne Tramcar Preservation Society

Ron White, A E T M, St. Kilda , S A

Carolyn Dean, Ballarat Tramway Museum

The Chairman opened the discussion by introducing the panel.

Dennis Bell asked how many museums had trolley wheels only? Adelaide, Ballarat, Brisbane and Sydney have wheels only at present. Bendigo cars all had wheels until recently, but because new overhead wiring was installed, all the bogie cars were changed over to skids. The fleet of single truck cars still have wheels at present. Bendigo had wheels for nearly 100 years and were reluctant to change, but the wheels were causing a lot of damage to the worn wire. The carbon skids have maximum wire contact and, with lubrication, no arcing or overheating takes place. With the new wire in place, and carbon skids on most cars, Bendigo is getting much better service from its overhead, and with much less maintenance.

Craig Tooke stated that skids were introduced into Melbourne in 1956 on new W7 type cars. Because of operating noise these cars were fitted with resilient wheels and skids. Pantographs came later with the new cars because of power draw. The trolley pole heads fitted to experimental cars, nos. 2001 & 2002, melted with the heat caused by the power draw. However pantographs can, and do, snag the overhead, pulling it down and causing great damage to themselves and the overhead. A figure of \$9000 was mentioned for a new pantograph. Mr Tooke then tabled a copy of "Proceedings of the Australian & New Zealand Tramways Conference", held in Sydney in March 1934, dealing with experiments carried out in various cities with trolley slides and comparison with wheels. Colonel S H Hancox, of Hobart, makes some comments on bow collectors in this paper. See Appendix B.

As an historical aside to this conference the building in which it was held (Bank of New South Wales, 7 Wynyard St, Sydney) is still used very much the same today as it was then by the Bank—now Westpac Banking Corporation.

Ron White told of experiments, in Adelaide, in 1935, with pantographs and Fischer bow collectors but nothing came from these events. About 40 years ago, on the Glenelg line, a trolley pole got caught in the overhead and pulled down half a mile of wire near Morphett Road, causing much damage and disruptions to services. Pantographs were finally fitted to the 'H' class, Glenelg cars, during refurbishment and these were introduced into traffic when the new Glengowrie depot was opened about 1985.

Carolyn Dean then gave a humorous talk on her experiences, as a Melbourne tram driver, with poles and pantographs. When the 'Z3' class trams received pantographs they were placed at the No. 2 end as opposed to the 'A' class at the No. 1 end. Prior to raising a 'Z3' pantograph it is necessary to switch on the battery, obviously the battery must not be switched off before the pantograph is lowered.

The advantages of pantographs are:

- do not get wet changing ends in bad weather
- do not get run over by errant motorists
- do not get dirty hands
- no trouble with rope retrievers
- no problem with front pole still up, especially on one person operated trams
- fewer back problems from pulling down poles
- no problems with poles coming off wire and breaking overhead or span wires or bending poles
- at night tram is always lit

- less maintenance on pantograph and no eyesight damage from particles from carbon insert in pole shoe

The disadvantages of pantographs:

- prone to catching under troughing at over-bridges thus necessitating reduced speed
- if overhead fittings are loose problems can occur
- if a pantograph is pulled off a car and hits the road replacement cost is \$9000 and management takes a very dim view of this
- other problems are running with both poles up or with pole and pantograph up (a comment from the floor suggested these situations caused the tram to go twice as fast — much laughter ensued).

Lindsay Richardson then asked Dennis Bell about information on converting from wheel to skid? Dennis replied that he took notice of ideas from Keith Kings, Bill Kingsley and others about mixing wheels and skids (see attached diagrams). Lindsay asked about damage from using both. Craig Tooke replied that overhead with no fouling fittings can have wheels or skids in poles as well as pantographs. Careful maintenance of overhead can prevent any spikes, etc on the wire. John Radcliffe said that trams from their museum were changed from wheels to skids when they work on the Glenelg line. Richard Gilbert said their museum was retaining trolley wheels on the poles mainly because of history. One run was done with a tram fitted with skids and the skid got caught in the overhead resulting in the pole being ripped off the car roof. This event, as well as the historical reason, persuaded them to retain the trolley wheel.

When trams, in Ballarat, are stabled in the depot single truck cars have their pole up and sitting on the edge of the troughing and two pole trams have one pole down and the other up and sitting on the troughing. This action prevents any fire starting from lightning strikes and makes movement of cars easier in the event of a fire.

Don Smith mentioned that Hobart went to bow collectors to get around Sprague patent rights. He also asked whether Melbourne trams had two pans on their pantographs. Craig Tooke replied that they did and this meant that longer section insulators were needed, compared to the requirements for single pan units or skids or wheels, to avoid bridging between sections.

Phillip Bertram asked about the life of a skid? Craig Tooke gave details of maintenance and inspections every 100 hours.

Bill Kingsley asked whether pantographs were fitted to the Glenelg cars to enable higher speeds to be run? Ron White thought that this was not a major factor in the conversion from poles to pantographs. He made reference to the Chicago and North Shore line operating at speeds up to 80 mph with poles and no problems.

John Bullen commented that poles with wheels on single truck cars drew 30 amps and poles with skids on bogie cars drew 200 amps. So far they had not had any problems with cars fitted with skids.

Phillip Bertram asked who manufactured the skids? Craig Tooke replied that they were made by Morganite. The cost is \$50 each including the brass block required for each unit. Barry Ollerenshaw pointed out that there are high and low quality skids and, no doubt, high and low quality prices to go with same.

Craig Tooke advised delegates of further reading material on the subject under discussion in a book titled "Current Collection Methods for Tramway and Trolley Bus Systems". This work was published, in 1975, by the authors, G E Bradley & E R Oakley, and its ISBN No. is 0.903479.04.4.

Dennis O'Hoy commented that he was pleased Bendigo was staying with poles because of memories he had, as a child, of pulling poles down around the Bridge St area.

As no further discussion was forthcoming the chairman closed the conference session and thanked all delegates for their interest in this subject.