

● Fig. 1.—Tramcar built by the Melbourne and Metropolitan Tramways Board and fitted with "noiseless" bogies supplied by the St. Louis Car Co., U.S.A. This car has been placed in service to obtain operating experience.

Australia's First "Noiseless" Tramcar

Noise Reducing Bogies . . . Rubber Used in Special Wheel Construction and Car Body Supports . . . Bevel Gear Drive

CITY TRANSPORT AUTHORITIES the world over have long recognised that the electric tramcar running with steel wheels on steel track in relatively narrow streets with high buildings is a "noise nuisance." In the United States of America, and in Europe, this problem has been studied for many years and good progress towards sound elimination has been made. For example, in U.S.A. tramcars with noiseless bogies have been in use for some years.

Here in Australia, for many reasons, progress in this matter has been much slower. However, the Melbourne and Metropolitan Tramways Board has always been keenly interested and imported from U.S.A. a set of special noise reducing bogies designated P.C.C. (President's conference car). A complete car, equipped with these bogies, and embodying other noise-reducing features, has now been placed in service. Operating information is now being collected. One matter that will be studied closely is of course maintenance.

Noise Reducing Features of New Car

Main differences in the new car and the standard car, in regard to noise reduction, are:—

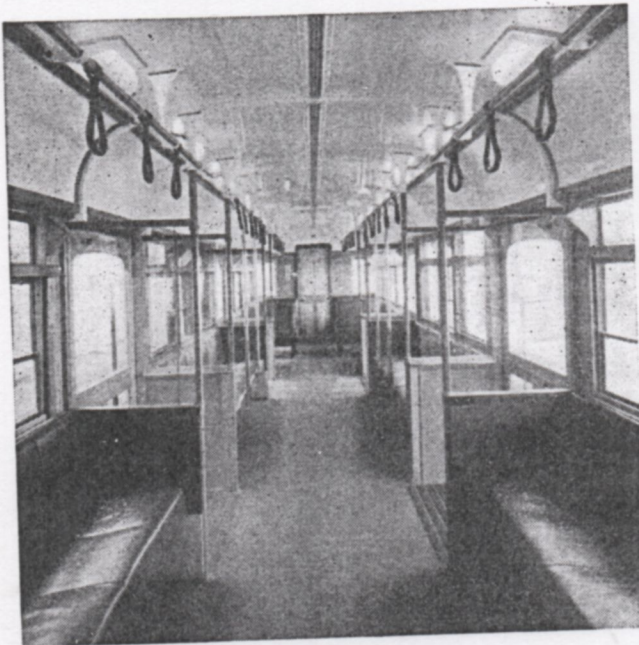
- (1) **Special wheel construction.** On each wheel the steel tyre is separated from the hub by rubber inserts. The rubber absorbs the noise.
- (2) **Car body supports.** The car body is supported through central bearing and king pin to bogie bolster. The bolster is supported at each end on large compound helical steel springs fitted with a rubber internal buffer spring to take overload.
- (3) **Drive.** The driving motors are mounted in rubber supports. Hypoid spiral bevel gearing is used instead of the normal spur gearing.
- (4) **Braking.** There are no brake shoes on the wheels.
- (5) **Trolley mounting.** Rubber mounts are provided between the platform of the overhead trolley and the roof of the car.

Description of Bogies

The bogies, which are of the B3 type were supplied by the St. Louis Car Co., U.S.A. Each is provided with two 55 h.p. 300 V forced-ventilated motors which drive through a carden shaft and hypoid gears to the axles. The axles are fitted with 25 in. dia. P.C.C. resilient wheels.

An interesting feature is that no ordinary shoe brakes are applied to these wheels, the retardation being by dynamic braking on the motors, drum brakes on the armature shaft and magnetic brakes on the rails. The magnetic track brake shoes are 3 ft 8 in. long by 2-13/16 in. wide and are fitted with a non-magnetic separator between the shoes. Normally the dynamic and drum brakes are used. The magnetic brake is for emergency use only.

The bogies are supplied with bolsters supported at each end on large compound helical steel springs fitted with a rubber internal buffer spring to take the



● Fig. 2.—Interior of car showing seating arrangement and wide corridor space for crush loading.

overload. A large conical central bearing is provided upon which the car body rests and to which the king pin is attached. There are no side radial bearings on the bogies, the whole of the work being done by the centre bearing and king pin. Totally enclosed in a housing, the axle is fitted with roller bearings and hypoid spiral bevel gearing, while the motors are placed transversely to the axle and held in cradles supported on rubber mountings.

Car Body

The car body is the Board's standard SW6 type suitably modified. Principal dimensions are:—

Length over bumpers	46 ft 6 in.
Length over corner posts	40 ft 1 in.
Width over pillars	8 ft
Width over footboards	9 ft 1 in.
Height — rail to footboard	1 ft 2½ in.
Height — footboard to step	1 ft 0½ in.
Height — rail to roof	10 ft 3 in.
Bogie centres	28 ft
Bogie wheel base	6 ft 3 in.
Seating capacity	48 ft
Crush load capacity	150 ft
Weight	17.02 tons

There are four sliding doors — two on each side — each 3 ft 6 in. wide — and these are operated with compressed air by a valve in the driver's cabin so arranged that the doors on each side can be opened or closed independently.

Latex rubber cushions and backs covered with brown leather provides comfortable seating. A combination of transverse and longitudinal seating is provided in the saloons but only longitudinal seats in the vestibule, an arrangement that ensures greater ease of movement and also facilitates the work of the conductor.

The Melbourne and Metropolitan Tramways Board holds the license from the Transit Corporation of New York for the manufacture of the P.C.C. car in Australia.

Concrete Kerbs . . .

Causes and Prevention of Failures

Although precast concrete kerbs are widely used and have generally given satisfactory service, failures of isolated kerbs or lengths of kerbing are not unknown.

Road Research Technical Paper No. 18, "Concrete kerbs: causes and prevention of failures", published by Department of Scientific and Industrial Research, describes investigations carried out over the past three years in a co-operative research with the Cement and Concrete Association with the objects of finding the causes of failure and suggesting remedies.

In all the kerbs studied the concrete was compacted by hand or by vibration; no failures of pressed kerbs have been reported to the Laboratory. The chief agency producing damage appeared to be frost; failure could not be related to the site conditions nor to the type of aggregate used. The faulty kerbs showed on the whole a higher absorption of water after 10 minutes' soaking than the sound kerbs. Most of the failures were traced to easily remediable errors in manufacture.