

LINKING THE HORIZONS

OF

CITY PUBLIC PASSENGER TRANSPORT

INTRODUCTION

"There be three things that make a nation great and prosperous - a fertile soil, busy workshops and easy conveyance of men and goods from place to place"

- Bacon

No one will dispute the soundness of Bacon's dictum on the significance of primary and secondary industry in modern civilization. Scarcely less, if less, important is the tertiary industry of transport.

This is an extract from the March 1954 "Report on Australia" by the National Security Resources Board, set up to advise the Commonwealth Government on the best use of Australia's resources in the interests of national security:

"A country can not be defenced or developed properly without a transport and communications machine big enough for its task and economically and efficiently run. Weaknesses in transport especially affect the whole economy, and retard the expansion of industry. Conversely, improved transport and communications will contribute to lower costs and to higher efficiency in industry."

As someone else has put it succinctly: "transportation is civilization".

Any industry that costs one-third of the national income must be of consequence. Sober estimates have shown that transport in Australia, including private transport, does cost one-third of the national income. It therefore merits the close study this Symposium proposes to give it.

Industry, commerce, business and pleasure, social and cultural contacts are dependent on efficient transport. "No man is an island, a part of himself; every man is a piece of the continent, a part of the main". But, without transport facilities, men would be islands.

The branch of the industry I serve and will principally speak about - city (more particularly, metropolitan) public passenger transport - does not loom so large in the cost structure as some others. But it directly affects many people, and, with few exceptions, they cannot pass on their cost to customers.

EARLY TRANSPORT

Road transport, especially as we now know it, is relatively very modern. Man's first transport routes were by water. His highways were ready made and free: rivers, lakes, inland seas and, later, the open ocean. Land transport of consequence came much later, and developed very slowly. When Blaxland, Lawson and Westworth crossed the Blue Mountains in 1813 (so recently as to have great grandsons still very much alive today) their fastest means of movement, horse-back, was the same as Xerxes' in his invasion of Greece twenty-three centuries earlier. Till well forward in last century, long distance travel was by stage coach in Britain, Cobb & Co. in Australia. Only then were they ousted by the coming and

tremendous growth of railways.

STREET TRANSPORT

The first street public transport was possibly the sedan chair - two-man power. The principle of the wheel was known then, but streets were less suited to it than some even of today's.

Horse buses followed, and continued in use up to about the beginning of World War I in 1914. Famous 5th Avenue, New York, had them as late as 1908, and elsewhere they continued still longer. I, not yet old, remember them as a boy - remember, too, schoolboys riding surreptitiously on their back step - until some enemy called to the bus driver: "Whip behind!".

Contemporaneous in part with horse buses were horse trams, with quite a vogue in the latter part of last century. They, if you will forgive a little prejudice, are responsible for some of the impositions tramway operators still bear. Horses' hooves wore out, made ruts in, the unpaved roads. Rails protruded above the road surface, grooved rails being unknown initially. Municipalities rightly set out to protect themselves. As part, therefore, of the price of being allowed operative, tramway authorities were required to build and maintain the road area occupied by their tracks and eighteen inches outside them, wholly at tramway cost. They are still so required. In addition they were obliged to pay rates - "track rates" - for their occupancy of the roads they so make and maintain. They still are.

After horse trams in point of time came cable, steam and electric trams, motor buses, trolley buses.

The world's greatest cable tramway was in Chicago. Glasgow was probably second, and Melbourne was not far behind.

Melbourne construction began in 1884. The first line, to Richmond, was opened in November 1885, and the last of the initial network, to Windsor, in October 1891. There were 41 miles of cable line in operation and 95 miles of cable. Melbourne's No. 1 tramcar ran over a million miles on those routes, continued in use till 1940 and now rests in the Melbourne Museum. Those cable routes continued in use for periods varying from 40 years to upwards of 50. The last abandoned was Bourke Street - Northcote and - East Brunswick in October 1940.

There is still, in San Francisco, one well known cable tramway in regular use - on a grade too steep for reliance on normal friction traction. It continues thoroughly successful and highly regarded.

Electric trams developed overseas in the 1880's and became predominant in the late 1890's. From then on, most Australian tramways were electric. In some cities, electricity supply companies sought and secured franchises to build and operate tramways because they appreciated the economics of the base loads the tramways would provide for their power stations. The Victorian provincial cities of Geelong, Ballarat and Bendigo are cases in point.

Motor buses, just developing when war broke out in 1914, came into their own in the decade from 1922 onwards. Relief from wartime restrictions, rapid housing development, often beyond the range of established transport services, absence of control or co-ordination (in consequence of which many operators set about "skimming the cream" of the transport business with little regard for giving real service) all helped. Increased demand supplied the incentive for rapid improvements in design. Running costs were greatly reduced, in some cases by almost 50%, and the bus industry expanded quickly. It is still expanding, though less rapidly, and design is still improving.

Trolleybuses came later. They belong properly to the early 1930's onwards. More tram than bus (though originally called "railless trams") they have not enjoyed the great increase in numbers one time forecast for them. Their undoubted attractions have, however, made them popular where conditions particularly favour them. Nevertheless they are now going out of fashion, and largely out of use - unfortunately, I think.

NEED FOR PUBLIC TRANSPORT

Is public transport, street public transport, still necessary? Will it continue necessary? If so, what form should it take?

I do not really imagine there is any need to convince this audience of its necessity, but it is astonishing the number of people who think, or perhaps I should say unthinking people who urge, that trams and buses should be banned from the streets to make way for other vehicles, primarily, private automobiles. They are very short-sighted, of course, because if those communal vehicles were banned, there would necessarily be many more other vehicles in the street, and the motor car users would have greater difficulty in moving than today. Alternatively, people would not move, and the city would die of inanition.

Let me draw some parallels.

Many modern homes have private swimming pools, but most people if they wish to go swimming must share a public pool - or the ocean if they elect sea bathing. Only Mussolini laid claim to the Mediterranean as a private sea - and he failed to sustain his claim.

An increasing number of homes have private cinemas, but the overwhelming majority of people must share their theatre with hundreds of others.

There are more people with private cars than people with private swimming pools and cinemas. Even so, they or those of them who can use their cars for every day city travel are a small minority. The majority use public transport, and must go on using it, or even Melbourne's broad streets will become completely clogged and city business perish.

One of my colleagues puts it "The tram is the poor man's motor car". It is more than that: it is the average man's motor car. The Melbourne and Metropolitan Board of Works Master Plan Report records that 85.4% of the people who work in the central area of Melbourne travel there by public transport, 44.2% of them by rail and 41.2% by tram and bus. Many of the rail travellers use tram or bus to complete their journeys after reaching the city. They are additional to, not part of, the 41.2%.

Those figures leave $14\frac{1}{2}\%$ to come by other means, most of them by motor vehicle, but not all of them. It is those $14\frac{1}{2}\%$ who cause today's congestion, at their average of about $1\frac{1}{4}$ per motor car. Multiply them by 7, as we must if cars are to oust public transport, and where will one be? Stationary! And a long way from one's destination at that!

CHOICE OF VEHICLE

Granted then, if you will, that public transport remains necessary, our next question is, what form should it take. This has been a contentious question in recent years, not merely in Melbourne, but in every city of the Commonwealth, and in quite a lot of others too.

The forms available at the moment and in the near future are trams, motor buses and trolley buses. There has been a

Disposition in the past - I say in the past because it is much less evident today - to refer to some transport authorities as tram - minded, bus-minded, or as the case may be, meaning unreasonably prejudiced in favour of one form or another. That was wrong. No operator, not even a monopolist, founds his business on prejudice.

That different cities reach different conclusions is natural. It is because conditions are different. To take a case in point, Launceston and Hobart in Tasmania used to buy electric energy at 40% of the cost we paid in Melbourne. They chose trolley buses, and very rightly chose them too, at a time when a town of a similar size on the mainland should have chosen diesel buses. It is unfortunate for Hobart and Launceston that their electricity prices have gone up since, and are practically the same as ours now.

It is safe to say that every city needs some buses - for cross-town, feeder and developmental routes and for emergencies. What should they use for the rest?

Melbourne uses trams at the moment, 790, and buses, 217. That figure of 217 will surprise some. It was appreciably higher four years ago, until certain alterations were made. On Melbourne's most heavily loaded routes, trams are still the most efficient vehicles, both financially and on the score of moving large numbers of people rapidly. Equally, there is no doubt that on other, lightly loaded, routes the motor bus is the correct vehicle.

These are the major factors.

TRAMS VERSUS BUSES

Firstly, Road Costs

Trams require tram tracks and 19 feet wide strips of road in which to lay them. Today they cost £110,000 per mile for a completely new track: £80,000 to £110,000 for renewal, dependent on circumstances. As I have already said, the whole of that cost is met by the Tramway authority, plus the whole of the maintenance cost, and in addition, the Tramway authority pays rates on the strip of street it occupies. The result is that the trams save the municipalities of Melbourne over £400,000 per annum in road costs - road costs, distinct from track costs: that is one of the reasons why certain municipalities and ratepayers are in favour of retaining trams.

Against those costs buses pay only the equivalent of normal registration fees (high enough of course).

Fortunately most of Melbourne's tram tracks have been down many years, were built at a fraction of today's costs, and will continue in use for many years to come.

Secondly, Rolling Stock

A modern tram costs £15,500; a bus £10,000. That is a ratio of $1\frac{1}{2}$ to 1.

But the life of the tram is three times the life of the bus.

Thirdly, Reliability

Per 100,000 miles tram "pull ins" (break-downs in service requiring vehicle to be taken off the road and replaced by another) are 30; bus 90; a ratio of about 3 to 1 in favour of trams.

Fourthly, Power.

Unfortunately the Tramways Board has been unable to secure exemption from the new tax of 1/- per gallon on diesel fuel, which costs it £38,000 per annum. In consequence diesel fuel for buses costs more per passenger mile than electric power for trams. The ratio is 10 to 7 in favour of trams.

Fifthly, Platform Labour

A tram carries $1\frac{1}{2}$ times the number of passengers that a bus does. Most buses are still manned by two-men crews, the same as trams. The result is that "platform labour" (drivers and conductors) costs roughly 50% more per passenger on buses than on trams. There is the real rub, particularly when I add that labour costs are the overwhelming portion of our outgoings - nearly 70% in fact. It would be different if all buses were run by one-man crews - but that is another story.

Summing Up

It will be seen that some of those factors favour trams; some, buses. The net result in Melbourne today is that trams cost $17\frac{1}{2}\%$ more per mile than buses, but they earn $51\frac{1}{2}\%$ more revenue per mile. That is the prime reason why Melbourne sticks to trams, and looks like sticking to them.

Another reason is this. The present-day replacement value of Melbourne's tram assets is of the order of £30 million. Depreciated to their present physical value, they are still worth some £18 million. Scrapping them and replacing them with anything else would not abate one jot of the capital charges on them - and would impose the capital charges for the buses or other alternatives on top of them. It would be equivalent to throwing away the £18 million - financial folly whilst the tramway undertaking remains sound and efficient, as I assure you it is, and costs less than its alternatives would.

TRAFFIC CONGESTION

"The greatest domestic problem facing the United States is traffic congestion", said Paul G. Hoffman, Chairman of the Studebaker-Packard Corporation, doubtless in a position to know. Though less acute in Australia, here too congestion is already intolerably serious, and rapidly worsening. It is a matter of great and growing concern to passenger operators, striving to maintain time-tables, as they must, both to render acceptable service and to avoid inflated costs. (In this last connection, the spokesman of the Goods Section of the Victorian Road Transport Association recently said that every stop of a heavy goods vehicle in city traffic cost 6d.!)

Public transport is not the only sufferer, of course; private transport suffers too. But public transport delays affect many times more people than do delays of private traffic, even though they are represented by a mere fraction of the number of vehicles.

That is something not normally recognized. It moved the General Electric Company of America a few years ago to produce an excellent educational film with the title of "Moving People" to emphasize that the basic traffic problem is moving people, or goods, and not, as commonly and erroneously supposed, moving vehicles. (The film also aimed to sell trolley buses). It is easy, too easy, for the average man to look at the obvious foreground of vehicles and assume that there is the essence of the matter - just as it is proverbially easy to fail to see the wood for the trees.

Traffic congestion is the real cause of occasional lack of punctuality of trams and buses: it is not that roster clerks do not know how to time services; time-tables are not drawn up to have three or four trams together, followed by a big gap. What happens is this. Traffic congestion delays one or more vehicles; they then lift more than their normal loads and so are further delayed; vehicles behind them on the other hand get less than normal loads and so tend to get ahead of time-table; in no time there are three or four close together (in "convoy" as it is termed) the front late and the rearmost ahead of time. That is anathema to the Tramways Board as well as to passengers; and traffic congestion is the most fruitful cause of it.

Some years ago, the Town and Country Planning Board took a traffic census on outlets from the city, including Prince's Bridge. It found in the peak half hour in the evening, trams carried south-bound over Prince's Bridge, 5,472 people in one lane, whereas the other two lanes of cars and taxis carried between them, 727. These figures are still little changed. I quote from the Town and Country Planning Board's Annual Report that year:

"At this time of the day Princes Bridge would be regarded as operating at its maximum capacity. . . . For every ten feet of road space occupied 36 passengers in private cars were conveyed out of the city as against 547 passengers in tramcars". (That, you will notice, is a ratio of 15 to 1).

"It is therefore apparent that public transport is by far the most economical user of street space when considered in relation to the number of passengers for which it caters".

In U.S.A., the home of the automobile, the importance of public transport is well recognized, particularly its importance in moving large numbers quickly, without excessive demand on street space. It may well be that the automobile users best appreciate the need to encourage others to use it rather than more autos. This is from a book "The City Fights Back" published by the Urban Land Institute, representing nation-wide opinion:

"... it makes no sense to go kiting off in search of miracles when you may have, at your back door, something infinitely more valuable. In essence, most American cities....., beset by the loud and persistent cries of the motorist, a potent figure in urban life,...have been searching frantically for remedies which will make it easier for the man with a car to drive downtown and then park. This, while laudable, is only part of the solution to a nagging city problem - making it possible to get in and out of the central business district. Obscured by rows of cars backed up at the traffic light, downtown's most gleaming diamond has gone unnoticed in the streets. This diamond is mass transportation - the bus, the street-car, the elevated and the subway, which in the larger cities transport as many as 60 to 80 per cent. of the working population".

Note that that comes, not from transport men who might be thought interested parties, but from real estate men, people whose concern is property values.

American cities, alive to their problems, are setting out to help public transport. Some have provided reserved lanes in certain streets, to be used by public transport only, and reports are that both the public transport and the other traffic have benefited from the resultant improved orderliness of movement.

FINANCIAL

Costs and Fares

If someone says, "I will be quite happy to travel by public transport if you will guarantee me room and comfort", my reply is "Certainly, if you will pay for it".

For pay for it you must. Or someone else must. The Melbourne Tramways Board stands on its own feet financially, paying its own way entirely out of its own earnings. It has to. It receives no subsidy or financial support from the State or else-where. In this respect the Board is unique among organizations of its kind in Australia. Expressing a purely personal opinion, I have no wish for it to be otherwise. I believe the spur of having to pay our own way essential for efficient management. On the other hand, as a business undertaking, we should sell our commodity (transport in our case) at a price that will meet our costs. That does not mean that prices should be increased lightly. They should be kept to the lowest practicable level consistent with acceptable service and utmost pursuit of economy and efficiency in operation. At the same time, if it is not to be subsidized, the Board should not continue to bear the cost of the many concessions it gives various groups of travellers - concessions costing now nearly £ $\frac{1}{2}$ million per annum.

In recent years, in most post-war years in fact, our ordinary prices have not been high enough. In consequence, we have more often than not had a deficit each year, and have to some extent dissipated reserves, renewals reserves, to meet those deficits. That, of course, cannot go on.

Public opposition, and journalistic opposition, to realistic fares is astonishing, when contrasted with ready acceptance of prices commensurate with costs of goods and services in general.

Melbourne's average fare per mile today is just 3 times what it was in 1939. Costs, on the other hand, are 4 times or more what they were. Put another way, fares have gone up 200% whilst costs have gone up 300%.

Between June 1939 and June 1958, the basic wage per week went up 225%. But in the same period hours per week fell from 48 to 40. Therefore, the basic wage per hour, which is what really matters, went up 290%. Increased Award margins above the basic wage (does anyone draw the plain basic wage without added margin today?), higher penalty rates for week-end and holiday work and the like, inevitable increased overtime, all send the real cost still higher.

In the same period, retail clothing prices went up 311%, and food and groceries 226% - and clothing, food and groceries together make up 72% of the cost of living.

Far from being exorbitant in price, public transport is probably the cheapest thing one can buy in this community today.

STAGGERING OF HOURS

My final point is staggering of hours. Not only in Melbourne, but everywhere, street transport is plagued by peak loading. The bulk of one's passengers require to travel in the same brief period in the morning and again in the afternoon. That entails costly provision of rolling stock and other capital assets which are required for two or three hours a day, but lie idle, eating their heads off in capital charges, for the rest of the 24 hours. It entails depots, workshops, substations far in excess of average needs. It also entails employment of labour, much of which must be paid while not working. A prominent, probably the leading, American consultant in this field (basically a Civil Engineer, incidentally) has said that most transit organizations would be better off financially with only half their present passengers - provided they could choose the time of day to shed the other 50%. Of more immediate concern to passengers, peaks entail unpopular crowding when most of them have to travel: it is no consolation to them that there is ample room and to spare off-peak.

What to do about it? Staggering of working hours is the answer. We have been pressing for that for years. We thought we were going to get it four years ago, but were again disappointed. We have not given up hope. Everybody believes in staggering - provided it is the other fellow who staggers.

How serious the question is, is shown by my last graph. Its left-hand half shows the numbers of tram and bus passengers arriving at the edge of the golden square mile per quarter-hour in the a.m. peak. From 7.30 to 7.45 a.m. they are a little below 8,000 per quarter-hour. Then the rate falls to 6,500, after which it climbs rapidly until for a brief period it is over 15,000 per quarter hour - a rate of over 60,000 per hour pouring into the city. As office workers and shop assistants go through their front doors, the graph tumbles sharply, almost off the paper - down to 3,500, a loss of 75% in the course of half an hour! The horizontal broken lines show how the high rate could readily be lowered to 10,000 or less by quite reasonable staggering.

The right-hand half shows the slightly different but still very similar pattern of the p.m. peak.

The red lines are London's peaks, scaled down for ready comparison. Though generally similar to Melbourne's, they show peaks spread over about one-and-a-half times as long and therefore easier to legislate for.

CONCLUSION

Your invitation to address you today suggested I put before you a chronological summary of the development of public transport systems, something of my own technical and administrative experience with public transport and an opinion on the future of trams and public transport generally.

Undoubtedly the present is better understood if viewed against a background of the past, especially the recent past. Time has prevented me from including much history, but I hope you will agree that the little I have included is pertinent.

Concerning the future of trams and public transport generally, I have said unequivocally that public transport is indispensable. If that statement requires any amplification, it is that street public transport will remain indispensable while cities retain their present pattern. Until 75 years ago the size of cities was limited to the radius of horse buses.

Expansion far beyond that area was made possible by mechanized trams (cable, steam, electric), motor buses, trolley buses and, to a less extent, railways. If they are now to dispense with those public vehicles the character of cities must change more spectacularly than they did following the supersession of horse buses. They must explode widely enough to provide space for easy movement of the multitude of additional private carriages (motorcars) that will be necessary. If that happens, the central business areas we now know are doomed. Actually there is already some movement in that direction in newer cities overseas, notably in the United States of America, now tending to base their retail business on drive-in supermarkets. I am relectant to forecast (interpolation is so much safer than extrapolation) but I do not see the same sort of thing happening quickly in established urban development with its existing high capital investment. In short, street public passenger transport will continue necessary.

What is the future of trams? They have already disappeared from many big cities, or are in the course of disappearing. Whether that is for sound reason or without it could be, has been, a subject for lengthy argument. The correct decision in one city is by no means necessarily correct in another. Suffice to say that Melbourne, with its wide streets and rectilineal layout, is more suited to trams than many other places. Here they will continue in use probably for the next two decades at least. There may, or may not, be appreciably less of them within that period, or even within the next decade. Two considerations could appreciably influence that: one-man operation of large buses, and fashion.

For the rest I have discussed some, not all, of the major problems the Tramways Board faces - not in any sense of complaint that there are problems (if there were none those of us who direct the Board's affairs would not be needed, and that would be calamitous) but because study of those problems will best give you an insight, I believe, into the workings of our branch of the transport industry.

Finally, you may ask (doubtless will ask indirectly at question time) how are we, meaning the 6,000 men and women who constitute the Board and its staff, coping with those problems. Instead of answering, let me read you extracts from an article in the Melbourne "Herald" of 23 December 1957, written by Mr. Arthur O'Connor, former American Manager of the Australian National Travel Association, some of it directly relevant to my subject, some not but highly interest. I shall alter the order slightly but neither the text nor the context.

"OF COURSE YOU'VE GOT IT MUCH BETTER IN THE STATES!"
 How many times have I heard that remark since
 returning to Melbourne after 27 years in America?
 It makes me mad

Don't get me wrong. I like America
 but nowhere in the United States,
 Canada or Mexico have I discovered a more beautiful
 city than Melbourne.

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 The finest of these (cities) is the national
 capital, Washington, D.C., with Seattle and
 San Francisco well in the running. None of
 these has the broad, straight and clean streets
 of Melbourne, the extent of comfortable suburban
 homes set in lovely gardens in streets mostly
 lined with trees and shrubs.

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'OF COURSE YOU HAVE BETTER FOOD IN AMERICA!'

Since returning to Melbourne I have dined at several of the better restaurants and in private homes, and not in New York, London, Paris, Los Angeles, Hollywood nor in the fabulous cafes of the San Fernando Valley have I enjoyed better food.

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' WHAT DO YOU THINK OF OUR LOUSY TRANSPORT SYSTEM?'

I am convinced Melbourne is extraordinarily fortunate in its elaborate gridiron of electric trains, trams and buses.

These services run to and from all points of the compass and the manner in which peak-hour traffic is handled suggests high efficiency in management. "

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