FIFTY
QUESTIONS & ANSWERS
About
TRAMS in AUSTRALIA

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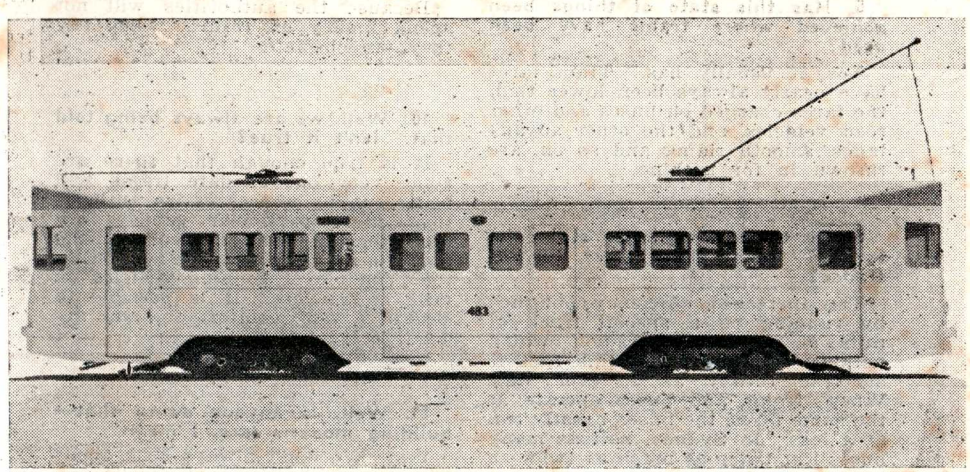

Tramcar of modern, attractive design operating in Brisbane, Qld.

1. What is a tram?

The words "tram" and "tramway" have been in use in our language for a very long time, and have been adopted without much alteration into most languages of the world. They seem to be derived from an old word meaning a beam of wood, and apparently referring to early wooden rails. As commonly used to-day they refer to a system of passenger cars running on rails, usually laid in or alongside the ordinary roads, and giving a local service in populated areas. Since they are essentially railways, but built and equipped less elaborately than the regular main lines, tramways are often called "light railways"; in America, "street car" or "trolley" and "street railway" are the usual words.

2. When were trams invented?

Light railways of a sort have been in use, especially in coal mines, ever since the time of Queen Elizabeth; but passenger tramways giving local service in towns seem to have originated in America about 1832. They were introduced to this country at the beginning of the sixties, and spread rapidly. Early lines were horse-drawn; later, steam and cable traction were used, and nowadays electricity is universal.

3. Why was the tram introduced?

This is a natural question, since ordinary road vehicles were in use much earlier; but the answer is simple. A specialised track of rails is much more efficient than the common road, as it gives smoother travel with automatic steering, and less power is needed to move a car of the same weight.

4. Then tramway transport ought to be less costly than other methods?

Yes, where there is sufficient traffic to make it worth while to lay down rails. It costs a good deal to do this, of course, but there is a point where the economies of running on rails more than compensate for the cost incurred in laying and maintaining the track.

5. Has this state of things been achieved where trams have been used?

Yes, it usually has. Tram fares have nearly always been lower than the fares charged on buses and other road vehicles, and the other advantages, smooth riding and so on, are thrown in for nothing.

6. Do these advantages still exist to-day?. What about fares, for instance?

The increased efficiency obtained by running on a special track of rails is a mechanical fact which nothing can alter, and this fact is as true to-day as it ever was. Where trams and buses operate at the same fares, the buses usually run at a loss. In Sydney, half as many buses lost twice as much as twice as many trams!

7. But you mention smooth riding. I don't agree. I have been in towns where the trams were terrible "rattle-traps" and most uncomfortable. Isn't a modern bus far preferable?

A modern vehicle is always more comfortable than a "rattle-trap," but it doesn't have to be a bus to be modern. Buses of a sort actually existed long before trams did; yet the tram was brought into use. Why, unless there was some definite advantage in using rails? To get at a fair comparison we must compare buses and trams of the same period.

8. I am thinking of the buses and trams running in Sydney, for instance, now. I know which I prefer.

In Sydney, few of the buses are more than 10 years old. Many of the trams have been running without alteration for over 40 years — some 50 years. Imagine buses even 25 years old.

9. I agree that it is hardly a fair comparison, but how is it that in the same city one type of vehicle is kept up to date and the other not?

Because the authorities will not spend money on trams. They say they are obsolete.

10. Well, we are always being told that. Isn't it true?

It is true enough that there are some very out of date trams will being run by unprogressive authorities; those particular vehicles are obsolete, but that is scarcely the point, is it? The question is whether the principle of running vehicles on rails is obsolete. It is possible to design a very comfortable and attractive tramcar.

11. Well, is anyone doing that—building modern cars, I mean?

Yes. We don't always hear about it, but several cities in Australia and in many places abroad have built very modern and attractive trams. They are comfortable, fast, and smooth running, popular with the travelling public, and they pay well at low fares; in short, they do the job efficiently, more so than any alternative. It would be stupid to call these cars obsolete, and how can the principle be obsolete when it is carried out with such outstanding success?

12. Probably a well-designed tram does its job quite well. But aren't trams and tracks an obstruction to modern traffic — wouldn't something more flexible be better?

Wherever you have heavy traffic a certain number of passengers have got to be carried. Whatever vehicles carry them are bound to create "obstruction," but, after all, carrying people is what roads are for! The question is how these passengers can be carried in the most efficient way.

13. Quite so. But isn't a tram more obstructive than a bus?

It needn't be. A tram has a very high carrying capacity in relation to road space occupied (about twice that of a bus), so that, per passenger carried, it is less obstructive. Then, it operates in a straight line, and is not always pulling in and out in front of other vehicles. It has exceptionally powerful acceleration, and can get away very quickly from stops. All these things together are important.

14. The fact remains that it can't get out of the way of other traffic — isn't that so?

A tram cannot swerve sideways, but this cuts both ways. It can't, as you say, "get out of the way of other traffic," but other traffic can very easily pass it, particularly where safety zones are provided. Moreover, it can't get in the way of other traffic by cutting across to get to and from the kerb as a bus does. It cannot overlap and obstruct two traffic lanes as a bus often does, and the fact that it keeps to a fixed track means that it can be approached with safety more closely than other vehicles. Modern trams with high-speed motors have the effect of a "spearhead" in traffic. By quickly accelerating, proceeding ahead in a straight line, as it were "clearing the way" for following traffic, the effect is the very reverse of obstruction.

15. But aren't traffic experts agreed that trams are a nuisance in the street?

By no means. The most comprehensive work published on traffic problems, "Street Traffic Flow," by H. Watson*, goes into this question in great detail, and comes to the conclusion that, in streets of adequate width, and with intelligent track layout, tramways have definite advantages. Recent American research confirms this.

* Chapman & Hall Ltd., 11 Henrietta St., London, W.C.2.

16. But at any rate motorists are very much against trams?

Some motorists are "against" anything which prevents streets becoming a speedway for their cars. Pedestrians, cyclists, and other users of the streets arouse their ire. But even they must realise that passengers must be carried; if there were not one tram to "obstruct" then, there would be two buses doing the same thing. As we have already seen, this would cause considerably more obstruction.

17. No one will take much notice of the prejudices of a mere road-hog. But isn't the more reasonable motorist of opinion that trams are an obstruction?

There are two things to be remembered in assessing motorists' opinions. One is that, being fortunate enough to possess their own cars, they are apt to forget the importance of public transport. Assuming that everyone has an equal right to the road, surely a tram carrying over 100 persons (in peak hours, when obstructions are greatest), has every right to be over 100 times as obstructive as a private car with only one occupant? Yet the obstruction is nothing like this proportion; a tram takes up little more road space than two large automobiles. To carry all these passengers in private cars would be impossible without present roads. Recent American research shows that a lane of trams carries more passengers than nine lanes of automobiles. The word "obstructive" hardly applies.

18. What is the second point?

That they are obviously influenced by motoring journals and the pro-

paganda put out by powerful oil and motor interests, who naturally are anxious for large transport authorities to use their products, rather than employ rails and electricity. It is only natural that they should be biassed.

19 Then it is this bias which has led to the unanimity of motorists in condemning trams?

Such condemnation is by no means unanimous. Many motorists prefer to drive where heavy passenger traffic is segregated into one narrow strip by the use of trams. They appreciate the facility of passing on the near-side, and the absence of large, frequently-stopping vehicles continually pulling in and out of the kerb.

Organised supporters of modern tramways include many keen motorists. The late Sir Henry Segrave (a motoring expert if ever there was one) was impressed by the heavy traffic handled by trams on the Victoria Embankment, London, and publicly stated that he was convinced that this traffic could not be dealt with effectively in any other way. Amongst, generally, there is a certain amount of unthinking bias which, as we have suggested, is due partly to propaganda from interested sources and partly to mere impatience the needs of public transport.

20. Then you are against motorists and their interests?

By no means. Every road user should be able to use the roads with the minimum obstruction, but first things come first. Public transport vehicles clearly have first claim on road space. Of this space, trams take far less than any other method per passenger carried. Motorists, if they really thought the matter out, would welcome modern tramways as economisers of road space, and reducers of congestion.

21. You have mentioned that trams are not always pulling into and out of the kerb. Surely it is a great disadvantage and danger that they should load in the middle of the road in this way?

Like other special features of trams, this cuts both ways. Even where they do load and unload "in the middle of the road," does this actually mean any greater exposure of passengers to traffic danger than if buses are used?

22. Obviously it does. Don't buses draw right into the kerb and land passengers on the footpath?

Yes, but do all bus passengers require the left-hand footpath? Of course not. Roughly half of them will immediately pass behind the bus and cross the full width of the road, whereas with trams they can cross direct to the side they require. Thus, even with tramway loading conditions at their worst, the total exposure of passengers to road dangers is just the same as when buses are used — rather less, in fact, as they never have more than half the road to cross, and have to watch traffic in one direction only. With trams, all the passengers cross half the road; with buses, half the passengers cross all the road.

23. You say "even with tramway loading conditions at their worst." Can these conditions be improved?

Yes. We have just shown that the supposed danger is really no greater than with alternative methods; but, such as it is, it can be removed entirely. Progressive authorities advocate building narrow islands immediately alongside the tram tracks, on which passengers can wait for their car in perfect safety while traffic passes unobstructed on the side.

24. Has this ever actually been done?

Yes. There are one or two examples in Melbourne. On several systems abroad, loading islands are provided at every stop. It would be a comparatively easy matter to provide them, at least at the principal stops, in all our cities.

25. But do not these islands themselves constitute an obstruction?

People of the type to whom everything connected with tramways is "obstructive" sometimes suggest this, but if this is so, how is it that central islands are a prominent feature of every new road without tramways, and are then supposed to be an aid to traffic flow?

26. Then why have such islands not been more generally built?

There does not seem to be any reason but conservatism on the part of authorities, or opposition from motoring organisations.

27. But isn't it better to use available kerb space, rather than erect special platforms?

Far from it! Bus stops already take up a considerable amount of valuable kerb space. In Bourke Street, Melbourne, some fifty yards is required at each city stop for only two routes. If trams were replaced by buses the situation would become impossible. In Sydney, almost the whole kerb around Wynyard Park, along Eddy Avenue, in Hay Street, at the Queen Victoria Market, and in Upper Martin Place, is devoted to bus stops. Motorists wishing to park their cars should note this.

In London, the problem is overcome by halving the number of stops with resultant inconvenience to passengers.

28. You think trams are not necessarily more dangerous than buses?

Not in the least; in fact, they are the safest vehicles in the street. It is by no means uncommon for a town to be able to boast that, during the whole period the trams operated, perhaps forty years, there was never a fatal accident. At Southend, England, for example, in 41 years five hundred and ten million passengers were carried by trams without a single fatality.

29. What are the reasons for this enviable safety record?

There are several which are quite easy to see when you think of them. The fact that a tram pursues a fixed track means that it can readily be seen and avoided, and cannot easily take one unawares. Then, a tram has powerful brakes and can pull up very quickly to avoid an accident. Even if an impact cannot be avoided, every tram has an automatic "lifeguard" which prevents anyone being trapped under the wheels. Finally, the fact that trams are remote from the pavement (a feature often stigmatised as dangerous) is really a safety factor of immense value. The heaviest vehicles are thus kept well out of the way of the unwary pedestrian; but when reliance is placed on buses, large vehicles with quite unprotected wheels are constantly swooping up within inches of a crowded footpath, and present obvious dangers.

30. But are not the actual rails a great danger in the streets?

A great deal is said about the supposed danger to motorists and cyclists of skidding on tramlines, but this, upon investigation, seems to be chiefly a matter of incompetence on their part. Many careful people who have driven cars or cycles for years tell us that they have never yet experienced the slightest danger from this cause; the simple secret is to cross the tracks at a proper angle, and to avoid fierce braking (the latter, of course, can cause skids quite apart from the presence of tram rails). Some accidents may be caused by tracks and paving not being kept in proper condition; but when this is the case it is usually an anti-tram attitude on the part of the authorities which has led to neglect of track maintenance; thus the real cause of the trouble is not the use of trams, but the very reverse — the desire to get rid of them. It should also be remembered by those greatly exercised about the dangers of skidding, that where trams are used this automatically means that the bulk of the passenger traffic is being carried in vehicles which do not skid, so that, taking the whole traffic of the road together, the trams probably save many more skids than they can possibly cause. A properly laid and maintained track can rarely cause skidding, and with a reserved track — such as we advocate wherever possible — this supposed danger is entirely absent.

It must also be remembered that, where trams are not used, the continued pounding by heavy buses does not help to keep road surfaces in good condition, and that any road traversed by frequent buses tends to accumulate a film of rubber, dust and oil which, after a shower of rain, may become a veritable "skating rink," more dangerous than any tram rails.

31. So much for safety; how about comfort?

As a tram runs in a straight line along a smooth steel track, it is clear that, other things being equal, it will always be more comfortable than a road vehicle of the same vintage and degree of luxury, which has to swerve and turn and bump over all kinds of road surfaces. As we have seen, this basic fact is sometimes rather obscured by the fact that old trams often run side by side with modern buses; in such cases, an equally modern tram would always be more comfortable still. Similarly, what we now consider to be uncomfortable old trams were far ahead of contemporary buses when they were new. So great is the superiority that even where there is a great difference in the ages of trams and buses, many discerning people always prefer the former. Even an old tram, running on good track, glides along smoothly; it is always possible to read a newspaper with ease on a tram, and this can rarely be done on any sort of bus.

32. I am still not satisfied that the trams do not, on balance, cause a good deal of obstruction. As you say, many of their features "cut both ways," and I agree, but, all the same, I think on the whole they cause more obstruction than they prevent.

You are right in realising that the interactions of different types of vehicle in the same street have complex effects; that one factor has to be balanced against another, and that the net effects are not very easy to predict. It is a matter for experts to work out these effects, and many who have done so have come to the definite conclusion that trams have a most beneficient effect on traffic movement.

However, an easy way to get a hint as to the truth is to ask yourself: "What is the nature of the measures which are taken, in non-tramway streets to improve traffic flow?" Always it is such things as restriction of over-taking, segregation of traffic into lanes, yellow lines, metal studs, and islands to guide traffic into particular channels; always the tendency is to force traffic, in its own interests, to behave more in the orderly way that the tram automatically does! Is this not significant? Just think it over.

33. But aren't trams slow?

This is again a matter which has little to do with the type of vehicle. There is no difficulty in designing a tram to run at any desired speed. In fact the possibilities in the direction of high speed combined with safety and comfort are considerably greater with the rail vehicle than with its rubber-tyred brother. On most ordinary services there is very little to choose between the actual speeds attained by trams and buses; though a bus may often seem to be going faster owing to the tremendous noise and vibration which it makes, suggesting immense effort; while the tram glides along without much fuss, and is actually travelling very much faster than may appear. A good deal of the supposed difference in speed is simply an illusion.

Another thing is that where trams and buses operate together, the bus is often run as an "express" service with fewer stops and is faster simply because it is doing a lighter job than the tram. In such cases, if the trams are withdrawn, and everything left to the "faster" bus, the bus, coping for the first time with the really heavy local traffic load, becomes as slow as the tram. In Sydney, wherever buses make the same stops as trams, they operate at a similar schedule speed.

34. Well, trams are terribly noisy, aren't they?

Are they? If that is so, it must be in places where the cars and tracks have been shockingly neglected, as is only too common in areas where the authorities dislike trams sufficiently to neglect them systematically, while, at the same time, refraining from scrapping them as they know perfectly well they can't do without them. (This inconsistent attitude is more common than you might think.) Do you know that the modern PCC tram used in over thirty American cities has been dubbed the "Glideaway" because it is the most silent street vehicle yet produced? It is easy to make a tram silent, as there is no vibrating engine, no clutch, no gearbox, no bumping over potholes, no exhaust — just a smooth rotary motion of an electric motor, and a smooth gliding of steel wheels along steel rails. Have you ever heard a bus — yes, even the most modern type — climbing a steep hill in low gear? Was it silent? The trolleybus is fairly silent, but this is in fact something of a danger, as it approaches so close to the kerb and is liable to knock down the unwary pedestrian who does not hear it coming. (In parts of London it has recently become known as "The Silent Death.") A perfectly silent vehicle is not altogether ideal, but a modern tram can compare very favourably with any other type of vehicle in this respect.

35. Has anything been done to introduce "silent" trams to Australia?

Yes. The Melbourne & Metropolitan Tramways Board have acquired the patent rights, and will build trams embodying the features of the latest developments of the PCC car. The Board originally intended to import a complete car, but the war and dollar restrictions prevented this.

In Brisbane, too, the City Council Transport Dept. is developing similar vehicles of local design in conjunction with the University of Queensland.

36. Isn't it a great disadvantage of trams that, if one breaks down, everything is held up? A bus can pass round without delay. Isn't this better?

The relative advantage of different types of vehicle form a complex subject, and one point has to be balanced against another. It is true of all kinds of rail vehicle that one cannot pass another on the same track, but it is simply silly to advocate scrapping them for this reason alone. No one advocates scrapping railways because a train occasionally breaks down and causes delay, and we have already referred to the great inherent advantages of transport on rails. After all, a damaged tram can usually be hauled away in a few minutes, and, in point of fact, as regards general reliability and freedom from breakdowns, trams have a very good record. Alternative routes usually exist in a large city, in any case.

37. Explain a little more about the "reliability" of trams.

For one thing, a tram is unrivalled in its independence of weather conditions. Rubber-tyred vehicles are severely handicapped when there is rain, snow or ice on the ground, owing to the risk of skidding; but trams cannot skid, and are equally safe whatever the condition of the rails. In fog, the trams can always carry on longer than any other vehicle, as they simply follow the track, and cannot take a wrong turning. Indeed, in such conditions they are superior both to buses and to ordinary railways, as the former have steering difficulties, and the latter have signalling difficulties, from both of which the tram is free. Then, the construction and maintenance of a tram's mechanism is extremely simple, and mechanical breakdowns are rare. A large city operating trams, buses and trolleybuses recently recorded the following figures for vehicles taken out of service owing to mechanical defects: Motorbuses, 2.47; trolleybuses, 3.43; trams, 1.81, per 10,000 vehicle miles run in each case. And the trams in that particular city are by no means modern ones. In Melbourne, the figures are even more in favour of the trams.

38. What about trams in war time?

It was once thought that air raid damage would have the effect of completely putting out of action the "inflexible" tramway; but it was actually found, to the very great surprise of many, that the tram proved

in many instances more "flexible" and adaptable than the motor bus in surmounting craters. A heavy bomb would usually, besides blowing up the road surface and twisting the tram lines, cause severe damage to pipes and cables and other underground structures, all of which had to be fully repaired with weeks of labour before the surface could be replaced. On the other hand, it was the work of a few hours only to lay a bridge and restore tram services at once, while repairs to the pipes, etc., could proceed beneath without interruption. Even more important, the trams use home-produced fuel and materials, while that for buses has mostly to be imported.

39. You have certainly made out a good case for some of vehicle on rails. But isn't it a mistake to mix them up with other traffic on the roads?

One of the advantages of tramways is that it is by no means necessary to "mix them up" with other traffic. The modern tendency is to separate different classes of traffic into "lanes," and with trams this is singularly easy to do, because a lane for trams only requires no paving, and, what is called a "reserved track" alongside or in the centre of the ordinary road, can easily be provided where there is room. This may actually be cheaper to build than a paved tramway of the traditional sort. At the same time it provides an almost ideal method of transport. The trams can run in safety at high speeds; passengers can wait for cars right alongside the track; there is no "obstruction" of other traffic, which has the whole of the ordinary road to itself, relieved of all the heavy passenger load; yet the trams are still close to the road and easily accessible at convenient points.

40. Have such reserved tracks actually been built?

Yes, to a varying extent, in most Australian cities and in many overseas.

41. But is not a more radical solution necessary? Shall we not have to have underground railways eventually?

It should be remembered that a reserved track tramway is an electric railway, yet, unlike the ordinary type of "tube," it is not built all at once, at tremendous cost, but is developed gradually from he existing street tramway system. A new tube system would be no good unless at least several miles were built, and opened at once, and the cost would be almost prohibitive; yet, if we place the existing tramways on reserved tracks, bit by bit as gradually as you like, we achieve the same result eventually — a system of electric railways away from the streets — and yet can do it in sections as finances permit, retaining the usefulness of the system, with its through routes, all the time. With open reserved tracks in the suburbs, and a few short sections of subway in the busy parts where roads cannot be widened (at far less cost than an all-underground line), the thing would be done. Once the line was all-reserved, you could, if you liked, run long, heavy trains; but single cars, tramway-style, have important advantages. You get a more flexible service, freedom from signalling complications, and easy access at wayside stops, yet speed can be high. It is an almost ideal system from every point of view; yet it can all be done by intelligent development and adaptation of existing tramways, without the waste of capital involved in "scrapping." And the beauty of it is that it can all be done in easy stages without disturbing existing services; the routes are just diverted from the streets to reserved tracks whenever opportunity offers. In Brisbane, such a combination is actually planned.

42. Is the usefulness of trams confined to large cities?

Not necessarily. They show up to greatest advantage in populated areas, as that is the kind of place where the mass transportation problems, with which the tram can deal so efficiently, chiefly arise; but wherever there is sufficient traffic to justify the investment in track and other equipment, the tram can make a good showing. In many countries abroad there are networks of what are called "interurban" tramways, linking up adjacent towns and villages — in Belgium there is a nation-wide system connecting the whole country, and handling goods as well as passengers, and they are found throughout America.

43. If tramways have such great possibilities and advantages, how is it that so many have been scrapped in recent years?

That is rather a complicated story. In the first place, many lines were not soundly financed, and did not make proper provision for renewals — or their funds were raided for road widening, "consolidated revenue," or other extraneous purposes. Then came the war; necessary renewals were postponed on account of the high cost, and afterwards the systems were left in a semi-derelict state requiring very costly and greatly overdue renewals all at once. The result was that many concerns had to seek alternative methods, not because they were necessarily better, but because there was no proper renewal fund to put the existing system in good order.

Plans to scrap a few smaller systems received much publicity, and, with the aid of certain sections of the Press and the motoring interests, the idea was spread that it was fashionable and "modern" to scrap tramways. This fashion was unthinkingly followed in other places where there was no need for it, and eventually reached some of the larger cities where it was a definite step backwards. In many towns, authorities influenced vaguely by anti-tram ideas, refused to extend existing tram routes to newly-developed areas. Thus, the old terminus was left high and dry; the areas had to be catered for in a haphazard way by running buses along the same routes in competition with the same authorities' trams, and naturally costs rose with this dual operation in which one good service was turned into two bad ones. The trams, finishing at a point where no one in particular wanted to go, naturally soon ceased to pay, and the authorities had a ready-made excuse for scrapping them. Further, there has been little scrapping outside England, apart from some cases in France and America, and a few other places. Of the world's capital cities, only one has totally abolished tramways. The usefulness of tramways is still a very live issue, and is quite unquestioned in most of the large cities of the world.

44. But surely newspapers would not have supported tram-scrapping unless there was some reasonable foundation for this attitude?

Despite the widespread acceptance of the anti-tram matter circulated by certain sections of the Press, its factual basis is extraordinarily flimsy. It is noteworthy that newspapers with a reputation for reliability usually support tramways. Others are often swayed by advertising revenue from the motor industries. Motor vehicles, petrol, oil, tyres and spares support highly profitable businesses. Trams, being built almost entirely by the authorities which run them, require no sales promotion and offer little attraction to big business.

45. Where trams have been scrapped, have the results been generally satisfactory?

There are, of course, a number of small towns which can be catered for quite adequately by almost any sort of vehicle, or where, for special local reasons, a rubber-tyred vehicle is actually more suitable than one running on rails, and in such cases scrapping may have turned out quite well. But in cases where a good tram system has been unnecessarily cast aside, and where really heavy traffic exists which requires a "mass transport" vehicle, several tendencies, far from good, have made their appearance. In the first place, fares have almost invariably tended to rise upon the substitution of the bus. All the numerous cheap fare rates in London, introduced by the LCC trams, have been withdrawn since the L.P.T.B.'s costly trolley-bus scheme. There are countless instances of a similar nature. Then, accidents have tended to increase. Many tramway systems never had a single fatal accident throughout their career, yet death has followed the "flexible" vehicle. Road surfaces have noticeably deteriorated in many places after a few months' pounding by heavy buses; services have be-

come less reliable in bad weather, and headways more erratic — it is notorious how trolleybuses, in particular, always seem to come along in "convoys." The streets have become pervaded with unpleasant and unhealthy fumes from exhaust gases — scarcely an improvement after the earlier use of electricity! Passengers have suddenly discovered — when it is too late — that they are no longer able to read a paper while travelling; there is not the same room for standing passengers; and there are all kinds of minor pin-pricks. Then there has often been a rude shock in the form of a heavy increase in the local rates.

46. What have the rates to do with it?

A lot. A tramway concern is required by law to maintain at its own cost the whole of the road paving between the rails, between the tracks and for a margin of 18 inches outside. This is often half of the total road surface. When the tramways are abandoned, the whole of the road surface has to be maintained by the local highway authority — that is, by the ratepayers, who are suddenly called upon to find at least twice as much as before in respect of paving along the transport routes. At the same time, this paving is worn out much faster by the extra buses put on to replace the trams. In Newcastle, road maintenance costs have trebled where buses replaced trams.

47. Do you mean to tell me that trams, which pay in full for their own special track and do not wear out the road surface at all, have also to pay the whole cost of paving half the road, and that vehicles which wear out the roads can throw this burden on the ratepayer?

That is the position, illogical as it may seem. So when the trams go there is a loss to the rate fund, and there is more paving to pay for. This shows two things; first, that tram-scrapping, quite apart from the increase in fares which usually follow, affects the pocket of the ordinary man in another way, through the rates; second, that tramways do manage to pay, at cheap fares, notwithstanding all these burdens placed upon them. Does this not show in a very striking light the efficiency and economy of tramway operation?

48. I agree that the petrol or oil bus is not an adequate substitute for tramways in every case, but is not the trolleybus highly successful, and in a fair way to becoming the universal replacer of the tram?

We should not deny a place to the trolleybus, which is a very useful vehicle for certain types of service, and has the advantage of using electric power; but it must be remembered that it is essentially a road vehicle and thus has none of the distinctive advantages of the tram; i.e., the economy, reliability and added safety of rail traction, which we have already stressed. It is subject to the same disabilities as the motor bus in bad weather; it has the same reduced passenger capacity and propensity to skid, and has proved itself even more dangerous to pedestrians than the motor bus, as it has the same proximity to the footpath, and the same unprotected front wheels, combined with a swifter and more silent approach. Considerable concern has already been caused, especially in North London, at the heavy increase in pedestrian casualties since the replacement of trams by trolleybuses on busy traffic routes.

In addition, it should be borne in mind that the overhead equipment for trolleybuses is at least twice as heavy and ugly as that for trams (more than four times so at crossings and junctions).

The trolleybus is also much less economical in current consumption than the tram, owing to the greater road resistance, and — an important consideration in war time — is a heavy user of rubber tyres.

The trolleybus is far from being used as a universal tram substitute. It may surprise you to learn that no fewer than thirteen British trolleybus systems have been completely abandoned, together with isolated routes in other areas (including Australia), while tramways are still being developed in progressive cities all over the world.

49. It begins to look as if the public has been rather "taken in" over this tram-scrapping fashion. Cannot these facts be made more widely known?

Many thinking people have been trying to do this for some time now. The A.E.T.A. was founded several years ago by a number of men in all walks of life who felt that the tram was not receiving a square deal. They have steadily worked, without any payment, to make the true facts known in the public interest. They feel that it is only necessary that the "case for the tram" should be properly stated, and the public opinion will do the rest. Already there is a steadily growing feeling in favour of retention, extension and development of the modern tramway; that this feeling exists is shown by the growth of our membership.

50. Will not this tramway question be of great importance in connection with post-war reconstruction?

Undoubtedly. The existing tramways proved their worth in the second world war; thousands of tons more precious oil and rubber would have been needed had our tramways not been in existence. Then, even now, oil and rubber will be extremely scarce for some time, and the price of oil fuel tends to rise; on the contrary, the price of electric power tends to fall. (Incidentally, a heavy tramway "load" at the power station usually enables it to operate at maximum efficiency, and makes possible cheaper power for other consumers). With these points in mind, consider that, in the future, vast new housing estates will have to be built, probably at a fair distance from existing cities, and that new transport facilities will have to be provided. Consider, also, that the route from city to estate will be a fixed route with heavy traffic; that with an estate built from "scratch" it will be an easy matter to provide "built-in" transport facilities in the form of reserved tracks. In every way, modernised and extended tramways provide the logical answer to these coming problems.

INTERESTED ?

If the facts stated in this pamphlet have aroused your interest, you can keep in touch with present-day tramway development by subscribing to "TRAM TRACKS," an illustrated monthly journal about tramways, trolleybuses and electric railways. Annual subscription:—6/-, post free; write to The Managing Editor, Traction Publications, 29 Seymour Grove, BRIGHTON BEACH, S.5, Victoria.

Better still — join the Australian Electric Traction Association. Get in touch with the Secretary, 20 Derby Street, MOONEE PONDS, W.4, Victoria, or the Secretary, Sydney Branch, 56 Stuart Street, LONGUEVILLE, N.S.W. Monthly meetings are held in both centres. There are also representatives in all the principal cities of Australia and New Zealand.

The popular "50 Questions and Answers About Trams" was originally issued by the Light Railway Transport League of Great Britain, and considerable interest was aroused by its appearance. In view of current interest in street transport in Australia, the Council of the Australian Electric Traction Association felt that the preparation of an Australian edition was desirable.

Additional copies may be obtained from Branch Secretaries or the publishers. Price, 3d. each (add postage).

RETAIN — EXTEND — MODERNIZE THE TRAMWAYS.

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