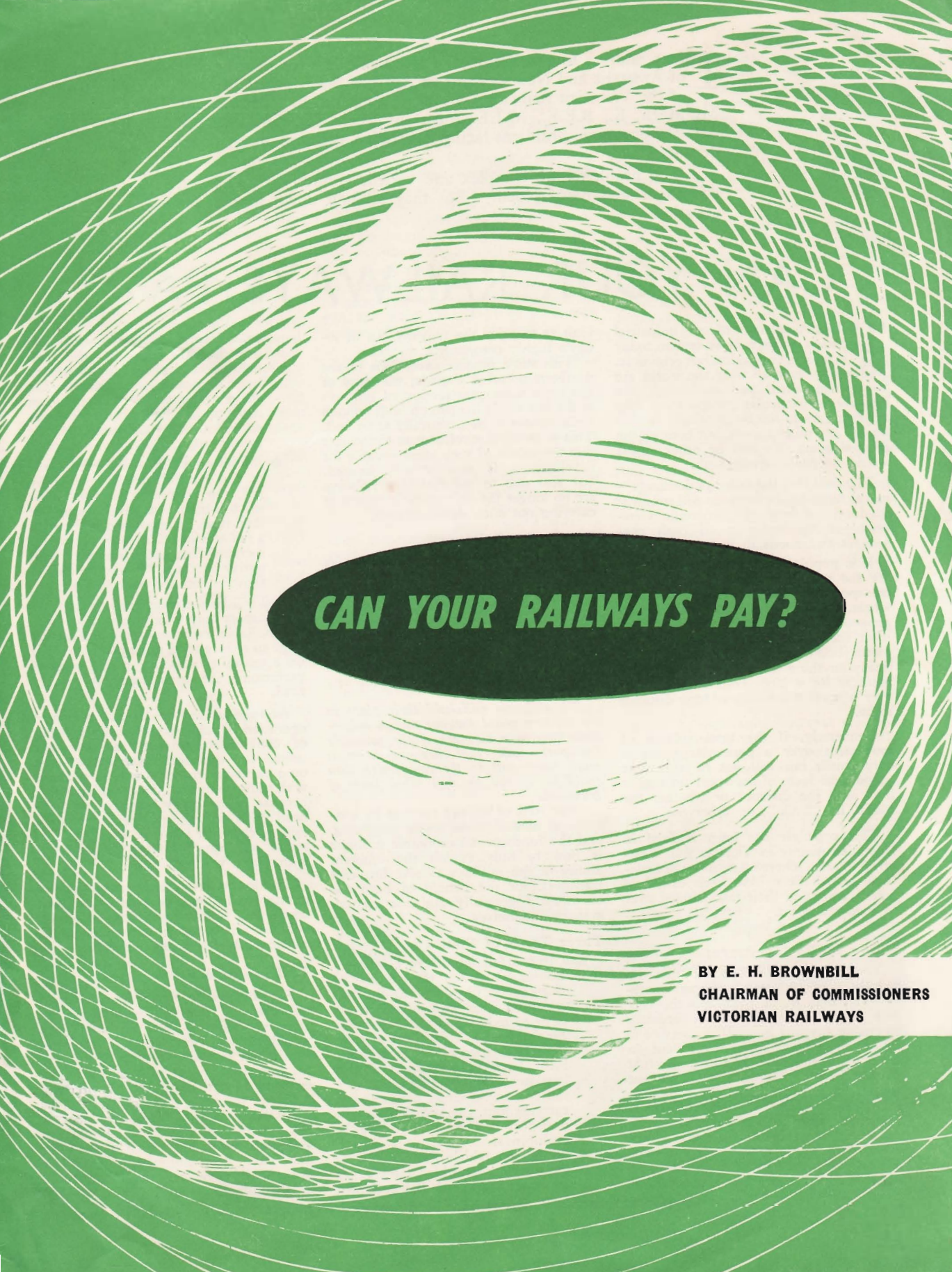


CAN YOUR RAILWAYS PAY?

BY E. H. BROWNBILL
CHAIRMAN OF COMMISSIONERS
VICTORIAN RAILWAYS

IN an address to the Victorian Branch of the Economic Society of Australia and New Zealand on April 30, 1960*, the Chairman of the Victorian Railways Commissioners, Mr. E. H. Brownbill, M. Mech. E., B.E.E., M.I.E. Aust., M. Inst. T., F.A.I.M., laid bare the economic problems facing Australian railways in the next decade.

The problems are complex and varied, tempered by changed conditions and development. But they all boil down to the one question . . .

CAN YOUR RAILWAYS PAY?

THE dependence of an industrial nation on its railway system today is no longer physical but economic. Railway systems all over the world are being maintained and developed, not because the particular transport task they are doing could not be physically carried out by any other means, but because the cost of doing this task by other means would be prohibitively high.

The field that the railways dominate—and as far as can be foreseen will continue to dominate from the economic viewpoint—is the transport of both passengers and goods in large volume.

It is popularly accepted that railways are the most economical form of land transport for bulk commodities such as wheat, fertilizer and coal. It is not so generally realized that they are also the most economical form of transport for motor bodies, television sets, or practically anything else, where the requirement is for a large volume movement over a specific medium or long distance route.

Conversely, if the total volume of movement over a particular route is only small, rail will not be the most economical form of transport no matter how long the distance or whether the traffic is "bulk" or otherwise.

This principle has been realized in Australia, mainly in Victoria and Western Australia, where many miles of little-used branch lines have been closed in recent years and their task handed over to road transport.

Heavy Initial Investment

The underlying reason for this dependence of successful railway operations on high traffic volume is the very heavy initial investment that is necessary to enable any sort of a railway service to be given at all. The investment in fixed plant and facilities is so high that overhead costs will always be a dominant feature in railway finances, although a high traffic volume enables these costs, measured on a ton-mile basis, to be reduced to an economical level. However, when traffic falls below a certain critical level, the cost per ton-mile of these irreducible overheads becomes so high as to price the railways out of today's highly competitive market.

With some notable exceptions in the northern parts of Canada, the days of the large scale construction of railways in the free world to open up undeveloped areas appear to be practically at an end. This is partly due, of course, to the fact that the extent of such areas suitable for development is now strictly limited, but also due to the fact that railways are no longer the only suitable means of carrying out such developments.

Reason for Existence

Railway management, in meeting its problems today, and in the years ahead, must dissociate itself from any ideas that the railways have some inherent right to a share of the country's transport because they opened up the country in the first place, or there is a lot of money invested in them, or they are the only way of doing a job, or for any similar reason.

The railways will hold their place in the modern world for one reason only—that there is a big slice of the country's transport task that they can do at a much lower cost to the community than could be offered by any other form of transport.

Over 70% of railway revenue in Australia is earned from goods freighting, and the fundamental economic problem is how to fully exploit the inherent ability of the railways to give low cost transport, for the benefit of both the community generally and the railway systems themselves.

Three Types of Routes

Rail routes fall into three classes—

- Routes on which the volume of those goods, for which rail **charges** are lower than road, is sufficiently large to reduce rail ton-mile **costs** for this traffic below those of road. On these routes the community must have rail transport simply because it cannot afford not to ; the cost in resources consumed of carrying out this portion of the transport task by road would be prohibitive.
- Routes on which the volume of those goods, for which rail charges are lower than road, is insufficient to reduce rail ton-mile costs below those of road, but the total volume of traffic, if it all moved by rail, would be sufficient. On these routes the community must make up its mind whether it wants all rail or all road transport ; it cannot afford both.
- Routes on which, even if the whole of the available traffic moved by rail, the volume is so small that rail ton-mile costs would be higher than road. Any attempt to operate a rail service on these routes would increase the community's total outlay on transport; the whole job must be handed over to road.

Rail will be the most economical form of transport only on those routes where the available traffic volume is sufficiently large to reduce total rail costs, measured on a ton-mile basis, below the costs of performing the same transport task by road.

As even a large-scale road transport operation basically consists of a number of comparatively small self-contained units, road transport costs per ton-mile on a particular route do not vary greatly with traffic volume. On the other hand, because of the heavy incidence of overhead costs on railway operations, total railway costs per ton-mile over the same route will vary between wide limits with traffic volume.

The lowest level, under conditions of intense traffic, will be well below road costs, but, under conditions of small volume, rail costs per ton-mile can be considerably higher than road.

To Keep or Kill

For this reason many developmental railways that were laid down to suit an entirely different set of conditions would not be constructed if we were setting out to plan a system of railways to meet the needs of the Australian economy today. However, the practical problem, from the point of view of the Australian railway administrations, is not which lines should or should not have been built, but which of the lines that have been inherited should be retained and developed, and which should be abandoned.

* For this puplication, facts and figures have been amended as at January 1, 1963.

Naturally, in considering this problem, the railway administration will be concerned not with the relationship between rail and road costs—unless the Department is considering operating its own road service—but with the effect of operating a particular service on the overall railway financial results.

To determine the cost of operating a particular line—running costs, signalling, track maintenance, and so on—is a comparatively simple matter. Because the capital sunk in the line itself cannot be recovered, interest on the track and structures is normally disregarded.

To determine the revenue that should be credited to the line under review is, on the other hand, anything but simple. This is because no line can be considered as a separate entity, but only as portion of the whole system. Its operations are resulting in the haulage of traffic for varying distances over other lines, and this haulage is incurring additional costs, all of which have to be taken into consideration.

Allowance has also to be made for the fact that some portion of the traffic—mainly the lower-rated bulk commodities—will continue to move by rail to the nearest railhead if the branch line is closed, while other portions of the traffic will be lost altogether.

The actual incidence of all these factors will naturally vary greatly from line to line, but, as an average, it is reasonable to credit a branch line with the whole of the "line proportion" of its revenue; that is, revenue from traffic actually hauled on it, plus 50% of the revenue from traffic hauled elsewhere but which originates or terminates on the branch line.

If this amount of revenue is insufficient to cover the costs of operating the branch line, a very searching investigation into the question of its closure is indicated.

Who Benefits ?

The proposition that the economy, as a whole, will benefit from the withdrawal of rail services in the circumstances outlined is in no way invalidated by the fact that some transport users will pay higher charges as a result of the change. This is merely a reflection of the fact that that portion of their transport costs, that was previously being met indirectly by the community at large, is now being met directly by the users of the service—a reasonable but sectionally unpopular adjustment !

Transport users generally want the best of both worlds—freedom to use either rail or road transport according to the rates charged by each for particular commodities.

This means that the stage at which it is no longer economical to provide a rail service on a particular route is usually determined, not by the total traffic movement on the route, but by the volume of that traffic for which rail transport has a rating advantage. This will result in the withdrawal of many rail services that could be economically retained if the community were willing to concentrate all its business on the rail facility.

Protection From Competition

The final decision in such cases rests with the transport users themselves.

If railways owe their existence in the modern industrial economy to the fact that they are the low-cost producer in a particular field, it is not immediately apparent why they, unlike other low-cost producers, need protection from competition to exploit this advantage.

It would seem logical that the railways themselves, using the normal play of economic forces, should be able to win and hold their field of advantage against all comers.

The answer to this apparent paradox is to be found in two factors :

- the large size of the minimum economic railway unit ;
- the peculiarities of the railway rating structure.

While a certain substantial volume of traffic is necessary to economically justify the provision of rail facilities, railway fixed plant, even if designed only to meet this minimum level of traffic, has such enormous capacity that on most Australian routes it is capable of handling the whole of the traffic offering.

The implications of this fact are far-reaching, particularly when considered in relation to those classes of competitive traffic that are actively solicited by rail and road operators.

Cost Basis

Putting the question of rail and road charges aside, first examine the relative costs of moving this competitive traffic by rail or road.

On routes where the railway facility is necessary to economically carry out that portion of the transport task that is the undisputed function of rail, overhead rail costs have to be met in any case and will not be increased in handling the competitive traffic. The only additional outlay involved, therefore, will be the out-of-pocket portion of rail costs, that averages about 1½d. per ton-mile. Alternatively, the effect will be to lower the unit total cost of all traffic moving by rail.

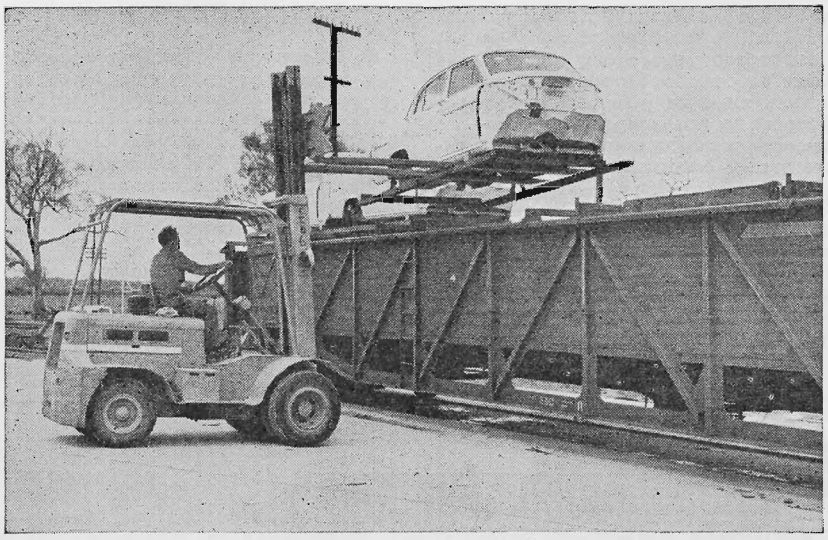
If, on the other hand, the competitive traffic moves by road, the community must meet total road costs, that are much higher than rail out-of-pocket costs. There will be no appreciable reduction in unit road costs, as overheads comprise a much smaller proportion of road costs than rail.

The fact is that Australian railways are, generally speaking, existing in a condition of chronic over-capacity. The situation cannot be corrected by reducing the capacity, which is that of the minimum economic unit ; so that the only way in which total transport costs can be kept down is by making the maximum use of this excess capacity.

The logical conclusion to be drawn from this argument is that the railways should be in a position to charge very low rates in order to attract competitive traffic—rates that will do little more than cover out-of-pocket costs. To a limited extent, this is what is happening today.

Negotiated Rates

The Victorian Railways are constantly negotiating new rates to obtain additional competitive traffic, and in all such negotiations they regard out-of-pocket costs as their bedrock figure. They do not, however, pay regard in this connexion to ton-mile costs, that can vary greatly between various classes of traffic according to their "loadability" ; instead, they relate the proposed rate to average out-of-pocket costs measured on



Motor car bodies from South Australia being unloaded at the Dandenong plant of General Motors-Holden's Pty. Ltd.

a wagon-mile basis, that makes due allowance for the " loadability " of the particular goods.

Most of these negotiations are based on guarantees of minimum annual tonnages, which is the same thing as saying maximum utilization of excess railway capacity.

Another application of the same principle is certain agreements that have been reached for incentive rates—lower rates for all traffic offered after a certain minimum annual tonnage has been reached.

If this rating principle could be extended to all competitive traffic, it would appear on the face of it that the railways would be able effectively to counter most road competition and, at the same time, secure an adequate financial return. To appreciate why this is not so, it is necessary to consider the railway rating structure as a whole.

Value v. Cost

Traditionally, railway rates have been based on value-of-service rather than cost-of-service. This method appears to have been ideal both from the point of view of consumers as well as suppliers of transport, as from the inception of railways it was accompanied by tremendous growth of not only railway systems but the economies they served.

Unfortunately for the railways, it was this rating system that made them most vulnerable to road competition following the development of the internal combustion engine. From the railways' point of view, charging according to value-of-service was satisfactory only in conditions of monopoly, and is quite unsuitable under conditions of intense competition.

The fact that this rating structure has not been basically altered must surely be due to something more than resistance to change on the part of railway management. The fundamental reason is not hard to find ; it is simply that the low-value bulk traffics for which the railway system must be maintained—whatever happens to the competitive traffic—are themselves subject to intensely competitive market conditions.

The existing rates charges on these commodities cover out-of-pocket costs and contribute something towards overheads, but they do not cover the full cost of giving service. Under the value-of-service rating principle, the leeway is made up on higher-value goods —by rates that more than cover fully allocated costs.

If the cost-of-service basis of rating is to be adopted, it would certainly be possible to set much lower rates for higher-value goods, but the rates on low-grade commodities would have to be raised in many cases, to such an extent as to destroy the traffic altogether.

The position in Australia is that, on the principal transport routes, primary products and other bulk goods move in such large quantities that railways are necessary for their economical transport. Any other form of transport for these goods would be prohibitively costly.

Excess Capacity

The freight rates that these commodities will bear are not, however, sufficient to cover the full cost of providing railway service. At the same time, the minimum railway facilities that must be provided to carry these low-value traffics have a very large reserve capacity that can be used to carry high value traffic at little additional cost in resources used.

If the railway operation as a whole is to cover its costs, high-value traffic must pay rates that more than cover full costs —but such rates are wide open to road competition.

Because of the unavoidable excess capacity of the railway system, the cost to the community in terms of resources used is much less if competitive traffic moves by rail than if it moves by road.

The community, therefore, has two choices :

- To adopt a policy of unrestricted competition between rail and road. In this case, the rail rates on competitive traffic would have to be drastically reduced. This would result in immense railway deficits that would have to be met from general revenue.
- To continue to regulate transport so as to severely limit the extent of road competition with rail.

From the point of view of railway management, the first alternative is out of the question. No community could be expected to understand that the huge railway deficits that would result were merely the unavoidable price of free competition; and the railway service would carry a stigma of inefficiency that would make it impossible to attract the right type of recruit. Moreover, the exigencies of State Budgets would lead to a constant pruning of expenditure which, in turn, would result in lack of adequate replacement funds and the gradual wasting away of the railway asset.

Necessary Restriction

Therefore, in the foreseeable future the interests of overall transport economy in Australia will best be served not by permitting free competition, but by the continued restrictions on road transport, where it seeks to operate in direct competition with essential railway services.

On the other hand, it should not be necessary for Australian transport to be conducted in this restrictive atmosphere indefinitely.

As population and production in Australia continue to grow, the stage will eventually be reached where the railways will, in open competition with road, be able to obtain sufficient high-grade traffic at payable rates to cover the minimum overhead costs involved in providing a modern railway service ; but with Australia's long distances and present sparsity of population, this stage is a long way off yet.

In the meantime, the most difficult problem will be to keep the railway systems in a healthy condition in the face of constant pressure on the one hand for greater freedom for road transport and on the other for reduced expenditure to counter the loss of rail revenue that such greater freedom inevitably brings.

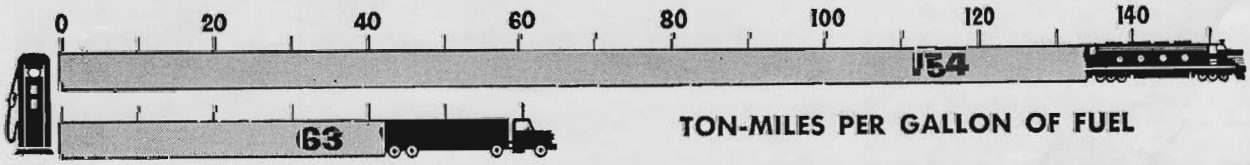
Co-ordination

While the Victorian Railways strongly advocate continuation, for the time being, of existing restrictions on competitive road transport, they also have great hopes of a greater degree of co-operation between rail and road leading to both improved railway operating results and a reduction in total transport costs.

A great deal of progress has been made in this direction by the development of " piggyback ", containers, and forwarders' bulk loading arrangements ; but much more can be done yet. All these devices are designed to exploit the particular inherent advantages of each form of transport to their best advantage —road for local pick-up and delivery, and rail for long-distance bulk haulage.

Diesel Development

Without doubt the greatest single influence on the level of railway costs in recent years has been the development of the diesel locomotive to its present state of high efficiency.



Rail transport gives best value for the fuel used. As the chart shows, the average diesel-electric hauled Victorian Railways' train produces 154 ton-miles transportation for every gallon of fuel used, while the average road motor truck gives only 63 ton-miles for every gallon of fuel.

The principal advantage of the diesel over the steam locomotive is its high availability, so that under conditions of heavy traffic a single diesel can do the work of approximately three steam locomotives. Even under lighter traffic or in yard work, where the replacement of steam by diesel locomotives is necessarily on a basis approaching one for one, the much lower running and maintenance costs of the diesel far more than offset its higher capital cost.

A further advantage of the diesel in Australian conditions arises from the fact that the majority of the busiest rail routes in Australia were laid as cheapily as possible and are heavily graded. This means that, before the advent of the diesel locomotive, trains loaded up to to the full capacity of the coupling and braking gear could be hauled only by double-heading with steam locomotives—which involves a crew for each locomotive—or by building very large steam locomotives, which involves greatly strengthening the tracks and bridges.

With diesel locomotives, on the other hand, it is possible to couple together several units of moderate size, under the control of one crew, so as to obtain far greater power than was available with the heaviest steam locomotives previously in use, but without the necessity for exceedingly heavy tracks and bridges.

Death of Steam

Although good progress has been made by all Australian systems towards the ultimate conversion to all diesel operation, there are still many steam locomotives in service and very substantial economies can be obtained by eliminating them in favour of diesels.

The actual rate of conversion will depend, of course, on the capital funds available ; part of the cost will consist of the writing-off of steam locomotives that have not reached the end of their economic life. There is no doubt, however, that for some years to come the purchase of further diesel locomotives will be the most rewarding avenue for the investment of railway capital funds. In Victoria it is hoped to have the conversion completed by 1972.

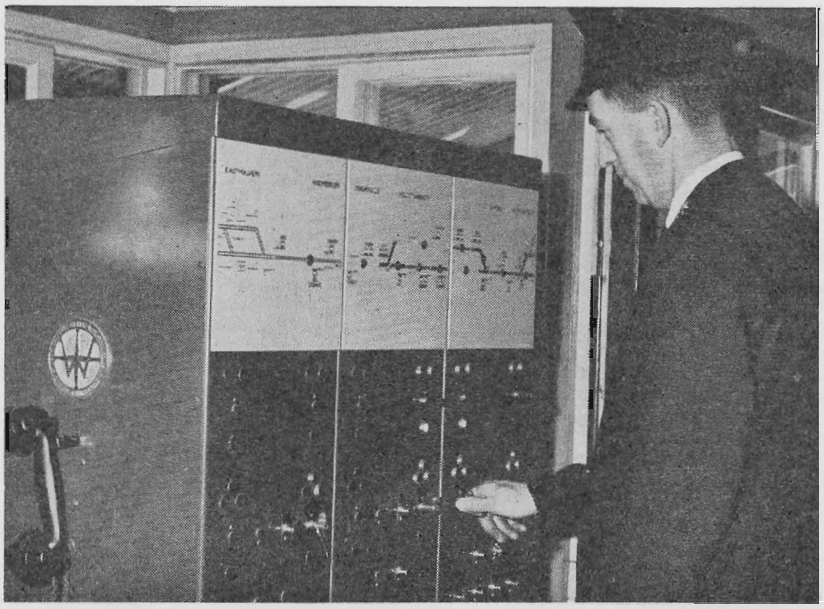
Other than in exceptional circumstances, such as the recently completed project between Sydney and Gosford—a section of line combining a high density of both goods and passenger traffic with very steep gradients—direct electrification of main lines is unlikely to offer any financial advantage over diesel operation in the foreseeable future.

Electric Limitation

Electric locomotives cost a good deal less than diesel locomotives of similar power, but require a heavy additional investment in substations, overhead gear, transmission lines, etc. Except in conditions of the densest traffic, the saving on electric locomotives compared with diesel will be insufficient to offset the cost of the fixed equipment they require, and the capital cost of diesel operation will be lower. This is the position on most Australian lines.

If electric locomotives were cheaper to operate than diesel this disadvantage in capital cost could, in favourable circumstances, be more than offset, but the present position in Victoria, at least, is that diesel fuel costs a good deal less per gross ton-mile than electric power.

It will, therefore, require a substantial drop in the price of electricity relative to diesel fuel to justify any further main-line electrification in Victoria. Such a change in relative values cannot at present be foreseen, but so many variable factors are involved that it would be most unwise to forecast that it will never occur.



On the operating side, the greatest potential economies lie in further extensions of systems of automatic signalling and centralized traffic control. Assistant Stationmaster is operating C.T.C. equipment at Eastmalvern.

These comparative costs of operation on the Victorian Railways by diesel, electric, and steam traction are of particular interest.

	Diesel S Class	Steam R Class
Weight ...	116 tons	180 tons
Load up Ingliston Bank (13 miles at 1 in 48) ...	780 tons	365 tons
Time up Bank	48 mins.	67 mins.
Maintenance cost per mile	10½d.	4/10d.
Average fuel cost per mile (passenger and goods)	1/9½d.	6/9d.
Capital cost	£120,000	£90,000
Mileages ...	B Class—1½ million in 10 years 500,000 before major exam.	S Class—1½ million 26 years

	Diesel B Class	Electric L Class
Load from Yallourn to Melbourne (ruling grade 1 in 110)	1,600 tons	1,400 tons
Maintenance cost per mile	comparable	
Fuel cost per mile	4/11d.	9/1d. (power)
Capital cost	£120,000	£77,500

Other Fuels

Other changes that may take place in the technology of railway locomotion—such as the development of oil or coal-fired gas turbines, or even atomic locomotives—do not concern us greatly.

Railways will always utilize that form of motive power that combines the maximum degrees of reliability and economy, but it is not expected that any future development will produce such a revolutionary lowering in costs as has resulted from the replacement of steam by diesel.

Automation

Apart from the conversion from steam to diesel locomotives, the best prospect for reduced costs through the application of modern techniques to railroading lies in the field of automation.

Railway operations are on a big enough scale to take full advantage of the economies of electronic data processing, and a steady extension of these techniques to timekeeping, accounting and stores procedures will be seen in the next few years.

The greatest potential economies are available, however, on the operating side, through further extensions of systems of automatic signalling and centralized traffic control.

Because of the economic advantages of rail for mass transport and of road for local distribution, there is a constant tendency for rail traffic to be concentrated on the larger centres and for the traffic at small country stations to decline to the level where the business can be conducted by a non-skilled caretaker.

At many such small stations it is necessary to retain qualified staff, probably for 24 hours daily, for signalling purposes, and this offers the prospect of substantial reductions in costs if some form of remote control of the signalling at these stations can be installed. This manpower, too, could be used with greater advantage elsewhere.

Centralized Traffic Control

A remote control of this type can be operated from an adjoining station, but the modern method is to install centralized traffic control by which all the points and signals on a length of line are operated from one centre.

Centralized traffic control has as yet been used in Australia only to a very limited extent, but a major installation will shortly come into use on the standard gauge line between Albury and Melbourne.

When this installation is completed, the whole of the points and signals between Dynon and Wodonga will be operated by one man from a small control desk at Spencer Street. The system will be of the latest electronic transistorized type which will not only be instantaneous in operation (earlier systems take several seconds to transmit a control and receive an indication that it has been carried out), but will have unlimited capacity for the addition of further crossing loops or sidings as the need arises.

Another direction in which automation offers some prospect of worthwhile economies is in the installation of hump marshalling yards in which the marshalling of wagons is controlled from one operating centre and the movements of the wagons themselves, after they pass the hump, are practically automatic, being controlled by electronically-operated weighing and retarding devices.

Such yards reduce manual shunting to a minimum, with considerable economies, but require very heavy traffic to justify their cost. There are as yet very few locations in Australia where the cost of such a yard is justified.

Mechanized Track Work

A further direction in which very substantial economies are expected to be achieved within the next few years is the mechanization of the maintenance and renewal of tracks.

In Victoria, mechanized track relaying was first adopted in 1956, and there are now three fully mechanized gangs operating in country areas. Each gang moves along the track on a production-line principle and relays approximately one mile per week. The work includes re-railing, partial re-ballasting and re-sleepering, the widening of cuttings and cleaning of drains. This mechanization has trebled the annual mileage relaid while the cost per mile has been practically halved, compared with earlier hand methods.

The next step that will lead to further substantial savings, is the reorganization, combined with mechanization, of day-by-day track maintenance procedures.

Under the traditional method of track maintenance, a gang of men is fully responsible for a specified length of track. The work consists mainly of keeping the track fastenings secure, maintaining proper level and alignment, and renewing sleepers as they reach the end of their life.

For some time past track maintenance gangs have been equipped with various mechanical appliances that considerably lighten the arduous nature of the work, but investigation has shown that to obtain the full economic advantage from this modern equipment it will be necessary to revise the organization of the work. This will mean reducing the size of the local gangs and creating fully mechanized " flying gangs " that will be responsible for a particular function, such as re-sleepering, in a whole district.

While there are still many avenues open for the further reduction of the already low level of rail transport costs, two things should be emphasized. Firstly, these economies can be obtained only by an adequate expenditure of capital funds ; secondly, they can yield their maximum benefit only by employing the railway asset to the full.

Gauge Standardization

Gauge standardization is predominantly an economic problem, too. The correction of Australia's present multiplicity of gauges is only likely to be undertaken insofar as it can be justified on economic grounds.

This means that the cost of eliminating any particular break-of-gauge point, measured in terms of annual interest and sinking fund payments, must be less than the annual costs that will be incurred if the break-of-gauge is retained ; such annual costs would include a figure for revenue lost because of the existence of the break-of-gauge.

Mechanical wrench being used to tighten nuts on fish-plate bolts for new standard gauge track.

It follows that the justification for eliminating a particular break-of-gauge point will depend on the volume of traffic that will flow if the break is eliminated. As the principal interstate traffic flows in Australia—excluding certain bulk seaborne traffic such as coal, iron ore and sugar—are between adjoining States, there is little doubt that the provision of at least one rail link without a break of gauge between adjoining States is economically justified and should be given top priority.

It is interesting to note that the "Wentworth Plan"— of which the Albury–Melbourne link is the first stage—provides for all adjoining States being linked by a *common* but not a *standard* gauge, and it is difficult to see that anything more than this will ever be warranted.

The necessity for any further gauge standardization will, in any event, depend on the requirements of goods, not passenger, traffic.

A stopover in each capital city is a normal feature of interstate railway passenger services, quite apart from any gauge differences that may exist, and once the stage has been reached when passengers can travel from each capital to the next without changing trains, the absence of complete gauge standardization need not be regarded as a serious drawback from the passenger viewpoint.

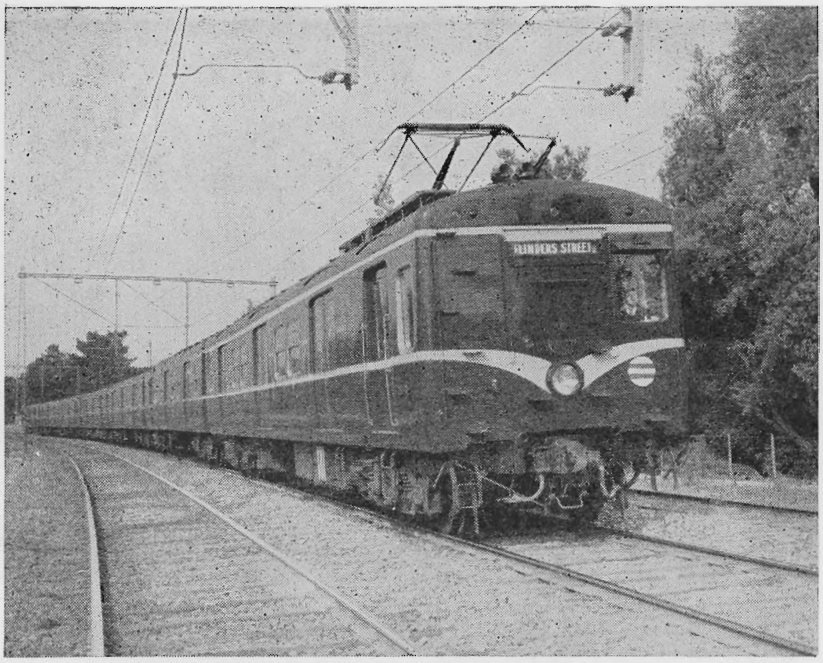
In spite of universal gauge standardization in North America, it is only in Canada that one can travel from coast to coast without changing trains.

Long Distance Passengers

There is little doubt that in Australia, as in all countries with an increasing standard of living, the total demand for public long distance passenger transport will continue to diminish for some time yet.

If the demand for this type of transport were expected to disappear entirely, the problem perhaps would be simpler than it is now. The pattern that is actually developing—in Victoria at any rate—is one of intense activity at holidays and, to a lesser extent, at week-ends, accompanied by a very poor patronage for the rest of the time.

Country and interstate traffic is, in fact, becoming in its own way as subject to peaks as suburban traffic, with the vital difference that with the country traffic it is the occasional passenger who causes the peak ; with the suburban traffic it is the regular passenger. For a time Victoria tried off-peak country fares as an experiment to produce a more even traffic flow. These took the form of reduced return fares on Tuesdays, Wednesdays and Thursdays to stimulate travel when plenty of room was available in the trains. The experiment was not a success.



Gleaming in their blue and gold livery, "Harris Trains" help in the modernization of the electrified suburban network.

It was concluded that the demand for country passenger transport is inelastic in one direction—it can be depressed by higher fares, but is not noticeably stimulated by lower ones.

The only option, therefore, appears to be to keep the fares at about their present level, measured in relative rather than money values, and to provide a high standard of service so as to exploit to the full the inherent advantages of rail travel—namely, reasonable speed combined with a high degree of comfort and safety.

Passengers Incidental

Financially, passenger services must be regarded as merely an adjunct to the goods business, which in itself provides a sufficient reason for the operation of the railway system. All that is needed from the passenger services, therefore, is their out-of-pocket expenses and, if possible, some contribution towards overheads.

On the operating side, the most reasonable approach to the country passenger traffic problem seems to be to maintain a basic stock of luxury type air-conditioned cars—either locomotive-hauled or self-propelled—sufficient to meet normal day-to-day requirements, and a somewhat larger stock of older non-air-conditioned cars to call into service for peak and special traffic. Victorian Railways are doing a great deal to raise the standard of older rolling stock by way of improved seating, lighting and riding qualities ; but the provision of sufficient luxury-type air-conditioned stock to meet peak load requirements would be economically out of the question.

Suburban Traffic

The suburban traffic problem in large cities such as Sydney and Melbourne is, of course, of such magnitude that only some of its broader aspects can be referred to here.

As with country goods services, the justification for suburban railway passenger facilities is purely economic.

A suburban railway system does a vital job at much less than the cost of doing this job by public street transport and at a fraction of the cost of doing it by private car ; therefore, the greater the proportion of the total number of suburban passengers who can be induced to travel by rail, the lower the city's total outlay on transport will be.

If a greater number of passengers can be attracted from street transport, and particularly from private cars, to rail travel, there is an important

Only railways, with their ability to handle high density passenger traffic, can cope with "peak" loadings.

secondary saving in addition to the lower cost of transporting the passengers themselves. This secondary saving results from lessened street congestion to give improved efficiency in the most vital—and also most costly—task of road transport—the local pick-up and delivery of freight.

As the cost of providing suburban passenger service by rail is less than by any other means, it would appear, on ordinary business principles, that the operators of suburban rail services should be able to charge fares sufficiently high to cover costs, yet still low enough to hold a major proportion of the traffic. Unfortunately, they can't ; and the reason is simply that to hold the traffic against the main competitor—private cars—rail fares would have to be competitive with the out-of-pocket cost, rather than the actual cost, of private car travel.

Peak Problems

Another factor operating against the financial stability of suburban railway systems is a growing tendency for peak period traffic to increase relative to off-peak. This is brought about by several influences. Peak period road congestion and parking difficulties are combining to reduce the attractiveness of travel by private car compared with public transport, and particularly by rail which offers, in the peaks, equivalent speed combined with the convenience of parking at suburban stations.

On the other hand, the higher speed of private car transport at off-peak periods when the roads are less congested, together with the spread of television and the development of regional shopping centres, are tending to reduce the level of off-peak traffic.

Every increase in peak traffic lifts costs more than proportionately, as it entails a further investment in costly equipment that is used only twice daily five days per week. Paradoxically, however, peak period rail travellers pay the lowest fares, as they enjoy the benefit of cheap periodical tickets.

Staggered Hours

The overall effect of these tendencies is to increase average costs per passenger-mile and, at the same time, reduce average revenue.

While these tendencies continue—and nothing short of a really radical readjustment of starting and finishing times of work could counter them—and while we have to compete with what people **think** it costs to travel by private car, there is no prospect of a major suburban railway system, such as that of Sydney or Melbourne, becoming financially self-supporting.

Running a suburban railway system is somewhat analogous to operating a painting contractor's business on the basis of working your staff for about four hours daily and at the same time charging rates low enough to undercut the costs of do-it-yourself home-owners. The chances of making a profit are about the same.

This inability to apply the normal business test of profit or loss creates numerous difficulties. It is difficult for the community and the management to judge the efficiency of its railway system, and it is particularly difficult for the management to find a suitable basis on which to judge the justification for capital expenditure.

Some items of capital expenditure are, of course, forced upon the railways. When peak period loading on a particular line reaches uncomfortable levels and housing development in the district indicates that the traffic will continue to grow, there is no option but to expand facilities to cope with the growing traffic, even though there is little doubt that the investment will be unprofitable in the normal sense.

Some items contribute towards the flow of traffic and at the same time are definite money-spinners. Chief among these are the replacement of manual by automatic signalling and of hand-operated level crossing gates by automatically-operated booms. In some instances the contribution made towards the elimination of a level crossing by grade separation will more than pay for itself by the wages saved.

Perhaps the most difficult problem of all, however, is whether capital should be spent on new lines as extensions to or branches from the existing system. As, under existing conditions, there is no likelihood that any new line will yield a profit in the business sense, there is a natural tendency on the part of railway managements to fight shy of the construction of new lines that will only add to the existing financial burden.

New Approach

The conclusion to be drawn is, that the whole question of financing suburban railway systems has to be approached from a new standpoint.

The community appears to be willing enough to spend revenue, that is derived from general rates, on motor expressways without any thought of demanding a profit and loss account, or of ensuring that only those ratepayers who actually make use of the facilities are called upon to pay for them.

Why should not the same line of reasoning be applicable to the fixed plant involved in providing a new railway extension ? After all, any such extension adds enormously to property values in the area concerned.

The fares fixed by the operating authority would then need to cover only the cost of providing, maintaining and operating the trains. This would make them much more competitive with private car travel and would thus be an important influence in diverting passengers from cars to trains — a diversion which has a dual effect in lowering total transport costs.

Published January 1963 by the Victorian Railways.

V. R. Print

3152—62