CHAPTER 5

PROGRESS IN TRANSPORT

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"The true history of the United States is the history of Transportation—in which the names of Railroad Presidents are more significant than those of Presidents of the United States."
—PHILLIP GUEDALLA.

The development of any country or region is very closely linked to the transport services available. The more efficient and economic they are, the greater the benefit they are to the economy. On the other hand, transport services can only develop as far as the demand for them warrants. Being an instantaneous service, transport has to be produced at the time and place that it is required, at a cost that can be afforded and at an efficiency which is acceptable.

The degree of transport needed by the country varies directly with its economic growth. Consider a remote village in, say, New Guinea, where the natives are able to find all their needs from the surrounding country and carry it on their backs to their village. These people need no transport services. But as they come into contact with the white man and their needs become greater, so products have to be taken to them and, in turn, to pay for it, they have to produce something which can be sold in the outside world and so they come into the market for transport service.

As Australia has developed and grown, so the volume of transport needed has grown with it.

In the very early days, of course, sailing ships provided the transport services linking the various colonies as they sprang up. Mostly these were along the coast for this very reason. The fact that Australia's main cities are coastal cities is directly attributable to the necessity of being linked by sea. Ships played a very important part in the development of the country and provided the only practical form of transport for very many years between most parts of Australia.

Being a very dry Continent, Australia has very few inland rivers of any size and consequently, barge transport and paddle-wheel steamers were not of the same benefit in opening up inland areas, compared to the extensive use of these methods of transport in the U.S.A. and Europe. However, there were, particularly in the Murray and Darling areas, paddle-wheel steamers in the early part of the

19th century, and the establishment of these areas as wool-growing areas was directly attributable to the river transport that was possible. It is still possible to see along the Murray River a paddle-wheel steamer of earlier years now kept going for tourist purposes only.

The great bulk of inland transport in the early part of the 19th century was confined to coaches for passengers and bullock and horse teams for freight. The legend of Cobb & Co. is strongly preserved in Australian history and this Company had a very extensive network of coach services, particularly during the years immediately prior to the coming of the railways. Naturally, the bullock teams and horse teams, because of their slow speed, were a long way from being an ideal method of transport, but they did have the effect of allowing the pioneers some method of moving their wool, wheat and other products to the coast and the movement in return of their manufactured requirements.

RAILWAYS

The railways in Australia have developed as separate State systems. The greater part of the railway network is, and always has been, owned by the various State Governments. Each regarded their system as being completely separate and there has been little co-ordination or consultation between them. It is only in the more recent years that there has been a more national outlook by railway executives, and they now meet together frequently for conferences on many different aspects of railway matters and work together for the movement of passengers and freight across State borders, in a way that would have been unimaginable, even 30 years ago. The railways systems now join together to promote the "Railways of Australia" as being able to handle a very wide range of transport.

Because of the inefficiencies with transport in the early part of the 19th century, there was considerable interest in the colony of Sydney, in the success of the railways which had started operations in England. As a result, in 1846 a public meeting was called to discuss a suggestion that a railway line should be built to link Sydney with other towns. After a good deal of investigation the Legislative Council of New South Wales in 1849 passed an Act to establish the Sydney Railway Company. The Company was to be financed partly by public subscription and partly by Government money. The driving force in this formative period, Mr. Charles Cowper, who later became Premier of New South Wales, was the first President of the Board of Directors.

There were plenty of construction problems as there were, of course, not many people with experience of railway operations, and, because of the slow communications and transport, the equipment which

had to come from England involved a 12 months' delay. This meant that the builders were forced to improvise and make what they could in Sydney. At first it was intended to use wooden rails, but later, as iron rails became available, the wooden rails that had already been laid were replaced.

On September 26, 1855, 25 years to the day after the first railway line in England was opened, the new line from Sydney to Parramatta was officially opened. Because the cost of construction had been greater than estimated, the Government had to come to the assistance with more money during the construction period and actually owned the line at the time it was opened. The line, however, was leased to a private company to operate for a period of time after this.

At the same time, the Hunter River Railway Company, which had proposed a line from Newcastle to Maitland, came under Government control. This line was opened in March, 1857.

By 1865, 143 miles of track and 36 stations had been opened and the network extended as far as Penrith, Richmond and Picton and the Newcastle line had been extended to Singleton.

The Blue Mountains, west of Penrith, were a formidable barrier, and for a long time surveyors could find no practical route to cross the mountains. Finally, it was resolved to follow the track of Blaxland, Wentworth and Lawson and to use two zigzags, one on either side of the range, one near Lapstone and the other near Lithgow. Only by this means could the grades be made easy enough for the trains to climb. These zig zags were themselves a tremendous feat and were described as a triumph of engineering for the period. So steep was the route that the surveyors had to be suspended by ropes and tremendous quantities of rock had to be moved. In 1876 the line reached Bathurst.

The southern line was pushed ahead faster because there had not been the physical barriers, and the fertile country of the Southern Tablelands meant that there was a good potential for future traffic for the railway lines. Goulburn was reached in 1869 and Wagga in 1878. The New South Wales Government was anxious to extend the line as far south as possible because the Victorian Government line had reached Wodonga in 1874 and Echuca on the Murray in 1864. Thus, trade from southern New South Wales was being diverted to Melbourne. It was in 1881 that the New South Wales line reached Albury and two years later the Murray was bridged and the two systems were connected. A Customs House was erected in Albury for the train passengers travelling interstate.

Meanwhile, the northern part of the State was being linked up to the line from Newcastle, and Armidale was reached in 1883 and the

line extended to Wallangarra to meet the Queensland system in 1888. But there were still two separate systems within New South Wales, and it was realized that a line from Sydney to Newcastle was necessary. At this stage, to travel to the northern part of the State, passengers had to take a ship from Sydney to Newcastle to join the train. Between Sydney and Newcastle was the Hawkesbury River, and this was a formidable barrier, because of its depth. The line was built from Newcastle to Gosford and then a paddle steamer was used to bridge the river. Finally, in 1889 a bridge was built, and again it was a triumph, being the third largest in the world, the largest of its type in the Southern Hemisphere. It was also significant in that it was the final link in a railway system which then connected Brisbane to Adelaide via Sydney and Melbourne.

The tremendous and fast growth of the railway system is evidenced by the fact that in 1885 the western lines had extended to Hay in the south-west and to Bourke and Narrabri in the north-west. Later years brought the north and south coast lines, the Broken Hill line and numerous spur and connecting lines between the main lines. But in 1885 there were 1,732 miles in the New South Wales system. Seeing that the first line was only 30 years old, this was a tremendous achievement. This was the great railway age for expansion and, in fact, since 1915 only one line of significance has been built in the State — the Broken Hill line.

In the early years the system operated from a station near Redfern and in 1906 the present Central Station was built, although at the time it was criticized as being too large and in the wrong place.

The electrification of the Sydney suburban network and the underground system have been major achievements for the New South Wales railways. Sydney still is the only city in Australia with an underground system, and Melbourne is the only other city with an electrified system. Their presence has been a major factor in the growth of Sydney and the spread and development of the metropolitan area.

These features were planned by a Royal Commission back in 1908 and were strongly supported by Mr. J. C. Bradfield, a Public Works Engineer, who has become famous for his part in the construction of the Sydney Harbour Bridge. Mr. Bradfield saw the three projects as an overall scheme and in this he showed tremendous foresight. As a result, the electrification of Sydney lines commenced with the Illawarra line in 1926 and gradually spread. In 1932 the Town Hall and Wynyard Stations were opened and, with the opening of the Harbour Bridge, electric trains were able to run across the bridge and under the city.

The East Hills and Cronulla lines were later built and electrified and the electrification to Lithgow was completed in 1957 and to Gosford in 1960. In 1968 the line from Liverpool to Campbelltown will be electrified.

In recent years the most significant change to come to the railways has been the introduction of, and steady conversion to, diesel locomotives.

Diesels have the advantage of being able to travel much further without refueling and maintenance. They can maintain faster speeds, haul heavier loads and are more efficient in many ways. They are ideal in a situation where coal and water supplies are scarce, and this is why the Commonwealth Railways was the first to introduce them to Australia on their trans-Australia route across the Nullarbor Plain.

So superior have diesels proved that the New South Wales Government Railways have adopted a policy of phasing out steam locos in favour of diesels, and this will be completed in 1971.

There has been a big improvement in the standard of trains available for passenger travel in the post-war period. Daylight trains, most of them air-conditioned and diesel-powered, have been introduced to supplement and improve the services to country areas. Despite this, the railways find freight much more profitable than passengers. About 32% of their effort goes into providing freight services and this returns 74% of total revenue. Being a Government enterprise, railways for political and social reasons have to keep passenger fares low, rather than charge the actual costs of providing the services.

New South Wales railways have some 25,000 freight vehicles in service. The older ones are being continually withdrawn and replaced by bogie high-speed trucks, and they can travel at 70 miles an hour carrying 40 to 50 tons of cargo. In recent years there has been a big improvement in the method of construction, and efforts made to keep the vehicle weight down have resulted in bulk wheat trucks made of aluminium.

The railways are suited economically for the long haul of heavy products. This is reflected in the task of moving coal and coke from a mine to wharf, to powerhouse, to steel works. Coal in bulk is the largest single item moved by rail in New South Wales. Other significant cargoes are live stock, mineral ores and concentrates, steel and bulk wheat. The wheat silos in country areas are a familiar sight in New South Wales and they are all built on rail sidings, as this is the only way wheat can be moved at anything like an economical cost. These days, practically all wheat is in bulk, and wheat bags are a thing of the past. Other primary produce—milk, fruit, butter, wool and cotton—all move from the country to the city for consumption or export by rail.

Although well over 100 years old, the railways are still playing a vital part in the economy of Australia.

BREAK OF GAUGE PROBLEM

One of the greatest problems and features of the Australian railways has been the variation in gauge between the different systems. There are basically three different gauges in use, 4' 8" in New South Wales and the Commonwealth Railways across the Nullarbor Plain; 5' 3" in Victoria and a large area of South Australia, and 3' 6" in Western Australia, Queensland and Tasmania. Each break of gauge means that passengers and freight have to be transhipped and while this is inconvenient to passengers it is a very expensive operation for freight and it also means that each system must maintain a larger number of vehicles than would be necessary if they could be operated interstate.

It is interesting to record how such a state of affairs occurred and had its origin before the first lines were built. In 1846 the House of Commons in England passed a Bill decreeing that all railways should have 4' 8½" gauge. This information was passed on to the colonies and they readily agreed to this gauge in drawing up plans for their own railway systems. Then the Sydney Railway Company, between the time that it was incorporated and commenced building, appointed an Irishman as their engineer. As Ireland had already settled on the 5' 3" gauge, he managed to persuade the Company to change the gauge to 5' 3". The British Government agreed to the change and Victoria agreed to follow suit.

This was no sooner done than the Irishman resigned from the Sydney Company and a Scotsman succeeded, and because of his experience and qualifications, he persuaded the Company to change their decision again, and the Sydney Railway Company decided to go back to the 4' 8½" gauge. Meanwhile, Victoria had gone ahead with the plans for 5' 3", had spent money accordingly, and it was too late as far as they were concerned, so they decided to retain the 5' 3" gauge. In due course the South Australian railways followed Victoria's lead.

In later years, Queensland and Western Australia adopted the 3' 6", mainly because their greater distances meant that they had to find the lowest possible construction cost and the 3' 6" was cheaper to lay than the wider gauge.

After Federation, the Commonwealth Government proceeded with the building of the line linking the eastern States with Western Australia. They adopted the standard gauge, 4' 8½", between Port Pirie and Kalgoorlie.
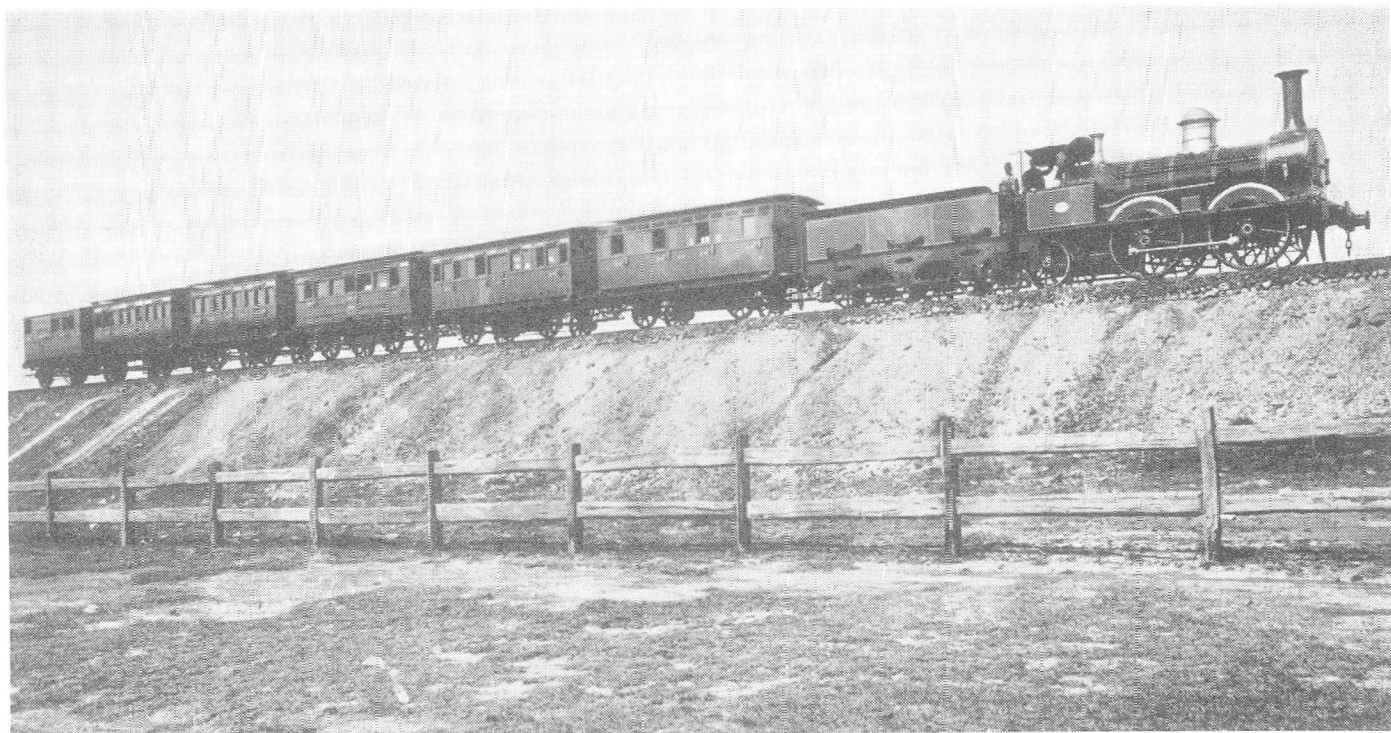
The first train in New South Wales.

The tremendous problems with the different gauges became apparent early in the 20th century and successive governments and committees investigated the practicability of standardizing, but they all were abandoned because of the tremendous cost involved.

In 1932, the Clarence River at Grafton was bridged, and this meant the North Coast line from Sydney continued to Brisbane linking Sydney and Brisbane with 4' 8". Until then, interstate travellers had gone via the Tablelands route and changed at Wallangarra.

During the Second World War, and particularly during the Pacific Campaign when there were huge numbers of American troops in Australia, the pressure on the railways became severe. It was found that the delays and inconvenience of the broken gauge, together with the tremendous number of men needed to trans-ship freight, was a major problem to the armed forces. The immediate post-war situation also resulted in many bottle-necks.

Another significant factor was the Privy Council's decision in 1954 that interstate road tax was invalid, which meant that the railways had to compete against road transport without taxation to protect them.

Accordingly, in 1956, a Federal Member of Parliament, Mr. W. C. Wentworth, M.P., successfully moved for the creation of a committee of Government members to investigate rail standardization. Mr. Wentworth was the chairman of the committee, and was undoubtedly largely responsible for the plan that the committee presented. This became known as the Wentworth Report.

The scheme was different from previous schemes put forward in the past, because Wentworth proposed that the major interstate lines only should be standardized, rather than trying to convert whole systems. The Wentworth Report isolated the three sections necessary. These consisted of the line between Albury and Melbourne, a distance of 197 miles, to provide a 4' 8½" gauge between Sydney and Melbourne. The second line was that between Broken Hill and Adelaide via Port Pirie. This would link the New South Wales system with Adelaide and with the Commonwealth trans-Australia line at Port Pirie, which was already 4' 8½" as far as Kalgoorlie. The third and final link was that between Kalgoorlie and Perth to connect up to the eastern States. Because this Report concentrated on the main lines and produced figures to show the tremendous economies that would result from the operations, it was accepted by the Government, and the Federal Parliament resolved to go ahead along the lines of the Wentworth Report.

Each of the State Governments negotiated with the Commonwealth regarding the arrangements and the first stage was the line

from Melbourne to Albury, which was commenced in 1958 and finished in 1962. New terminals were built in Melbourne for both passengers and freight. In 1962 the Western Australian Government arranged with the Commonwealth for finance for the Kalgoorlie to Perth section to be converted to standard gauge, and this was designed to reach Koolyanobbing for movement of iron ore to Perth and Fremantle. The third stage between Port Pirie and Broken Hill is also being rebuilt, and this will assist the mines at Broken Hill that rely on this line for transport of their minerals to Port Pirie, as it will mean a more efficient and more economical method of transport than the narrower gauge. Both sections are scheduled to be ready early in 1969, and this will allow passengers to go from Sydney to Perth in two and a half days and freight in four days.

Because of the newer types of rolling stock being built, it has been found possible to make them bogie-exchangeable. Briefly, this consists of a system whereby trucks are jacked off one set of bogies and lowered on to another set of a different gauge. This process is much faster and more efficient than a trans-shipment of the freight, and by locating bogie exchange depots at strategic points, a tremendous amount of freight can be sent between places of different gauges without trans-shipment. The link from Port Pirie to Adelaide will be dependent on this system at this stage, as no plans have been made for standardization of this line. Thus the standard gauge will shortly connect all mainline capitals, and this has been brought about very largely by the vision of one man, a Federal Member of Parliament, who by his persistence and imagination was able to cut the huge problem down to its essentials to find a practicable and economical solution.

ROAD TRANSPORT

The road transport industry is a classic example of an industry that has very little glamour and yet is of tremendous importance to the whole community because of the work that is carried out, and upon which so many people are dependent. Those who contributed to the development of the efficient road transport services that we now take for granted, had a tremendous range of problems of one sort or another.

In the early days, of course, there were no motor vehicles and the horse was the motive power for road transport operators who provided a link between railway and wharf and to areas where the railway had not reached. It wasn't until about 1914 that the first trucks appeared on the roads. Until then, the horse teams, because of their slow speed, were suitable only for shorter distances. The horse team travelled at about two and a half miles an hour and it meant a journey

between Sydney and Parramatta took six to seven hours. Because of this, most goods going from Sydney to the outer suburbs, as they were then—places like Burwood and Kogarah—went by rail. Manly and Watson's Bay were served by boat and the north side of the Harbour was served by rail to Hornsby. There was a punt across the Harbour, but this was not popular with the carriers of the day because of the
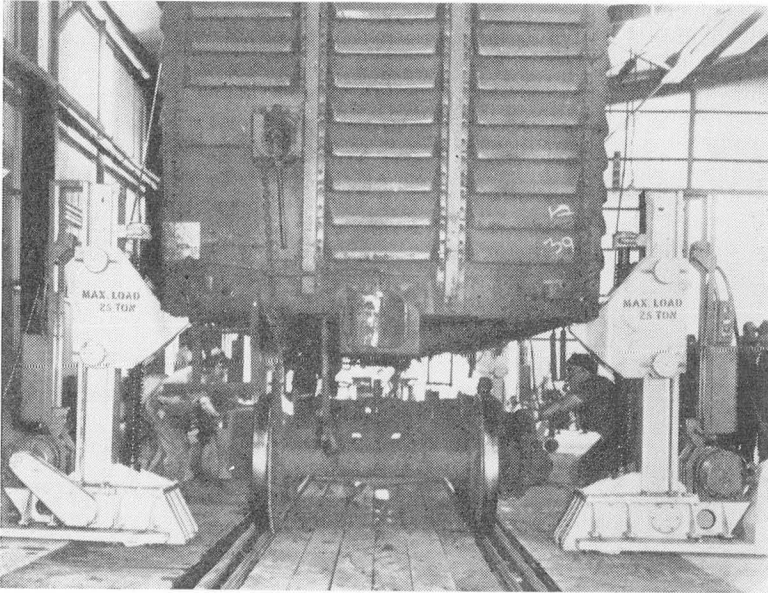
Bogie change in operation allows a rail truck to be changed from one size bogie to another.
Photograph: N.S.W. Railways Department.

steep pull-up for the horses on the north side. At this time, the city had numerous stables on all the major streets and thousands of horses lived and worked in the city area.

After the First World War, motor vehicles were gradually introduced and tried out for various jobs. The roads were hardly suitable and carriers still needed their horse teams to pull the trucks out of quagmires even on places like Parramatta Road. The trucks of the period were unreliable and temperamental, had solid tyres, and it was difficult to see how they could ever replace the horses. By 1930 they had improved, and as they became more efficient, and roads improved, became more widely used. In particular, they had started to trespass on the role which the railways had always had to themselves, and being State owned, this brought about the indignation of the State Governments.

In 1931, Mr. Jack Lang, then Premier of New South Wales, raised this problem at the Premiers' Conference, and later introduced the New South Wales Transport Co-ordination Act. The effect of this was a road tax on all road vehicles carrying passengers or freight competing with the railways. Road vehicles were allowed only to travel 25 miles, although this was later increased to the present figure of 50 miles. This tax added tremendous costs to road carriers, and it meant it was impossible for them to compete with the railways and had the effect the Government intended of confining road transport to local areas.

A Caldwell Vale truck manufactured in Sydney in 1909. This was the first road train in Australia and was operated by the Australian Pastoral Co. in the western part of Queensland where this photograph was taken. The vehicle had power steering, four-wheel drive and had a top speed of six miles per hour. On a test run, one of them carried eleven tons of wool up Margaret Street, Sydney, on the hill between Kent and Clarence Streets. About twenty-five of these were made and one was used by the Federal Government for the construction of the Duntroon Military College.

At this stage, Australia was importing most secondary goods from overseas and these had to be moved from the wharf to a warehouse and when sold, from the warehouse to the country areas by rail. The primary produce coming in from the country had to be moved from rail to store to wharf, and it was this local cartage that became the province of road transport. In fact, this still is the major function of road transport and it is estimated that between 80 and 90 per cent. of road transport vehicles to-day are employed in short hauls.

The Second World War brought problems to the road transport industry. Petrol rationing was introduced as all petrol was imported and became very valuable. Various types of alternative fuels were used

and vehicles were fitted with gas bags to carry their own supply of gas. Others had charcoal burners and many other novel methods of producing power, none of course being as effective as the normal petrol fuel. As the trucks were imported, supplies of spare parts became hard to obtain and new vehicles impossible — in fact, many second-hand vehicles were taken by the government for military purposes. A further problem was the loss of many experienced men who followed the call and joined the armed forces. At this time, work became very brisk and hectic because of the tremendous amount of equipment and supplies needed by the forces, both Australian and U.S.

This photograph shows a gas producer unit fitted to a truck operated during the Second World War.

One good thing resulting from this intense war effort was the pallet, which was introduced by the Americans. This is a wooden platform on which goods can be stacked so that a whole stack can be lifted by a fork lift truck. This simple idea results in tremendous savings of labour and is now very widely used in all classes of industry.

A few horses still remained in carrier service during the war years, doing short runs as another way of beating the petrol shortage.

Petrol rationing was finally removed in 1949 and road transport was set for a period of tremendous expansion. Vehicles had been improved tremendously by the trials and lessons of war service, and with expansion of trade in the free world secondary industry was growing; together with an upsurge in national development and building projects, and a huge amount of work was falling on road trucks.

Take the Snowy River Scheme as an example. This would have been impossible without modern road transport. Thousands of trucks

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were needed for the hauling of cement, machinery and equipment. A special 120-ton low-loader was built with two prime movers to transport some of the heavy machinery into the mountains to the power stations.

In Northern Australia, road trains have rapidly taken from drovers the task of moving cattle. Whereas graziers were once restricted to certain routes and systems for the movement of their stock to market, the road train has meant a much greater degree of flexibility. Road transport can move a herd of cattle in hours, where it would take a drover months. New cattle breeding and fattening areas are possible as new "beef roads" are specially built for the development of the beef industry. As these roads are completed, road transport will play an even larger part in this vital industry to Northern Australia. Actually the cost of road transport is, in many cases, more expensive than droving, but its greater advantages mean that it is worth the grazier's while to pay the extra charges. One of the problems of this type of transport is that they have little or no back-loading, and the forward trip must pay the costs of the return journey.

These days, trucks come in an immense variety of sizes and types. A large number have been built to specialize in the movement of a particular type of freight. On to-day's roads, trucks can be seen specializing in ready mixed cement, bulk flour, bulk petrol or oil, bulk chemicals, bulk liquid sugar, bulk beer, bulk wine, bulk fruit juice, bulk milk and bulk liquid chocolate, carbon black in bulk and other granulated materials, bulk wheat, stock carriers, refrigerated and insulated trucks, armoured cars, brick trucks, timber jinkers and low-loaders. Low-loaders, of course, are necessary for the handling of large indivisible loads which cannot be legally and safely carried on conventional trucks.

In the last 20 years there has been a tremendous improvement in the efficiency of trucks and ancillary equipment. Specialization into different types of freight means that enormous amounts can be saved in transport costs, because materials can be handled more quickly in bulk as they can be pumped, tipped, etc. Money is also saved in packing materials such as bags, drums, cases, etc., which would otherwise be involved. Such specialization can only occur when there is a continual movement of a truck, and normally on shorter distances where the lack of back-loading in a suitable form is not so important to the economics of the operation. Of course, if back-loading is available in a suitable form and quantity, the operation can be of a much longer length.

Vehicles have improved in power and performance, and, in a period when costs generally have risen consistently, the operating costs of trucks have remained remarkably stable because of their increasing efficiency, particularly on longer runs.

There are two broad classifications for carriers, professional and ancillary. Professional covers the company or owner-driver who carries other peoples' goods for payment. Ancillary is the name given to companies or individuals, such as farmers who own their own trucks to carry their own goods. It is hard statistically to separate the two, but it is generally recognized that professional carriers own the majority of the larger vehicles, doing a greater mileage a year, and ancillary users own the majority of the smaller vehicles, e.g., utilities and 30-cwt. trucks. Overall it is estimated that about 25% of trucks and commercial vehicles are professional vehicles. To show the growth of the industry, the following figures are the number of commercial vehicle registrations in Australia from 1923:

1923	.. 7,156	1935	.. 56,055	1950	.. 162,625
1925	.. 17,267	1940	.. 75,887	1955	.. 227,353
1930	.. 47,289	1945	.. 83,980	1960	.. 329,157

Australia shares with New Zealand the distinction of having the highest ratio of commercial vehicles per population in the world—a figure of one vehicle to thirteen people.

Thus Australia is well served by the road transport industry, and without doubt it is an absolutely essential servant to the whole community.

INTERSTATE TRANSPORT

With the development of Australia, the type of transport required has changed considerably. A different type of transport is necessary for movement of the produce of secondary industry as against the requirements of primary producers. With primary produce — wool, wheat, meat, fruit, etc., the movement is in large quantities from country areas, mainly for export. Rail transport is used to the port and sometimes straight to the ship's side. At other times road transport is used for movement to the wharf or to a store pending shipment.

Imports from overseas go straight from the wharf to a warehouse, and then are distributed throughout the State mainly by rail. In Australia, where each State capital is also a major port, this pattern of trade requires very little interstate transport.

However, the tremendous growth of secondary industry, particularly since the end of the Second World War, has changed this pattern, and transport services have had to grow accordingly.

These days, a factory buys its materials either from Australian or overseas sources, often from interstate suppliers. These materials then have to be moved to the factory. After production, goods are distributed

all over Australia. With the development of bigger and more expensive machinery and higher production rates, the tendency is to have fewer factories, each with a larger capacity, serving a wider area. The economies of production are greater than the cost of the extra transport required, and the growth of interstate transport has, for this reason, been phenomenal.

Because the railways are State owned, the State Government, in the '30's, became aware of the threat to their railways systems, and in 1931, the New South Wales Government introduced a coordination tax. This tax was at the rate of 3d. per ton per mile for journeys of 25 miles in competition with railways. During the '30's, this was not such a disastrous move because the road vehicles at the time were not really suitable for long distances anyway.

In the immediate post-war years, the tremendous pressures that were placed on the railways caught up with the lack of maintenance and new equipment during the war years, and for a period it was necessary for road tax to be suspended so that road operators could assist the railways to move their cargo. This gave many intrepid ex-servicemen the opportunity to start as interstate hauliers. With the availability of ex-service vehicles and the spirit of adventure that war-time service had given they undertook what was then a hazardous undertaking. However, they gave good service and the companies who utilized them came to value the services they provided.

In due course, the road tax was levied again, and the road operators were faced with the choice of either going out of business or increasing their rates substantially to cover the tax. They joined forces and formed an Association, and after seeking legal advice, decided to challenge the validity of the tax on constitutional grounds. The Australian Constitution says in Section 92 that trade between the States shall be free. This was meant to convey that the States should not charge customs duties on trade from one State to another, and there have been considerable legal arguments as to what other protections this clause provides. Finally, the road operators, in November, 1954, won an appeal to the Privy Council in the now famous Hughes and Vale case. Hughes and Vale were two operators who agreed to challenge the tax on behalf of the industry. The Privy Council held that road tax on interstate transport was unconstitutional, and this judgement has had a profound effect on the whole industry. The winning of this judgement was due very largely to the new men who had come into the industry and who were determined to see that they were allowed an equal opportunity to compete in the provision of transport for the benefit of all concerned.

About this time, the railways had introduced what at that stage was a new concept in their operations known as bulk loading. Previously there had been a complicated rate structure on which all freight rates were based depending on the commodity moved. The railways' new concept was that the type of commodity was irrelevant, and the rates should be based on the amount of work involved in providing the transport. They entered into contracts with companies who undertook to load merchandise into a rail vehicle, to its maximum capacity, and who would then pay one charge for complete movement of the truck. Transport companies came to realize the advantages of this system and the railways were successful in winning some business from road transport, which, naturally enough, was the railways' objective. Rates were adjusted to make rail competitive with road transport, and rail services were improved to make rail transport more attractive.

The next stage was the introduction of containers, some of which were built and provided by the railways systems and some by private transport organizations. These containers enabled goods to be loaded at the factory door and eliminated further handling until arrival at the destination warehouse. Containers had advantages in the reduction of pillage and packing, but the difficulties with them were the size of the load necessary to utilize them sufficiently and the restricted space in many premises where they were to be loaded and unloaded. However, they have proved very successful for many industries and play a very useful role in the transport industry.

The next development was Flexi-vans. These are really huge containers, 35 ft. long, and able to carry up to 20 tons of cargo. The difference is that instead of being lifted on and off rail trucks by crane, they are carried on a special rail truck fitted with a turntable which allows them to be slid into position and thus moved from road to rail vehicles and vice versa. It is significant that companies utilizing Flexi-vans are major transport organizations that once relied on road transport for their interstate movement. Flexi-vans provide another example of coordination between road and rail. In the interstate trade, this has been achieved not by Government regulations or legislation, but by the natural play of economic forces.

A spectacular development in interstate transport in recent years has been the introduction and growth of containerized and roll-on roll-off shipping services.

Tasmania, being an island, suffered disadvantages in slow and costly transport in the post-war years compared with other States, which were able to utilize the faster and more economical land transport services, particularly between adjacent States.

The Flexi Van. The van is mounted on a turntable on a rail truck and can be manually swung so that it can be locked on to the road vehicle before being moved away.

Photograph: N.S.W. Railways Department.

Australian shipping received new impetus in 1958 with the establishment by the Commonwealth Government of the Australian National Line, which took over the shipping interests of the Commonwealth Government. The A.N.L. realized a new method of transport was necessary because of the high cost involved with loading and unloading ships and the amount of time spent by ships idle in port. Accordingly, in 1959, a new concept was introduced with the building of the "Princess of Tasmania". Her schedule called for six trips per week between Melbourne and Devonport, carrying passengers and their cars. All freight was loaded into trailers, or containers on trailers, so that it could be rolled on and off the vessel. Such was her success that very shortly the "Bass Trader" was built to handle cargo only from Melbourne to Tasmania.

The significant factor about the success of these vessels was that overseas ferry runs covered relatively short distances—for instance, across the Irish Sea or English Channel. The 250 miles between Melbourne and Tasmania became the longest ferry run anywhere in the world. This is significant because this type of vessel contains a certain amount of waste space compared with the stowing of cargo in conventional ships, but the disadvantage is offset by the faster turn around of a ferry or roll-on roll-off ship. It follows that the longer the journey the more important is the maximum utilization of space.

However, the services from Melbourne proved so successful that plans were then made for the linking of Sydney to Tasmania, and the "Empress of Australia" was built for this trade, carrying passengers and cargo. She commenced operations in January, 1965. Just prior to this the Union Steam Ship Company introduced two ships, the *Seaway Queen* and the *Seaway King*, to run from Melbourne and Sydney to Hobart, carrying cargo only.

Tasmania's trade has brought with it developments in the types of equipment most suitable for the handling of cargo. A particular type of container unit has been developed, consisting of a base platform with collapsible sides and ends. This unit has a capacity of 12 tons weight and 1,000 cubic feet, and its flexibility has made it very suitable for the Tasmanian trade as the sides and ends can be removed for the handling of timber, aluminium, paper, etc., which is the main cargo from Tasmania.

One important feature of the Tasmanian services is that while the shipping companies provide the vessels and special equipment at the wharf, they rely on private transport companies or forwarders to provide the carrying equipment, containers and trailers. These forwarders actually contract with the owners of the goods and provide a door-to-door

service, sub-contracting the sea line haul to the shipping company. It is a very effective and efficient method and retains the advantages of competition (between the forwarders) when economically only one ship is justified on the run.

The A.N.L. have plans for the extension of their services and will shortly link North Queensland with Sydney and Melbourne by the same type of service.

A different approach to the use of new shipping methods was adopted by the Adelaide Steam Ship Company and the Associated Steam Ship Companies.

Adelaide Steam Ship Company was actually first when they built and introduced the *Troubridge* to run from Adelaide to Kangaroo Island and Port Lincoln within South Australia. She uses company-owned semi-trailers and the shipping company provides a door-to-door service. The Associated Steam Ship Co. was one of those interstate shipping companies that in 1959 realized the traditional methods of handling cargo were no longer good enough. They noticed the severe competition from road and rail transport. For short runs between adjacent States they had lost most of their general cargo, and even in distances as far as from Sydney and Melbourne to Fremantle they were losing freight to land transport. Accordingly, a seatainer was designed and built to be handled by existing interstate ships. This was a container made of steel, mostly with a 120-cubic-foot capacity and a maximum load of three tons weight. Seatainers could be loaded on the wharf or at the consignor's premises, and could be lifted with the ship's normal gear. The introduction of these containers cut down handling, reduced pillage and saved packing.

Shipping companies also made history by departing from the 40 cubic feet shipping ton, which had always been used as the basis for charging freight rates. They adopted a sliding scale per ton weight, depending on the cubic measurement of the ton. This they were forced to do because land transport was much cheaper for light cargo, particularly because of the historical method of freight rates.

By 1962, the interstate shipping companies had 5,000 of these seatainers and it became apparent that it would be necessary to design a ship to handle these containers, to provide for the lifting on and off with appropriate gear on the ship, and the stowage in the ship in the most efficient way to save time and space. Accordingly, the *Kooringa* was planned, and was introduced on the Melbourne to Fremantle run in 1964. She became Australia's first pure container ship. Associated Steam Ship work under the policy of controlling the door-to-door movement themselves, and have their own or contract companies to do the cartage to and from the wharf.

SHIPPING

Sea transport is the oldest method of transport, and while it has changed in form and emphasis over the years, it still remains of tremendous importance to Australia.

As an island nation, we are almost totally dependent on ships for overseas trade. Even with the fantastic advances in aviation it is difficult to imagine that the time will ever come when planes will be able to take over from ships the movement of cargo, particularly the heavy and less valuable lines.

Sydney, of course, is only one port in the hundreds around the Australian coast, but it is the oldest and largest and reflects the gradual change in shipping over the years. Sydney Cove, or the Circular Quay area, was the original shipping port, and in the earlier years, ships discharging were anchored in the Cove and their cargo was taken ashore at rather primitive wharves around the Cove. In 1800, in an effort to place the arrangements on a commercial basis, the first wharfage charges were imposed and this consisted of 6d. for every package that was landed. It was not until 1822 that this was extended to cover exports, and the charges re-defined to take the size of the package into account. In 1846 the Government adopted the policy of allowing private companies the lease of a wharf, and left them to collect their own wharfage and harbour dues from ship owners and merchants. However, by 1870, with 1,006 vessels using the wharf for the year, the strain on wharves was so great that it was necessary to change the policy, and in 1874, the Government appointed a collection manager to ensure the better utilization of the limited number of wharves in use. It was not until 1888 that wharves were built in Woolloomooloo Bay, and it was in 1892 that the Darling Harbour wharves were built. At this time, private wharves and jetties were being built around the harbour and companies used barges to move cargo to their own private wharves, in this way avoiding wharfage dues which were payable for cargo landed at Government wharves.

In 1901 the Sydney Harbour Trust was established, and was empowered to charge wharfage on all cargo coming into the port, irrespective of the wharf used.

There was considerable argument as to whether goods being transhipped should pay wharfage, as many felt it would hinder Sydney's development as a port in which the transhipment of cargo was quite important. However, a rate was finally struck for transhipment of cargo. At first goods from intrastate were free, but this had to be amended, as it meant extra charges were being levied on interstate cargo, which was contrary to the Federal Constitution. In 1936, the Maritime Services Board was established in its present form. The Board now

controls all ports in New South Wales, but in other States there are instances where there is a separate authority for every port. This results in varying charges and conditions between Australian ports.

Actually, the large number of people, authorities and organizations involved in the shipping of cargo have always presented a problem. Apart from the owner of the goods, an inward shipment is also the concern of the shipping company, the stevedoring company, the Port Authority, the waterside worker, the Customs Department, the Customs agent and the carrier who collects the cargo from the wharf. Lack of coordination or slowness by any one of these people can result in tremendous delays and congestion on the waterfront. Future promise of containerized cargo will go a long way towards avoiding these problems.

While shipping still plays an important and vital role in Australia's transport effort, the significant thing is the changing emphasis. Whereas at one stage general cargo was the main trade, there has been an increasing volume of bulk cargoes in recent years. Nowadays on the Australian coast bulk cargoes such as coal, iron ore, limestone and cement, petrol and crude oils are responsible for the largest volume of shipping activity.

By the free play of economic forces, shipping has found its best role in the handling of large, heavy cargo for longer distances.

AIRLINES

In a review of transport history, the award for the most spectacular growth must go to the airlines. Within the lifetime of most people there have been incredible changes and developments in this rapidly growing form of transport. After experimentation with and the development of 'planes in the early years, the 1930's brought men who could see the commercial possibilities of aviation, and these men felt that 'planes had reached the stage of development where they could be relied on to provide service with safety. Initially, many of these gave "joy rides" and chartered planes, but as the demand established itself they set out to provide regular services for both passengers and freight.

Typical of these men was the Holyman family of Tasmania. In 1932 two brothers, Victor and Ivan, left their family shipping business to commence an air service to Flinders Island. They later extended this service to Melbourne. Victor was killed in an air crash, but Ivan carried on and in 1936 gained the shipping company's support financially and was able to form A.N.A., or Australian National Airways. A.N.A. gradually expanded to provide Australia-wide service, and was able to play a significant part during the Second World War with the movement of supplies and personnel.

In 1945 the Labour Government of the time tried to nationalize airlines, and A.N.A. were in the forefront of the fight against this plan. Subsequently they won the case and this forced the Federal Government to establish the National Airlines Commission in 1946. The Commission operates T.A.A., which, since 1946, has grown to become an important airline in Australia.

In 1956 A.N.A. found the rapid growth of the industry and the competition from T.A.A. meant some serious financial problems. The Federal Government were faced with the prospect that if A.N.A. were allowed to go out of existence, or be taken over by T.A.A., Australia would be left with only one main domestic airline, which was completely contrary to the Government policy at this time—of maintaining competition in the airline industry because of the advantages obtained by passengers and general public. Ansett Transport Industries offered to take over the assets of A.N.A., and this was found to be an acceptable solution, so Ansett-A.N.A. was formed to be the private enterprise airline on the Australian scene.

Ansett had also started back in the '30's. The founder, Mr. Reginald Ansett, was refused permission to run road passenger services from Hamilton to Melbourne, and to overcome this obstacle he obtained a 'plane and arranged an air service. He too gradually expanded, and by the time of the Second World War had several services to towns in Victoria and New South Wales. In post-war years, Ansett extended his organization to serve country areas of both States and also some capital cities, until the opportunity came to buy A.N.A.

Another pioneer, who is of particular interest to New South Wales, is Mr. Charles Butler. Mr. Butler commenced business in 1934 in Cootamundra, and gradually built up Butler Air Transport. Particularly after the Second World War, this company reached into all parts of New South Wales and became a very important service to the country people. Butler operated profitably and gave good service, and the business thrived. Their problems began when they extended their services interstate to Melbourne in 1955, as they then competed with interstate airlines. A.N.A. held shares in Butler, and when Ansett took over A.N.A. the Butler shares which Ansett acquired, together with others they were able to buy, enabled Ansett to take over Butler in 1958 and make it an Ansett subsidiary company. In 1959, the name of this Company was changed to Airlines of New South Wales.

Over the years, a spectacular change has come about with the type of aircraft. In 1947 the latest model was the DC3. This carried 21 passengers and flew at 130 miles per hour. The DC9's and 727's of 1967 carry over 90 passengers and fly at 430 miles per hour. Thus, fewer aircraft are able to do considerably more work because of their greater

loads and faster speeds. An idea of the growth of this industry can be obtained by the comparison of the following statistics selected from 1947 and 1965.

	1947	1965
Route miles	36,228	93,284
Hours flown	160,159	270,915
Miles flown (millions)	23	56,675
Passengers carried	857,574	4,118,733
Freight carried (tons)	12,352	74,595

It is obvious from these figures that a tremendous amount of work is now carried out by the airlines, and they play an important role in the economy of Australia in 1967. Businesses particularly would be lost without airlines to move their cargo or personnel on business trips.

The growth of the airline industry is in itself a reflection of the sophistication of Australia's economy. The tremendous changes which have taken place in all fields have resulted in differences in the types of transport required, and the airlines are a very good indication of this.

In Australia today, all forms of transport have a part to play, all have achieved a particular function, and this function is best spelled out by freedom of enterprise, sometimes privately owned, sometimes Government owned, working side by side, and allowing economic forces only to decide the role of each particular form of transport. Australia is well served by the transport network now in existence, but undoubtedly there is a lot more progress and development to come in years ahead.