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NEW ZEALAND.

AMERICAN RAILROADS

(REPORT OF INQUIRIES MADE RESPECTING): BY MR. J. P. MAXWELL.

Presented to both Houses of the General Assembly by Command of His Excellency.

Mr. J. P. MAXWELL, General Manager, New Zealand Railways, to the Hon. the MINISTER for PUBLIC WORKS.

SIR,— 29th February, 1888.

I have the honour to report that, in accordance with instructions received from the Agent-General to make inquiries respecting American railroads, I proceeded to New York from England, arriving there on the 27th December, 1887. After making inquiries in the vicinity of New York and Philadelphia, I proceeded to Buffalo, and thence to Chicago, Topeka, Pueblo, Denver, Ogden, Portland (Oregon), and San Francisco, travelling over the Pennsylvania Railroad, the New York Central, Michigan Central, Chicago and Alton; Atchison, Topeka, and Santa Fé; Denver and Rio Grande, Union Pacific, Oregon Short Line, and the Oregon and Californian railroads. I visited the Baldwin Locomotive Works at Philadelphia, the largest of the kind in the world, the last year's work being 653 locomotives; also the Rogers Locomotive Works at Paterson; Jackson and Sharp's carriage works, Wilmington; the Altona Workshops, on the Pennsylvania Railroad; the Pullman-car Works, the Allen Paper-wheel Works, and the Denver–Rio Grande workshops at Burnham, Denver, &c. I had the opportunity of consulting and obtaining information from some of the general officers of the New York Central Railroad, at New York and Buffalo; the Pennsylvania Railroad, at Philadelphia and Altona; the Adams Express Company; the Illinois Central, at Chicago; the Denver–Rio Grande, at Denver; the Oregon–California Railroad, at Portland; and the Central Pacific, at San Francisco; and also Mr. Albert Fink, Commissioner of the Trunk Line Association, at New York, and Mr. Blanchard, Commissioner of the Central Traffic Association, at Chicago.

The object in following the route named was to see something of railroad business in the more remote districts. The lines in the East are situated among a population of many millions, and are among cities of great magnitude. They serve great manufacturing districts; their traffic is very great; their locomotives, rolling-stock, and roads are of the heaviest calibre. They run passenger-trains at great speeds, in keeping with their appliances and roads, with the needs of the vast population they serve, and the great distances they traverse. The conditions they work under are remotely different from those attending the colonial railways, and, there being little in common in the conditions of traffic, we are less likely to find them of value to us in furnishing precedent for colonial practice than in those roads farther west. The New York Central Vestibule Express runs 953 miles, from New York to Chicago, in twenty-five hours, averaging nearly thirty-nine miles an hour, with sleeping-, dining-, and drawing-room cars of the most expensive and luxurious description, connecting New York, with 2,500,000 people, and Chicago, with 600,000 people. The Pennsylvania Railroad runs a similar train to Chicago. Its express train from New York to Philadelphia, ninety-one miles, is run in two hours five minutes. Philadelphia has nearly 1,000,000 people. This company is employing 50-ton locomotives, and has cars to carry up to 60,000lb. of freight. The Illinois Central is a line traversing a well-settled and productive country, and is connected with the cities of Chicago and New Orleans, but has different conditions of traffic. After going west from Chicago the route I followed leads into districts which are very thinly populated. The Denver–Rio Grande system is of especial interest. It is of 3ft. gauge, and traverses a mountainous district, with maximum grades of 1 in 25, and curves sometimes 200ft. radius. It has 53lb. and 30lb. rails. The line crosses the Rocky Mountains at an elevation of 10,850ft., and connects Denver—70,000 population—with Salt Lake—20,000; distance, 771 miles. The country is thinly peopled; the traffic is chiefly minerals and cattle. From Ogden to Portland, Oregon, 885 miles, the country is very thinly peopled. The Oregon country produces timber, grain, sheep, and cattle. Portland, on the Columbia River,

has about 40,000 people. I was thus able to see and inquire into the general features of the working of four well-defined groups of lines—first, among the densely-peopled eastern cities; second, in the central, producing States; third, a narrow-gauge system in a mineral district; fourth, a system traversing the more remote agricultural and pastoral districts.

In considering the remarks I have to make, it must be borne in mind that my visit was very brief, and that some of the salient points only of the enormous system—which, on the 31st December, 1887, was reckoned at 150,000 miles—could be touched in my inquiries; but, as I had an opportunity of consulting some of the best-known railway experts in the States, representing, in various ways, a very large proportion of the system, the information obtained may no doubt be taken in a general way as a fair indication of American practice.

To any criticisms I may appear to make it may be reasonably objected that the system is so vast and its growth so rapid that no individual who has not been intimately and professionally concerned in a large way for some years with railway management in the States can realise the great difficulties attendant on organization and working. In the year 1887, 12,000 miles of railway were opened.

When we consider the effect as regards the new traffic brought to existing lines, the new competition introduced, the supply of rolling-stock and engines needed, the great staff-changes which such rapid extension involves, and the effect on accommodation and appliances at existing stations and ports, it must be allowed that the difficulty attendant on meeting such an unparalleled development must be great, and we cannot but admire the wonderful way in which the services are conducted in the face of such a growth. At the same time, we should not therefore neglect to point out what appear to be defects which, in the absence of such difficulties, need not be permitted in other countries under much simpler conditions. I must not therefore be considered to be criticizing American railroad-management, but rather as endeavouring to point out those things which it is desirable for us to follow or to avoid.

In America, undoubtedly we find much more in railway management that is of value to us than we shall do, generally speaking, in Europe: not that railways in America are more perfect (they are, indeed, less so), or that their management is more efficiently or successfully carried on, but because the circumstances attendant on railways in this country differ less from our own than they do in Europe. After opportunities of seeing and learning something about the operation of Italian, Belgian, and French railways, and renewing my acquaintance with English railways, it seemed to me that the English were in advance of the rest; but we cannot follow the English practice in most ways, because we have not the population to work on, and because, physically, our lines are so much inferior, both on account of the physical features of the country and through their light construction, which it was necessary to adopt to suit the financial condition of so small a community as ours.

The United States had, at the end of 1886, about 138,000 miles of railroad; they are stated to have earned about 3¼ per cent. net on the total capital and debt. The previous year they earned 3⅓ per cent.

In inquiring into particulars of working, statistics are often compared and criticized without knowledge of or reference to the conditions of working, thus leading to very erroneous inferences.

The primary use of railway statistics is to guide and inform the persons in charge, to enable them to control and regulate their working. The railways in the United States differ most widely amongst themselves in the conditions of working, and from the conditions under which the colonial lines subsist. We cannot judge by figures, unless we know the conditions, what may be the relative merits of the management.

It would be difficult to find out what rate of interest the United States railways pay on their cost, as the cost could not be known without an intimate knowledge of the history of each company. The capital stock and debt at the present time do not represent the actual cost of the lines. It has been modified in various ways. The enormous land-grants made to many companies are a disturbing element. The Northern Pacific Railroad, for instance, had land-grants of 48,000,000 acres. The great number of bankruptcies of railway companies is another disturbing element. For example, the report of the State Commissioners for 1886 says, with reference to the official railway statistics for the State of New York: "In consequence of the reorganization of the West Shore Railroad Company . . . . . its stock and debt was reduced from $125,924,339 to $60,000,000, and the cost of road and equipment from $101,552,487 to $60,000,000." Again, the Denver-Rio Grande Railway, I was informed, had been in the hands of a Receiver, and had been reorganized; and its present capital does not represent half its actual cost. Mr. Jeffry, General Manager of the Illinois Central Railroad, says, of the railroads in Illinois State in 1886, that twelve companies in the State of Illinois were then in the Bankruptcy Court in consequence of the undue lowering of rates. Instances might be multiplied in illustration of this difficulty. Another source of disturbance has been the "watering" of stock. In many cases also large sums of money have been contributed by towns and localities to companies, to induce them to provide accommodation or to extend their systems.

There is perhaps no element connected with working railways which affects the expense of working more than the rate of wages. Wages in our system probably absorb over £500,000 a year out of £700,000 expenses; and, unless this element is kept carefully in view, very erroneous inferences may be drawn in making comparisons with other systems. In the States the usual practice is to work ten hours a day. Unskilled regular labour seldom commands much more than $1 per day of ten hours. Hire is usually at per hour—a dollar a day is 10 cents an hour. Comparing this with the rate paid on the New Zealand railways for unskilled labour, 6s. 6d. per day of eight hours, the latter rate is 19 cents an hour. In other branches of labour the difference is not so great: still, generally there will be a material difference in the average. In the Western States, where population is scanty, and where mining prevails, wages are higher—

unskilled labour is paid as high as 18 cents an hour; but on the Pacific coast, as a set-off, Chinese labour is resorted to, at a lower rate than in the Eastern States.

All the tonnage statistics in the United States are based on a 2,000lb. ton; but we do not know the actual dead-weight of much of the freight carried, which is arrived at by computation: thus, with cattle and sheep, a truck-load is counted at a fixed weight; it may be 20,000lb., but, as far as I can judge, this will be in excess of the actual dead-weight as a rule, and different accountants have different practices of compilation. Tonnage is re-stated many times over in passing through different companies' hands. In dealing with expenses, most statistics profess to separate the cost of moving passengers and goods, stating it at per ton and per passenger per mile. The calculations and methods are, to some extent, arbitrary, and each accountant will have his own way of arriving at the two estimates, so that the value for comparison of effective results in different systems is doubtful.

The difference in the conditions of traffic may be briefly illustrated as follows, by comparing the approximate data of several railways:—

Railway: 1886.	Number of Passengers.	Average Distance carried.	Tons of Goods.	Average Distance carried.	Mileage of Line.
		Miles.		Miles.	
New York Central	14,662,118	32	12,718,101	189	1,441
Illinois Central	6,112,110	19	4,051,823	178	2,356
Denver–Rio Grande	337,306	122	1,352,252	143	1,317
New Zealand railways	5,087,685	10	1,834,000	25	1,727

No illustration which I can give will show better one of the greatest divergences of the conditions of traffic on our railways, compared with some of the American lines, than these figures do. The reasons for the short average distances that traffic is carried will be already apparent to all persons who have given our business their careful consideration. They are, that the colony has numerous ports, that no part of our system is anywhere as much as a hundred miles distant from ports or water competition, that nearly all the best productive country is nearer to a port than this, and that nearly all our larger centres of population are situated close to the ports. This, from a colonial point of view, cannot but be a source of congratulation; but it is not conducive to large profits on the railways. Were our system situated as the Victorian system, so that we could carry long distances and make as high charges for our services, we could earn as large a dividend; but such a condition of things could not be as favourable to the interests of the colony as at present.

There is one point requiring especial attention in connection with this. We have heard a great deal in New Zealand about high rates, as if the sums paid by customers per ton were really large. The amount per mile is not the true gauge to adopt. Americans, as a rule, pay much larger amounts per ton for railway-freight, on account of the long distances goods are carried, than is the case in New Zealand, and, as a general rule, the New Zealand settlers and producers obtain all their goods and despatch all their produce to the markets much more cheaply than is generally the case in the States.

Each State in the Union makes its own laws on the construction and operation of railways within its limits. Traffic which originates and terminates within the limits of a State is subject to its laws; but traffic which originates in one State and terminates in another is subject to the laws of neither—it is amenable to the laws of the United States Legislature. Companies whose lines traverse two or more States thus come under the operation of a variety of statutes—a condition of things which seems inconvenient and inconsistent, as in some instances there are important differences in the various enactments.

In the earliest days of railroads very great freedom of action was exercised by railroad companies in making their rates, fares, and charges. Railroads were at first popularly regarded as private commercial concerns, having similar rights to private traders in their dealings with the public, and entitled to similar freedom of action. This view, however, was held by legal authorities and statesmen to be erroneous, and contrary to the provisions of the statutes under which the companies obtained their powers. Gradually the public opinion came round to the latter view, as the operations of working and the abuses liable to arise in connection with rates and charges came to be understood.

The demands of the individual customers of the line, the acute competition among rival roads, and the financial difficulties of companies drove their managers into bidding for traffic by the granting of personal rates and rebates, and by the exercise of personal discrimination in all forms; and it has only been after the most acrimonious contentions in the public Press, litigation in the Courts, discussions and investigations and legislation in all the legislative bodies in the Union, extending over many years, that an order of things is now becoming established tending to entirely abolish such practices. Even at the present time they have not entirely ceased.

During this change railroad managers have been stigmatized as robbers, extortioners, and evil-doers, preying on the community; companies and individuals have been acrimoniously assailed by the Press, by book-writers, by politicians, and by all classes of producers and traders. It is quite natural that, during such a revulsion, the railroads should be attacked and vilified; but it must be none the less true that the generally prevalent practice could not have existed unless with the active participation and at the earnest desire of traders and commercial bodies and producers of all classes, who, in their eagerness for personal and local advantages, did not foresee the magnitude of the evils they were giving rise to; and, had the railroad managers resisted the popular tendencies of the day, they would doubtless have been condemned as unenterprising, incapable, stupid per-

sons, who failed to move with the commercial spirit of the age. From the earlier view, public opinion has of late years gone to the opposite extreme, the outcome having in many cases been coercive and restrictive legislation, often of a harassing and unpractical character. Many States have gone the length of trying to prevent the practice of special rating in the cases where water competition or competition in the markets would prevent the conveyance of any traffic by rail without special rates adapted to the natural conditions of the country and trade. The State of Illinois at one time passed such stringent laws that all railroad-construction ceased, and many railroad companies became bankrupt. I have obtained copies of the laws of some of the States at present in operation. The State of Illinois forbids unjust discrimination or extortion, defining it as charging not alone more to one than to another for the same service, but as charging less for the longer than the shorter distances, in the same direction, under various circumstances. Kansas State provides for all charges for like services being the same to all persons, and that no unreasonable charges shall be made. It prohibits pooling. Oregon State forbids personal discrimination, the granting of rebates or drawbacks in any form, and compels the publication of all rates and charges. It forbids combination, to prevent continuous charges. It forbids the practice of charging less for the longer than the shorter distance in the same direction.

Finally, there is the Inter-State Commerce Law passed by the Congress of the United States last year, which applies only to traffic originating in one and terminating in another State. It provides that all charges shall be just and reasonable; it forbids unjust discrimination between persons by special rates, rebates, drawbacks, or other devices; it forbids undue or unreasonable preferences to persons, companies, firms, corporations, or localities, and granting free passes; it forbids pooling; it also forbids the practice of charging less for the longer than the shorter distance for similar services in the same direction, but it permits certain Commissioners, who are appointed under this Act to attend to its administration, to suspend the operation of this provision in special cases. This is a most important reservation. It is an admission on the part of the Supreme Legislature that no absolute rule about rating localities can be laid down, and that charges must and ought to be regulated by an intelligent consideration of all the conditions surrounding the traffic, the locality, and the market. Some of the individual States have been less prudent in this respect, and by their legislation essay to restrict the natural advantages which one locality has over another for purposes of trade, seeking to prevent the railway managers from adapting their practice to suit the varying circumstances of trade, competition in markets, climate, and competition by rival carriers by land or water. One prevailing error seems to largely pervade public opinion on this branch of the subject; it is this: that the length of the railway is the only element which should govern the fixing of charges. It may as often happen as not that the distance between two points by railway by no means regulates the cost of conveyance between them. It may happen that a railway, on various grounds, travels a very circuitous route between two points, and in such case it may be needful to compete against more direct communication; or there may be a connection by water between two points on the railway by which traffic is carried on almost regardless of distance, or there may be competition in the markets: foreign goods, for instance, may be coming into a port competing against inland supplies, and the development of the industry of the country may demand special treatment. In such cases, to make a railroad regulate all its charges by using such special rates as a standard may ruin it financially. To forbid special rates would merely be to deprive the railroad of earnings it might reasonably secure, to deprive the locality served of advantages it might be justly entitled to by its position, and to prevent the development of the industries of the country owning the roads. Whatever laws may have been hastily passed which may thus injuriously affect the railroads, the localities, and the trade of the country, they will certainly be altered when the public appreciates their operation fully.

The fact generally seems to be overlooked that for the most part all these operations are for the benefit of the consumer: the tendency of the Inter-State Commerce Act seems generally adverse to these interests. The Inter-State Commerce Act also provides for the publication of all rates, fares, and charges. There is little doubt that the publication of rates will largely curtail irregular practices. The United States, in this respect, is approaching the practice of the European countries, of the Australasian colonies, of some of the South American countries, the African colonies, and India. Special as well as scale rates can always be published, and can always be available for reference at all stations. There is nothing in the publication of rates which will ever restrict legitimate business. It is not clear upon what grounds the practice of pooling has been forbidden, or what good results can follow from its restriction.

It is well that we should learn, by the great troubles which have arisen in the United States over railway rating, to avoid like errors in New Zealand. Hitherto personal discrimination and rebating has made no way, because it has been discouraged and resisted by the railway management, merely on the grounds of the lines being national property. There is no law forbidding it, but, now that private companies are coming into the field, proper restrictions should be made by law; and it would be well that the subject should be thoroughly studied, to avoid the errors into which others have fallen. The great extent of the public agitation, discussion, writing, and legislation which have gone on and still go on in the States on the subject of rates is little known in New Zealand; no such discussion or consideration has ever prevailed here, because, so far, many evils have been absent; but there is no guarantee that this order of things will continue, and it is therefore desirable in good time to take proper precaution. As long as there is no law against such practice, railway managers have to resist the attacks, public and private, of every disappointed seeker after personal favour, and these attacks serve to influence and bias the public opinion, while the cause and origin of them is unknown or misapprehended. With proper legislation this difficulty would disappear to a large extent. Many of the leading railroad experts in the States whom I consulted considered that, on the whole, the inter-State law was a step in the right direction; others dissented from the tenor of the "short-haul" clause. It seems to an outsider more than doubtful that it can be

possible for the Inter-State Commissioners to examine and pass judgment in the many thousands of instances in which the operation of the clause may have to be suspended to meet natural conditions on 150,000 miles of road, to which 10,000 to 12,000 miles are being added annually. It is the opinion of many that this Act must shortly be modified.

Each State has a Board of Railroad Commissioners, who are State officers, appointed to watch the operation of the various State Acts, and to hear and report on complaints from the public against railroad companies. These bodies have different powers in different States. They investigate complaints about rates, location of sidings, train-accommodation, train-stoppages, private sidings, crossings, and a great variety of such-like matters. These reports, opinions, and rulings are well worth perusal: the topics discussed and dealt with are all very much the same as arise daily in our own working in New Zealand, and the remedies and solutions arrived at are of a kindred character as a rule. The practices of a country with such an extended area and variation of climate and conditions cannot but be of great interest to all persons concerned in railroad-working.

Whatever improprieties may have occurred, and whatever evils may have arisen, in connection with railroad rates and fares, the general outcome at the present time is that the United States has rates as low as are to be found in any part of the world, and fares which are extremely moderate, though on the average they may not be as low as the European fares. Every year has, on the general average, seen rates getting lower, as traffic has grown and appliances and organization have been getting more perfect. The roads have on the whole rapidly improved their services and correspondingly benefited the public.

I have alluded to the violence with which American railroad managers have been assailed. That they are the extortioners and evil-doers that some writers make out is not to be believed for a moment. Much of the abuse poured on railways arises from a want of full appreciation of the subject discussed. A great deal is due to the mere love of smart writing which often characterizes some sections of the Press, and other writers. It is, without doubt, true that personal discrimination has largely prevailed, but that it has been so was due to the views of all classes of traders and producers using the railways, who practically constitute the public, and who have originated, assisted at, participated in, and supported the system until it has come about that disappointed seekers after special favours have become very numerous, and have come to see the evils attendant.

For us in New Zealand to enter upon a system of personal discrimination would be retrograde; it would give rise to general dissatisfaction. There have not been wanting numerous pressing and imperative demands to grant personal rates, and that refusal to do so has caused great dissatisfaction is well known. Having resisted this error in the past, it will be easier, with the example of the United States before us, to avoid the other extreme, and to maintain a practice of using special rates wherever the local circumstances, markets, and competition make it advantageous to do so.

The English practice, although providing for publicity, would be unsuitable, and would be very expensive to work. It has been stated in New Zealand that it would be better if the rates could be altered by petty officers at their discretion. Such a system would prevent just dealings with the public, and would lead to corruption and fraud. The practice among companies is to deal with all rates through the chief officer in charge of the freight department and from the head office. The chiefs are, of course, dependent on their local officers for evidence and information, and for advice of all local wants; but new rates are not granted without instructions from head-quarters. Inquiries from companies controlling many thousand miles of railroad confirm this: indeed, control of revenue could not be properly maintained save under such a system. Traffic regulations of the same character as are in operation in New Zealand and other parts of the world govern the work of the traffic employés, and they are strictly enforced and watched through properly-organized accounting and auditing staffs.

The companies in America have formed themselves into large associations for the purpose of settling rates and arranging matters connected with traffic in which they may be jointly concerned. Without pretending to speak precisely, some of those associations may represent an aggregate length of from 20,000 to 40,000 miles of road. The Trunk-line Association, of which Mr. Albert Fink, is the Commissioner, is one of these. The Central Traffic Association, of which Mr. Blanchard is Commissioner, is another. Of the general features of these organizations, and their goods classification and rates, these gentlemen were good enough to inform me of particulars. We have nothing in our limited system to demand any such organization, but it is a matter of great interest to examine their goods classification, and to observe their rates, as they have an indirect bearing on the colonial commerce. It must be clearly understood that what is called long-distance traffic in America has no parallel in New Zealand, and will never have any. What we should term long-distance traffic in New Zealand—*i.e.*, from 100 to 200 miles—is in America short-distance traffic. The Pennsylvania Company has a great coal traffic extending over 500-mile distances. Some of the grain traffic from the North-western States is carried over 1,500 and even 2,000 miles to port, sometimes by rail, lake, and canal, and sometimes by rail direct. Large quantities of grain are carried from Chicago by rail nearly 1,000 miles to port, having been previously railed from the place of production to the Chicago market. The New York Central Company carries large quantities of grain from Buffalo 440 miles to port, which have been brought to Buffalo by water. The rates have been agreed upon by the associations for the carriage of grain from the North-west States to the Eastern ports. Many of them are regulated mainly by the water competition by way of Chicago or Milwaukee, and the Lake or canal route.

The present rate on wheat direct from Chicago to eastern ports is 25 cents per 100lb., or 25s. per ton as computed in New Zealand. The highest direct-rail rate on wheat from the North-western States is 45 cents per 100lb., or 45s. per ton. Freights from Eastern ports to Liverpool vary from week to week and from day to day: at the time I was in New York they were quoted at 2½d. to 3d. a bushel on grain. On some special occasions they have fallen as low as 1d. a bushel, and at

other times they have risen as high as 6½d. a bushel. The average freight for one year was supplied to me by Mr. Fink as 3½d. a bushel, or 11s. 8d. per ton, New Zealand weight. To these charges must be added, for the contingency of elevating and storing for a week, 2 cents a bushel, or 3s. 4d. a ton. Wheat therefore will cost for conveyance to Liverpool from Chicago or places west 40s. to 60s. per ton. I was told that farmers in the North-west States had been getting from 1s. 10d. to 2s. 3d. per bushel for best grades of wheat delivered at the country stations. In the Pacific States I was assured that large quantities had been sold for 1s. 8d. per bushel. In the Chicago market wheat was quoted at 3s. 4d. per bushel: this, however, was for wheat which had already been rail-borne. In Buffalo market, 500 miles nearer port, similarly, wheat was quoted at 3s. 9d. The difference between the prices of grain delivered in the great markets and the prices got by the farmers for delivering at country stations will, however, be considerable.

Most of the wheat produced in New Zealand does not travel more than fifty miles to port; the average travel is not over forty miles; the extreme travel rarely exceeds 100 miles. The average rate will be 8s. per ton, the extreme rate 13s. per ton; the contingency of handling and storing for a week will be 3s. a ton. Freights to England have been varying from 15s. to 30s. a ton, possibly averaging 23s. Thus, from country stations in New Zealand to England the cost may be approximately placed at 34s. to 39s. a ton, against the charges to American producers in the central and western States of from 40s. to 60s. per ton. The farmers last year obtained, at country stations in New Zealand, from 2s. 9d. to 3s. 4d. a bushel.

The New Zealand produce will on the average command a better price than the produce in America of probably nearly 6d. a bushel. On wheat from the Pacific States shipped from Portland and San Francisco, there is a similar advantage in favour of New Zealand. It is therefore within the capacity of New Zealand so to regulate the charges as to retain this advantage, provided that sufficiently low sea-freights are obtainable.

The American companies cannot regulate their short-distance rates by the extremely low rates per mile which they offer for long-distance traffic of this class; neither could we do so and make any profit on the transaction. But in the case of long-distance rates there is margin to work on, and it may be necessary for the colony to look to getting the remoter lands under cultivation, rather than to be striving merely to make direct interest on the railway capital. The colony ought to be prepared to face this question, and to realise that, with our small population and high wages, very low rates and high profits cannot both be obtained. With wheat as low as it now is we ought to be prepared to make sacrifices if necessary.

Organization.

Of the organization of the staff, the practice differs in matters of detail merely from that in other parts of the world. Subject to the board of directors and president are the usual subdivisions—general management, traffic department, locomotive, engineering, accounting and audit, and purchasing agency, corresponding to our Stores Department. The greater the system and traffic the more will these branches be subdivided. The traffic work will fall under two or more branches. The train-running on large systems will require suitable district officers. In one case I found that what we term the "parcels business" forms a separate department; but, as a rule, the railway companies do not deal with the public in parcels traffic, all this work being carried on by "express" companies. Railroad companies, as a rule, have the advantage of working connected systems of lines, which makes the operation cheaper, easier, and more expeditious than is the case where there are many disconnected short lines.

The greater part of the ticket system is carried on as our own is done. Local tickets are issued at the stations. As a rule, single tickets only are sold; but for some special localities return ("round trip") tickets are also available.

Coupon tickets for long journeys, extending often over several companies' lines, are also used. Season tickets such as we use, available for an indefinite number of journeys, are not used. What are termed "commutation tickets," which are issued in small books or on cards, each ticket being available for one journey, are generally adopted. The accounting is complicated by the numerous provisions for check and for the apportionment of receipts among various companies. One accountant informed me that many of his ticket receipts had to be divided among twelve to fifteen companies: this, of course, entails an amount of book-keeping and regulation which on a single system like ours is happily unnecessary. Similarly, in the freight department, the interchange of traffic, the possibilities of various routes between the two points, and the checks and safeguards needful to arrive at the proper control in distribution of charges make the accounting-work especially heavy and complicated. The absence of such clearing-house arrangements as prevail in England is a great drawback. There is at present a movement in the direction of setting on foot such an establishment, which is not unlikely to be successful. The main principles of the railway freight accounting are, however, the same as in other parts of the world. The way-bill is the basis, and the summaries of each station's inward and outward traffic afford the means of balancing and compiling the total traffic of the line. Our accounting is much simpler, because our system and our traffic are much smaller than in America, and complicating conditions are absent.

Passenger Trains.

American railways comprise every class of line, from those with expensive and luxuriously-equipped trains running at the highest speeds in thickly-populated districts and between great cities, to lines in newly-settled districts, often with steep gradients, sharp curves, and light rails running trains at average speeds as low as fifteen miles an hour. The Denver–Rio Grande 3ft.-gauge practice is to limit its extreme speed between stations to about thirty-five miles an hour on 52lb. steel rails and flat country. On the Rocky Mountains saddle, where steep grades and sharp curves prevail on a line which may be likened to that from Wellington to Featherston, the time is fixed at fifteen miles an hour. It is a common practice on the standard gauge of light construction to limit

the maximum to thirty-five miles an hour: in such cases the average speed will not be more than twenty-five miles.

Greatly-exaggerated ideas sometimes prevail about the possibilities and propriety of running trains at high speeds. With the features of the country between Christchurch and Oamaru, we could, by incurring a proper outlay and using heavier rails and stock, run trains at forty miles an hour average speed at an increased cost. But, when physical configuration gives us a line like that between Oamaru and Dunedin, with 1-in-50 grades and sharp curves, no reasonable capital outlay would permit of such average speeds being safely or economically worked: twenty-five miles an hour average speed is sufficient, having regard to economy, on such a class of line. On such lines as that from Wellington to Featherston, where the features of the country are more rugged, we must be content with a lower speed than this. Judged by results in other parts of the world, the Wellington line is a worthy monument of engineering ability and skill, executed after the most thorough and careful investigation of other possible routes. It is a credit to the Government of the colony that planned and executed the scheme, and gave such an outlet, at a moderate cost, to the great producing district beyond it. The Americans are justly proud of the engineering work carrying the Denver–Rio Grande Railway through the great cañons and passes in the Rocky Mountains, but in no part has the work been so difficult as is the case with the Rimutaka Pass. The average speed of the express train from San Francisco to Ogden—895 miles—in crossing the continent is twenty-three miles an hour; it has 1-in-40 grades, on which fast running is not possible. On the Oregon Short Line from Pocatello to Portland,—730 miles—part of which traverses some difficult country, the average speed of the Pacific express is twenty-four miles an hour; but on a considerable length, over difficult country, its average speed is from sixteen to seventeen miles an hour.

Our practice in New Zealand has been the same as the western railways in America in limiting the extreme speed to thirty-five miles an hour between stations on level country with 53lb. rails and suitable engine-power, and in other respects our practice in train-running is very similar; but the Americans on the same class of line can get a better average speed, because they have not overdone their railways with stations in the manner which has been done in New Zealand. This subject has been for so many years constantly represented in official reports that I need not dwell on it, except to say that in the general interest it would be well to remove many stopping-places, though it may not suit individual interests to do so.

In England steep gradients are rare and limited in extent. On the Continent of Europe they prevail where the country makes it necessary, as, for instance, on the Saint Gothard line, and on the line between Genoa and Milan, where 1-in-40 grades are used, trains have to run at low speeds.

In most cases the passenger and goods trains are run separately: where the traffic is very light, mixed trains are run. The Westinghouse air-brake is in use on all passenger trains, and is generally approved of. The vacuum automatic brake, which we have fitted a train with experimentally, is the one generally in use in England. It is not used in the United States, so far as I can learn.

The Americans excel in all kinds of woodworking: their carriages are many of them quite works of art, those on the best trains costing, probably, from £1,500 to £2,000 a piece. An ordinary 60ft. first-class car, to hold sixty persons, will cost about £1,000, and weighs about twenty-seven tons. I never saw a badly-built carriage in the States. The double bogie is universal. The gauge generally being 4ft. 8½in., the stock can be made loftier and more roomy than that on our narrower gauge. Vestibule express trains are close-coupled trains, with closed passages between the carriages, magnificently fitted and equipped. These trains have dining-, smoking-, and sleeping-cars. Meals are served at one dollar a head each meal. The price for sleeping-car accommodation, I found, varied from two to five dollars a night.

Electric lighting in carriages has made practically no progress in the States as yet—in England it is more advanced; outside lighting by electricity is on the other hand far in advance. The use of mineral-oil lighting is general, but it is condemned on account of the great danger of fire. Train-heating is carried to great excess; it is unbearable to those unused to it, and is even complained of by the American public. In some of the best trains attention is given to ventilation; but this is rare. A first-class carriage full of people, with a closet in it, and well heated, is a most unwholesome vehicle to travel in; the atmosphere is often most offensive and unhealthy. This great evil is now receiving attention in some parts.

As regards our own practice, we cannot do better than to follow the course which we have done for the last seven years, and continue converting all our old type of carriages into bogie stock of American pattern.

The sleeping-cars with berths lengthways do not appear to be so comfortable as some with transverse berths in use in Europe. The latter are not only more comfortable, but afford privacy for women, which the former do not.

Americans devote great care and attention to their passengers. A large passenger-train, carrying Pullman sleeping-cars and a dining-car, has quite a small army of attendants. There will be a train-conductor, a baggage-man, and three brakesmen for the company's contingent. There will be a Pullman conductor, and a separate attendant to each Pullman car. The dining-car will have cooks and several waiters, the entire crew often exceeding twelve persons. Services of this kind can only be kept where there is a great traffic as between very large cities. In the remoter districts trains on long journeys stop once in four or five hours for meals. Dining and Pullman cars are only available for first-class passengers.

With reference to rules, regulations, and precautions for the safety of life and property on the United States railways, they appear to me to be behind the general European practice. The block system is very little used in the States. Some of the rules and regulations which I saw were deficient. They are said to be different on different roads where through-running often takes place.

A well-known writer in the States confirms these views, and draws attention to the great laxity about disobedience to rules where such disobedience has not caused accidents. I was given to understand that one common and complete code of rules was about to be adopted by the whole of the companies in the States. It is surprising that such a step should not have been taken before. There is little we can learn from the States railroads on this subject. With our system under one control it has been possible to work out all these important details of operation with considerable precision and completeness, though it is as difficult to make proper rules for a thousand miles as it is for a hundred thousand miles.

The only statistics of accidents I met with are those given by Kirkman, who states the number in ten years to have been 10,887, involving 11,023 deaths, omitting the bulk of small mishaps that fail to get reported in the papers. Whether this is an undue number for such a great traffic on such a great mileage of line, subject to the severities of climate prevailing in many parts, it seems difficult to determine.

The train-running on single lines over long distances, in the great uncertainty of the climate in winter in the States, is very troublesome to conduct. No train that I travelled by from New York to Portland was less than two hours late. In certain cases they were twelve hours to twenty-four hours behind time, owing to accidental stoppages and the bad condition of the roads during sudden thaws.

Passenger-fares of the ordinary class range from 2 cents to 6 cents a mile for first-class in different parts of the States, those in the east being lowest. The greater part of the passenger-traffic is what is termed first-class, and the accommodation is excellent. The generality of trains for moderate distances have only this class; but practice varies greatly. Second-class fares are obtainable for most long distances. Second-class carriages frequently are old first-class, in which smoking is allowed; they are often very dirty, and unfit for cleanly-clad persons to ride in. There is not the cleanliness of the second- and third-class European carriages, or of our second class. There is yet a lower or emigrant class, which is run inland on certain through-trains from seaports. Saloon- and sleeping-cars are run on certain trains: persons who have already booked first-class can obtain seats in these upon presenting their tickets and paying extra fare. Carriages of this kind as a rule are not owned by the railroad companies, but belong to carriage companies, which furnish them on fixed terms, collecting and retaining the additional fares by their own conductor. Holders of second-class tickets are not allowed to use sleeping-cars.

The commutation ticket takes the place of our season ticket. There is no ticket so cheap as the New Zealand £50 ticket. A line with a 4-cent fare will issue a thousand-mile ticket for, perhaps, 3¾ cents per mile: this is a very moderate concession. The commutation ticket does not afford such a liberal concession as do our season tickets. A six-monthly New Zealand first-class ticket for a seven-mile distance enables a person to travel as many times as he pleases for 7½d. a day, while second-class he can travel as many times as he pleases for 6d. a day. Our second-class carriages are, for short distances, as comfortable and they are as clean as are the American first-class, and the rate of fare is cheaper. The Pennsylvanian commutation tickets are for 180 trips quarterly, and sixty or fifty-four trips monthly: the cheapest are the first—they cost, for a seven-mile trip, about 7½ cents a trip, or 7½d. for the return journey: they have no second-class ticket as we have. School-tickets, for example, for a ten-mile distance are issued at 18s. a month, which is looked on as a very low fare. We issue such tickets at 10s. a quarter, and in certain cases free. As a rule, American companies charge higher rates than we do, but from the City of New York some tickets are lower.

Coupon-tickets of two kinds, limited and unlimited, are issued for long journeys at reduced fares. The limited are available between certain points within certain periods; passengers using them cannot stop over at intermediate points. Unlimited coupon-tickets allow the passengers to stop over at intermediate stations, and are not restricted as to time. The opinion of the American passenger-agents whom I asked was that our £50 ticket was far too low and open to abuse.

A practice, known in the States as ticket-scalping, is sometimes carried on by persons who buy up unused parts of coupon-tickets and the unused halves of return-tickets from travellers, at low prices, and sell at a lower rate than the proper fare. In many States this irregularity is forbidden by law; it is, naturally, objected to by all the large companies. The practice of issuing limited and non-transferable tickets has of late years largely curtailed this business. The paying of commission on account of fares by railway companies, except to their authorised agents, is also greatly diminished. I was told that the system had grown at one time to be a great evil; cab-drivers, 'bus-drivers, waiters, hotel-keepers, and a host of others solicited and obtained commissions for passenger traffic which they were assumed to bring to the railways.

The excursion business of the character we are used to is not carried on proportionately to the extent we do it in New Zealand, and, so far as I could learn, it is not the practice to issue tickets at such low fares as we do.

The baggage-check system is general in the United States with all carrying companies. Some of the State laws provide for enforcing this system. Railroads will not take baggage unless checked. The passenger has to present his ticket with his luggage at the office in good time before starting; 150lb. is usually allowed free. Each package has a metal check attached marked to destination, and the passenger is given a counterpart. The check-numbers are entered by the baggage-clerk. The luggage is delivered at its destination on presentation of the counterpart. The system is an admirable one, and is worked out in great detail, but it marred by the ruthless way in which baggage is destroyed in handling. On the Continent of Europe all luggage is booked instead of checked—a mere difference of detail—and it is also conveyed safely and without damage. In England the practice of seeing the baggage labelled and claiming it at the van insures fair treatment, and the trouble of this is thus repaid. In America the strongest and best-packed trunks frequently get smashed. I had several excellent opportunities of seeing this process in baggage-rooms. Some

of the States have passed laws inflicting heavy fines for baggage-smashing: but laws are of little use; travellers, as a rule, cannot stay to prosecute. The evil can only be stopped by the controlling officers; the present malpractices probably are the result of lax discipline and want of control. The extraordinary development of the railway system in the States must make it very difficult for the companies to obtain the services of well-trained careful hands, and they must consequently, in many instances, be obliged to put up with indifferent assistance.

In the neighbouring colonies of Victoria and New South Wales the check-system has been introduced; but I was told that it was not strictly enforced. By many persons it is considered too exacting, as compelling them to obtain their tickets and to check their luggage some time before the train time, and precluding them from hurriedly dropping their luggage in the van at the last moment, as is often done when this system is not in operation.

The luggage which a passenger may carry in America must be personal luggage, and not merchandise of any kind. The restriction in this respect is the same as we have in operation in New Zealand.

Passengers neglecting to book at the proper office, and demanding tickets in the trains, have to pay an excess rate, generally of 10 per cent. on the proper fare, with a minimum charge of 5d.

Goods Traffic.

Most of the traffic is carried in covered goods-trucks, essential in such a climate and where such long distances are traversed, and when it is absolutely necessary to securely lock up goods in transit to prevent pilferage. Covered goods-wagons have never been popular with us, probably because grain and other produce cannot be so readily handled in them. In the Eastern States grain is universally carried in bulk. Farmers cart their grain in bags to the railroad, where they may either empty them into trucks, if they can manage a full load, or, more generally, they deliver or sell to an agent owning a storage elevator at the station. Grain may then, for example, be shipped to Chicago, when it may be delivered to Lake steamers, carried *vid* the Lakes to Buffalo, again elevated, and despatched either by rail or canal to New York; again elevated, and perhaps stored and delivered to ships direct, or into barges for transit to ships at other points in the harbour. The practice of grading, elevating, and storing and shipping in bulk is no doubt thoroughly known to our leading grain-merchants and shippers. We appear to be too far committed to carrying in bags for us to adopt the other practice now. All grain in the Pacific States, I was told, is carried and shipped in bags. The reason for this different practice was not explained. How large a business is transacted by the elevator companies may be imagined by the fact that the Buffalo elevators put through 87,000,000 bushels of grain during last year. The elevator charges are 2s. 6d. a ton for elevating and five days' storage, with 1s. 8d. a ton for each additional day's storage. Ordinary labour about this work is paid at the rate of 13 cents an hour, against our rate of 24 cents an hour for casual labour. In very busy seasons as much as 16 cents an hour is paid. The New York Central elevators put through as much as 36,000,000 bushels in a year. I had an opportunity of examining the establishments both at New York and Buffalo.

Live-stock is loaded, unloaded, and carried at the owner's risk. No receipt is given for stock until it is safely loaded and secured on the trucks. Some companies have double-floored sheep-trucks; other companies will not allow them on their lines at all; others permit consignors to put in temporary double-floors in cattle-trucks for sheep at their own risk and expense for each journey. Nowhere in country districts could I hear of the complete and ample provision for loading sheep and cattle which we have so largely provided on our railways. Such accommodation as I saw was of the most limited and cheapest character. I heard of special cars for feeding and watering cattle in on transit, but I saw none. All the cars I saw were about the dimensions and character of our double-bogie cattle-trucks, which we shall do well to adopt more extensively in future. Cattle in transit is, by law, in many States, forbidden to be carried more than twenty-four hours without being unloaded for food, water, and rest. This is done at the risk and expense of the owners.

Goods-shed accommodation is generally very limited, probably for two reasons: first, unloading can be done from covered cars; secondly, because private sidings are pretty largely in use, connecting with private stores in towns.

The proportion of dead-weight of goods-stock to capacity for carrying load is usually 2 to 3 and 1 to 2, the latter appearing to preponderate. In the largest (60,000lb. trucks) now being introduced the proportion is 1 to 3. Our practice has resulted in 2 to 3 and 1 to 2, but more frequently the former. We, unfortunately, cannot use the bogie-truck extensively; it is too large for our small business; we cannot get full loads for it.

American railways have generally a great advantage over ours in their getting large traffic in both directions. All our heavy traffic is in one direction. Grain, wool, timber, cattle, sheep, coals, and produce all travel towards the ports and large towns; and the back-loading is small. All goods are carried by dead-weight; they are either actually weighed or weights are computed. I made particular inquiries about round and sawn timber. The rule is to treat all alike, and to charge for the actual weight carried. This is the practice usual on all railways. The traffic officers told me that they would not entertain the proposal to carry round timber at lower rates than square, as the former was more troublesome and expensive to carry. The objection offered by the railway officers in New Zealand to the introduction of this form of discrimination has led to some dissatisfaction. It is well to know that the practice of the railway management here is that followed in other parts of the world.

Goods are taken delivery of by the consignees within twelve working-hours, and storage is otherwise charged thereon; demurrage is charged for wagons standing for unloading. Fresh vegetables and fruits sent by railway requiring protection from cold are attended to by consignors, who have to provide stoves and fuel to warm the trucks; fresh meat is carried in summer in tight trucks cooled by ice-boxes. The freezing of meat, as practised in New Zealand, is not done.

I made some inquiries about the export of Oregon pine to the Australian market. I was informed that no rail-borne timber is exported; the supplies are generally drawn from Puget Sound. Timber is rafted distances of from three to four hundred miles to mills at the port of shipment, and has practically no land-carriage to pay, while freights to Australia by sailing-ship are practically as cheap as they are from New Zealand. In this way the timber from New Zealand is beaten out of the Australian markets.

Express Traffic.

The parcels-traffic, which in Europe and on the Australian and New Zealand lines is usually worked by the railways, is usually done by organizations called express companies. Railway companies as a rule will only take goods and live-stock by slow trains timed from ten to fifteen miles an hour, and do not deliver or collect them. The organizations for express business are of various descriptions. I made inquiries about one—the Adams Express Company, of Philadelphia, which has 7,000 employés and 2,500 horses, and operates over 23,000 miles of railways, receiving and collecting at all moderate-sized towns. This company generally pays the railway companies a fixed percentage of its gross receipts. Its books and accounts are open to the audit and inspection of the railway companies' officers. When this arrangement is not in operation it is usual for the express company to pay for its traffic at rate and a half first-class goods rates. The rates in operation for parcels and small goods are as follow:—

Weight.	Up to 20 Miles.		Up to 60 Miles.		Up to 150 Miles.	
	America: Express Rate.	New Zealand: Parcel Rate.	America.	New Zealand.	America.	New Zealand.
	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
3lb.	1 0½	0 6	1 0½	0 6	1 0½	0 6
7lb.	1 0½	0 6	1 0½	0 6	1 3	1 0
14lb.	1 0½	0 6	1 3	1 0	1 3	1 9
28lb.	1 0½	0 9	1 5½	1 6	1 8	3 0
56lb.	1 5½	0 9	2 1	2 0	2 6	4 0
84lb.	1 8	1 0	2 6	2 9	3 1½	4 9
112lb.	2 0½	1 3	2 9	3 3	3 8	5 6

All other fast freight is dealt with at similar rates. Our small business really admits of no comparison with this traffic. This company, in Philadelphia alone, collects 14,000 parcels daily. The express companies, I understand, pay very much better than the railway companies, and absorb a large sum which otherwise would go to swell railway companies' profits if the latter did their own business.

Construction, &c.

The lines which I saw, except portions of the Denver-Rio Grande and parts of the Oregon Railroad and Navigation Company's line, are through very easy country, free from many heavy works, and with but little bridging. The bridging over the great rivers includes many well-known and stupendous undertakings; but against this are many thousands of miles of line on level plains, with very trifling earthworks or formation, and no grades or curves of any importance. The eastern lines use 70lb. steel rails, suitable for the fast expresses and heavy wheel-loads. The loads on the heavy rails are as much as 34,000lb. to an axle. On the 52lb. rails they do not exceed 17,000lb., which is the limit of our loads. More commonly a rail about 60lb. is in use; 52lb. steel is also very largely in use; and many lines have used rails as light as 30lb., such as are on the New Zealand branch lines. Great lengths of line are laid almost without ballast, there being large areas of country with none available. Soil and sand take its place.

On the other hand, 3,000 sleepers per mile are generally laid, as against 2,000 on our lines, so that the roadway is probably more expensive on the whole. Iron bridges are very rapidly taking the place of the older timber structures. The tendency, with the growth of population and traffic, has been to greatly increase the weight of rails, speed of trains, size of locomotive and stock. The eastern main lines are now probably using the heaviest engines and stock in the world, and they are also running the fastest express trains on a large scale. The necessities of their traffic have pushed their stock weight ahead of the strength of their bridges; it is generally admitted that extensive reconstruction and strengthening are essential, and many lines are engaged in these operations. Great areas of country are devoid of any timber, which has to be fetched long distances by rail. At Denver (Colorado), a city of 70,000 people, with extensive manufactures, and the head-quarters of the Denver-Rio Grande Company, the bulk of their timber travels 1,500 miles by rail—Oregon pine costing 22s. per 100ft., and durable oak timber 25s. per 100ft.

Owing to the heavy protective duties, steel rails, which cost us, imported into New Zealand, £7 per ton, cannot be procured in the States under from £9 to £10 per ton.

In engine-building, as is well known, the Americans use wrought-iron tubes and steel fire-boxes. Of late years also it is the practice to use steel boilers, and, in many instances, steel axles. The extended smoke-box has become pretty general. The Belpaire fire-box is now being very largely introduced. The Locomotive Superintendent of the Denver-Rio Grande, however, has adopted a special form of circular-headed boiler, which he considers simpler and more effective. Compound-cylinder locomotives, which have originated in France, and which are on trial in England, have not yet been introduced into America, but trials are about to be made with imported locomotives. The economy effected by their use is not such as to justify our incurring any great expense in introducing such features; but presently, when we want more engines, and have

carefully considered the subject of adaptation to the narrow gauge, which has not yet been attempted, it may be as well to give the system a proper trial. The steel-tired wheel has now been generally adopted on all passenger stock; cast-iron wheels are still used in all goods stock. The paper-centre wheel does not seem so good as the wrought-iron-centred wheel which we use; it is not so durable. These protected industries command very high prices. We can get a superior article delivered in New Zealand for £8 per pair of wheels and axle, as against £20 which the paper wheel will cost in America; or we can, with imported tires, manufacture a better article for £13 in New Zealand. The narrow-gauge locomotives on the Denver–Rio Grande, made at the Baldwin Locomotive Works, do admirable work on the very difficult parts of the line. I have seen no such striking instance of the excellence of design for traversing sharp curves as was shown to me by Mr. Sample in the condition of his engine stock which was in use on this line.

Very little attention seems to be paid to the lubrication of axle-boxes of goods stock. I have counted as many as a dozen broken boxes on one side of a train. The design of boxes in use is very primitive. This is, perhaps, attributable to the cheapness of mineral oil, which is used without regard to economy; but, apart from this, much inconvenience and danger must result from defects in this respect. We have a better box, and give more attention to this point. As oil costs us a much higher price, economy is a matter of importance. Our lighter loads also make our work easier. Regarding supplies of oil of the proper qualities, I am much indebted to the Locomotive Superintendent of the Pennsylvania Railroad for valuable information thereon. We have hitherto been drawing our supplies from America under a little disadvantage, owing to want of such data.

Stations in the States are, as a rule, very primitive. Except at the great centres, raised platforms are usually absent. In most trains attendants carry small stools to assist passengers to get in and out of carriages. Large waiting-rooms are usually provided, but verandahs and covered platforms are rarely seen. It is not a good country to study either passenger- or goods-yards. Yard accommodation is frequently very rambling and scattered, and is not laid out in a systematic way. It is easy to understand why this is. Towns and cities have grown up with great rapidity around railways, and the accommodation has been added piecemeal, streets often being occupied largely by sidings and private lines to stores. A great deal more freedom has been used in laying lines along and across streets than we have seen. One outcome of this unavoidable growth must be a greatly-increased outlay in station-working under most heads. An evil attendant on so much level-crossing is the great number of accidents. I have observed for some years past that the Railroad State Commissioners are constantly remonstrating about the dangers arising from these features. I find that there is a considerable feeling on the subject prevailing. The Massachusetts Commissioners reported forty-seven persons killed or injured at grade-crossings in that State during the year. We have avoided, so far, some of the greater difficulties which have developed in the States; but our level crossings are excessive in number in many places, and, while offering facilities for accident, they form a very formidable item in the annual cost of maintenance.

The private-siding question is receiving some attention in places. It has been held that to grant one person private access and to refuse it to another constitutes personal discrimination. At the same time facilities must be limited, and everybody cannot be accommodated similarly. We have experienced similar trouble. Probably the best way in future to settle this trouble will be to fix a moderate upset-price for such privileges, which shall vary with the locality, and put the privilege up to the highest bidder for a term of years. By hitherto restricting the right of access to a term of ten years the Government has retained in its hands the power to deal with difficulties that may arise.

Goods Rates and Classification.

This subject is very extensive and intricate. Very many of the companies have their own classifications, differing from others; some of them have adopted common classifications; and some of them work under two classifications—the one applying to their local traffic, the other applying to the inter-State traffic. Goods are classified under from ten to twenty heads: the classifications are generally more extensive than ours, as might be expected in a country where the trade is more varied, and manufactures are numerous. The larger proportion of goods are carried under two classes, a cheaper rate being charged for full car-loads than for smaller quantities. The car-load minimum varies from 20,000lb. to 24,000lb. as a rule: our minimum varies from 2 to 4 tons (4,480lb. to 8,960lb.), in which respect the small consignors are relatively much better off than is the case in America. The practice of charging a higher rate for smaller quantities is usual all the world over. In some parts of New Zealand complaints have been raised against this, although more liberal treatment is accorded to customers than usually prevails elsewhere. I inquired about this point in the States, and found that some years since it was the subject of agitation there; but the public has now come to realise the reasonableness of the practice and the need for it. It would lead to great extravagance in working if such a system were abandoned. There would be no inducement to consignors to fill trucks, and it would lead, in many cases, to loads being handled in which the nonpaying load would many times exceed the paying load. When car-load rates are given, the practice is for customers to bear the expense of loading and unloading; and car-load rates, as indicated, do not show this expense. The minimum charge for loading and unloading is usually 20 cents per ton of 2,000lb. for each operation, or, roughly, 11d. per English ton. In numerous cases, however, the charges are in excess of this.

In trying to make comparisons between American and New Zealand rates there is some difficulty. Most of the companies have local-rate schedules for general application; but they are modified in many instances by special rates. Companies do not, as a rule, present their rules and regulations for public inspection, as is done in most parts of the world; and the enormous number of rates on any railway would prevent a comprehensive review of them. I have been able, however, to make extracts of local schedules, and to compare them with our own schedule, which will give us a general idea of the local practices as compared with our own; and I have also ex-

tracted a list of articles commonly carried, with their rates, for comparison over certain distances. With traffic over long distances we have nothing to do, as we have no parallel traffic to compare it with. Long-distance traffic runs, in the States, from 200 miles up to 3,000 miles. The Pennsylvania Railroad, which has a coal traffic of 17,000,000 tons a year, carries a large proportion over five hundred miles distance. Many lines carry large quantities of such traffic through long distances at excessively low mileage-rates, which has the effect of making the average rates per mile on their lines very low. The local rates, however, do not differ very widely from our own. An inspection of the schedules following will show that much of our local traffic is carried at lower rates than is often the practice in America. I should here again draw especial attention to the fact that a comparison of the rate per mile is not a proper standard to use in judging whether the customers of the New Zealand railways are better or worse off than railway customers are in the United States. The point to be considered is, whether we pay larger amounts for freights or not.

Careful examination and consideration show us that we cannot but pay freights greatly below those paid per ton on the average in the United States. We cannot verify this by figures, because the tonnage of the American lines is made up largely of through-traffic, and each ton of through-goods is reckoned by each company over whose line it is carried. If it passes over six companies' lines it will be reckoned six times; and we have no means of dividing up the through- and local-traffic tonnage to arrive at even an approximate idea of what the average charge per ton is, and all attempts to unravel this problem are unavailing with the information usually available in railway statistics. Railway accountants are well acquainted with this element of uncertainty, The inference to be drawn from this is, that the New Zealand settler is much better off in respect to railway freights than is the producer as a rule in America. A careful consideration of this point seems to place it almost beyond the limits of controversy. It is true that over-sea freights to Europe are higher than between the United States and Europe, but the disadvantage in this respect cannot counterbalance the advantage in the other; and it is satisfactory to feel that settlers in New Zealand are in so favourable a position to compete with the United States in the European markets.

Conclusions.

It now remains to briefly consider the whole subject. In trying to, very cursorily, review the chief points of interest, we should remember that we are drawing comparisons between a continental system serving 60,000,000 people, which has grown up during fifty years and deals with great manufacturing industries, and a small insular system serving 600,000 people, with relatively very small resources; and we must therefore expect to find both conditions and results widely differing.

It is, however, very doubtful whether the interest earned on the actual cost of the United States railways is practically in excess of our own earnings. The inflation of capital by watering stock in certain directions must be very far outbalanced by the great loss of capital resulting from numerous bankruptcies, and the forced sales of lines by mortgagees, while the grants-in-aid in the form of land have been enormous.

The form of construction of our railways is settled and done with for the most part. The natural features of the country and the financial position of the colony have determined the character of the lines, which are suited for moderate speeds only. The plan pursued has undoubtedly been the wisest in this respect. It would be unwise to allow ill-advised and rash persons to persuade the public that high speeds can be run with safety or with economical advantage; while at the same time we may be sure that no practical increase of revenue would result. We have unfortunately overdone building stations, and it may be as well to consider whether the public convenience will not be best served by dispensing with many of them.

It is very doubtful whether we can dispense with many trains. We have probably economized in that direction about as far as the public convenience will permit, although we run more trains in places than would be conceded by private companies. The City of Portland, with 40,000 people, has only two daily trains inland. We clearly cannot adopt this as a precedent for the service of our cities, although they may be smaller.

In the class of carriage stock we ought to improve; but the steps in this direction ought to be gradual: it is certainly not desirable to largely increase our annual expenses by prematurely converting the older stock. The colony is fairly well served at present.

We have years since settled on the general features of locomotives suitable for our services and lines, and no material departure from them seems at present likely to be made. In many respects we have followed the American practice. Changes in this department should be by the gradual introduction of classes of locomotives capable of taking larger loads and running at slightly higher speeds where the lines permit. This will be a continuation of our present practice.

As to the staff, it is well organized and trained, and is as steady and capable a body of employés as is to be found in any part of the world. Whatever trouble may have arisen with staff control, strict discipline has been maintained, and we may safely say that during the last eight years improper influences have not prejudicially affected the operations or discipline of the staff as a whole. Reduction in numbers is not likely to be very large, since we cannot very well do with less trains or close any main stations. We could, however, do a good deal more traffic with present appliances and staff, and this we must reasonably look for with the growth of population.

Our regulations and instructions for train- and traffic-work cannot be much improved; they are very complete and ample. We have carried on business under them with reasonable safety of life and property, and with reasonable immunity from fraud and losses. Some people imagine that simplification lies in the absence of ample and extensive regulations and rules. Such, however, is not the opinion or practice of the most successful railway experts in railway-working.

While the general features of accounting are similar to those in the States, we do not bring out our statistics in the same form. That, however, is an immaterial point. We bring them out

in such a way as is most convenient or the use of the officers engaged in working, to enable them to control and review their work. Americans keep more diffuse statistics. In one case I found expenses kept under 224 heads. I should not advise incurring expense in extending our accounting. I think our system is sufficient for our purposes.

In the management staff, the chief officer here has not had an equal amount of assistance to what is usual in American railways of like magnitude. Chiefly, this has come about from the necessity for adapting the control to suit the conditions of working a number of detached sections, and in endeavouring to keep down the expenses of management at the same time. The result here has been that the work of management has been more onerous than it should have been.

In America the management is much less fettered in its operations than has, so far, been the case here. Railways are in the control of professional experts, who have been able to give their entire attention to administration, and to act with promptitude. Here we have been handicapped by the great amount of reporting, memorandum-writing, and reference of correspondence to the Minister. If this can be mitigated better attention can be devoted to the public railway business. It remains to be seen if this can be done. It is by no means so readily dispensed with, however, where the railways are public property, as might at first sight be supposed.

The most vital question is that of rates and fares. New Zealand is better off for freight facilities, in a general way, than a large proportion of the United States settlers. Many of our rates are lower than American rates, and our very-short-distance rates are unduly low. It will be remembered that from 1880 to 1883 the present management produced much better financial results than have since been got, because the policy then was to realise as much revenue as possible. The altered results since that have been due to circumstances outside the control of the management. Among other things, wages have been raised, rates and fares have been lowered, and additional duties have been added. The Government have never exercised the powers of the Public Works Act to define the duties and responsibilities of the management; but steps have been taken by the Minister not as the outcome of professional advice, but as a part of the public policy, and with a full knowledge that the profits on the railways would be thereby diminished: and these facts have been clearly indicated from time to time. We have thus been pursuing a course ruled by other considerations than the mere earning of profits. In this the practice has differed entirely from that of private companies, whose business is regulated by the companies' professional officers with the sole object of making money.

In considering whether any of the principles which rule in American management should also be adopted here, this question should be the foremost to be determined.

If additional revenue is to be obtained now by raising rates, it should only be after the most careful consideration of all the local conditions prevailing, as well as the general bearing of any such steps. It will be in many instances advisable to act in the other direction. It would be injudicious to attempt any wholesale increase in rates and charges at the present time; the circumstances prevailing in the outside markets of the colony ought to be much more studied than they have been, and the capacity and means of the competitors in the colonial markets should be closely scrutinised. I know very little of South America; but, from what I have been able to gather casually, the capabilities of the southern continent should receive attention, for from that quarter great competition in the markets may be expected, and the colony should certainly possess accurate information as to what is being done there. Having such information, we shall often be better able to determine whether it is necessary to reduce rates to allow of the colonial producers having a fair chance of competition or not, and it may serve to prevent revenue being needlessly sacrificed when it is difficult to spare it.

I have collected a very large amount of data about rates, fares, regulations, time-tables, and trains, and traffic-work in the States, which are available for examination. But, regarding these matters, such data must always be looked at with caution, in the absence of local knowledge.

English and European practices, as a rule, cannot be adopted in our colony, on lines built for slow speeds, and furnished with light stock. Luxuries which can be freely given where a population numbers many millions, are extravagant where it numbers only a few hundred thousands. English roads, engines, and stock are such as to be entirely beyond our financial means.

English rating as practised would never be tolerated by the New Zealand public for a day on the State railways. It is not practised in any other country in the world except England. In the Eastern States of America also the traffic and population are so vast that to aim to take their railroad practice as a guide is entirely beyond our means or our needs. In the Western States the railroads in country districts in point of accommodation for traffic and passengers at stations, and for complete and efficient organization, are in many instances much behind us; the public in such places is content to put up with very limited accommodation for goods and live-stock in the shape of roads, yards, sheds, and rolling-stock, such as in this colony would be regarded, not alone as insufficient, but as intolerably objectionable.

While train-speeds in the Western States on the whole are better than ours, the country as a whole being easier to traverse, the stations being fewer, and the rails and rolling-stock heavier, the journeys are much longer, and neither in point of time nor expense are people are as well off in travelling as in these Islands, where the distances to be traversed are so much smaller.

Any one who will carefully compare the present condition of the New Zealand railways with that of eight years since will see what enormous improvements have been effected in the roads, stations, rolling-stock, and trains. Concurrently with this, rates and fares have been greatly reduced, and expenses have been lowered. For example: Hurunui–Bluff system with 750 miles cost in 1879–80 £439,717 to work; this year, with 1,048 miles, the expenses will not exceed £410,000. We may reasonably expect improvement to continue if the professional management is instructed to control the working so as to prevent extravagant outlay of all kinds, and to devote itself entirely to attending to the public wants.

Improvements should run concurrently with increased population. At the present time our railway system and appliances, with a few exceptions, are far greater than the present population can properly utilise; and one of the essential points to be observed in the future, if economy is to be practised, is to limit the extension of railroads until the population is greater, and to abstain from outlay on works, accommodation, and appliances which often are not only not needed but are positively objectionable from a public as well as from a departmental point of view, and which add to the expenses of maintenance and working without bringing any additional revenue or traffic. It must be remembered that it very often happens that private accommodation and favour is not to the public advantage, either in working the railway or indirectly by improving revenue. No railway-administration ever seems to be popular. Economy and saving expense are points not usually applauded by the public; conveniences and improvements added from time to time seldom call forth any remark. On the other hand, great numbers of people are seekers after private favour at the public expense, in the shape of personal rates, lower rates, stations, private sidings, bridges, level crossings, fencing, drain, age, and a hundred other things which may be improper to grant, on grounds of public convenience and right. In dealing with supplies, also, the authorities who have to guard the interests and rights of the department have to face much ill-feeling and resentment. All these numerous disappointments give rise to numerous expressions of dissatisfaction, which are always heard of and are seldom understood, and which invariably induce much adverse criticism of railroads. We are in this respect in a worse position than private companies, because the latter entirely disregard all these unfounded and prejudiced attacks, while State departments are necessarily very susceptible to such attacks, however unjustifiable they may be. A State administration can never hope to escape severe criticism, any more than private companies do, and vigorous public criticism is moreover a very wholesome stimulus. We can never hope to take any important steps without some criticism, however effective the administration may be.

The thanks of the Government are due to Messrs. R. W. Cameron and Co. and to Messrs. Burnham, Parry, Williams, and Co. for the great assistance they rendered to me in obtaining information and introductions; and also to Mr. M. B. Forney, Editor of the *Railroad Journal*, for similar courtesy. To the gentlemen in charge of the railroads and associations mentioned thanks are due for their great courtesy in giving information and opportunities of seeing and studying their practices. I have also to thank the Jackson and Sharp Company, the Roger Locomotive Company, the Allen Paper-wheel Company, the Government Commissioners of the Kansas State, the Editor of the *Railroad Gazette*, and many others, through whose courtesy and assistance I was enabled to obtain information for the Government.

I have, &c.,
J. P. Maxwell, M. Inst. C.E.,
General Manager, New Zealand Railways.

The Hon. the Minister for Public Works.

Comparison of some American Companies' Local Rates with those of New Zealand.

	10 Miles.					40 Miles.					100 Miles.					200 Miles.				
	American.				N.Z.	American.				N.Z.	American.				N.Z.	American.				N.Z.
	Per Ton.	Per Ton.	Per Ton.	Per Ton.	Per Ton.	Per Ton.	Per Ton.	Per Ton.	Per Ton.	Per Ton.	Per Ton.	Per Ton.	Per Ton.	Per Ton.	Per Ton.	Per Ton.	Per Ton.	Per Ton.	Per Ton.	Per Ton.
Wheat—America, in car-loads of not less than 20,000lb.	s. d. 5 0	s. d. 8 0	s. d. 5 9	s. d. 3 0	s. d. 3 5	s. d. 13 0	s. d. 9 0	s. d. 8 0	s. d. 11 0	s. d. 7 10	s. d. 18 0	s. d. 17 0	s. d. 11 6	s. d. 14 0	s. d. 12 10	s. d. 22 0	s. d. 28 0	s. d. 15 0	s. d. 47 0	s. d. 21 2
Wheat—New Zealand, in 4,800lb. lots																				
Coal, 20,000lb. loads	4 8	3 9	2 10 3 11	6 3 5 3	2 6	6 1	6 6	4 2 5 3	8 4	5 1	7 0	12 2	6 4 7 3	12 2	10 2	13 4	21 6	8 4 9 10	16 8	14 5
„ 8,960lb. loads	7 6	9 4	8 5	6 6	2 6	16 10	13 1	13 1	22 5	5 1	38 3	18 8	11 2	28 0	10 2	73 9	56 0	24 3	65 4	14 5
Cheese, packed, in car-loads ..	8 5	9 4	8 5	7 6	5 10	19 7	13 1	13 1	28 0	14 11	42 11	18 8	18 8	36 4	26 6	84 11	56 0	24 3	74 8	36 11
„ „ in 2-ton lots ..	11 2	10 3	13 1	9 4	5 10	23 4	14 0	21 6	32 8	14 11	46 8	19 7	30 10	41 1	26 6	102 8	63 6	39 2	84 0	36 11
Butter, in car-loads	8 5	9 4	8 5	7 6	5 10	19 7	13 1	13 1	28 0	14 11	42 11	18 8	18 8	36 4	26 6	84 11	56 0	24 3	74 8	36 11
„ in 2-ton lots	11 2	10 3	11 2	9 4	5 10	23 4	14 0	17 8	32 8	14 11	46 8	19 7	24 8	41 1	26 6	102 8	63 6	30 3	84 0	36 11
Reapers-and-binders, packed ..	13 1	14 0	14 11	11 2	6 5	25 2	22 5	26 2	37 4	18 7	46 8	28 11	38 3	49 6	33 7	102 8	77 6	48 6	93 4	44 3
Guano	8 5	10 3	11 2	7 6	5 10 3 6	19 7	14 0	17 8	28 0	14 11 8 2	42 11	19 7	34 8	36 4	26 6 13 0	84 11	63 6	30 3	74 8	36 11 17 8
Lime, in car-loads	4 8	3 9	3 11	4 8	1 9 3 6	6 6	6 6	5 3	10 3	5 7 8 2	14 0	10 3	7 3	13 1	9 5 13 0	27 1	14 11	9 10	29 10	13 8 17 8
Tallow „	7 6	9 4	6 9	5 7	6 5	16 10	13 1	10 5	19 7	18 7	38 3	17 8	14 11	26 2	33 7	73 9	30 10	19 3	53 2	44 3
„ in 2-ton lots	7 6	10 3	8 5	6 6	6 5	16 10	14 0	13 1	22 5	18 7	38 3	19 7	18 8	28 0	33 7	73 9	63 6	24 3	65 4	44 3
Bones, in car-loads	4 8	3 9	3 11	4 8	2 6	6 6	6 6	5 3	8 5	6 4	13 1	12 2	7 3	10 3	10 2	24 3	16 10	9 10	26 2	14 5
Fresh meat, in car-loads	8 5	9 4	8 5	7 6	6 5	19 7	13 1	13 1	28 0	18 7	42 11	18 8	18 8	36 4	33 7	84 11	56 0	24 3	74 8	44 3
„ in 2-ton lots	13 1	14 0	14 11	11 2	6 5	25 2	22 5	26 2	37 4	18 7	46 8	28 11	38 3	49 6	33 7	102 8	77 6	48 6	93 4	44 3
Fencing-wire	7 6	10 3	8 5	6 6	5 10	16 10	14 0	13 1	22 5	14 11	38 3	24 8	18 8	28 0	26 6	73 9	30 3	24 3	65 4	36 11
Galvanised and corrugated iron ..	13 1	14 0	14 11	11 2	6 5 5 10	25 2	22 5	26 2	37 4	18 7 14 11	46 8	28 11	38 3	49 6	33 7 26 6	102 8	77 6	48 6	93 4	44 3 36 11
Furniture, packed	13 1	14 0	14 11	11 2	7 6	25 2	22 5	26 2	37 4	26 6	46 8	28 11	38 3	49 6	49 4	102 8	77 6	48 6	93 4	70 2
Earthenware, packed	11 2	10 3	11 2	9 4	5 10	23 4	14 0	17 8	32 8	14 11	46 8	19 7	24 8	41 1	26 6	102 8	63 6	30 3	84 0	36 11

Comparison of some American Companies' Local Goods Rates with those of New Zealand.

Miles.	Class.	Merchandise, per Ton. 1.	2.	3.	4.	5.	In Car-loads of from 20,000lb. to 24,000lb. Rates per Ton. 5.	A.	B.	C.	D.	E.	Car-loads. Wheat.	Lumber.	Coal.	Per Car. Horses.	Cattle.	Sheep. S.F.	Sheep. D.F.	Dry Hides.	Green Hides.	Wool in sacks.	Wool in bales.	Green Fruit, less than car-ld.	Green Fruit, car-load.	Vegetables.
													Ton.	Ton.	Ton.					Ton.	Ton.	Ton.	Ton.	Ton.	Ton.	Ton.
10	American rates	13/1	11/2	8/5	7/6	..	7/6	7/6	5/7	4/8	4/8	4/8	5/	4/8	4/8	50/	50/	50/	50/	13/1	8/5	11/2	11/2	..	..	..
		14/0	12/2	10/3	9/4	..	..	11/2	9/4	7/6	3/9	3/9	8/	3/9	..	37/6	37/6	33/4	37/6	..	..	14/	12/2	10/3	9/4	7/6
		14/11	13/1	11/2	8/5	6/9	..	5/11	5/4	4/4	3/11	..	5/9	4/5	Soft 2/10 Hard 3/11	50/	47/11	38/4	38/4	..	..	..	..	..	..	..
		11/2	9/4	7/6	6/6	..	5/7	4/8	4/8	4/8	4/8	4/8	3/	4/8	..	41/6	41/6	41/6	83/2	..	..	..	..	..	..	..
	New Zealand ..	Merchandise. 7/6	7/0	6/5	5/10	..	..	B to D 7/	5/10	E 3/5	F 2/6 N 3/6	N 3/6 O 1/9	3/5	3/4	2/6	30/	30/	30/	30/	7/	7/	..	5/	5/10	5/2	5/10
40	American rates	25/2	23/4	19/7	16/10	..	16/10	16/10	13/1	6/6	6/6	5/7	13/	6/6	6/1	116/8	104/2	104/2	104/2	25/2	19/7	25/2	25/2	..	..	..
		22/5	17/8	14/0	13/1	..	..	14/	13/1	8/5	6/6	6/6	9/	5/7	..	91/8	91/8	83/4	91/8	..	..	22/5	17/8	14/	10/3	8/5
		26/2	21/6	17/8	13/1	10/5	..	9/4	8/10	6/10	5/3	..	8/	6/4	Soft 4/2 Hard 5/3	81/3	72/1	57/6	57/6	..	..	..	..	..	..	..
		37/4	32/8	28/	22/5	..	19/7	16/10	12/2	10/3	8/5	8/5	11/	8/5	..	83/4	66/8	66/8	108/4	..	..	..	..	..	..	..
	New Zealand ..	Merchandise. 26/6	22/	18/7	14/11	..	..	B to D 22/	14/11	E 7/10	F 5/11 N 8/2	N 8/2 O 5/7	7/10	9/7, 6/8, 6/3	5/1	50/	50/	50/	67/6	22/	22/	..	19/2	14/11	11/9	14/11
100	American rates	46/8	46/8	42/11	38/3	..	38/3	37/4	31/9	14/	13/1	12/2	18/	12/2	7/	187/6	166/8	166/8	166/8	70/	42/	56/	56/	..	..	..
		28/11	24/3	19/7	18/8	..	..	21/6	17/8	15/10	12/2	10/3	17/	11/2	..	158/4	158/4	137/6	158/4	..	..	28/11	24/3	19/7	17/8	14/
		38/3	30/10	24/8	18/8	14/11	..	13/0	11/11	9/1	7/3	..	11/6	9/4	Soft 6/4 Hard 7/3	113/4	98/4	85/5	85/5	..	..	..	..	..	..	..
		49/4	41/1	36/4	28/	..	26/2	20/6	15/10	13/1	10/3	10/3	14/	10/3	..	141/8	91/8	91/8	133/4	..	..	..	..	..	..	..
	New Zealand ..	Merchandise. 49/4	41/6	33/7	26/6	..	..	B to D 41/6	26/6	E 12/10	F 10/11 N 13/	N 13/ O 9/5	12/10	15/10, 10/1	10/2	100/	100/	100/	119/6	41/6	41/6	..	37/1	26/6	19/3	26/6
200	American rates	102/8	102/8	84/11	73/9	..	73/9	70/	54/2	27/1	24/3	21/6	22/	21/6	13/4	250/	208/4	208/4	208/4	102/8	46/8	74/8	74/8	..	..	..
		77/6	71/10	63/6	56/	..	..	40/2	30/10	26/2	16/10	14/11	28/	17/8	..	262/6	262/6	245/10	262/6	..	..	77/6	71/10	37/4	28/	23/4
		48/6	39/2	30/3	24/3	19/3	..	16/7	14/9	12/6	9/10	..	15/	11/11	Soft 8/4 Hard 9/10	150/10	132/1	113/6	113/6	..	..	..	..	..	..	..
		93/4	84/	74/8	65/4	..	53/2	51/4	45/9	29/10	26/2	26/2	47/	26/2	..	208/4	166/8 208/4	208/4	208/4	..	..	..	..	..	..	..
	New Zealand ..	Merchandise. 70/2	56/1	44/3	36/11	..	..	B to D 56/1	36/11	E 21/2	F 17/2 N 17/8	N 17/8 O 13/8	21/2	21/3 18/9	14/5	150/	150/	150/	167/6	56/1	56/1	..	47/6	36/11	31/9	36/11

N.B.—For purposes of comparison Merchandise has been computed at 2,240lb. to the ton, and Wheat at 2,400lb., according to New Zealand practice. American car-load rates do not include the cost of loading or unloading.

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