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NEW ZEALAND.

EUROPEAN RAILWAY SYSTEMS

(REMARKS IN REFERENCE TO): BY MR. J. P. MAXWELL.

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

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SIR,— 7, Westminster Chambers, London, 14th December, 1887.

As my visit to this country is drawing to a close, it appears desirable to send a brief account of the matters of interest which I have seen in Europe connected with railway-working. The time at my disposal in England has been very short, and has been devoted entirely to travelling about to examine various railways and their works; I have not therefore time to make a very voluminous report at present.

The printed reports of the proceedings of the Conference have not yet come to hand; they will be sent direct to New Zealand on arrival.

On landing at Naples I travelled over the Mediterranean system of lines by way of Rome and Genoa to Milan, where the Railway Conference was held. From thence, during the sitting of the Congress, I visited, in connection therewith, Venice, Genoa, and Como. On leaving Milan, I proceeded by the Saint Gothard Railway to Lucerne, and thence through Alsace and Lorraine to Brussels, where I remained some time, making inquiries into railway matters. Thence I proceeded to Paris, and, by way of Dover, to London.

During my stay in England I have travelled over, and made various inquiries respecting railway matters on, the London and South-Western, the Midland, the London and North-Western, the Lancashire and Yorkshire, the North-Eastern, the Great Northern, the Glasgow and South-Western, and other lines, visiting Crewe, Derby, York, Edinburgh, Glasgow, Manchester, Sheffield, and other places.

The Italian railways, I was informed, were built by private companies; they were afterwards bought up by the State; but, after very exhaustive inquiries, finding State working accompanied by some difficulties, the Government has leased them to two great companies—the “Adriatic” and the “Mediterranean.” The Government retains a staff of engineers and auditors for the inspection of the lines and their working operations. Into the precise organization of this staff I did not inquire, but I procured from the Government officials copies of the State papers and contracts relating to the leases: as they are voluminous, I did not get them translated, but I am forwarding them with other papers through the Agent-General, so that, in the event of particulars being required at any time, they may be available. The companies pay the Italian Government a fixed interest on the capital as well as a percentage on profits. The rates and fares are restricted by law; they have all to be published by the companies and approved by the Minister for Public Works. The manner of dealing with rates and fares is much the same as prevails in New Zealand, the Australian Colonies, South Africa, and other places: it differs from the English practice: the latter, as you are aware from the official documents in the colony, involves the fixing of each rate separately; in the former cases referred to it is the practice to make use of tables of rates and distances. The accounting is audited by Government officers, for the double purpose of settling the payments due to the Government by way of rental, and of restricting the rates and fares. The railways then are worked by two private companies as far as control, accounting, train-running, and other technical matters are concerned, in the manner common to all large systems throughout the world generally; but they differ essentially from company-worked railways in other countries, inasmuch as their operations are conducted under a close Government scrutiny in many ways. Opinions differ as to the advantages gained. Some persons consider that the public is not so liberally served by the companies as it was by the State. Others consider the operations of the companies have not been carried on long enough to settle whether the public is better served or not. It did not seem possible to come to a conclusive opinion on this point, but there seems little doubt that under this system the Executive has been relieved of much troublesome control.

The lines which I saw are substantially built on the 4ft. 8½in. gauge. The speeds run are moderate, and not equal to those of the English lines. Where steep grades prevail speeds are necessarily restricted thereby, the practice differing but little from ours under similar conditions.

The carriage stock in many cases is dirty and uncomfortable; but there are great differences in type and condition. The wagon stock is of a very mixed character; much of it seems to be very old. The passenger-station buildings at the chief cities are spacious and handsome, but many of the smaller country stations appear very dirty and inconvenient. The rolling stock has grease-boxes.

The lighting of carriages seems to be chiefly in oil, and is, as a rule, inferior to our own lighting. Gas is also now occasionally used. Persons are not allowed on the station-platforms without tickets. No luggage is carried free, except what the passenger can take in the carriage. The charges on luggage are heavy, and the crowding of carriages, through passengers trying to carry their packages with them, is very inconvenient. I have procured and forwarded particulars of the Italian railway charges, and of the rates of pay which govern these charges, to a large extent.

Many things on the Italian railways which are indifferent may be attributed to the previous history of the system; but there is nothing, so far as I could judge, in the management which shows that any special advantage is gained in that respect by the system of control adopted—namely, in leasing the lines to be worked under a limited Government control.

While in Italy I procured patterns of a special form of ticket for advertising upon. This I have written to the Agent-General about, and he will send forward a small lot for trial, with a view to their introduction.

In Belgium nearly all the railways are owned and worked by the State, having been either acquired or constructed by the Government. They are managed by a Board of professional officers appointed by, and answerable to, the Minister. These officers, I understood, are the heads of the respective railway departments. The absorption of the remaining private railways appears to be actively going on. The general aspect of the stock and lines is superior to that of Italy. The same system of division of departments and of booking, accounting, and control prevails as is generally in operation elsewhere.

The rates and fares are made subject to the Minister's approval, and are tabulated, as is the case in Italy. Special rates are published where necessary for the exigencies of trade and of competition in the markets, or with other carriers. The Belgian railway officers showed me great courtesy, and gave me facilities for seeing their traffic work and their shops. The carriages are lighted by paraffin gas. It is claimed that it is cheap and clean; but what I saw was not especially good. The carriage and wagon stock is better than in Italy. Oil-boxes are used, and the same class of American oil as we have adopted in New Zealand; but recently a system of grease-boxes for locomotives has been tried, which is said to be cheaper. Particulars were furnished to me, and I have already reported on the matter; the papers will have reached you through the Agent-General, in which I have recommended a trial. Passengers are allowed 56lb. of free luggage in Belgium, charges are made on the excess, and all luggage has to be booked except it is carried by the passenger. The rates and fares on the private companies' lines are under Government supervision; they have all to be approved by the Minister for Public Works, and to be published. The Belgian laws forbid personal preference in rates. I procured from railway officers copies of the Belgian rates and fares, information about the rates of wages, and a copy of their report. The inference I drew from private information was that the Government railways could not be worked so cheaply as private ones are, not because the management was inferior, but on account of political influences. It also appears that on national grounds the rates are fixed very low, and the country does not look for the railways to pay much interest on their cost in consequence, notwithstanding the excessively low rates of wages prevailing, which in many cases are not a third of what they are in New Zealand.

In Belgium, then, the railways, for the most part, are State-owned and are worked by the Government under a professional Board responsible to a Minister. The Colony of Victoria has also a professional Board to work its railways; but in that case the Board has a status, which is not the case in Belgium.

I understood that very similar causes operate in Belgium to those which have been experienced in New Zealand and elsewhere. Political and national considerations act to prevent the same financial results being obtained from working as are obtained by private enterprise. In contrast to the Italian lines, however, the State-worked lines in Belgium appear to be better managed than the State-owned Italian lines, which are worked by companies.

During my stay at Brussels I was shown over the railway workshops at Malines, which are the principal shops. They are very extensive. I made special inquiries as to the experience of the railway engineers with the Belpaire fire-box, which was, some time since, introduced into New Zealand on trial. Many years' experience in Belgium has proved its utility for classes of light coals such as we use in some parts of the colony. So far as the appliances are concerned there was nothing more than we are acquainted with generally in New Zealand, and the arrangements were not so complete as those of some of the English shops.

After leaving Brussels I proceeded to Paris. The short time at my disposal prevented my making very close inquiries into the railway-working in France. The French railways are for the most part worked by private companies; a small portion of the whole are, however, worked by the Government—as the system is some distance from Paris I could not visit it. I obtained a copy of the companies' rates on the northern system. The companies are compelled by law to publish their rates, which are sanctioned by the Government. Personal preference is forbidden by law. The rates are tabulated, similarly to the Belgian and Italian practice and to our own. The lighting of carriages is of a mixed character, oil and gas; I saw nothing very brilliant of this kind. The lines are substantially built, and the appearance and working seemed very similar to the Belgian practice.

Time did not allow of my going to Germany, so that, beyond travelling over the railways through Alsace and Lorraine, I saw nothing of the German working. The same remarks apply to the Swiss railways, which I merely travelled over from Como to Balse through the Saint Gothard tunnel.

The carriage- and wagon-stock is interchanged by all the European countries, except Russia and Spain, whose gauges differ from that of the rest of Europe. Continuous brakes are adopted, both Westinghouse and air-brakes: the different systems in operation cause great trouble. Many of the carriages are fitted with two kinds of continuous brakes, and with hand-brakes also, to allow of through running; but great difficulties occur in practice through such differences. Sleeping-cars are provided by a special company, and are run by the railway companies all over the Continent; a charge is made by the carriage company in addition to the first-class fare charged by the railway company. The cars I saw were not so commodious as those used in South Australia and Victoria.

Refreshment arrangements vary very much. In some cases time is given at the stations. In others, dinner- and luncheon-baskets are obtainable by previous order: these may be carried in the train and left when done with. To some trains dining-cars are attached, built on the American pattern. Where lines have easy gradients dining-cars are doubtless very convenient; but on lines with steep gradients, where a few tons of extra load is of great importance, they would be objectionable.

As regards rates and fares, I have, as stated, forwarded some of the official data thereon, and I have also inquired about the English rates; but the latter, on account of the system of rating, do not allow of a review being readily made. I may at the same time remark that comparisons of rates and fares in operation in different countries, where conditions differ widely, are not of much value. The rate of wages is the main factor in working expenses. Rates of freight which might yield handsome profits in Belgium would involve heavy losses in New Zealand, where the rate of wages is about three times as great. The rates of wages in Victoria and New South Wales are probably higher than in New Zealand; but those in New Zealand are in advance of those in the United States, and still more so of those in Europe. In any examination of the question therefore this point must not be overlooked.

Throughout the systems I visited, the lighting of passenger-stations by electricity has been very generally adopted, and in some cases electricity has been applied to lighting goods-stations, to facilitate wagon-sorting and -shunting at night: an interesting example of this class of work was shown to the members of the Railway Conference at Milan. Signals by trumpet are pretty generally used in sorting instead of by the whistle. These stages of railway-working are not yet reached in the colony, where the traffic is light.

I have alluded to the systems of primary control which I observed on the Continent, which comprise State lines worked by private companies, under a limited Government supervision, State lines worked for the Government by a professional Board directly answerable to the Minister of the department, and private lines worked under the directions of Boards of directors.

Whatever system of primary control may prevail, on all railways the practical working rests with professional officers, and the departmental divisions fall naturally into the same groups, with similar systems of control, and subordinate duties with but slight differences in detail, except in respect to rating, where the English system of keeping rates in books at each station differs very considerably from the system of publishing all the rates in one book, as is done on the Continent of Europe, and in all the English colonies that I am acquainted with.

While at the Milan Conference I made general inquiries about the railway practice in Chili in some respects. The conditions in Chili are, briefly, that the railways, at present, have only one outlet to ports; they have a much smaller mileage, a population nearly three times that of New Zealand, and a much lower rate of wages. Precise particulars of rates, &c., have been promised to me, and will be forwarded to the colony. Chili is a great wheat-growing country, and is therefore a competitor with the Australasian wheat-exporting colonies. It is expected shortly that the Chilean railway system will be connected with the east coast of America, bringing it much nearer the European markets: it will therefore be of interest to know more about its practice.

The working of the English railways by the principal companies, in most respects, appears superior to the Continental systems which I saw. The speed of passenger trains, the rapidity of despatch of goods, the class of passenger accommodation, and the train accommodation are in advance.

With respect to lighting of trains, by the courtesy of the General Manager of the Great Northern Railway, I was able to travel on and examine one of their suburban trains which is lighted by electricity. I also visited the London, Brighton, and South Coast Railway, and received information from the company's electrician on the subject. The latter company has had the electric light in trains for some years, and is extending its operations. The system in use is to drive a dynamo off the axle of the van of the train, which is also fitted with accumulators, with which the carriage-lamps are connected. In other places the dynamo has been driven by a separate engine on the locomotive; but in practice this has not been found convenient. The Electric Lighting and Storage Company undertakes to furnish movable storage batteries, which can be charged at permanent stations, and placed in each carriage. From what I learned, it seems likely that electric lighting will be gradually introduced on English railways, as it is preferred to gas and is superior to oil. Gas is extensively used on the English lines as well as oil, but, like oil, gas very frequently is a very inferior light. So far as I have observed, I have seen no lighting better than or even equal to that obtained from kerosene in the American lamp used in the American type of carriages. Gas-lighting must add very materially to the load of the vehicles and to the cost of their maintenance, and it involves costly plant at numerous points on the line, and, with the prospect of electricity becoming more generally introduced, it does not appear a practice which would be advisable to commence.

I took note of the large extent to which hydraulic cranes are now used at goods dépôts and wharves. Up to the present the New Zealand Government has only essayed to introduce the system at Greymouth for coal-loading; but it appears suitable for some of the larger stations, such as Lyttelton, in connection with the wharves and with grain-storing, and at Christchurch and Dunedin, in connection with goods work; and the extent to which it should be adopted is a question which the officers of the department may with advantage consider and investigate.

The Locomotive Superintendent of the London and North-Western Railway (Mr. Webb) has kindly furnished me with particulars of his compound cylinder locomotive, of which he has a large number running. I have also been supplied by the consulting engineers with data respecting Wordsdell's compound engine, which is in use on the Great Eastern. It is claimed that some economy in fuel is obtained by their use. Both systems appear to be capable of adaptation to the 3ft. 6in. gauge, and the subject is one which should receive close attention and investigation before further locomotives are built for the New Zealand railways.

During my visit to various works I made note of such machinery as appeared suitable for the colonial shops, and I have requested the Agent-General to forward you the lists and estimates for procuring same.

I have received your instructions from the Agent-General to obtain information respecting railway matters from America, and I have accordingly arranged to leave England on the 17th by the s.s. "Gallia," of the Cunard Line, for New York; and I propose to leave San Francisco by the mail leaving there about the 2nd February, reaching the colony in March, unless it should appear desirable to remain longer in America for the purpose of getting information.

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The Hon. the Minister for Public Works.

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