

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-