In Denmark the State often assists by guaranteeing 4 per cent. on the capital invested, and it also guarantees the cost of the land. The State contributes one-half or three-quarters of the cost.

In Egypt free land is granted, and the Government also allows a net profit of 900 francs per kilometre (£60 per mile), but the guarantee is of no practical value.

In Italy the system of subsidies also prevails. This system has been modified by different laws. At first the subsidy did not exceed 1,000 francs per kilometre (£67 per mile). The law of of 1881 raised the amount to 3,000 francs per annum per kilometre (£200 per annum per mile); and, even later, to 8,000 francs (£536 per mile). It is now 6,000 francs (£400 per mile).

In Norway there has been no special legislation on this subject. Special subsidies are stipulated for each line. Frequently the State assumes one-half of the cost of construction. One-half of this portion takes the form of a subsidy, the other half being represented by shares of stock.

In the Netherlands the financial assistance of the State and provinces is not defined by any special law. Each concession is dealt with separately.

In Switzerland no law exists, but some cantons give aid in the form of subscriptions to stock.

I have gone into this question pretty fully, thinking it may be of special interest. The so-called light railways are in many cases substantially built, and will compare favourably with the New Zealand lines.

In France it will be observed that most of the light railways are of the normal gauge. This is very desirable for all lines which connect or may in the future connect with main lines.

19. Organization of Cheap Service and Simplification of Conveyance.

Organization of a cheap service on main lines, branch lines which carry little traffic, and on light railways; simplification in the conveyance of passengers, parcels, and goods; special motors and rolling-stock.

Reporter.—All countries, except America, Austria-Hungary, Germany, and Holland—Mr. Joseph Rocca, Engineer, Chief Inspector of the General Directory of the Mediterranean Railway of Italy.

Notes.

As to technical working, nearly all managements are satisfied to have the track inspected once or twice a day. Some have done away with track-watchmen, replacing them by labourers employed on maintenance-work, who inspect the track in the morning on their way to work. In other cases this duty is intrusted to the gang foreman. To simplify the station service, the crossing of trains is restricted to certain stations. To reduce the number of employees at crossing-points it would be necessary to do without their co-operation in matters affecting the movements of trains; all these matters for the entire line must be concentrated in the hands of a single official. Such an arrangement has been in use experimentally on a line 60 kilometers (37 miles) long belonging to the Hungarian State Railways for nearly six months, without developing any disadvantages.

A similar measure might overcome another difficulty encountered at small stations—viz., the complexity of the tariffs. An employee of limited education is not qualified to understand all the rules for the application of the tariff. It might perhaps be possible to intrust the application of the tariff to an official living at the junction station. One of the most efficient methods of reducing operating-expenses will always be the reduction of the expense of traction. Now the numbers of trains cannot well be reduced without causing dissatisfaction to the public, or even reducing receipts. The running of mixed trains for this purpose only partially meets the reasonable demands of the public, while the separation of freight from passenger traffic always involves an increase in the number of trains. To avoid an excessive increase in the cost of the service, the only recourse is to reduce the weight of the trains and the number of employees. Some of the measures introduced for this purpose involve dispensing with the brake-van and the fireman on the locomotive. Automotor-cars have been introduced on many light railways, and on branches of main lines for passengers and parcel business. In some cases the automotor hauls an ordinary car as a trailer. The motive power is generally petrol, used in a Daimler engine, and steam used as in a locomotive. Electric (accumulator) cars are also used. In Hungary a number of cars are working, but their construction leaves room for improvement in design.

The Great Western Railway Company of England have upwards of fifty automotor-cars working, which number is being rapidly increased. They are steam-cars of a powerful design, having cylinders of 12 in. diameter and 18 in. stroke supplied with steam from a large vertical boiler carrying a pressure of 160 lb. per square inch. When in England I went to Plymouth, where I saw the cars in service. They are working a frequent service on a branch line running to Plymouth. The line runs through a thickly populated district. Prior to the introduction of the automotor the passenger business suffered severely on account of tramway competition. The stations were also too far apart. Specially low fares have been made for the new service, and a large number of new stopping-places made. These are provided with cheap sheds and short platforms. In some cases considerable expense has been incurred in building overbridges and in making approaches to the stations. The cars are operated by a staff of three, and they are not reversed at stations. The engineman drives from the leading end of the car or cars, as would be the case when two cars are on. The fireman attends to the boiler, and the guard sells tickets at "halt" stations. He also collects all tickets. The cars are large, carrying from sixty to eighty passengers, all of one class. When one car is run no smoking is permitted, with two cars the second is used as a smoker. The speed attained is quite thirty miles per hour. The cost of the cars is considerable, varying with their size, reaching as high as £3,000. The same object could be gained by using a small locomotive and two cars. The Great Western Company are the largest users of automotors in England. Other companies use them also, but not to the same extent.