

to haul trains of maximum size at the speeds required. The train-schedules should provide for the movement of all trains at a uniform speed and stopping at all stations on the same tracks. Separate tracks should be provided upon lines of heavy traffic for trains which are run at high speed and do not stop at all stations.

All necessary measures should be taken to accelerate the movement of passengers and start the trains promptly. In this way the expenditure of energy to regain the time lost is conserved and the promptness with which the services are conducted communicates itself to the passengers, who quickly learn to move more rapidly. The frequency of train movements should be in proportion to the volume of traffic to avoid prolonged waiting of passengers and congestion at stations.

Notes.

The Assistant General Manager of the Great Eastern Railway Company, England, considered that the main points in connection with suburban traffic are—(1.) The number of passengers to be carried: At Liverpool Street Terminus, London, the maximum round number of passengers arriving on an ordinary week-day is about eighty-six thousand. (2.) Motive power: On the Great Eastern single-expansion engines having four, six, and ten coupled wheels are used. (3.) Train-running speed: On the Great Eastern the average speed for local trains is $19\frac{1}{2}$ miles per hour; 28 seconds stop at stations. (4.) Signals: The block system is generally employed on the Great Eastern. (5.) Station management: In order to distribute passengers as much as possible over a longer space of time the Great Eastern has divided the first morning hours in the working-class districts into "time zones," the fares varying according to the hour at which passengers take the train.

Mr. A. Mange, Secretary to the Paris-Orleans Road, said his company operated 12.4 miles of road electrically. One hundred trains are run daily, as against seventy-five where the line was worked by steam locomotives. Four tracks are used, two for express and two for local trains. There are two types of trains—heavy trains carrying a thousand passengers, and light trains carrying six hundred and fifty passengers.

During my stay in New York I spent some considerable time in observing the working of suburban traffic, especially on the underground and elevated railways, both of which are worked by electric motive power. The underground, more generally known as the "subway," is an excellent piece of work. Trains are numerous, and a very large number of passengers are carried. There are four tracks, two for express services and two for local services. One very noticeable feature in connection with both lines is the smartness of working at stations; there is no dilly-dallying on the part of passengers, who are always ready to join their train quickly. They make it a regular practice nearing their destination to be up on their feet and move towards the car-door generally before the train stops. Little or no luggage is carried on these trains. The same remark generally applies to the elevated railway in New York.

While in London I travelled on the "twopenny tube," and also on the Metropolitan line; both carry heavy traffic. The tube is worked by electric power, and the Metropolitan is being converted from steam to electric traction. The working was smart, but not equal to the New York subway and elevated lines. The passengers did not hurry in the same way. I also took the opportunity when in London of seeing the working of several of the large stations. Lack of room to deal with the ever-increasing business is one of the many difficulties which companies have to contend against, and extension of stations can only be accomplished at an enormous cost.

SECTION 4.

13. SLOW FREIGHT RATES.

General principles and descriptions of the different systems of rating slow freight goods.

Reporters.—America—Mr. M. C. Markham, Assistant Traffic Manager, Illinois Railroad; England—Mr. Smart, Secretary, Railway Clearing House, London; Italy, Spain, Portugal, France, Belgium, and Holland—Mr. Mange, Assistant General Superintendent of the Paris and Orleans Railway Company, and Mr. W. J. Vare Overbeck de Meyer, Chief of the Division of Tariffs of the Company operating the Holland State Railways.

Conclusions of Congress.

Tariffs should be based on commercial principles, taking into account the special conditions which bear upon the commercial value of the services rendered. With the reservation that rates shall be charged without arbitrary discrimination to all shippers alike under like conditions, the making of rates should as far as possible have all the elasticity necessary to permit the development of the traffic and to produce the greatest results to the public and to the railroads themselves.

Notes.

In England the tariffs are submitted to the Board of Trade, which settles by arbitration any disagreement between the companies and the public, but it has no right either to fix or modify tariffs. By the Railway Rates, Charges, Orders Confirmation Acts of 1891-92 there was established—(1) A general classification of the various classes of freight; (2) the maximum limit of supplementary charges; and (3) the maximum rate of transportation per ton for each class. In some cases tariffs have been specially reduced for large movements of freight between given points during a certain period. In making special rates companies are not allowed to discriminate between shippers, and no distinction is made in the tariffs as to the time of transit. The principles applicable in England are the same as those which control the establishment of freight charges in the United States, but what especially characterizes the freight charges of the United States is their very great flexibility due to the commercial and industrial conditions.