gate only 45·28 miles in extent, as compared with 403·64 miles of the entire system. The locomotives used are of the Baldwin type, with two pairs of driving-wheels coupled, and weighing about 60,000 lbs. on the drivers.

The main line of the Michigan Central Railroad, which extends through the southern part of the State of Michigan from Detroit to Chicago, is 284·07 miles in length, but with branches and leased lines, it comprised 949·59 miles in 1881. The gradients on the main line and branches are considerably steeper than those on the Canada Southern, and in places reach 52 feet to the mile (1 in 100). The locomotives used are similar to those on the Canada Southern, and the fuel is also similar, being bituminous coal from Ohio.

The Lake Shore and Michigan Southern Railway extends along the southern shore of Lake Erie from Buffalo to Chicago, with branches to Detroit and other places. The total mileage of the system in 1880, including leased lines, was 1,177·67, and of this the length of main lines is 504·49 miles. The gradients of the main line are considerably easier than those of the Michigan Central, and nearly as good as those of the Canada Southern Railway. The engines and fuel are similar to those on the lines before-mentioned.

The Hannibal and St. Joseph Railroad is in the State of Missouri. Its mileage in 1880 was 292·35. From the length of trains hauled, the gradients would seem to be steep.

In preparing the Table in the Appendix, information has not always been obtainable from the printed reports in the exact form required. In these cases the method adopted for supplying the particulars has been as follows. The total amount of coal and wood (the latter turned into its equivalent in coal) consumed is noted. When the amount to be apportioned of the freight and passenger services respectively is not stated in the printed report, the total amount is divided into two portions in the ratio of the respective engines, mileages, and also in the ratio of 26 to 34, being that in which the consumption of a passenger-engine, as determined by careful observation, stands to the consumption of a freight-engine. This, in the first instance, gives the total amount of coal consumed in each service, including switching or shunting. In order to arrive at the amount consumed in moving freight-trains on the line, the total amount of engine-mileage made in switching or shunting is noted, and this is divided into two portions, in the proportion in which the passenger-train mileage stands to the freight-train mileage, and the switching is thus allotted to the respective ser-