the Back Bay stations and the South Station. The construction of the South Station, indeed, was another piece of temporizing.

Bearing this in mind, one evident solution of the difficulty would seem to be a compromise between the two rival routes for the new westward subway, by which it would follow the river-bank course to Exeter or Dartmouth Streets, cross through the very heart of the Back Bay district, touch the Back Bay stations, which ought to be united instead of scattered as at present, and then swing around through Park Square and the Boylston Street subway to the North Station, either through substantially the old route or via the M. Street route. In connection with this, a direct tunnel between the North and South Stations might or might not be necessary. The fact is, at all events, that 10 years from now Park Street will not be a central traffic point, nor will the South Station have anything like its present importance as regards the local passenger service. The city would be, in fact, better off if it were abandoned as a passenger station altogether and used merely as a freight station for the accommodation of the wholesale districts which lie near it. It seems a shortsighted policy to arrange the rapid transit situation with a view to the traffic conditions of 10 years ago instead of taking into account those which are likely to exist 10 years hence.

Any subway construction superimposed on that already existing in Boston involves engineering difficulties, but they would not be substantially more serious under the arrangement here suggested than under those now projected. It is not always easy to foresee future lines of development in the growth of a city in time to allow for them, and plenty of mistakes have been made in the past, as they will be made in the future. Nevertheless, in the case of Boston the handwriting on the wall is perfectly plain so far as general tendencies go, and it should not be overlooked in executing the important and costly works for the betterment of the city.

**ENGINEER**

**TRANSPORTATION FACILITIES IN CHARLESTON, S. C.**

The City of Charleston, S. C., which now has a population of 65,000, is situated on a peninsula 1½ miles wide and 3 miles long. The electric railway service for this city and the nearby Sullivan’s Island and Isle of Palms is furnished by the Charleston Consolidated Railway & Lighting Company, which operates a total of 41 miles of standard gage track and two ferryboats under the management of George H. Waring, general manager, and T. W. Passailigue, superintendent of the railway division. The trackage is divided as follows: Six city lines on East Belt, West Belt, Meeting, King and Broad Streets, Rutledge Avenue north, Suburban and Navy Yard line to the extensive fertilizer works, lumber mills and government Navy Yard; and the Seashore division for trans-bay traffic, including the service to the company’s noted pleasure resort on the Isle of Palms. The latest construction is a 4-mile extension, including 1 mile of double track, to the northwestern suburbs of Charleston. The line ends at a park called the Schuetzenpark and also reaches a baseball ground located at Hampton City Park. All curves on this line are double-tracked to insure maximum safety in operation. The United States Electric Signal Company’s block signal system has been in successful use for over two years on both the Seashore and Suburban divisions.

**CITY SERVICE**

About 31 cars are regularly operated on the six city lines. The East Belt and West Belt lines give a 7-minute service, while a 10-minute headway is used on the other routes. Most of the cars are of the single-truck type, 25 ft. over all. However, the Belt lines have recently been equipped with Brill semi-convertible cars which seat 32 passengers. The new cars have 20-ft. bodies, are 28 ft. 7 in. over all and are equipped with two GE-57 motors each. The seat-use factor in the Charleston city service is about 66 per cent.

As elsewhere in the South, the Charleston company also has to cope with the problem of race separation on the cars. The South Carolina “Jim Crow” law calls for the separation of the races only on suburban lines over 5 miles long, but by agreement with the Charleston municipality white and colored passengers are not allowed to sit together. This practice has been found more satisfactory to both races than the use of compartments or movable partitions.

**SUBURBAN AND NAVY YARD LINE**

The Suburban and Navy Yard line carries thousands of black and white workers to and from the fertilizer works. For obvious reasons this traffic is confined to separate cars during the rush hours. Between 6 a.m. and 7 a.m. and between 4:30 p.m. and 6:30 p.m. groups of six cars are sent out on 15-minute headway. Three cars of each group are for white and three for colored people. As the traffic decreases, similar cars are run two and two. A half-hour service is maintained with single cars during the day, and the passengers are then separated, white on one side of the aisle and colored on the other.

The principal rolling stock for this service comprises 15 semi-convertible cars 37 ft. over all with 30-ft. bodies mounted on DuPont trucks, which are equipped with two GE-57 motors. With these cars the 8-mile trip from the Battery in Charleston to the Navy Yard is made in 45 minutes. The latest cars for this service comprise six Brill full-convertible cars 46 ft. over all, with slat seating for 56 passengers. These cars will be used principally as trippers.

**THE SEASHORE DIVISION**

The Seashore division is an 8-mile line passing through the United States government reservations on Sullivan’s Island, several summer resorts and the Isle of Palms, which is last the property of the Charleston Consolidated Railway & Lighting Company. The Mt. Pleasant terminus is reached by ferry from Charleston in 15 minutes. The boats, which are owned and operated by the railway and named “Lawrence” and “Sappho,” are of 1500 and 750-passenger capacity respectively. Only the smaller boat is used during the season. From May 15 and Sept. 15 the traffic is very heavy. The round trip to the Isle of Palms, including ferryage, costs only 30 cents for 22 miles. The one-way trip by car and ferry from Charleston is made in the fast time of 40 minutes. The Sunday and holiday travel to the Isle of Palms varies from 3500 to 5000 people, some of whom are brought into Charleston on reduced rate combination steam railroad tickets. The natural attractions of the island are enhanced by a dancing pavilion 1000 ft. x 140 ft. in size, which is large enough for 1500 dancing couples and 2000 pavilion seats at one time. There are a hardy-gurdy and a Ferris wheel. On Sundays the traffic is given by the Metz Military Band at a cost of $3,500 for the season. Hotel Seashore, which can accommodate 300 guests, is located on the beach near the pavilion. There is also a large café adjoining the pavilion which caters to the large crowd of Sunday guests.

The rolling stock for this service consists of 19 double-truck cars seating 40 passengers and each operated by two GE-57 motors. During the periods of heavy travel each motor car takes a 40-passenger double-truck trailer. Two box cars, each equipped with two GE-57 motors, and two flat trailers are used to handle the freight business on this line. Express packages received from the Southern Express Company's agent at Sullivan's Island are handled at an average rate of 15 cents. The company also has a contract with the United States government for carrying mail. The annual revenue from mail transportation is about $1,300, based on three cents per pound-mile. Mail is carried on the Suburban division at the same rate.

The maintenance of way department of the Michigan United Railways has erected neat and substantial fixed signals at all places along the tracks between Jackson and Battle Creek where obstructions require that a snow plow be lifted. Each signal consists of a 6-ft. length of 1-in. pipe, to one end of which is attached a triangular-shaped flag of sheet steel. The pipe is painted black and the flag yellow. These markers can easily be set in the track grade at snow-plow obstructions and serve their purpose during the winter and easily be collected and repainted during the summer.