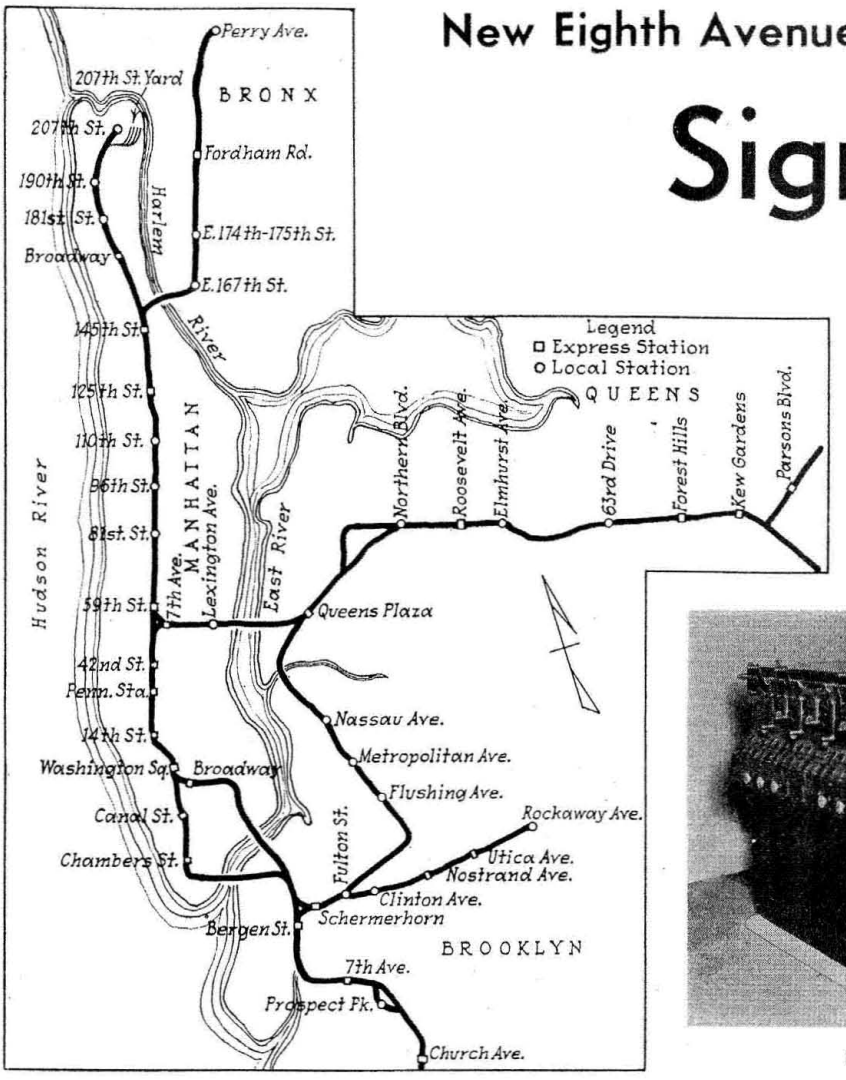
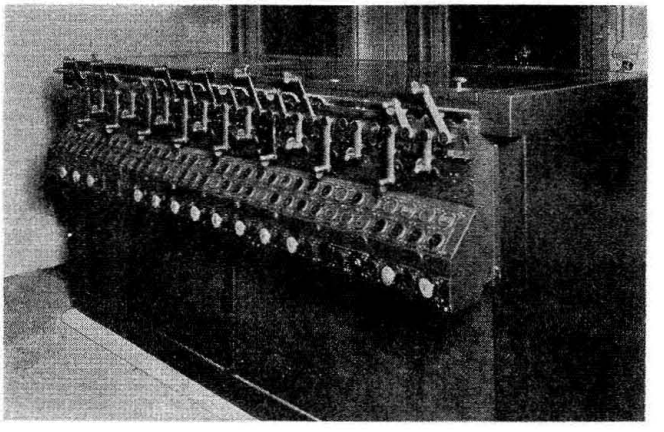
New Eighth Avenue Subway

Signaling and

Dense-traffic operating conditions responsible for many singular features of general and technical interest—Scientific location of signals provides for maximum safe utilization of track





Machine at the 200th street plant

FOR several years the city of New York, through its Board of Transportation, has been constructing an entirely new system of subways to serve Manhattan Island and the more populous sections of the Bronx, Brooklyn and Queens. This new system to a certain extent parallels the two subway systems now in service and is being provided for the purpose of relieving congestion on existing lines and to insure proper transportation for the city's ever-increasing population. The lines to these several boroughs are not as yet completed, but the section of this new system, known as the Eighth Avenue line, extending from Fulton street at the south end of Manhattan to 207th street at the extreme north end of the island, is now ready for service, and as the features of the signaling facilities for the entire project are in general the same, the following description will be confined to this section. This line has four tracks from Fulton street to 168th street, 10 miles; and two tracks from 168th to 207th street, 2.2 miles; or a total of 48.5 miles of single track on the main line, including 4.1 miles of siding track. The main shops and storage yard of the system are located at 207th street, and include about 14.2 miles of track, making a total track mileage of 62.7 miles, all completely signaled. All switches on the system are interlocked.

To the railroad man who ordinarily thinks in terms of 100-mile divisions, this subway may be considered as a small proposition. True, it is rather short, but due to the dense traffic which will be handled, and the numerous interlocking plants and stations, the signaling not only presented many new problems, but involves a vast amount of equipment. On this section of line there are 822 signals, or an average of 13 signals per mile of single track, including yards. Of these signals, 551 are equipped with automatic train stops. There are 837 track circuits, or an average of 13.3 per mile of single track. The 19 interlocking plants have 626 working levers. The relays, of which many types were used, total 2,957. About fourteen million feet, or 2,650 miles, of wire were used, equivalent to 42 wires per track. The total cost of the signaling and interlocking was over $5,000,000.

The signaling system was installed according to plans and specifications developed under the direction of R. C. Johnson, signal engineer of the Board of Transportation of the city of New York. On account of the extent of the project and the short time available, the construction was divided into two contracts. The Union Switch & Signal Company furnished and installed the signaling on the territory between 103rd street and 207th street, including the yards; while the General Railway Signal Company had a similar contract for the territory between Fulton street and 103rd street. About 54 per cent of the project was installed by the U. S. & S. Company and 46 per cent by the G. R. S. Company.

Operating Characteristics of Line

In general, on the four-track section of the line the two outside tracks are for local trains and the two inside tracks are for express trains. Local stations are located approximately ½ mile apart, there being 29 such stations between Fulton street and 207th street. On the average,