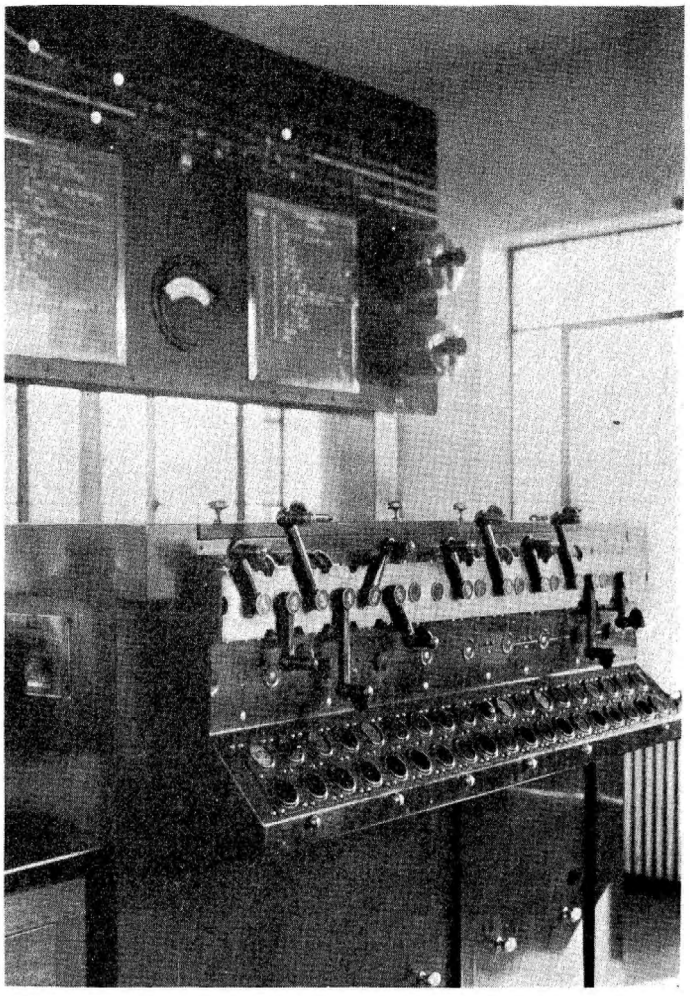
Erie Installs



A 12-lever electric plant replaces 18-lever mechanical interlocking

THE Erie has made extensive track changes and replaced an 18-lever mechanical interlocking with a 12-lever electric plant at Rutherford Junction, N. J., which is located 9 miles west of Jersey City terminal. In brief, the interlocking is the Union Type-F electric type, with a Model-14 interlocking machine, and 110-volt d-c. Model-M2 switch machines using Type-F controllers, the control system being based on SS selections through switch-repeater relays. Thus, in general, the installation represents standard practice. However, the plant includes several interesting special features such as a "hold-out" signal, the use of a hand-operated switch stand, with an electric lock, within interlocking limits, a new type of connection for the point-detector rods on switch machines, an economical fireproof tower building, and numerous well-planned details of construction including cable lines and instrument housings.

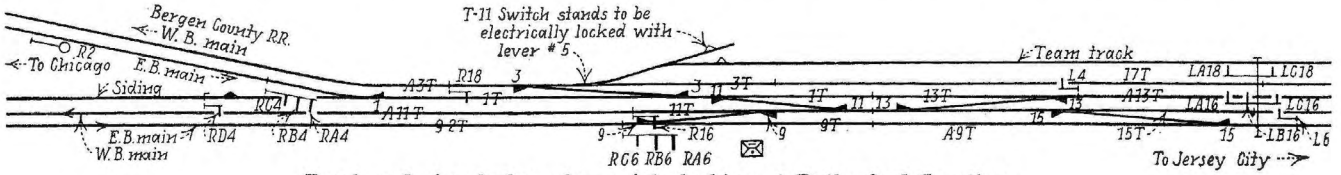
Why a New Plant Was Required

With the exception of a short section over Hackensack River drawbridge, the Erie has four or more main tracks from Jersey City to Rutherford Junction, with two main tracks extending westward from Rutherford Junction through Paterson, N. J., to Ridgewood Junction, and two main tracks, known as the Bergen County Railroad, diverging at Rutherford Junction and passing to the north around Paterson to join the main line again at Ridgewood Junction. In the four-track section east of Rutherford Junction, the two tracks No. 1 and No. 2, on the south side, are used primarily by passenger trains, and tracks No. 3 and No. 4 for freight trains. West of Rutherford Junction, the majority of the passenger trains are run on the line via Paterson, and the through freights via the Bergen County line, although some of the suburban trains to and from more remote stations are operated via the Bergen County line. The line through Paterson crosses numerous streets at grade, and as a result speed restrictions are in effect, whereas the Bergen County line passes around Paterson, affording practically unrestricted movement for through trains.

The traffic through this plant daily includes 125 passenger trains and 25 freight trains. Operation is complicated by the fact that some of the suburban trains from Jersey City reverse direction at Rutherford Junction and return to Jersey City, thus requiring extra operations of the plant. In view of the fact that the freight as well as passenger trains are to a great extent bunched during the morning and evening hours, the changing of routes through the Rutherford Junction plant required fast operation of the interlocking machine.

The previous track arrangement was such that only direct crossover movements to and from the Bergen County line could be made. As these crossovers were No. 10, train movements through them were slow. Also during the morning rush hour the occasion frequently arose in which certain trains could be kept moving and on time if they could be routed from eastward track No. 2 to eastward track No. 4 without stopping. To accomplish this would require the installation of two crossovers.

As the rail throughout the plant was due for renewal, it was decided that a new track layout should be installed, including the two additional crossovers and using longer crossovers throughout so as to permit fas



Track and signal plan of new interlocking at Rutherford Junction

Electric Interlocking

Extensive track changes and new signaling arrangement replace mechanical plant at important junction as a means of facilitating train operation

train movements. An additional consideration was that the old two-position lower-quadrant signals were obsolete. Rather than rebuild the old mechanical plant to fit the new track layout, a new electric interlocking was installed.

Track and Interlocking Changes Co-Ordinated

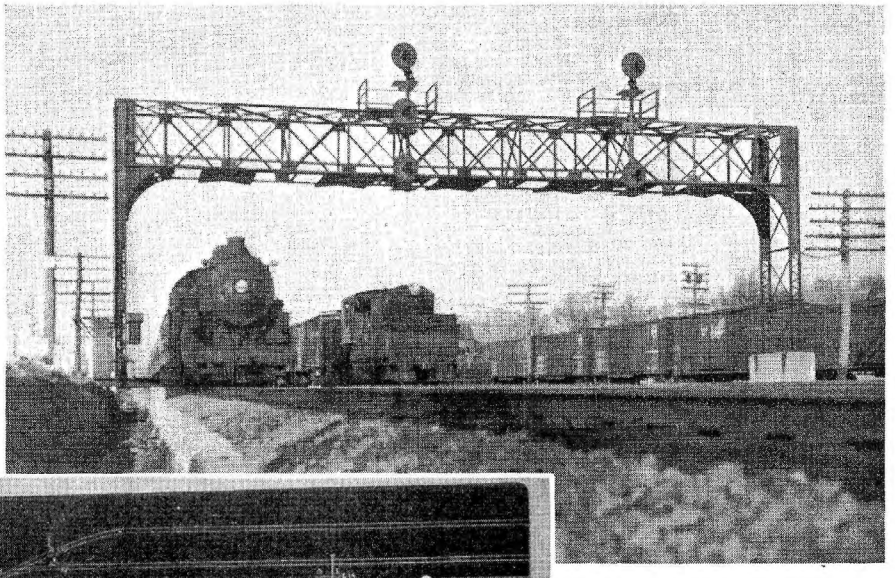
When making track changes, 131-lb. rail was used throughout. The new layout was planned so that all switches could be installed, switch machines set and connected, without interfering with the old interlocking, except for crossover No. 9. Due to the necessity of first removing one of the crossovers of the old interlocking, crossover No. 9 was placed in service the following day, but as this was one of the additional crossovers, the delay did not interfere with existing train schedules.

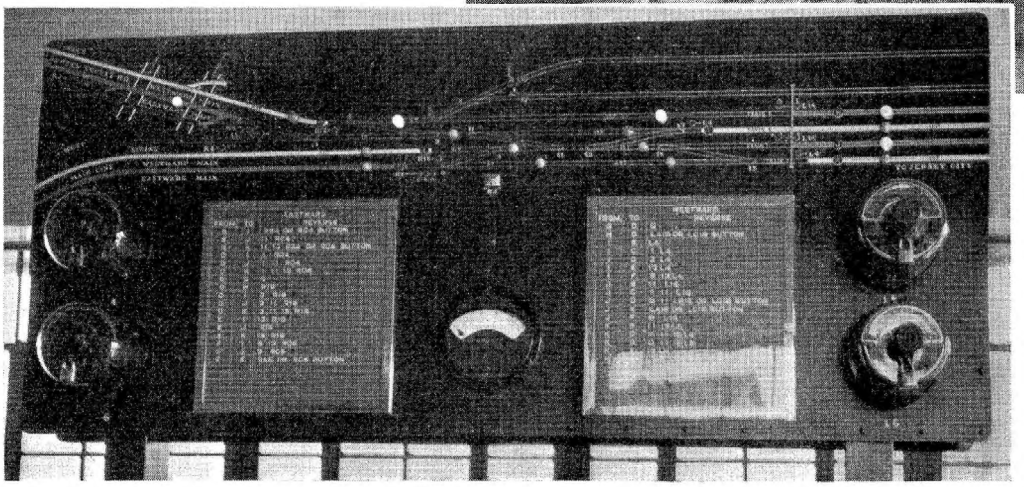
The previous westbound home signal bridge, which spanned only four tracks, was taken down and moved 500 ft. eastward, and at the same time a new section was inserted to make it span five tracks. The new searchlight type signals were placed in service on the bridge and connected to the old mechanical interlocking machine temporarily. The eastbound semaphore signals remained in service until the interlocking was changed over. Prior to the track changes, the new tower had been constructed at a point about 270 ft. east of the old frame tower. The new interlocking machines, relays, battery and wiring distribution over the plant was installed complete as a separate project from the old mechanical plant.

Choosing a period when no trains were due, starting at 9:30 a.m., the old interlocking was cut out of service, and the leverman moved to the new tower. Within 30 min., the changeover was completed, during which time the signal forces made the final connections of the 110-volt circuit to the switch machines at the new crossovers, placed jumpers around old insulated joints and removed them from the ones at the new locations, made changes in the connections for signal control circuits, etc. At the end of 30 min., the layout was being operated from the new electric interlocking machine, with the exception of the new crossover No. 9, which, of course, could not be laid until the old crossover was removed, this work being completed, the switch machines connected and in full operation before the end of the day following the changeover. The entire change was made without delay to any train. A telephone circuit which extends from the tower to each instrument case on the plant was a great help in making tests.

The New Interlocking Machine

The new Union Type-F electric interlocking machine, with a 19-lever frame, has 6 levers for operating 1 single switch, 5 crossovers, and 1 derail; 5 levers for operating 16 signals, and 1 lever for control of electric locks on hand-operated switch No. 5 and two derails on the team tracks leading to house tracks.





Above—Eastbound train passing westward home signal bridge. Left—Illuminated diagram, time-releases, and meter