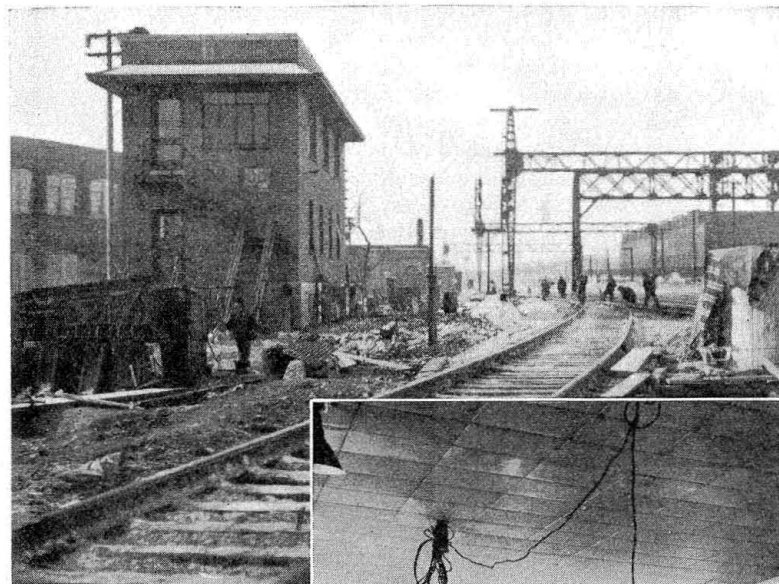
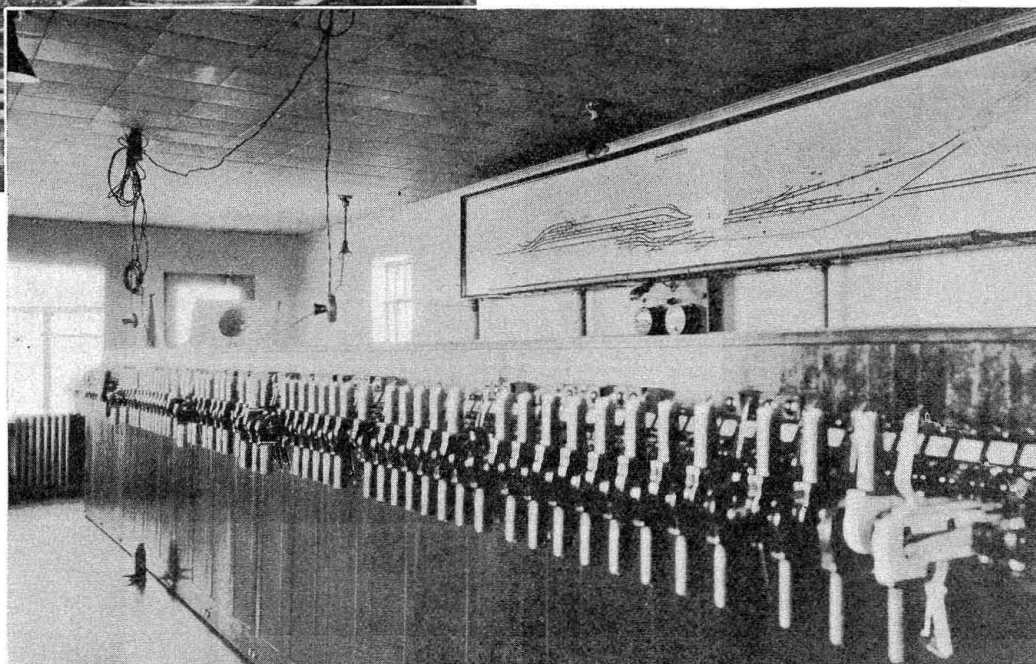


N.Y.C. Makes Rapid Cut-Over on Large Plant at Cleveland



Above—New tower at Collinwood, Ohio—Note catenary structures, in the background, for Cleveland Terminal electrification

Right—Close-up of G-R-S control machine — Note acoustic insulation on the ceiling of the operating room



Telephones aid in systematic checking of operation

ON JANUARY 10, the New York Central placed a 166-lever G-R-S electric interlocking machine into service at Collinwood, Ohio, without an operating hitch and with extreme dispatch. The new interlocking plant is located just a stone's throw east of the old electric interlocking tower which it replaces. The old tower had to be removed in order to make way for an additional track as a part of the Cleveland Terminal electrification. The first task on the morning of January 10 was to disconnect the operating wires at each switch machine on the ground and make connections to the wires running to the new interlocking tower. The cut-over from the d-c. to a-c. track circuits was made in advance of this date. The signal gangs started to work at the east end of the plant and maintained constant telephonic communication with the tower by means of a portable Western Electric telephone.

Telephone Aids in Checking

The signal foreman on the ground in charge of the switch machine cut-over was at the telephone and was able to check the correspondence of the switch machine position with that of the control lever in the interlocking machine. That is, the switch control lever was first operated from normal to reverse and

when the switch machine operated to correspond therewith, the signal foreman notified the general signal inspector, who functioned as leverman during the process of cutting in the plant. The general signal inspector called the switch lever number to the signal inspector located in the relay room of the tower on the floor below and requested him to check the position of the "WP" relay, in order to see that the armature of this switch repeating relay operated from normal to reverse position in correspondence with the switch point movement on the ground. In this way a triple check was obtained of the position of the control lever in the machine, the switch point on the ground and the switch repeating relay or "WP" relay, as it is termed.

The switch control lever was then operated from reverse to normal in order to check the correspondence during the reverse operation. As before, the signal foreman communicated with the general signal inspector as to the operation of the switch, and he in turn called to the signal inspector downstairs to check the position of the "WP" relay.

The operating fuses were installed at the back of the machine, one at a time, at the direction of the general signal inspector. A third signal inspector was stationed underneath the interlocking machine in the

space provided for the purpose of wiring and maintenance inspection. This man checked the indication magnets during each cycle of operation. In order to do this, he connected a portable voltmeter across the indication magnet coils and obtained a voltage drop reading during the pickup of the indication magnet. Knowing the resistance of the indication magnet coils, he was able to determine the value of the indication current and this was recorded on a data sheet for future reference.

Manipulation Chart in Book Form

In order to aid the leverman to become familiar with the lever operation of the new machine, the manipulation chart was prepared of blue-printed sheets in book form. This made it easy to refer to, because the leverman could hold it in front of him while operating the machine. Moreover, he was able to take the new manipulation chart home with him, so that he could study it in advance of the cut-over. There is no manipulation chart framed in the tower, as is the common practice at many interlocking plants.

It was necessary, of course, before making the operating and indicating check of the switch machines to complete a preliminary circuit test in the interlocking tower. All of the indicating and locking circuits were checked, contact by contact, and relay by relay, by referring to the written circuit plans prepared in the signal engineer's office. This detailed circuit check consumed several days and was completed before the actual cut-over could be made, in order to save time; hence, it was only necessary, when making the cut-over, to check the switch and signal controls.

The call-on signal indications were next checked and these were the only signals operating at the completion of the cut-over on January 10. The high-speed signals on certain routes were cut into service the following day. This gave train crews a chance to



Type of concrete relay shelter which N. Y. C. is now using

familiarize themselves with the new layout at slow speeds.

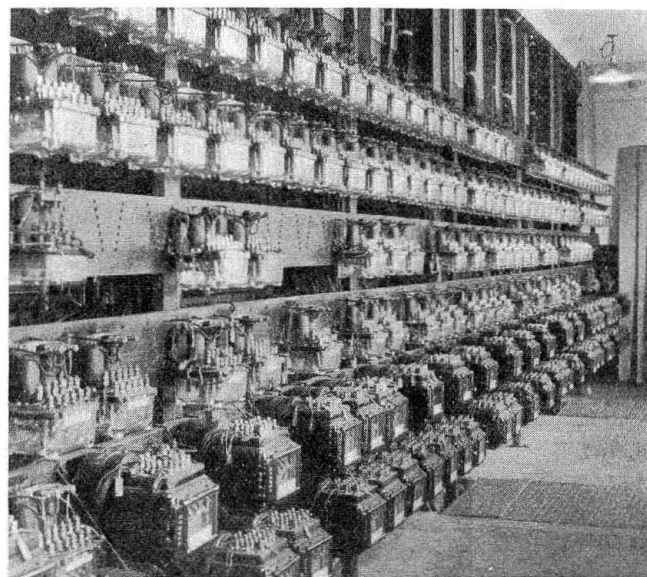
The new machine has 166 working levers in a 192-lever frame, and is provided with the latest type of preliminary latch locking. Each switch control lever has, in addition to the blue-etched white lever light, a red indication lamp for "cross-protection"

purposes. The white lever lights follow the operation of the electric lock, that is, when the lock becomes de-energized (locked), the lamp is lighted automatically. It affords a visual indication that the electric lock is de-energized and that the lever cannot be moved.

When the leverman is operating levers to effect a given lineup for trains, the lever lights remain dark until the final signal lever is reversed, at which time a progressive lighting up of these white number lights takes place. It is readily apparent that a definite sequence is incorporated in the electric locking control, because of the step-by-step fashion in which the lever lights become illuminated. The leverman knows that he cannot operate a lever as long as the white light is displayed.

New Type Circuit Controllers

Another feature of the Collinwood interlocking machine is the use of the latest model of rotary circuit controller on the low-voltage circuits employing contacts of the relay type. The contacts proper are sil-



A-c, and d-c, control relays in the new Collinwood tower

ver-to-silver and all of the contacts are alike, the desired adjustment as to sequence being obtained by shifting the position of an individual molded Bakelite cam.

These cams are slotted and can be replaced without disturbing the controller shaft. With only two cams it is possible to obtain any contact adjustment required in interlocking practice. When the cam adjustments are completed on any given controller shaft, the individual cams are mechanically locked to the shaft and cannot become displaced. All of the contact adjustments obtained with the earlier type of rotary circuit controller can be obtained with the new relay-contact type. Contacts can be so adjusted as to be closed only in the full-normal position of the lever; in the normal-indication position; in the reverse-indication position; and in the full-reverse position. It is also possible to make cam adjustments that will maintain a circuit closed between any two desired lever positions. In other words, the new type as found on the Collinwood interlocking machine has all of the flexibility of adjustment that was found on the older type of rotary circuit controller.