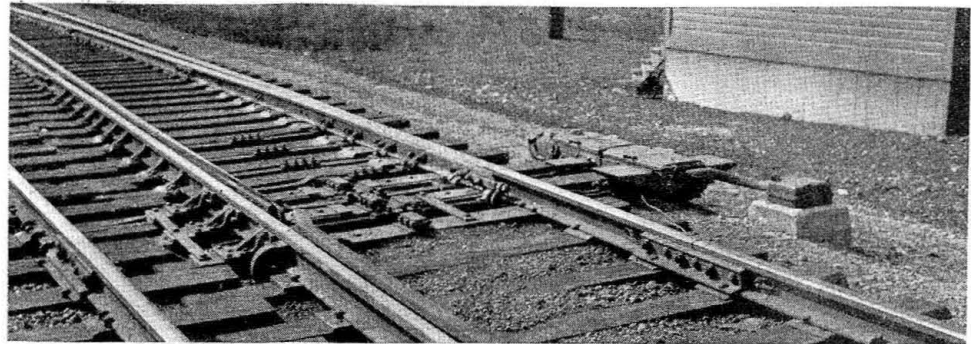


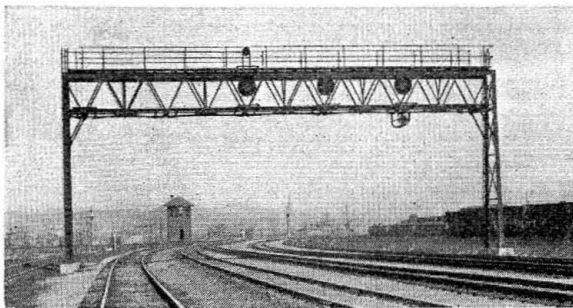
# Electric Interlocking on the B. & O.

The switch layouts are well equipped with insulated gage plates and rail braces



## Plant installed at temporary end of four-track may remain for many years

THE construction of the new Union passenger terminal at Cincinnati, Ohio, necessitated the relocation of certain freight houses and yards on the Baltimore & Ohio in the vicinity of Cincinnati. Furthermore, as the Baltimore & Ohio main line offers a direct route to the new terminal layout, the passenger trains of three other roads are operated over the B. & O. track for several miles. For example, trains of the Big Four use the B. & O. track between the terminal and Ivorydale junction, a distance of 5.4 miles, and the trains of the Penn-



B. & O. standard color-position-light signals were installed

sylvania and the Norfolk & Western use the B. & O. tracks between the terminal and Norwood junction, a distance of 7.7 miles.

As a part of the terminal changes, the B. & O. improved its track layout and provided two additional main tracks from the limits of the Union Terminal property to Cumminsville north of its yards, a distance of 1.9 miles. It was planned to extend the four tracks on to Ivorydale junction an additional 2.5 miles, but on account of limited finance, this project was postponed. This

left the end-of-four-track layout, including the yard entrance switches at Cumminsville, without any interlocking, it being proposed to handle these switches temporarily by switchmen and hand signals.

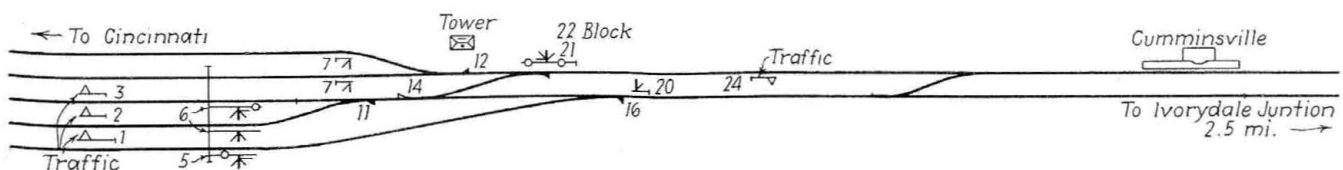
However, a few months before the new station project was completed, an informal conference of operating and signal officers was held on the ground, and it was decided that in view of the number of trains to be handled, it would not be economical to handle the Cumminsville end-of-four-track layout by switchmen and hand signals. As a result, the signal department was given a "hurry-up" order to install an interlocking and have it in service within 90 days, so as to be ready when the new station was to be opened and the additional trains of the other roads would be operated over this route.

As shown in the track and signal plan, the layout includes four single switches, one crossover and one derail, the derail being located on the yard lead. In order to signal the layout properly, it required a five-track signal bridge for the three eastward home signals, a ground-mast high signal for the westward home signal, and three dwarf signals, in the interlocking limits. A two-track cantilever bridge was required for the eastward approach signal and a two-arm semaphore signal for the westward approach signal.

## Construction Rushed

With the situation thus analyzed, plans were quickly prepared for an electric interlocking and materials were ordered. With the thought that this interlocking would quite likely remain at this location only temporarily, a frame tower was provided. For the same reason an interlocking machine, formerly in service at another plant, was overhauled in the Zanesville shop and shipped to Cumminsville. This is a Model-2 machine with a 24-lever frame, only 15 working levers being required. The remainder of the materials, including the seven switch machines, signals, wires, cables, batteries, etc., were ordered for rush delivery from the manufacturers.

Construction work in the field was started on February 23, 1933, and the plant was completed and ready for



Track and signal plan of Cumminsville plant

service on March 27, a construction period of only 27 working days. In spite of the hurry, the construction was handled in conformance with Baltimore & Ohio standards, and the completed plant shows no lack of proper attention as to materials and workmanship.

The interlocking machine was equipped with individual polar cross-protection relays, and forced-drop

cable extends from the tower to junction boxes at the signal bridges or at central points, from which single-conductor wires or cables extend to the switches or signals. The track circuit batteries are located in concrete boxes, and wood relay boxes on concrete posts are used to house the relays at outlying locations.

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## Collision at Kylesburg

ON April 19, there was a head-end collision between a Baltimore & Ohio freight train and a Pennsylvania freight train near Kylesburg, Ohio, which resulted in the death of one and the injury of three employees. An abstract of the report of an investigation of this accident by the Bureau of Safety follows:

This accident, occurred on the division extending between Columbus, Ohio, and Newark, a distance of 33 miles, which is owned jointly by the two railroads and operated by the Baltimore & Ohio under Pennsylvania operating rules. This is for the most part a double-track line; between Outville, 5 miles west, and Heath, 2.6 miles east of Kylesburg, there is a third track known as the westbound running track, which is used principally by westbound freight trains. When running with the current of traffic, trains are operated by time table and an automatic block signal system, a cab-signal system also being in operation on Pennsylvania engines; trains running against the current of traffic are operated by train orders and a manual-block signal system. The tracks are designated from north to south as follows: Track 3, westbound running track; track 1, westbound main track, and track 2, eastbound main track. The accident occurred on track 3 at a point about one mile west of Kylesburg.

The automatic signals are of the position-light type, located on signal bridges spanning the tracks. Pennsylvania engine 6706, which was involved in this accident, was equipped with automatic cab signals which function when running forward with the current of traffic but was not equipped with cab signals to operate when running backward.

### Description

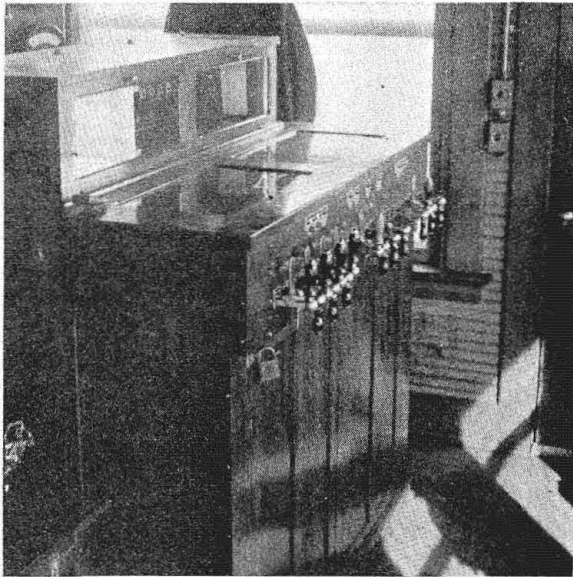
Eastbound B. & O. freight train Extra 2765 consisted of 53 cars and a caboose. At Outville, 21.8 miles east of Columbus, the crew received train order 243, form 19, authorizing that train to run against the current of traffic on track 3, and reading as follows: "Baltimore & Ohio Extra 2765 East has right over opposing trains on westward No. 3 track, Outville to Heath. Westward trains get this order at Heath."

Westbound Pennsylvania freight train Extra 6706 consisted of engine 6706, which was being operated backwards, nine cars and caboose. The cars were picked up at Heath and at 5:30 p. m. the train left that point without a copy of train order 243, form 31, previously quoted, having been delivered to the crew by the operator or the train order signal having been displayed.

None of the members of either crew was aware of anything wrong as their trains approached each other around the curve; each engineman at first thought the other train was on track 1 or track 2, and although both of them immediately applied the air brakes in emergency when they realized that the opposing train was on track 3 it was then too late to avert the accident.

Shortly after the occurrence of the accident Signal

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The interlocking machine was rebuilt and modernized

electric locks, thus modernizing it in these respects. Mounted above each signal lever is a set of two small lamps and a pushbutton. The green lamp at the left is lighted when the signal controlled by the lever is at clear. The white lamp at the right is the approach annunciator which is lighted at the same time as the approach bell rings. The pushbutton is for the control of the call-on feature of the signal, the signal lever must be reversed and this button pushed to get the call-on aspect. Above each switch lever there is a small white lamp which is lighted when the track circuit is occupied, with the route lined, and the signal lever reversed. In other words, this lamp shows that the route is lined up and locked. The entire interlocking machine was, of course, rewired.

The relays for the interlocking are mounted in a rack located on the ground floor of the tower. This rack is constructed according to B. & O. standards, using asbestos board for the shelves and back, bolted to angle-iron framework. The main battery consists of 55 Exide Ironclad cells which are on a-c. floating charge at about 3 amp. 120 volts through a G. R. S. rectifier. The six-cell low-voltage battery is charged by a Union rectifier.

### Outside Equipment

The switch machines are the General Railway Signal Company's Type 5A rated at 110 volts d-c. and are equipped with a magnetic brake to prevent the machine from "drifting." The switch layouts are made up with insulated gage plates and adjustable rail braces on three ties. On two ties the plates extend out and are attached to the switch machine.

In the vicinity of the tower, parkway cable is extended to the signals and switch machines, the parkway terminating in cast-iron junction boxes mounted on concrete foundations, and single-conductors extend through a flexible duct to the machine. For the longer runs, aerial