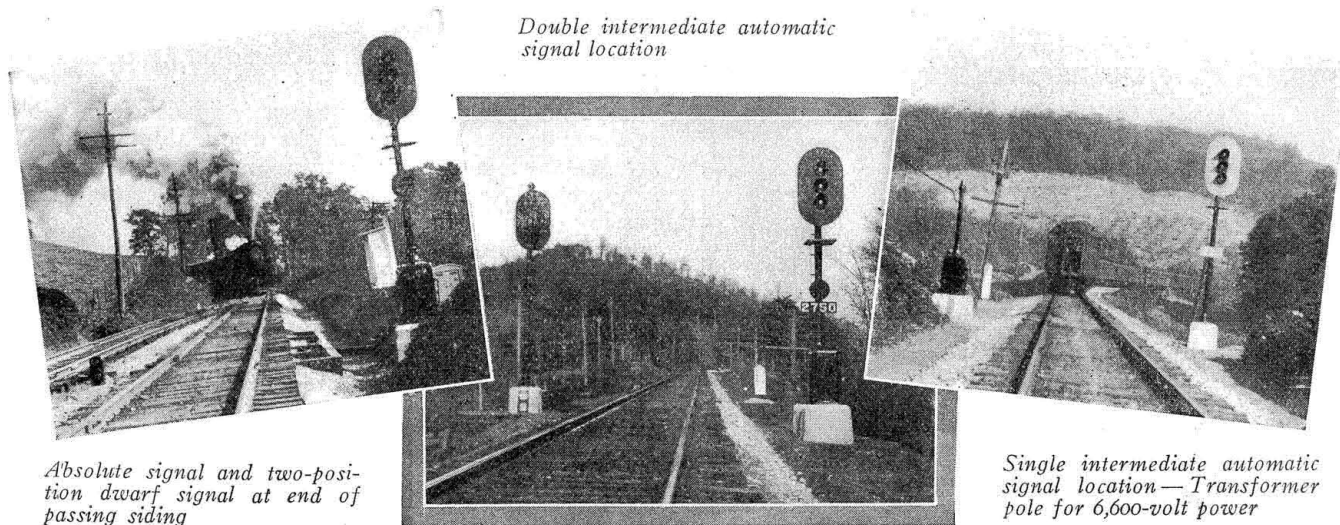


C. & O. Signaling and Train Control Facilitate Operation

Union intermittent inductive type of A.T.C. employed on 125 miles of main line



THE present train control installation on the Chesapeake & Ohio which was placed in service November 1, 1926, is the intermittent inductive automatic train stop system of the Union Switch & Signal Company, which replaced an intermittent electrical contact type of device, which had been in service approximately ten years.

Experiments were first started with a seven-mile section of train control without wayside signals between Gordonsville, Va., and Lindsay, this being a part of the line included in the present installation and was placed in service on May 15, 1917. This installation was later extended to Charlottesville and was placed in service with 38 equipped locomotives on June 9, 1919. At the same time automatic signals of the color-light type approach lighted from primary battery were installed between Gordonsville and Charlottesville, a distance of 21 miles.

In March, 1920, plans were made to extend the installation of automatic signals and train control approximately 40 miles west from Charlottesville to Staunton, Va. On the latter section the signals were of the color-light type, continuously illuminated from a 3-phase, 6,600-volt, 60-cycle power line, through step down transformers, and were placed in service December 14, 1922. The automatic train control on the latter section was designed for a-c. operation, and with 24 additional equipped locomotives was placed in service January 16, 1924.

The first order by the commission required the installation of train control on a passenger locomotive operating district between Richmond, Va., and Clifton Forge. An order by the commission dated December 30, 1924, permitted the installation of train control between Gordonsville and Staunton, a distance of approximately 61 miles, to apply as the first order installation. This installation was inspected by the commission in August and September, 1925, after which it was removed from service. The second order by the commission designated the same territory as for the first

order. On December 23, 1925, the C. & O. petitioned the commission asking to substitute that portion of its line between Orange and Gordonsville, Va., which is a connecting line nine miles in length with the Southern on the eastern end of the first ordered territory, and the section between Staunton, Va., and Clifton Forge, on the western end, making a continuous section from Orange to Clifton Forge, a distance of approximately 125 miles of main line. This authority was granted on January 2, 1926, after which it was decided to change to the present type of device; after careful consideration had been given to the numerous other types of train control devices on the market. This work was started in February, and both first and second order sections were completed and placed in service November 1, 1926.

Character of the Line

The territory from Orange to Charlottesville, 30 miles, includes a portion of the Richmond division, and the 95-mile section, Charlottesville to Clifton Forge, is a portion of the Clifton Forge division. Beginning at Orange, the line traverses an open, rolling country with a maximum curvature of 10 deg. at the junction with the Richmond line and a maximum grade of approximately 1 per cent. From Charlottesville to Clifton Forge, the line crosses a mountainous section with numerous curves ranging from 2 to 8 deg. and grades as high as 1.36 per cent. Starting at Charlottesville the line gradually ascends at the rate of approximately 1.0 per cent for a distance of about 22 miles, and after passing through three tunnels, the longest of which is Blue Ridge Tunnel, about 0.75 of a mile in length, descends at the rate of approximately 1.25 per cent for a distance of about 3 miles, then crosses the Shenandoah Valley, a distance of 10 miles, to the foot of the second mountain range. The line again ascends for a distance of about 16 miles to the railroad's highest point between Staunton and Clifton Forge. For the next 42 miles the line passes through four tunnels and

