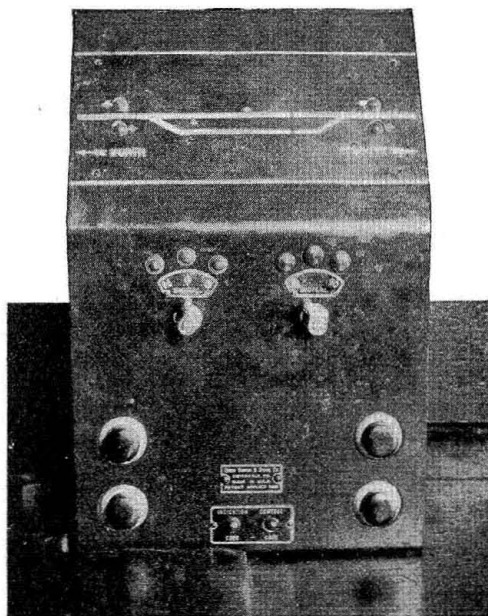


Manual Block Signals Controlled Remotely on the Big Four

Centralized circuit system affords control, indication check, and "OS" feature, thus saving the expense of operators

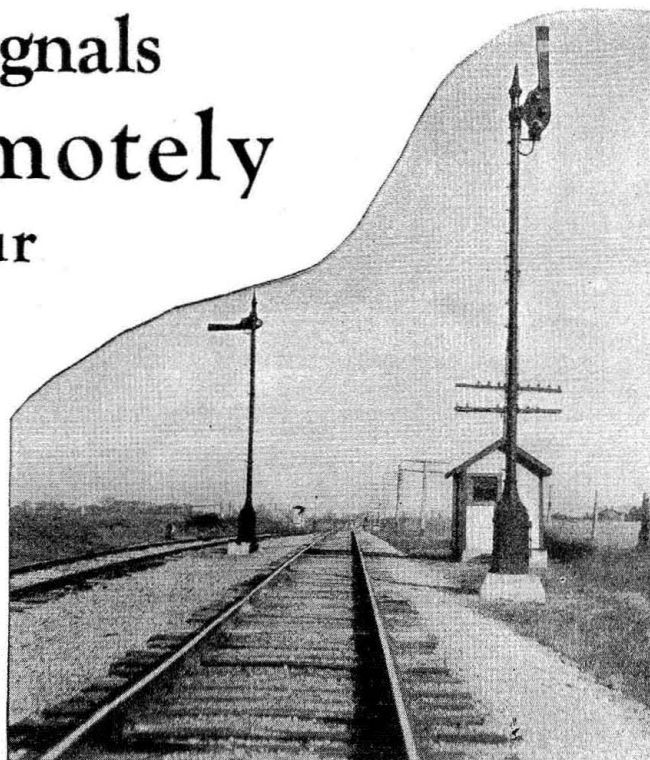


The control machine in the operator's office at Greensburg

THE Cleveland, Cincinnati, Chicago & St. Louis now has five installations of unattended manual block stations remotely controlled from adjacent stations, which serve to direct train movements and report the passing of trains, thereby saving the expense of operators at such points, all of which are located at outlying passing tracks.

The first installation of this device was made on the Michigan division of the Big Four at Horace, Ind., which is seven miles south of Greensburg on the line from Greensburg to Louisville, Ky. The control machine is located at Greensburg and is handled by an operator who also serves the Chicago division of the Big Four between Indianapolis and Cincinnati. The next manual block station with operators continuously on duty is located at Westport, Ind., 13 miles south of Greensburg. The automatic equipment at Horace divides this territory and permits trains to meet at the Horace siding under block protection. If it were not for this system, it would be necessary to employ three operators at Horace. The traffic on this line consists of one passenger train and approximately eight freight trains each way daily, or a total of 18 movements a day. The major portion of the freight traffic consists of coal from Kentucky moving north to Greensburg for connections north.

Four similar installations of remote controlled manual block signals are in service on the Cairo division of



View at Horace, northbound signal indicating proceed

the Big Four, at Ernst, Ill., Trimble, Dunn and Gossett.

Short track circuits, located in the main line outside of the limits of the passing tracks, are so connected as to report the passing of a train and the direction in which it is moving. When a train enters a track circuit approaching the siding, the fact is indicated immediately by an annunciator bell and a light on the illuminated track diagram on the machine in the operator's office at Greensburg. The movement is likewise indicated when the train passes the signal and again when it passes the track circuits beyond the siding switch. An indication showing the position of each signal is displayed on the control machine until acknowledged by the operator.

As shown in the track and signal plan, each of the two manual block signals is located to the right of and adjacent to the track governed, and are separated sufficiently to permit the use of a track circuit that will afford proper shunting. The control of each signal is taken through a circuit breaker on the opposing signal, so that only one of the signals may be cleared at one time, thus insuring that the other is displaying the stop indication when the one indicates proceed. The signals are so connected that a train passing the signal indicating proceed, automatically releases the signal, causing it to display the stop indication.

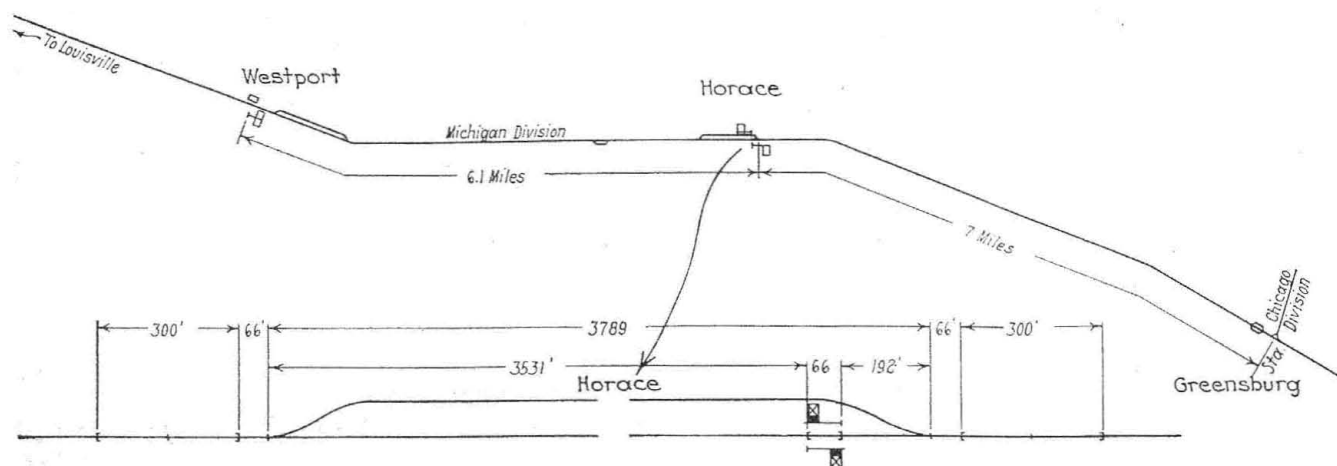
Middle Order Established by Signal Indication

The operating rules provide that the "middle order" must be used when the movement of a train carrying passengers is affected by a train order, excepting when the meeting point is the initial station of the superior train on the division. When the dispatcher sends a train order establishing a meet at Horace, the operator at Greensburg receives the order and causes the signals at Horace to display the stop indication until the train, taking siding, reports in the clear; after which a proceed indication is displayed to the train using the main track. The conditions are reported to the dispatcher and by

this action a middle order is in effect established by signal indication.

The two manual block signals at Horace stand normally in the stop position. The indicator lights on the

next block station. In case the block is occupied by a preceding train, only the caution indication is displayed, which authorizes the engineman to proceed with caution into the occupied block.



Plan showing location of signals and track circuits at the passing track at Horace.

operator's machine at Greensburg show the position of the signals, whether at stop or proceed. Only one three-position signal lever is used to control both the north and the southbound signals. The normal or center position places both signals at stop, and by moving the lever to either point marked "N" or "S" (North and South) will clear the corresponding signal to the 45 degree (caution) position. The use of one three-position lever precludes the possibility of clearing both signals at one time. The right-hand lever on the machine marked "90 degrees" is used to clear the signals from the caution position to the proceed indication.

Method of Directing Train Movements

In case it is desired to give a southbound train authority to pass through Horace without stopping, the operator at Greensburg moves the left-hand miniature lever from its central position to the right to the letter "S," which causes the southbound signal to move to the caution or 45-degree position, which lights the indication light above the letter "S," thus informing the operator that the signal has cleared to the caution position. He then moves the right-hand lever to the right to the position marked 90 deg., causing the signal to move up from the caution position to the proceed or 90 deg. position. This gives the engineman authority to proceed and indicates to him that the block is clear to the

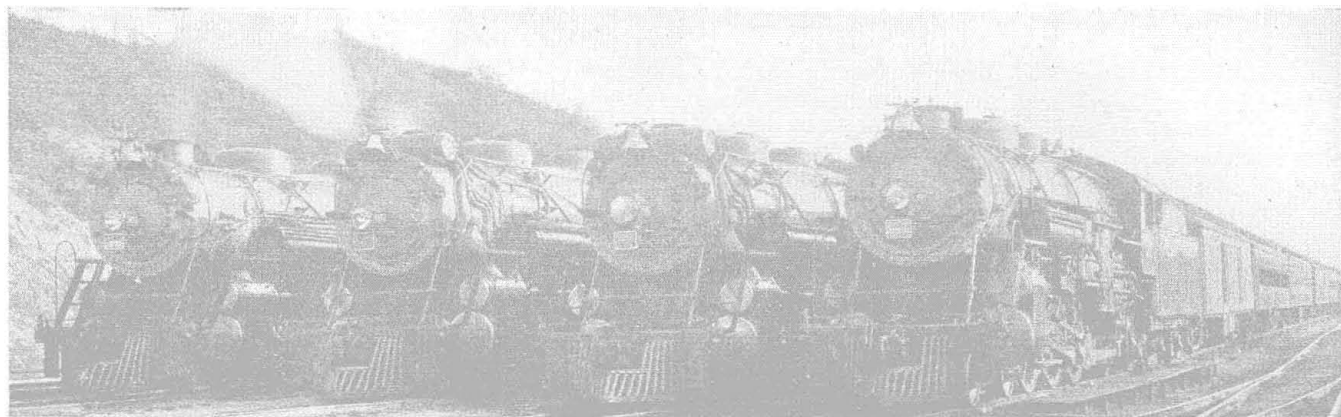
In case two trains are to meet at Horace, the manual block signals are left in the stop position until the operator at Greensburg is ready for one train or the other to proceed. One train, as designated by the dispatcher's order, takes the siding and reports in the clear by telephone. The manual block signal for the opposing train is then set at the proceed indication by the Greensburg operator and the train proceeds, thus completing the meet movement.

Two-Wire Control System

The control of these manual block signals at Horace, as well as the return indications to report to O.S. of the trains and the position of the signals is all handled over two line wires extending to the operator's office at Greensburg seven miles away. The Union Switch & Signal Company's selector system of centralized dispatcher control is used.

The power for the operation of the electric motor semaphore signals, as well as the control circuits, is provided by storage batteries charged by rectifiers from alternating current supplied by commercial lighting circuits.

The same control equipment and, in general, the same type of construction are employed on the other four installations of remotely controlled manual block stations on the Big Four.



The Southern's "Big Parade" at Cincinnati. The four passenger trains that leave Cincinnati for the south over the Southern every evening between 7:45 and 10:40