



## What's the Answer?

An open forum for the discussion of maintenance and construction problems encountered in the signaling field. *Railway Signaling* solicits the co-operation of its readers both in submitting and answering any questions of interest.

### To be answered next month

1. *What has been your experience with the use of wooden trunking treated with preservative such as creosote? How extensive has it been used on your railroad?*

2. *What types of electrical measuring instruments do you use for signal maintenance; what scale ranges do you recommend? What special care do you take while on the road to prevent injury to instruments?*

3. *What has been the average life of poles used in signal pole lines on your railroad? What*

*kind of poles have been used? Do you know the average labor cost of replacing a pole?*

4. *What are the benefits of heavier rails in lengths up to 39 ft., with respect to the installation and maintenance of bonding and track circuit connections?*

5. *How do you locate broken bond wires on your territory? Do you depend on finding them by watching from a motor car or do you walk the track? How successful have you been in preventing signal failures from broken bond wires?*

## Train Operation Without Written Train Orders

*"What mileage of road on your railroad is now operated by signal indication without written train orders and what methods are used?"*

**Train Order Signals on the Erie Controlled by Dispatchers Eliminate Necessity for Written Orders—Information Is Conveyed to Trains at the Point They Are Required to Act Upon It**

**T**HE use of written train orders on the Susquehanna division of the Erie was almost entirely discontinued following the installation of the three-position train order signal for the purpose of directing train movements by signal indication. This use of the three-position train order signal was at that time a distinct step forward in train operation. An article describing this first installation on the Susquehanna division between Susquehanna, Pa., and Hornell, N. Y., was published in the July, 1918, issue of the *Railway Signal Engineer*.

On each succeeding installation of automatic block signals we have followed the same scheme and method of operation until we now have a total of 889.3 miles of road so equipped, the last installation being 28.7 miles of three-position color-light signals between Salamanca, N. Y., and Cuba Junction.

On the first installation old style train order signals

have been replaced with three-position signals electrically operated and mounted on the mast with the automatic block signals. These train order signals are controlled from the nearest train order office, thus making it possible for the train dispatcher to direct the operation of these signals by telephone instructions to the offices controlling them. The blind passing siding and also blind crossovers were equipped with both telephone and train order signals. By this arrangement the train dispatchers direct train movements at these points by signal indication which is a marked improvement over operating blind sidings equipped with telephones only.

The circuits controlling the train order signal require the block signal upper arm to be in the stop position whenever the train order signal is moved to either the 45 deg. or the stop position. This arrangement of the circuits insures the display of the caution block signal approaching the train order signal whenever the latter is either in the 45 deg. or stop position. This provides a distant or approach indication for each train order signal. The circuit controlling the train order signal is a polarized one over a single line wire with a common return between the signal and train order office.

With three-position signals at a blind siding electrically controlled from the nearest train order office which may be one or more miles away it is a simple matter for the dispatcher to display at the blind siding the required signal indication for directing the train







