# What's the Answer?

**If You Have a Question That You Would Like to Have Someone Answer, Or If You Can Answer Any of the Questions Shown Below, Please Write to the Editor.**

**Contributions Paid for in Cash or by a Subscription to Railway Signaling**

## Double-Caution Signaling

*"What are the objections to the use of a 'double-caution' automatic block signaling scheme wherein a yellow or equivalent aspect is used on two succeeding signals in approach to one indicating danger? What are the advantages of this practice?"*

### Approach-Medium Indication Is Better

*W. M. Post*
Assistant Chief Signal Engineer, Pennsylvania, Philadelphia, Pa.

I assume that "double-caution" automatic block signaling means when an automatic signal displays a stop signal, both the first and second signal approaching the stop signal will display "approach signals." The indication for an approach signal is "Prepare to stop at next signal. Train exceeding medium speed must at once reduce to that speed."

In so-called "double-caution" automatic block signaling, the arrangement is such that a signal will display approach when the next signal ahead is at stop and also when the second signal ahead is at stop and the next signal ahead is at approach. An engineman in time will realize that this arrangement exists and may assume that the signal is at approach because the second signal ahead is at stop when in reality it may mean at that time that the next signal ahead is at stop.

The second part of the definition of the approach indication states that trains exceeding medium speed must at once reduce to that speed. Therefore, when the set-up is such that there are two approach signals leading up to a stop signal, the engineman must reduce to medium speed before it is actually necessary to do so in order to stop at the second signal ahead.

A much better arrangement is to give the first warning of a stop signal ahead by displaying an approach-medium signal, which indication is "approach next signal at not exceeding medium speed." The next signal will, of course, display approach. The only advantage of the "double-caution" automatic block signaling scheme I know of is it is a little less expensive to install.

### Cannot Always Be Avoided

*P. M. Gault*
Signal Engineer, Missouri Pacific, St. Louis, Mo.

In locating the signals in a given territory, it is always best to arrange them so that each stop signal will have a so-called "caution signal" not less than full stopping distance away for the train which requires the greatest distance to stop. After signals have been in service there may be changes in operating conditions which will require that a greater stopping distance be provided. This can be done either by respacing the signals or by providing "double-caution" indications.

About the only thing to recommend the "double-caution" method is its cheapness. Promiscuous use of "double-caution" indications is very liable to result in laxity on the part of enginemen in observing their indications. Regardless of what they have been taught, too many men appear to think that all a caution signal means is "the next signal is at stop." After encountering numerous such signals and always finding the next signal at caution, what is more natural than to assume that the first caution signal means little or nothing?

In terminal territory or around interlocking plants it is not always practicable to locate signals braking-distance apart. In such cases, the dou-

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### To Be Answered in a Later Issue

*(1) Is it the recommended practice on your road to test a line relay by placing a short across the coil terminal posts to cause the armature to drop? If not, please explain why?*

*(2) What method of construction do you recommend for the installation of concrete signal foundations and what is the approximate cost of a 4-cu. yd. foundation in place as installed by your method?*

*(3) What special line control arrangement, utilizing existing signaling line wires, can be used to control train indicators to inform men operating motor cars of the approach of trains?*

*(4) In your opinion, should the speed limits of 20 m.p.h. through automatic interlockings be eliminated? Why?*

ble caution is about the only way out unless one wants to go to one of the fancy schemes for multiple-block indication, and in that event it is very doubtful in my mind whether an engineman ever gets to understand the system well enough to get much benefit from it.

### Single-Caution Preferable with Suitable Stopping Distances

*W. F. Zane*
Signal Engineer, C. B. & Q., Chicago

The answer to this question naturally is based upon braking distances and speeds, which have been emphasized lately due to the high-speed trains which the different railroads have placed in operation. Fundamentally, the yellow or caution indication is to inform the engineman that at the next signal he is liable to receive a red or stop indication. Thus the yellow indication should be far enough in advance of the red indication to permit him not only to bring his train under control, but also to be in a position to stop before passing the red signal. In order to do this properly, all signals should be separated a distance sufficient to permit the fastest train operated to be stopped with a service brake application before passing the red signal. This is ideal signaling and is obtainable in the large majority of ordinary instances.

There are many places on each railroad, however, where the blocks are very short, especially in terminals and in suburban territory where it would be impossible to obtain proper indication if the caution indication were given just a block apart. Consequently, under such conditions it is advisable and practically imperative that the yellow indication be carried through two blocks, which is commonly known as a "double-caution" indication.

This explanation is based entirely upon the assumption that straight three-aspect signaling is being used. There are probably exceptions on railroads where combinations of signal aspects have been standardized to produce a more extensive system of speed signaling. However, on such roads it appears to me that the basis of their signal indications is entirely dependent upon the highest permissible speed of the trains using the signals in question.

The last sentence in the question can hardly be answered, as the arrangement of the caution indication is sometimes dictated by necessity rather than advantage. However, I see no objection to using double-distant signals where necessity dictates, but the single caution signal, I believe, is preferable where there is room to obtain the proper braking distance.

# Removing Lead Cable Sheath

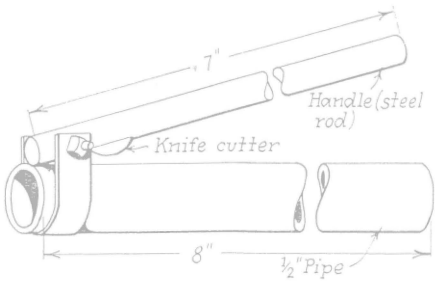
*"By what method can the lead sheath be removed from cables so that damage to the rubber insulation on the individual conductors will be avoided? Do you use a special tool?"*

### Special Tool Easily Made

*D. A. Yorkley*
Signal Foreman, Missouri Pacific, Kansas City, Mo.

A handy means of removing the lead sheath from parkway cable requires the use of a simple tool that can easily be made out of a short length of pipe, a soft steel handle and a knife-edge cutter. As illustrated, the pipe and the handle are clamped together with a small bolt acting as a hinge. A slit is provided in the pipe to admit the knife edge when the handle and pipe are together.

In using the tool the handle is raised and the pipe is slipped over the end of the cable. Then the handle is forced against the pipe, the cutter entering the lead sheath through the slit in the pipe. From this position the tool is drawn off of the cable, splitting the lead. The pipe keeps the cable end straight and prevents the knife from damaging the insulation. Of course, the depth of the cut must be adjusted properly by adjusting the size and position of the cutter. One tool is required for each size of cable.




This tool is easy to operate

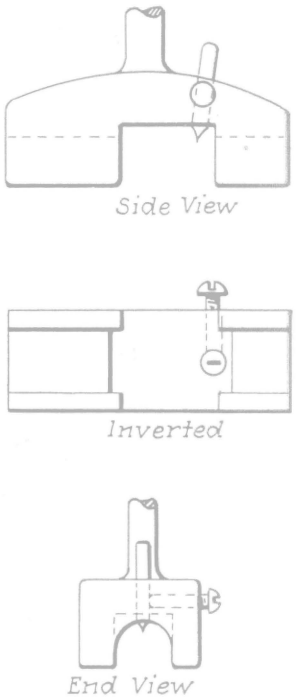
If the lead sheath is removed with a pocket knife, it is very likely that the insulation of some of the conductors will be damaged.

### Tool Made from Pipe Wrench

*Charles Kruger*
Signal Maintainer, Missouri Pacific, Wichita, Kan.

The use of an ordinary knife for removing the lead sheath from parkway cable without injury to the person doing the work or to the insulation of the cable is an irregular event. For this reason, I have devised a special tool for this purpose, such as the one illustrated, to eliminate these hazards.

To make the tool, obtain from a discarded 18-in. pipe wrench the guide that holds the upper jaw, and saw this piece off so as to leave a ¾-in. groove. A 9/32-in. hole is then drilled in one side of this groove to admit a cutter, which is fashioned from the shank of an old 9/32-in. drill, by grinding to a minimum thickness like a sharp screw driver. The cutting tip should be slightly longer than the thickness of the cable sheath. The cutter is secured in proper position by a small set screw, for which a hole must be drilled and tapped. The cutter is then adjusted to the proper depth, a handle welded to the block, and the tool is ready for use.




The cutter can be adjusted and removed for resharpening

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