



# What's the Answer?

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

## TO BE ANSWERED IN A SUBSEQUENT ISSUE

(1) *Is it better to use a stick relay circuit or an interlocking relay for the control of highway crossing signals? What are the advantages and disadvantages of each method?*

(2) *When using trunking for runs under track, should the trunking be buried about a foot or should it be at the surface of the ballast? Why?*

(3) *When detector locking prevents operation of an interlocked power switch, owing to*

*some circuit interruption or track circuit trouble, is it safe to permit of using any kind of an emergency release to nullify the detector locking? What steps should be taken to restore the leverman's control of the switch at the same time fully safeguarding train movements?*

(4) *What are the advantages and disadvantages of a stranded aluminum cable (with steel wire core) for signaling transmission lines up to 4,400 volts?*

## Signal Aspects for "Head-In" Indication at Passing Track

*"Where color-light signals are employed to give a head-in indication at a passing siding located in remote-control territory, what combination and color of aspects should be used? A scheme of aspects is desired which will protect a train in the event of a lamp burnout in the top signal unit."*

**N. Y. C. Recommends Standard A. R. A. Scheme of Aspects—Red Over Yellow Should Be Used for Diverging Movement**

By B. J. SCHWENDT

Assistant Signal Engineer, New York Central, Cleveland, Ohio

**U**NDER conditions of this kind it is our practice to use the standard interlocking arrangement. This is the recommendation of the Signal Section of the A. R. A. and as yet we have not found a case where it has not worked out satisfactorily. If the remote control turnout or crossover is under a No. 16, it is our practice to display the slow-speed indication, which, unless other routes are involved at the same signal, would require a two-unit color-light signal, the lower unit displaying yellow for movement through the turn-

out or crossover would mean "proceed at slow speed prepared to stop." While we have not used green, our rules in this case provide such indication to mean "proceed at slow speed." The upper unit of this two-unit color-light signal would work for the through route or main track and be two or three-indication as conditions might require.

Should the turnout or crossover be a No. 16 or longer, it would be our practice to display the intermediate speed signal which would be yellow on the middle unit of a three-unit color-light signal. Should the converging route be equipped with automatic signals this middle unit would show green, provided the signal in advance displayed yellow or green. In the three-unit application, the upper unit would govern the main route as above described and the lower unit would be fixed or used as a calling on arm as conditions would require. The distant or approach signal in the rear of the home signal above described should necessarily display colors in proper sequence, namely, yellow, in event the home signal indicates stop, red if the block between the two is occupied, and green provided the home signal is displaying an indication which would admit of displaying a clear indication at the distant signal.

All told, no special combinations of so-called "head-in" signals or other signals are required to complete the application, as I understand it.

### Southern Uses Two-Unit Color-Light Signal

By W. J. ECK

Assistant to Vice-President, Southern, Washington, D. C.

WE are now using for situations of this kind a two-unit, color-light signal displaying the following colors:

#### Main Line Movements

Stop—Two vertical red lights.  
Approach next signal prepared to stop—Yellow over red.  
Proceed—Green over red.

#### Diverging Route

Proceed at slow speed prepared to stop—Red over yellow. The latter indication is displayed when the switch is set for the siding.

It will be noted that these indications are the same as the night indications which have long been used on two-arm semaphore signals for similar track layouts. We have had no criticisms from the trainmen, as the indications are the same as those which they have been accustomed to use.

### Pere Marquette Employs Two-Unit Signal, Using Three-Indication Lower Unit for Diverging Route

By H. C. LORENZEN

Assistant Signal Engineer, Pere Marquette, Detroit, Mich.

OUR standard method of signal protection for a switch in remote control or centralized control territory, is a two-arm semaphore, or a two-unit, color-light signal for both directions on the main line, and a dwarf signal for moves from the siding. The top arm or unit in both directions on the main line is a three-indication, semi-automatic signal. The lower arm or unit for the signal governing trailing moves over the switch is inoperative. The lower arm or unit of the signal giving head-in indications to the passing track is a three-indication signal. Yellow or 45 deg. indication is for slow-speed moves. Green or 90 deg. indication is used when the track is clear to the leaving signal at the other end of the passing track. The dwarf signal on the siding is a three-indication, tying in with the automatic signals.

We do not use any special circuit arrangement to provide additional protection in the event of a lamp burn-out. Our contention is that a lamp failure is a signal improperly displayed and therefore a stop signal. We have telephones located at all head-block signals, and in the event of a stop signal being displayed, the conductor will immediately get in touch with the dispatcher for further instructions.

### Medium-Speed Limit Must Be Strictly Enforced—Recommends Two Lights on All Color-Light Signals

By W. M. Post

Assistant Chief Signal Engineer, Pennsylvania, Philadelphia, Pa.

IF a signal, leading to a passing siding over a remotely-operated switch, has the red lamp in the top signal burned out, and assuming that the switch is lined for the passing siding, the engineer would receive a yellow signal from the lower unit. This he might accept as an approach signal and it would indicate to him, if Standard Code indications were in effect, that he could proceed prepared to stop at the next signal, but if exceeding medium speed he must reduce to that speed. As the engineer would have received an approach indication at the distant signal, he would not proceed by

the signal with one light at more than medium speed. The railroad would designate the meaning of medium speed, which would probably be about 30 m.p.h. This speed, of course, is too high to move into a passing siding.

In my opinion where color-light signals are used, there should be two lights on every signal. If one light goes out the engineer would receive an improperly displayed signal, which he would of course regard as giving its most restrictive indication. For this reason the Pennsylvania has two lights on all semaphore signals. If the railroad does not have the two-light system and is not prepared to establish such a system, a light out relay could be connected in the circuit so that when the top light is burned out, the second light would also be out. While it is undesirable to have both lights out, I know of no better arrangement where one-light, color-light signals are used.

## Should Call-On Arms Be Used?

*"Is a call-on arm necessary below the high-speed arm on an interlocking home signal in automatic signal territory where there is only one possible route to govern over?"*

### Does Not Believe That a Call-On Signal Is Safe to Employ for Main-Line Train Movements

By WM. F. ZANE

Signal Engineer, Chicago, Burlington & Quincy, Chicago

I AM not in favor of a call-on signal so used. On the Burlington, this type of signal is used as a *route signal only* governing into side tracks, passing tracks, etc., and so interlocked that this slow-speed signal cannot be obtained in place of any regular signal covering the prescribed route. I do not believe it is good signaling to spend money to install an interlocking plant, and then install a signal to use in case the regular signal cannot be obtained. I also find in following the reports on accidents throughout the country, that quite a few of them have been caused by the use of call-on signals, even though there was no excuse for the accident, as the rules are plain covering the use of these signals.

Personally, I believe it is advisable in case of any type of failure in an interlocking plant, to have the signals assume their most restrictive indication, and that other methods be employed to get a train through. The methods that should be used are covered by operating rules. I do not believe that a call-on signal is necessary below the high-speed arm on an interlocking home signal in automatic signal territory, where there is only one possible route to govern over.

### Monon Employs Call-On Signals to Advance Trains on Main Line

By E. G. STRADLING

Superintendent of Telegraph & Signals, Chicago, Indianapolis & Louisville, Lafayette, Ind.

ON the Chicago, Indianapolis & Louisville we use a call-on arm on all interlocking home signals which govern movements on the main track in automatic block signal territory. We feel that this is essential on account of the fact that the high-speed arm on such home signals is semi-automatic and is controlled by the automatic block signal circuits between such signal and the next block signal, therefore any interruptions to the