# 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.

## Pipe Joints

*"What kind of leak-proof compound do you use in pipe joints in air lines in an electro-pneumatic interlocking plant? Is red lead satisfactory?"*

### Red Lead and Linseed Oil

J. F. Talbert
Superintendent of Installations, Union Switch & Signal Company, Swissvale, Pa.

The Union Switch & Signal Company has for years past used red lead and linseed oil for the purpose mentioned in the question. This red lead is applied to the threads of the pipes and nipples before the connection is made to the couplings or fittings, in order to exclude as much of the dry red lead as possible and to keep it from entering the inside of the pipe, where it would interfere with the operation of pin valves used in electro-pneumatic interlockings. We have always found this to be a very reliable means of sealing the joints of pipe, and the results obtained on various modern interlockings have been very satisfactory.

**E. B. Pry,** superintendent of telegraph and signals, Pennsylvania, replies briefly, "We have used white lead, red lead and graphite grease on pipe joints in air lines at electro-pneumatic interlockings, and consider red lead very satisfactory for this work."

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## Testing Lamps on Approach Control

*"On installations of automatic signals where the lights are on approach control, how do you test the lamps without the liability of stopping trains?"*

### Without Train Stop

Chas. K. Robinson
Canadian Pacific, Montreal, Que.

A convenient way of testing the lamps on approach-lighted signals, without the liability of stopping trains, is to use a temporary jumper around the relay contact that controls the current to the lamp to be inspected. This cuts out the approach lighting while the lamp is being tested. Upon removing the jumper the approach lighting is placed back in service. This method of testing the lamp does not make it necessary to de-energize the track relay, and therefore no signals are placed at the stop indication.

### To Be Answered in an Early Issue

*(1) What objections are there, if any, to making the starting or head-block signal in A.P.B. territory a permissive signal for a following movement from the siding? It is claimed that a saving of one to two minutes' time would thus be made for each train making such a movement from a siding.*

*(2) What Fall maintenance precautions are essential to insure uninterrupted operation of low-voltage switch machines during severe winter weather?*

*(3) How often should a maintainer ride or walk over his territory for a general visual inspection?*

*(4) In a remote-control low-voltage switch installation, what means should be provided to prevent an unnecessary consumption of storage-battery power in case the switch point becomes obstructed?*

*(5) How are relay repairs, as well as repairs to other signal equipment, handled on your road? To what extent do the maintainers participate in such work?*

Most railways have standard signal case wiring plans, and if the wiring in each signal case conforms to the plans, the approach lighting wiring in each signal case will be the same, with only a few exceptions. Therefore the maintainer should have no trouble in finding the proper relay contact to jumper around, at each signal location, in order to make his lamp inspection. If there is any doubt as to which contact to jumper, then the jumper should be attached to the positive terminal of the lighting battery (in the signal case), and extended to the EB or positive lighting wire terminal (also in the signal case), which has a wire running directly to the lamp to be tested.

The signal maintainer can use his meter leads as the temporary jumper, or if he thinks it worth while, a special jumper can be made up, with battery clips on each end of a suitable length of flexible wire.

### Where Approach-Lighting Relays Are Used

W. H. Newman
Signal Supervisor, New York Central, Buffalo, N. Y.

The approach lighting circuits, which we are using, are so designed that a maintainer can shunt the approach-lighting relays at the signal location to determine whether

the lights are burning, without the blocking of any signals.

We are maintaining a record of all lamps, voltage applied, etc., used for signal lighting, and the lamps are replaced when they have exceeded the estimated life hours.

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# Checking the "D" Relay

*"In terminal signaling, involving three-position color-light or searchlight signals, should the indication lock circuit of a particular signal be extended to check the D relay (de-energized), or the caution position, of the signal in the rear, having in mind the numerous selections that may be necessary in the back-lock circuit on account of the fact that there are various routes leading to the particular home signal in question?"*

## Not Necessary With Light Signals

E. K. Post
Signal Engineer, Pennsylvania Railroad, Philadelphia, Pa.

The practice of providing a lock circuit for home signals was first used when pipe connected home signals were abandoned and power operated signals were substituted and as the signal operating mechanisms first used were not entirely dependable, most dwarf signals being forced normal by coil springs, it was quite necessary to provide a check lock to give immediate information if the signal did not respond to the movement of the lever and it was general practice to extend the lock circuit to check the approach signal.

The light signals as now used are not subject to failures of moving parts that caused most of the false clear signals heretofore, and with the double wiring now usually used, very little if any additional safety is obtained by extending the lock circuits to check the "D" relay and it is quite probable that the additional wire required and numerous selections necessary in the interlocking machine increase the complications to such an extent that reliable operation is impaired rather than increased if the circuits check the "D" relay.

## Future Maintenance To Be Considered

J. P. Muller
Signal Engineer, Boston & Maine, Boston, Mass.

The question can be discussed from many angles with various reasons for or against, depending on the responsibility as to maintenance, organization, design, apparatus, material, standards, speed of trains, cost and method of installation, operation, and especially the cost of maintenance, which will be expensive when complicated protective circuits are added. This maintenance expense will increase each year as material and apparatus become worn and damaged.

The reason for checking the approach or D aspect, in my opinion, was primarily based on the old electric approach-signal apparatus and single-wire control circuits in trunking of often doubtful quality and frequently subjected to the weather. The advisability of using the checking circuit was, therefore, not open to doubt or question. Furthermore the apparatus and circuits for checking the aspects were sometimes more reliable than the apparatus checked.

The above reasoning has been frequently questioned since the introduction of the modern light signal and its protected, highly-developed and simplified mechanism, and there is wide-spread doubt among men of practical experience regarding the necessity of making the sometimes elaborate circuit design to check the aspect.

The whole thing resolves itself into the question of degree of reliability of the apparatus to respond as it should. Furthermore, when additional apparatus of no greater reliability and also with complicated circuit design, is used to check equally good or even better and simpler apparatus and circuits, it merely complicates a complicated situation instead of adding security. At the best, the checking circuits are just as liable to false failure as the aspect.

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# Painting Cable

*"How often should ordinary braided aerial cable be painted and what kind of paint do you use?"*

## No Fixed Schedule for Painting

G. E. Beck
Supervisor of Signals, New York Central, Toledo, Ohio

The frequency of application of paint to aerial cables will vary considerably with climatic and atmospheric conditions. Cables, in the open country, subject to the elements, will not require painting as often as those in towns and cities, especially where industrial activities foul the air with corrosive gases. We have no set time for painting but do it often enough to preserve the outer covering. We use Elaterite No. 45 cable paint for aerial braided cables, applying the paint with a brush or sprayer. Some cables are painted by a man riding the messenger, some by the use of a ladder, and others by lowering the messenger and cable to within four feet of the ground. Good second-hand cable received at our storehouse is matched up and spliced, the bad spots are taped, and the entire cable is drawn through a trough of paint before being reeled up.

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# Ballast Lamps

*"What has been the experience in the signaling field as to the use of ballast lamps for limiting and regulating the voltage of primary batteries used as a source of energy for signal-operating and signal-control circuits, as well as track circuits?"*

## Merits of Ballast Lamps

A. W. Fisher
Engineering Department, Union Switch & Signal Company, Swissvale, Pa.

It is our impression that the use of ballast lamps in signal circuits in this country has been very limited up to the present time, except to a certain extent in train control engine equipment where they have been used to regulate the filament current of pliotron tubes.

Voltage regulation for signal lamps operated from primary battery is very desirable, and it seems probable that ballast lamps will give quite satisfactory results in this service. Preliminary studies in this connection indicate