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 IN A SUBSEQUENT ISSUE

(1) *What is your latest approved method of terminating Parkway cable at the rail, and in relay cases?*

(2) *What is the best method of attaching a ground wire to a ground rod or pipe?*

(3) *What are the advantages or disadvantages of glass insulators as compared with porcelain insulators for low-voltage line control circuits?*

(4) *How are single track signals controlled so as to discriminate between opposing and following trains?* (*$5 will be paid for the most simple explanation of methods to provide directional control of single track signals.—Editor.*)

Is Approach Lighting of Signals Really Economical?

"In your opinion what are the advantages or disadvantages from a train operating standpoint, of the practice of approach lighting automatic block signals?"

Approach-Lighted Signals Are Very Effective in Compelling Engineman to Be Alert—Rear End Inspection of Signals for Opposing Train Movements Not Recommended

ON the New York Central Lines West, we approach-light our colorlight signals. The situation in the territory where we have colorlight signals made it necessary that we approach-light the signal for the reason that the power company from whom we obtain current, reserve the right to shut down the power at any time to make repairs or make extensions. This necessitated using power-off relays and storage batteries for reserve power for lighting the signals.

The advantage of approach lighting lies in its greater economy. The bulb life is longer and when the lighting is from the reserve battery, the battery will hold up much longer. It is also possible to use a battery of less capacity than would be required if lights were burning constantly. I have found in making inspections over the road that an approach-light signal is very effective. It is my opinion, these signals tend to keep the engineman alert as he is always, when passing a signal, watching for the next one to light up.

There are no disadvantages, except the possibility of an engineman being fearful that the signal will not light up and that he may pass the signal should it for some reason fail to light up. This however, is overcome by having the signals properly spaced so that the engineman is given ample opportunity to apply the brakes and stop his train before reaching the signal should the signal fail to light up after the train has passed the preceding signal a reasonable distance. The other so-called "disadvantage" is the impossibility of inspecting the lights on signals from the rear of the train for train movements in the opposite direction in multiple-track territory. This is not serious because an inspection from the engine is more satisfactory, and provides a truer condition of the signal lights.

Cleveland, Ohio. F. B. WIEGAND,
Signal Engineer, New York Central.

Longer Lamp Life and Reduction in Train Stops Is Source of Greatest Economy

THE approach lighting of automatic signals is economical because the lamp is only lighted when it is being used. This results in a greater increase in the time the lamp may be kept in service, necessitating less frequent renewals with consequent economy in lamp and energy expense. Longer lamp service means less frequent burnouts, resulting in less train stops due to an improperly displayed signal. The decrease in the number of train stops is the source of the greatest economy.

Cincinnati, Ohio. C. F. STOLTZ,
Signal Engineer, Cleveland, Cincinnati, Chicago & St. Louis.

Believes Approach Lighting Not Justified on the Basis of Economy—Train Operation Is Greatly Facilitated When Constant Lighting Is Used

WE all know the story of the man who applied so many gasoline saving devices to his flivver that he found it necessary to remove 10 gal. of gas from the tank every day but no one has ever actually seen the flivver or ever met the man. A good many people seem to have believed this story to be true, however, and attempted to emulate the result by getting something for nothing in the lighting of signals.

No one questions the desirability of electric lights for signals. No one suggests the desirability of intermittent lighting for signals except from the economy standpoint. The time was perhaps when a good argument might have been made for intermittent signal lighting, more commonly known as approach lighting, on the basis of a comparison with oil lights. Probably it was more desirable to employ intermittent electric lighting than oil lighting of any character, and, of course, it was not feasible to use constant lighting when the only source of energy was portable storage cells or primary cells.

When the primary source of electrical energy is an alternating current generator with its comparatively low cost per kilowatt-hour, any argument ever advanced in favor of approach lighting loses effect even in comparison of relative costs in the actual lighting itself. When the economics of railway operation is considered it is hard to understand why approach lighting is ever adopted, or where now in use, is perpetuated. The primary object of automatic signals is to move trains over the road safely, but with rapidity and this object is well accomplished by the modern appliances with which the railways are equipped. Why blind the equipment on the basis of false economy when such blinding is not necessary? Why not realize to the fullest extent the advantage which may be obtained by a good installation of automatic signals in speeding up train operation?

Certain it is that no consideration would have ever been given to intermittent signal lighting had low cost energy been available in the past, as it is now. If for no other reason than that of giving information to waiting trains at passing sidings, constant lighting certainly justifies its cost. Not only justifies its cost, but very materially reduces the cost of train operation and actually speeds up such operation. It is frequently necessary to cut trains at crossings while waiting at meeting points. If the signals are constantly lighted in the case of single-track operation, the waiting train is advised of the approach of the train to be met in ample time to close up the cuts and be prepared to leave immediately upon the arrival of the train to be met. Minutes are saved here which in the aggregate amount to days in the course of a year and result in the saving of many dollars.

Again, with constant lighting a train waiting at a meeting point will permit fire to go down thus saving coal until the train is "in the red" and then bring the fire up to full steam with resultant fuel economy.

The informatory value of constant lighting carries itself into the train dispatcher's office through the medium of the way station operator who can constantly keep the dispatcher advised as to the nearness of approaching trains and often permit him to make last minute changes in meeting points. If the train dispatcher could make the decision, I believe he would always decide in favor of constant lighting, as would also the train crew.

It is hardly necessary to argue the value of constant lighting for its informative and safety characteristics to employees who are required to move over the road on motor and hand cars. It is equally necessary to point out the advantages in case a repair crew is about to obstruct the track for any reason without knowledge of approaching trains. Both the safety factor and economical operation are involved and surely they greatly outweigh any minor saving in power cost which might be obtained by intermittently blinding the signal equipment. The actual consumption of energy in lighting even in the case of light signals is not great and the difference over a year's period will not amount to very much, whether approach lighting or constant lighting is employed.

Philadelphia, Pa. H. B. CRANTFORD,
Manager Signal Dept., Railway Division, Electric Storage Battery Co.

Approach Lighting Used Only When Normal A-C. Current Is Off

WE have never experienced any trouble with train operation either with approach-lighted or continuous-lighted automatic signals. Our automatic signals are made continuous burning on a-c. for the benefit of the signal maintainers and other maintenance of way forces and we approach-light them only on d-c. when the a-c. current is off, simply in order to save battery.

Nashville, Tenn. GEO. S. PFLASTERER,
Signal Engineer, Nashville, Chattanooga & St. Louis.

Increase in Lamp Life an Important Economic Factor

I BELIEVE that approach lighting in any type of automatic signal is far superior than any other method for economic and safety reasons. It is economical because the lights are lit at necessary intervals only by alternating current or direct current from a floating system of storage batteries, which also serve as a power source to operate the signal. This prolongs the life of the bulbs accordingly. The lights in the signal are lit one block ahead and behind the passing train only. When a train approaches a signal the engineman sees one light instead of several. They are lit behind a train for motor car protection.

Also the maintainer is inclined to keep the roundels and lenses much cleaner. This requires a little more of his time and indirectly causes him to give the matter serious attention, which makes passenger and freight service safer. The only instrument necessary to convert continuous-lighted signals to approach-lighted is a light relay, which is inserted in the track or line circuit at the right place, and it does not require any extra batteries. This relay soon pays for itself.

Galion, Ohio. J. W. CALLENDER,
Signalman, Cleveland, Cincinnati, Chicago & St. Louis.

Will High Efficiency Track Relays Shunt Satisfactorily?

"How far should current economy be stressed in comparing some of the latest track relays with earlier designs? Are the probable savings of sufficient magnitude to off-set any decrease in shunting efficiency?"

Greater Shunting Sensitivity Is Realized Because Higher Track Battery Resistance Units May Be Used

THE question assumes that the recently developed higher efficiency track relay permits current economy at the expense of decreased shunting efficiency. This is not the case as the higher efficiency relay is