track voltage and the low ballast resistance.

Ballast resistance should be maintained at a maximum in order to insure satisfactory operation of track relays. However, if there are several highway crossings in a track circuit, and if these crossings are wet, the ballast resistance is usually low. The lower the ballast resistance the higher will be the conductance between the rails, and the greater the loss of battery between the battery and relay end of the track circuit. The higher the ballast resistance and the higher the track voltage the shorter will be the time required for the track relay to release by train shunt action.

Painting Cable

"What is a satisfactory and efficient method of painting an extended mileage of aerial cable having a cotton braid covering?" (Other answers to this question were published on page 710 of the December, 1938, issue.)

Improved Trough

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An answer to this question, published in the December, 1938 issue, covers the method as originally employed. The C. B. & Q. relay shop used the F. W. & D. C. maintainer's method and built a practical tube 6 ft. long, with gaskets on each end that could be slipped through 1½ in. cable rings. I used this on my territory in 1937. However, shortly after, I realized that the nature of my territory was such that it was impracticable to walk along beside the cable after the messenger was lowered, as was originally contemplated.

I built a special spearhead shaped guide attached to ¾-in. round poles, coupled together so that they would reach from one telegraph pole to the next, and attached a piece of train signal cord long enough to reach one span. The painter tube was fixed with a shield to the contour of the rings, with a spearhead on the front end so it could be pulled by the bell cord from one pole to the next. The painter tube was also provided with a valve instead of a plug for filling it. The valve is in the rear end, and a vent hole was provided in the front end; the paint was forced in with a small pressure tank, about 2½-gal. capacity.

The work was done as follows: The spearhead was placed around the cable and enough poles coupled on and pushed through to the next telegraph pole. Then the bell cord was fastened on. Afterward, the bell cord was pulled through that span and the painter tube was put on the cable inside the rings and filled with paint from the pressure tank. The painter tube was then pulled through the rings to the next telegraph pole. The man that pulled it remained on this pole and filled the painter from the pressure tank, brought to him by the first man. The first man then went to the next pole and took off three rings near the pole, pushing the front end of spearhead through to the next pole until he got the bell cord. When the painter was full, he pulled it through. The second man put the three rings on, came down, delivered the pressure tank as he passed the pole, and went ahead to the next pole, pushing the poles through the span, thus completing the cycle. It is necessary to carry a ladder along to use in cases where the messenger is spliced or grape vines are tangled around the cable, etc. The ladder is always kept with the man in front. Where the messenger is spliced, a few rings must be taken off to let the spearhead and painter pass, as they take up practically all of the available space in the rings. The paint supply was distributed along the track at intervals where the pressure tank needed filling. In this way two men can work to best advantage.

This has worked out very well; however, I found that where the fabric was getting weather worn and frayed on the top of the cable, the painter did not hold enough paint for a span. For this reason, I built a painter using all of the available space, shaped like the rings, six feet long, made of cold rolled steel tubing and sheet metal. By doing this the painter will hold about three pints; this is very important as the cable should have a chance to get thoroughly emersed in the paint so it can soak up all that the fabric will take. I believe this will prove to be as economical as any other method.

Unusual Signal Trouble

"What were the circumstances involved in the most unusual signal failure you have encountered, and how did you correct the trouble?"

Channel Pins in Insulated Joint

JOHN O'CONNOR
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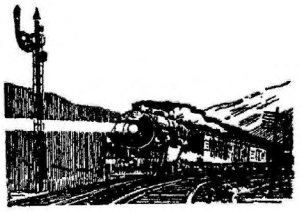
I had a crossing signal in a small town on a branch line, and while walking down the track toward the crossing one day, I stepped on a switch head rod and at that moment the bell started to ring. When I took my foot off the head rod, the bell stopped.

I tried this several times and the bell would ring every time. At first I thought that the insulated splice on the head rod was defective, later I traced the trouble to the insulated rail joint on the lead rails of the switch, midway between the frog and the heal of the switch point. I had the section men take the joint apart, and therein we found the cause of the trouble. The bond wire channel pins were still fastened to the web of the rails and when the insulated joint was applied and the bolts tightened, these channel pins stuck through the fiber plates and touched the inside of the angle bars.



At one time these rails were taken from a main line and sent to the rail mill to have the battered ends sawed off. Later they were sent out to this branch line and installed. These channel pins should have been cut off by the signal force before the rails were sent to the rail mill. We cut off the channel pins flush with the web of the rail and applied the insulated rail joint and this corrected the trouble. If the switch point had been making a good contact on the tie plates, the bell would have been ringing continuously.