Approach Electric Lighting On the Erie

Fourteen years experience reveals economies and advantages in the substitution of electric lamps for oil lamps

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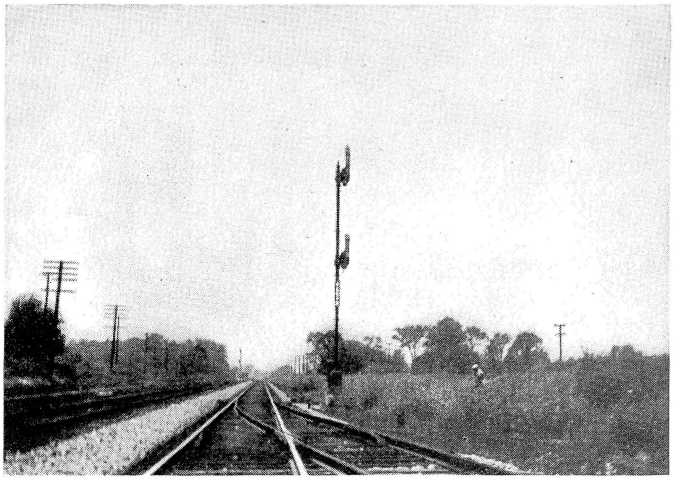
FOURTEEN years experience with approach electric lighting on 34 semaphore signals between Leavittsburg, Ohio and Mantua, on the Mahoning division of the Erie, shows a considerable saving in operating expense, as well as other advantages over the use of oil lamps on this particular territory. This installation was placed in service in June, 1922, and includes 19 miles of double track. Traffic over this line averages 7 regular passenger and 8 freight trains daily in each direction. The signals are Union Style-S, 24 with single arms and 8 with double arms, making a total of 42 lamps.

The changeover to electric lighting was made by equipping the existing lamps with Edison adapters and 3.5 volt, 0.3-ampere bulbs operated from four Edison S-500 ampere-hour cells. All of the original lamps, however, have since been replaced with complete Brach electric lamp units. At single locations, the lighting battery is housed in the same well as the motor circuit battery. At double locations and where signals are staggered, two motor batteries and one lighting battery are housed in the same well at one of the signals, while at the other signal there is only a lighting battery which is housed in a chute.

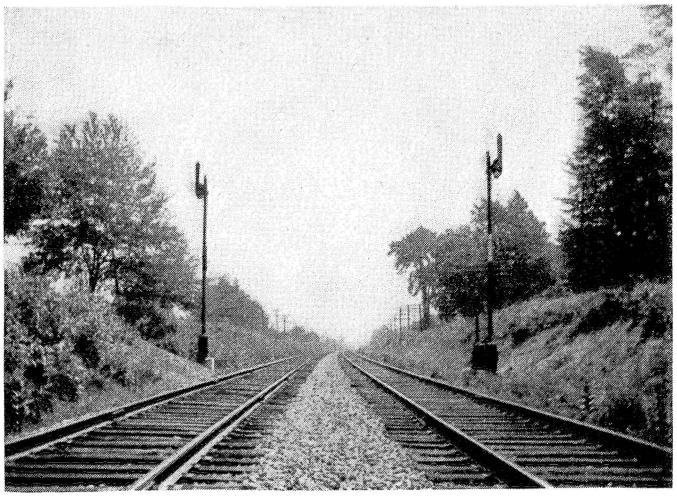
Both polarized and neutral track circuits are used in this territory, the number of each kind being about equal. On all polarized circuits, there is normally 0.2-ohm external resistance between the track and battery when the signal is in the stop position. Through a contact arrangement, after the pole changer shifts, this resistance is increased to 0.4 to 0.7 ohm, depending upon track conditions. This scheme has helped materially to increase the life of track batteries. Electric lighting circuits are controlled either through contacts on DNL relays in multiple with the back contacts of the track relays beyond the signals or through the back contacts of the track relays in multiple with the back contacts of the control relays so that lamps will be lighted even when the circuit ahead is occupied.

The total cost of converting to electric lighting was $996.08, including materials, labor and contingencies. Since this installation has been in service, the yearly operating cost has been approximately $1.75 per signal, allowing for the salvage credit received for the return of exhausted primary battery elements. With oil lamps on these same signals, material and labor costs amounted to $17.70 per signal when the installation was made. However, the present cost of operating oil lamps is about $7 per year. Thus, it can be seen that a substantial saving has been realized from the use of approach lighting.

In addition to the economy, electric lighting has also provided brighter and more uniform indications and has been generally more reliable. In fact, the only failures which have occurred were due to lamp burnouts before the system had been properly adjusted following the installation. Aside from the renewing of exhausted primary cells which has been necessary only every several years, and occasional visual inspection, the electric lighting has required very little attention as compared with the time previously consumed in filling founts, cleaning lenses and alining the oil lamps. As a result, maintainers have more time for other duties and can cover longer sections.



Single location—One well houses lighting battery and motor battery



Double location—Separate housing for motor battery—Lighting battery housed in a chute