Editorial Comment

Electronics In Signaling

THE EDITORIAL in the May issue discussed in general the railroad applications of electronic devices. Elsewhere in this issue, is an article which explains the use of electronic devices in the coded carrier system for centralized traffic control. This discussion has been prepared in great detail, complete with circuit diagrams, so that those readers who are interested can learn how the circuits are connected and how the electronic devices operate. Study of this article may be difficult for those who are not familiar with the terms used in radio and other applications of electronics. Such a study is necessary, however, to keep abreast of modern developments. Coded carrier for C.T.C. lines, like coded track circuits, is a development which has now been installed on such an extensive scale that it has proved not only practical in operation but also sound economically. Study to understand coded carrier in order to know how and where to use the system is therefore worthwhile.

Necessities or Frills in Centralized Traffic Control

CONSIDERABLE discussion is going the rounds these days concerning certain items in centralized traffic control which by some men are called useless frills, while other men argue that they are not only well worthwhile but are absolutely necessary if maximum benefits are to be derived from C.T.C. as a whole.

One of the items being discussed is the provision, on the control machine, of track-occupancy lamps to indicate when trains are on passing tracks, this feature necessitating the installation of track circuits on passing tracks, as well as means for transmitting the indications from the field stations to the control office. No such arrangements are included in many centralized traffic control projects, but on the machines of some of these installations, sockets are provided on the lines representing the passing tracks, so that token plugs with identification markers can be inserted as a reminder, to the man in charge, that a train is being held on the corresponding siding.

Another accessory, related in part with track-occupancy indications for passing tracks, is the train graph, which automatically records the passing of trains at the various OS sections in the field. On one of the recent installations, the graph indicates whether the switch is normal or reversed when a train is occupying an OS section, and thereby a record is made of train movements into or out of passing tracks, in contrast with through movements on the straight main track route. Thus the man in charge knows, from this record, when trains are occupying passing tracks. It is contended by some, therefore, that lamps to indicate occupancy of passing tracks may not be as necessary when an automatic train graph, controlled by OS sections, is provided.

The advisability of passing-track occupancy indications and/or automatic train graphs, depends first of all on the character and volume of the traffic, the bunching of train movements, and the relative importance of train delays which may result if the man in charge overlooks the fact that a train is being held on a siding, and fails to advance it.

Two extremes in these respects have been noted recently. On one of the most important single track lines in this country, that handles from 45 to 50 trains daily, one dispatcher operates a C.T.C. machine which controls a territory of 133 consecutive miles, including single passing tracks at 22 locations and double passing tracks at 3 locations. This machine is not equipped with either an automatic train graph or track-occupancy indication lamps corresponding to the passing tracks. The dispatcher in charge of this machine records train movements on a conventional train sheet. For ordinary meets or passes, the dispatcher who was on duty on a certain day, did not use the token plugs as a reminder that trains were on corresponding passing tracks, but rather he depended on his memory and his train sheet to remind him to direct these trains to move. It would seem that, with the volume of traffic and the extent of the territory controlled by this machine, the provision of indications of track occupancy on passing tracks and/or an automatic train graph would be the means of saving train delays sufficient to justify the expense for the added facilities.

In contrast, on another C.T.C. project which includes about 53 miles of single track, with a traffic of 25 to 40 trains daily, the facilities include indication lamps for the sidings as well as an automatic train graph with special controls to show whether the switch is normal or reversed when a train occupies the OS switch detector track circuit. The irony of the circumstances is that this train graph was not in service but, on the contrary, the man in charge was attempting, among other duties, to keep a train sheet passing report for the various OS sections, based on the bells and lamp indications on the C.T.C. machine.

It may be concluded from this discussion that where an all-out effort is being made to get all the track capacity and train speed possible out of a single track line, every accessory, such as track-occupancy indications and automatic train graphs, can easily be justified. On the other hand, on a medium traffic line where expenditures are limited such accessories may not be justified; this conclusion depending, however, on whether the man in charge of the machine has other duties. On the whole, the signal engineers as well as the operating officers who are responsible for planning the installations, must know the various factors involved that concern track-occupancy indications and automatic train graphs. Therefore, these men might well study the conditions from this standpoint on various installations on their own roads as well as on other railroads.