# EDITORIAL COMMENT

## A Signal Shopping Policy

WITHIN the next few years, it is to be expected that the railroads will make extensive detailed inspections of all signaling apparatus in service, and much of the older equipment, regardless of whether its operation is up to standard, may be sent through the shops for complete cleaning, overhauling, replacement of parts and adjustment. The time is now opportune, therefore, to make a detailed analysis of the expenses that will be incurred in such shopping programs, and to compare these costs for each class of equipment with the cost of new modern apparatus.

When determining whether devices, as for example relays, of a certain age and type are to be scrapped or repaired, a signal engineer must know all the facts, in order that he may not be influenced unduly by stores officers desiring to justify their overhead, or by accountants who have certain reasons for peculiar amounts of the charges. Perhaps an extreme example of such practices is that of crediting a relay, received at the shop, at scrap value, or very close thereto, and, when overhauled, charging it out to the signal department at the price of a new relay. The opposite extreme, perhaps, is to charge the shopping program of a relay with only the time of the repairman at the bench, plus the purchase price of the new parts installed, and allowing all overhead and supervision to be charged to the general signal account. In order to minimize book work and accounting, some roads charge the entire labor and repair parts used, in the shop to operations, to maintenance account 249. In none of the three procedures, outlined above, is the true cost of shopping certain types of equipment readily ascertainable.

The true cost of overhauling a signal device includes many items. When received at the shop station, it is carted to the shop and unpacked. The instrument must then be taken apart, and the various parts must be cleaned and perhaps repaired. The instrument must be carefully assembled, tested, and adjusted to be sure that the operating characteristics are within specified limits. The device is then packed and reshipped. These shop operations must be supervised by a man who is not only an efficient foreman, but also an expert in the repair and adjustment of signaling devices. Thus the total expense of overhauling a relay or other device should include not only the repairman's time and the cost of new parts, but also a proportionate share of the entire shop expense, including packing, cleaning, supervision, machinery, tools, power, heat, light, building maintenance, stores charges, etc.

Having assembled all the costs involved in shopping a signal device, the further important matter of obsolescence must be given thorough consideration. Within recent years, relays, controllers, signals, switch mechanisms, control machines and other equipment, used in signaling systems, have not only been vastly improved but, in many instances, complete new designs are available. For example, a modern track relay is more sensitive to shunting than earlier designs, and the operating characteristics are such that the relay will operate satisfactorily with more limiting resistance, thereby increasing the life of the battery sufficiently to save $3 annually, and thereby pay the difference between the cost of a new relay and the cost of shopping an old relay within five or six years. One road, which shopped some obsolete relays, found that the total cost was $21 per relay. Even with this expense, the operating characteristics could not be brought up to standard, nor was the operation as efficient as that of modern types of relays. Similar examples can be cited concerning signals, controllers, switch mechanisms, and control machines; in which safer operation, fewer signal outages, reduced operating costs, etc., will readily justify the changeover to modern equipment.

## C. T. C. on Multiple Track

SO MANY investigations have been made and so many descriptions have been published of installations of centralized traffic control on single-track lines, that there perhaps may be some tendency to overlook the advantages of this type of control as applied to one or more tracks of a multiple-track line. As a matter of fact, the application of centralized traffic control to multiple-track lines was an important feature of many of the earlier installations; the New York Central, in 1927, not only included 37 miles of single track, but also 3 miles of double track on which train movements were directed by signal indication in each direction on both tracks; installations made in later years, such as those on the Boston & Maine in 1929, and on the Burlington in 1930, included either-direction operation on tracks of multiple-track lines.

Where a particular track of a multiple-track line is provided for the operation of trains in one direction only, and where no trains are run in that direction during certain periods, the track may just as well be used by trains running in the other direction. The reduction in train delays and the increase in track capacity which naturally results from this practice are especially beneficial in sections where train movements predominate in one direction during certain portions of the 24 hours. An excellent example of either-direction train operation with centralized traffic control on a two-track line is afforded on the Texas & Pacific between Dallas, Tex., and Ft. Worth, 31.5 miles, where reverse movements