EDITORIAL COMMENT

Reverting to Single Track

THE provision of proper signaling facilities is one of the important considerations when changing from double track to single track operation on extended sections of main line. The idea of taking up a second track is not new, for during the World War sections of track on the railroads of Ireland were torn up to permit the rails and fastenings to be sent to France. After the close of the war it was found that, with proper signaling for directing train movements, such satisfactory operation was obtained that further sections of second track totaling 220 miles were removed. The signaling installed on these Irish roads was based on the "lock and block," using the staff system, train movements being directed by signal indications.

This same idea of reverting to single track has received considerable attention in America. The Committee on Economics of Railway Operation of the A. R. E. A. has presented a report setting forth the factors involved in determining the advisability of removing a second track on 24.6 miles of line of a certain road. The conclusion of the report was that "where the volume of traffic on a double-track line has decreased enough to warrant a reduction in facilities, the converting of double to single track should be considered." This committee, however, stopped in the middle of its job, for additional information should have been given to show what signaling would be required to handle not only the present but also a gradual increase in traffic on the single track.

As another example, the Chicago, Milwaukee, St. Paul & Pacific has recently converted double track to single track on nine sections totaling 205 miles of line. In this case the changing of the automatic block signaling from double to single-track operation constituted one of the major factors of the change-over, as described in detail in an article published in the *Railway Age* for August 20. The point is that the present traffic can be handled on the single track, using automatic signal protection, and directing the train movements by time table and train orders. Furthermore, as traffic returns to normal the demand for increased track capacity can be met at a comparatively small cost by adding centralized traffic control to direct train movements, thereby reducing the number of train stops and delays attendant on the train-order system.

Aside from variation in traffic, many changes in recent years have increased the capacity of single-track lines. Among these are better track, permitting higher speeds; larger locomotives, handling about twice the number of cars and thus reducing the number of trains; the development of an idea in main-line layout, involving short sections of double track and longer sections of single track so proportioned that practically all trains can be passed on the double-track sections without stopping; and last but most important, centralized traffic control, including power-operated switches, which eliminates numerous delays and thus further facilitates train movements, thereby increasing the capacity of the line.

These new developments can be used equally as well in reorganizing the layout on a double-track line to secure economies in track maintenance or to increase the capacity of a single-track line as traffic gradually increases. These changes will be considered on many roads, and signaling officers should be prepared to answer the questions of their managements as to what can be accomplished in expediting train operation by modern signaling.

Breaking Control Circuits Through Interlocking Relays

IN THE early days of highway crossing protection, interlocking relays with coils controlled by track circuits were developed to provide directional control and cut-out, especially for single-track lines. Some of these early types of interlocking relays were simple and reliable while others involved certain toggles and trigger arrangements which frequently failed to operate properly with the result that one set of contacts would be left in the open position. As the field of signaling grew, automatic crossing signal installations were intermingled in automatic block signal territory and, based on early troubles with interlocking relays, a feeling developed that it would not be safe practice to break line control signal circuits through contacts of interlocking relays. Therefore, rather than using interlocking relays with coils operated directly by track circuits, separate track relays were used, through which the signal controls as well as interlocking relay controls were extended.

This method required two extra track relays, with the necessary housing, terminals, wiring, etc. Being short of contacts in the track relays in certain instances, some roads began using contacts in the interlocking relays for controlling non-vital circuits, such as those for annunciators, switch indicators, etc. A rule was followed that the clearance of 0.05-in. must be maintained when the front contacts were in the open position, even when on locking. Serious study was given to the design of the interlocking arrangement of the relays, with the result that several improvements were made which practically eliminated failures of this feature of the relays. Records carefully compiled for several years showed that no trouble was occasioned by these improved interlocking relays or by the circuits being controlled through such relays. Therefore, when designing an automatic interlocking circuit scheme, it was decided to base the controls on interlocking relays rather than use stick relay circuits to secure the directional control features.

Satisfactory results have been rendered by this use of interlocking relays on more than 50 such plants for several years, and this experience, together with that of extending indicator circuits through interlocking relays at highway crossing installations, has again brought up the question as to whether it is practical to use modern interlocking relays with coils operated by track circuits and extend signal control current through the contacts, thus eliminating the two track relays in many instances. A question bearing indirectly on this problem was published in the August issue, and the only answer received