Editorial Comment

Something New in Interlocking Indications

An interlocking, including new features in the operations of levers and indications on the control machine, has been installed at Manchester, N. H., on the Boston & Maine. An article elsewhere in this issue explains the construction and operation of this interlocking, but the following discussion has to do with the importance of the new improvements.

As compared with previous interlocking machines using miniature levers, an outstanding feature of the Manchester machine is the use of "exit" lamps on the illuminated diagram. After having positioned the switch and signal levers for a proposed route and the switch indications have been received corresponding to the position of the levers, an "exit" lamp is lighted at the point on the illuminated diagram which represents the place where the train is to depart from the interlocking control limits. Although the signal lever has been positioned, the control for the signal cannot be initiated until the starting button is pushed and then only after the exit light appears. Therefore, before pushing the signal lever starting button, the leverman is afforded a quick visual check by the "exit" lamp as to whether he has established the correct line-up of switches to complete the desired route. This eliminates the necessity for an individual check of each switch lever involved. If the "exit" lamp is not lighted, no signal control is sent out from the machine, even if the leverman pushes the button. An important item is that the locking relays in the field are not actuated to lock up the route until a signal control is received. This control cannot be initiated until the route is complete. This fact may avoid delays in numerous instances.

The interconnections of circuits to provide safety locking between switches and signals is located at the field locations, the same as in previous all-relay plants, but a new feature of the Manchester machine is that the switches are positioned to complete a line-up and thus light the "exit" lamp before the signal control goes out. This feature is accomplished by a network in the machine itself, and this network serves as the equivalent of mechanical locking.

Another interesting feature is the use of only one indication lamp at each lever. The indication lamp above a signal lever is lighted only when the signal is not displaying an aspect corresponding to the position of the lever. This lamp also displays a flashing indication when approach locking is effective over the route which the signal governs. Similarly the lamp above each switch lever is lighted only when the corresponding switch is not over and locked in the position corresponding with that of the lever. This practice provides a dark face plate when conditions are normal and no trains are approaching or occupying the interlocking limits.

Head-Block Overlaps

In recent years, and as applying to automatic block signaling on single track, there has been considerable comment concerning the desirability of arranging the signals so that there will be twice train braking distance between staggered intermediate signals. This arrangement is considered desirable so that if two opposing trains simultaneously passed head-block station-leaving signals which were displaying clear aspects, then the trains would encounter red aspects at the intermediate signals, with distance still available to bring the trains to a stop without striking head-on. The chance that two trains would simultaneously pass head-block signals is one in many millions, but this could happen, and, therefore, may well be corrected if the solution is practical from an engineering standpoint and if the cost can be justified.

Some roads have advocated the practice of setting the head-block signals several hundred feet out from the switch, with a separate track circuit extending from the signal to a point on the main track opposite the fouling point on the siding, and this track circuit is included in an overlap, as explained in an article in this issue, concerning an installation on the Kansas City Southern. With such an arrangement, the enginemen of opposing trains cannot simultaneously pass head-block signals displaying the Clear aspect, but one or the other would have the Stop aspect for at least the length of an overlap, and in most cases more.

On the other hand, it may be contended that the cost of installing these extra track circuits and overlaps is not justified because the circuits are so short that for high train speeds the enginemen in a "one in many million" instance would not have much time to catch the change in aspect. At 90 m.p.h. a train travels 264 ft. in two seconds.