Editorial Comment

Highway Crossing Protection

MANY of the accidents at highway-railroad crossings occur because the drivers of motor vehicles disregard the danger indications displayed by standard types of automatically-controlled signals. From the standpoint of the railways, it may seem that the installation and operation of signals involve the practicable limit of expense that a railroad should be expected to make, and that if drivers carelessly disregard the signals, no further expenditure can be justified from an economic standpoint.

However, when 31 persons are killed in 11 accidents at crossings of one double-track railroad in one town, within a period of five years, public opinion forces action. The most disastrous of these accidents occurred when the driver of a northbound vehicle waited for an eastbound freight train to pass and then, disregarding the continued operation of the signals, proceeded on to the crossing and was struck by a passenger train approaching on the westward track.

When city, state and federal authorities investigate such accidents, one logical conclusion is that, even though the driver disregarded the signals, some more effective form of protection is needed at certain locations where heavy-traffic highways cross high-speed, multiple-track railroads. This leads to the consideration of some sort of an obstruction such as a gate arm or a barrier in the highway that will prevent drivers of motor vehicles from proceeding on to the tracks until all of the trains involved have passed.

Manually-operated gates have, of course, been used for years, but the high operating expense for such protection prevents their extensive use for full 24-hour service. Power-operated gates or barriers controlled automatically involve complicated control arrangements and certain other operating features subject to failure. However, when faced with serious conditions, some railroads have followed a very logical procedure of agreeing to co-operate with the public officials by making extended service tests of equipment advocated as affording improved protection. By entering whole-heartedly into such tests and contributing ideas to the improvement of such equipment, it may be developed to a stage of operating efficiency such that observations during extended periods of service will permit the assembly of data on which to base judgment as to its merits in affording protection.

As assistance to those faced with similar circumstances, several articles are presented in this issue, describing recent installations of automatically-controlled barriers and gates, with special details concerning the recently-developed gates, operated by top-mast semaphore signal mechanisms. On first consideration, a man experienced with signaling equipment is likely to form an opinion that it is not practicable to operate a 20-foot crossing gate arm by means of an ordinary semaphore signal mechanism. However, observation of such installations in actual service, coupled with the fact that obvious defects of the arrangement are rapidly being corrected, lead to the conclusion that the idea is not only practicable but, quite likely, will be used rather extensively. The fact that signal mechanisms have, through the years, been developed to a high state of reliability, is a point in their favor for use as gate mechanisms. Control of the hold-clear on the closed-circuit principle and the operation of the arm to the stop position by force of gravity, are other advantages. By use of counterweights to balance the arm, the operating load on the mechanism is so reduced as to be handled readily by existing standard types of mechanisms with no changes in gearing or direction of rotation. Future experience will dictate whether it will be necessary to provide additional guides or rest brackets to take the stress caused by wind pressure when the gate is in motion or standing in the clear position.

Speed Limits at Automatic Interlockings

THE IMPROVEMENT that has been effected in railroad service during the last few years is due in a large measure to the increased average speed of both passenger and freight trains. As these train speeds have increased, it has become quite evident that considerable time is lost when complying with the requirement for slow speed through automatic interlockings, especially where adverse grades introduce handicaps in attaining normal speed again. When automatic interlockings were introduced some 20 years ago, the system of control and the observance of train operation were so different from past practice that operating officers and state commissions were decidedly conservative in establishing low-speed limits of from 15 to 20 m.p.h. However, as the years have passed, the system of control has proved to be reliable, in that the approach of a train automatically interlocks the controls to prevent the clearing of the signals on the other road or route. Furthermore, the majority of these plants are equipped with operative distant signals, so that enginemen have the same advance information as to the line-up as at any other interlocking. The question now arises as to the necessity for hampering train operation by continuing to enforce low-speed restrictions at automatic plants when no such limitations are in force at manually-controlled interlockings.

The relatively few accidents which have occurred at automatic interlockings have been the result of the failure of enginemen to observe signal indications. Furthermore, under the circumstances, the chances are that in each instance an accident, probably of a different nature, would have occurred if a manually-controlled plant with derails had been in service. The problem simmers down to the fact that there is no way in which it can be made safe for a train to be operated in violation of signal indications. Therefore, if the training and discipline of enginemen are such that they understand and obey signal indications, there is no longer necessity for handicapping train operation with low-speed limits at automatic plants, which are equipped with distant signals properly spaced to insure adequate braking distance. If considered desirable, sequence of the approach of a train and the clearing of the