

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 engine-men 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

signals on one road, as compared with similar operations on an opposing road, can readily be made record by an automatic graphic recorder.

With some 360 of these automatic interlockings now in service in the United States and Canada, it would seem that the time has arrived when the railroads should take concerted action in laying the facts before the state commissions and likewise, that these commissioners should lend a co-operative ear to the plea of the railways to lift these drastic speed restrictions at automatic interlockings. Efforts in some states have already effected some results. For example, it is understood that the Railroad Commission of California has raised the speed limit to 30 m.p.h. at automatic plants which are equipped with operative distant signals, and under similar circumstances, the Iowa Railroad Commission permits 25 m.p.h. However, at many interlockings a speed limit as low as 25 to 30 m.p.h. is an unnecessary handicap.

Letters to the Editor

Bad Collisions on Best Railroads

To the Editor:

What purpose is aimed at by the government in its investigation of railroad accidents? The improvement of the service, of course, so that the accident record with its account of deaths and injuries shall be reduced. But in reading the record in your December issue, page 640, of a rear collision, September 27, 1935, on one of the busiest railroads in the country—four-track, 100 trains a day, with freights nearly a mile long moving at 40 or 50 m.p.h.—I find rising in my mind a number of unanswered questions. Assuming that you have given a fair abstract of the Bureau's narrative and decisions, one must conclude that if government investigations are to be of benefit to the public they ought to be much more thorough than they are. You may recall that some years ago when the New York, New Haven & Hartford had several bad collisions within a few months, one of the members of the Commission went to New Haven and held public hearings; and the Commission's reports and comments at that time were quite severe; perhaps unfairly severe in some respects. That commissioner very likely did not know much about train operation, as compared with the inspectors who do the investigating now, but he was a sharp lawyer and knew how to slam the railroads.

The first thing to be noted in the conclusions of the report on this September collision is that the failure of the flagman to go back is made fully as prominent as the failure of the engineman. This conclusion is no doubt of the same tenor as that of the superintendent who has to discipline that flagman and that conductor; but it is unsatisfactory, because it does not get us anywhere. Everybody has known for 40 years that, with suitable and efficient block signals, the holding of flagmen to this duty of going back is an exceedingly difficult task. With a red light, much more powerful than any flagman's lantern, shining brightly from the signal bridge and into the engineman's face, how do you expect the average brakeman to maintain and carry out his resolution to go back a half mile? And it is the average brakeman that you have to deal with, not the especially efficient one.

And on a four-track road the dependence on the flagman involves very defective reasoning, for cases arise every day in which the flagman cannot tell which track

an approaching train is traveling on; and as many other cases where the engineman cannot tell whether the red light swung across the track a mile ahead is for him or for a train on the other track. In case of doubt, you will say, take the safe side; but ask any wide-awake superintendent what degree of faithfulness he expects in securing obedience to that rule concerning doubts.

The engineman had been on duty 14 hours, and quite likely fell asleep. (The other collision reported by you in December was due to the neglect of an engineman who acknowledged that he had fallen asleep.) The fireman had been drowsy and owned up to it. It is very natural to ask why the road allowed men to work so long. It was doubtless to make it easy for the men to get home in the most convenient way. But is that a good reason?

Some railroad officers seem to think that the 16-hour limit in the hours-of-service law makes a 16-hour work day a reasonable one; but it does not. Sixteen hours is only a compromise to get a law on the statute books. That length of time may be right for an extreme limit, but the reasonable rule would be to set 10 or 12 hours (or less) as the normal day, to be lengthened only in emergencies. The railroads ought to do this without waiting for the government to act. Possibly no one but a Mussolini, with machine guns, could establish this reasonable practice; but it is reasonable all the same.

What was the sleepy engineman doing in the 30 hours that he was off duty prior to this run? This is not the most vital issue in this inquiry, but it is a very natural question. The Bureau seems usually to treat it as secondary. Culpable men and weak witnesses will sometimes make deceptive statements, but that is a difficulty common to nearly all investigations. Collisions on very busy railroads call for thorough inquiry, such as lawyers give to murder cases.

The public each day is giving increased attention to railroad matters and we may some day have the Interstate Commerce Commission taking a hand in the subject of discipline. It behooves the railroads to put their houses in order without its assistance.

The "public"—that is, non-railroaders—will call for automatic train control if the subject should become sufficiently prominent. What could the railroads say to that? Sentiment is, no doubt, very much divided; and, with financial problems pressing as a heavy load on every president's shoulders today, the most universal prayer, no doubt, is that the good Lord will see that the collision problem is kept in the background for a few years. The highest form of protection from collision today is the cab signal, as used extensively by the Pennsylvania; but we have to remember that this "state of the art" was reached only by the enormously expensive ten-year course of education through which the government led us; and any new step today would probably arouse fears that new and unheard-of ways of unwisdom might be concealed in the clouds of uncertainty arising in everybody's mind. The government, through the Interstate Commerce Commission, continues mildly to urge "consideration" of automatic train control or cab signals—evidently desiring to avoid any definite commitment; but this attitude probably has very little significance at present. As long as the British government is in a denser fog than our own, things are likely to continue to drift aimlessly. Possibly poverty may compel inaction.

But it remains true that simple, old-fashioned discipline, with education, has never yet been tested to its utmost in the train service. It is conceivable that millions of dollars spent there might do good comparable to that done by millions spent on machinery.

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