

done. Even though poor judgment is used, nothing worse can happen than what an automatic release is apt to do any time it operates.

No type of release should be required to operate so long as there is only one train within the clearing limits. When a second train approaches, the judgment of a leverman is particularly desirable, and in the absence of a leverman, the next agent available is a member of the train crew who should act in accordance with instructions. He can act through the medium of a clockwork time release and flagging equipment. He should remain at the crossing until his train reaches it, and if a trainman on the opposing line walks to the crossing the two can confer as to what should be done and which train should move first over the crossing. An automatic release increases the cost and introduces apparatus more difficult to maintain than the clockwork release.

### Favors Manually-Started Clockwork Time Release

By J. H. MOLLOY

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THE manually-started clockwork time release is more desirable than the automatic time release controlled by the approach of a train, for the following reasons: With an automatic time release, it is possible that a train, after having made a stop in the approach section, might start up, increasing its speed as it approached the home signal, and then, because the time interval had elapsed, have its clear signal change to a stop indication, causing the engineman to apply the brakes quickly to avoid overrunning the signal and on to the crossing.

The train on the opposing road which is approaching a stop signal receives a change from the stop to the clear indication and immediately prepares to accept the signal and move over the crossing. The signal for the latter train may change to stop again, if the first train should not be able to stop in advance of the signal. This method of operation appears objectionable in that it has the possibility of a change of indication in the face of a moving train.

With the manually-started clockwork release, or the push circuit controller, it is necessary for a trainman, of the last train entering the approach clearing section to proceed to the crossing in order to operate the release. He will then be put in position to observe whether the train on the opposing road is ready to accept its clear signal, or whether the train is moving. The release may then be operated if it is safe to do so, and after the time interval has elapsed, a clear signal indication will be displayed for the second train. This method of operation appears more desirable, in that there is no possibility of a clear signal being taken away from a train moving at considerable speed.

### Only Time Will Tell Which Type of Release Is Best Suited to Automatic Interlockers

By THOS. S. STEVENS

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AUTOMATIC interlockings are so new that it seems impossible for any one to state definitely his opinion, based purely on analysis, about the value of the different types of releases which have been suggested and to some extent placed in service. There are certain things, however, which must be accepted as facts. A manually-started time release makes it possible for trainmen of one road to interfere with the operation of trains on the crossing road. Whenever signals have

been cleared on one road and the passage of a train over the crossing is delayed it will always be necessary for the trains on the other road to stop and operate the manually-started time release. If track circuit failures occur on the clearing section of one railroad it will be necessary for all trains on the other railroad to stop in order to operate the manually-started clockwork time release.

All of the above facts, which really are the doubtful things in connection with a manually-started clockwork time release, are taken care of by an automatic device, which has been criticized only because there seems to be a possibility that if the time interval runs out after the signals have been cleared, stop signals may be displayed after the proceed signals have been observed.

The primary purpose of any interlocking is to prevent as far as possible the stopping of trains at level crossings with a device which is reasonably safe. At one Santa Fe crossing under consideration the "Chief" is scheduled to arrive a few minutes ahead of a mixed train on the other railroad, which is the only regular train operated over that line. The mixed train does a great deal of switching. If the "Chief" was a few minutes late and the train on the other railroad on time, the "Chief" would have to stop to operate a manually-controlled release. It might still have to stop if an automatic time release is provided, but the chances would be reduced.

Various types of releases have been installed on the Santa Fe or are under consideration. One plant has no release; two will have automatic time releases. At others it is proposed to use manually-controlled releases. I do not believe anyone can definitely state as his opinion that either one of these is better than the other, until time has provided enough data which will permit of a true comparison based on actual operating results.

## Rear-End Flagging

*"To what extent has rear-end flagging been eliminated or modified in automatic signal territory?"*

### Rule 99 Modified on Northern Pacific

ON the Northern Pacific, Rule 99 is modified so that a flagman is not required to go back to protect his train, if he can see an automatic signal at danger at least one-half mile to the rear of his train. In commenting on this modification of the flagging rule, C. A. Christofferson, signal engineer of the Northern Pacific states, "I cannot say to what extent the modification is eliminating flagging. It is in force in semaphore signal territory, but it cannot be used in color-light signal territory because the back light is not visible a half-mile away in daylight. I am not aware that any road relies upon the back light of the color-light signal for the purpose of modifying the rear end-flagging rule. Our operating rules require that the flagman make sure that the signal is plainly seen to be at stop. In our electrically-lighted signals, the approach system is employed and on heavy grades it is frequently the practice to use a control section of not more than 1,000 ft. in advance of the signal. Hence, there has not been a very great elimination of rear-end flagging on this road, if all these factors are given consideration."

F. H. Bagley, signal engineer of the Seaboard Air Line, replies that, "It has not been considered advisable on the Seaboard Air Line to modify the rules with respect to rear-end flagging in automatic signal territory. Our practice still is to flag rear-end in

