

position signal indicating Stop-and-Proceed, Proceed, and Approach Next Signal Prepared to Stop, but is incapable of displaying the aspects considered necessary on many of the railroads at interlockings, and it cannot be used as an adequate substitute for the method of signaling which gives definite information of the condition of three blocks ahead, or to indicate Approach Next Signal at Restricted Speed, an aspect frequently displayed approaching an interlocking with long crossovers; consequently, in the present state of development, a less favorable indication must be used on the cab signal at such points, but where an automatic stop is used with

the forestalling feature in the hands of an expert and alert engineman, it need not be anticipated that train operation will be greatly retarded.

The cab signaling we use has the same basic principles as the roadside signaling—that is, closed continuous circuit and the light signals without movable parts, and this is one of the reasons why the design can be considered as safe as that of the roadside signal, although, in its present development, it is more liable to so-called safe failures, it being subject to practically all the failures incident to the wayside signals in addition to these caused by defective apparatus on the engine.

Dispatching Trains by Signal Indication

BY STANTON ENNES

Formerly General Manager, Baltimore & Ohio, Lines East

RUNNING trains by signal indication instead of train orders, substituting signal indication for train order, presents the biggest opportunity for reducing costs offered the railroads in years. That's a pretty broad statement, but I make it with a very fair knowledge of what is being offered the carriers in the way of improvements to locomotives, cars and track, and I repeat it with emphasis that the facility you are now discussing: Substituting signal indication for train orders—will do more to put and leave money in the treasuries of your companies than anything now offered the railroads and the problem and opportunity is peculiarly yours.

Few people other than those who have had actual experience in moving trains understand or appreciate the intricacy of train rights and the details of advancing trains by train order.

The securing of the superior train, sending the order to all concerned, getting the acknowledgement, repeating it, reading it to the operator by the conductor, carrying it to the engineer, reading it to the conductor by the engineer, arriving at a mutual understanding of their rights and all before it can be acted on.

When the requirements of the trains can be anticipated and the trains orders issued in advance, this detail need not delay them, but it is often impossible to tell in advance when a freight train will be ready and in a discouraging number of cases so much time has been consumed getting the order that the train cannot make the move and clear some superior train, and the orders must be annulled or torn down and built up again, repeating the same routine.

Furthermore, and this does not appear in any record, only the train dispatcher knows how often he lets trains lay at sidings because by the time he could get out the order the train could not clear some superior train at the next siding, when again if it could move without this delay he could advance it at least one siding often making several hours difference in reaching the distant terminal.

Neither do many appreciate that these delays are progressive and that the ratio multiplies faster than the traffic. On light lines the necessity for train orders and the number of orders per train are negligible, but as the number of trains increases, the necessity for train orders increases and at an even greater rate, and so rapidly that in many places double track has been imposed long before the volume of traffic justified the expense.

There are doubtless some here who are asking themselves why the necessity for all of this red tape now that you have automatic signals? If this delay is so expensive,

why continue it? Why not simplify the system and cheapen the operation in that way rather than assume the expense of installing additional facilities, and the answer is that these details were all, every single one of them, developed in the interest of safety following accidents and years of study.

You must understand that what I have so briefly outlined are but a few of the highlights of the development of years and that for the first 70 or 80 years of railroading, many experienced operating men were constantly at work on this problem of providing ways and means to move first with safety and then with reasonable despatch, trains on single track railroads.

However, even this outline shows the principle around which train rules are built. First, clear the main track and forbid its use except on proper authority; then as trains are authorized to use it, protect them from one another and at the same time provide a way for them to find their own way about by giving them different values—i. e., superiority by class, by direction and by train order plus rules requiring inferior trains to clear superior ones.

The makers of these rules that have done so much to make transportation safe and practical, the makers of what we know as the Standard Code of Train Rules, have never had a tithe of the credit due them. For profound study of the thing to be done, of conditions to meet, of ways to meet them, of rules simple and explicit, the Standard Code has few equals.

You must remember, too, that the later generation of these rule makers are still in the saddle, largely as executives, and that their fellow executives have grown up in the same school and it follows that anyone offering a substitute for any part of these tried and proven methods of handling trains must know his subject and have something of real merit to offer.

This brings us to the question of what you have to offer as an improvement. Something as safe as the double order system, which is sponsored by the A. R. A. for handling trains on single track, plus the protection offered by modern automatics, and of course you would choose nothing less.

Can you meet these standards? Have you a substitute for train orders to offer your companies that will preserve all of the safety and eliminate the delays? And the answer is that with the help of the signal companies you can do both. In fact, you can do more, very much more. You can make lap orders mechanically different if not impossible, and if you care to go still further and include train control, you remove the last vestige of an excuse for train orders.