

Proposed Modification of Stop-and-Proceed Rule

Details of Practice on Fourteen Roads Using "Tonnage" Signals, Relaxing the Stop-and-Proceed Rule

THE paper by A. H. Rudd, on the Stop-and-Proceed rule, criticizing its use as usually employed in automatic block signal practice, which was printed in the *Railway Signal Engineer* of August, page 341, was promptly responded to by F. P. Patenall, signal engineer of the Baltimore & Ohio, whose signal for permitting a train to pass a stop signal without stopping is shown in the illustration. Since then we have received information from 14 other roads (besides some from

clear. Rule 501 AA, requiring that a train encountering a stop signal shall stop, and then proceed under control, is suspended, and instead the train is to be governed by Rule 501 G: "Proceed at slow speed, prepared to stop short of train or obstruction."

This rule applies to both passenger and freight trains. The main arm and the auxiliary each have an independent operating mechanism. No colored light indications are given with the lower arm; the blade is made visible at night by the rays of the light (uncolored) of the lamp fixed on a bracket near it.

Many of these signals have been in service eight years and their use is reported as highly satisfactory. F. P. Patenall, signal engineer, sees no objection to making Rule 501 G universal with automatic signals; which is to say, the auxiliary arm is unnecessary.

Supplementing the information given in the table and in the illustrations, we quote from letters from other roads, as follows:

Chicago & North Western.—Those who believe that the relaxation of the stop-and-proceed rule is unwise base their argument on the likelihood of failure of discipline; and this is most concisely expressed by the Chicago & North Western's reply, which says: "Operating officers find it difficult to administer discipline when there is any question about the action of the engineman; and in disciplining him for disobedience of automatic signals, there is very often a question, as between the observer and the man who is to be disciplined, as to what happened. Actual stoppage of the train eliminates any possibility of question of speed."

Chicago, Burlington & Quincy.—Signals are distinguished by having blades painted yellow and the addition of a purple light fixed to post below blade.

Chesapeake & Ohio.—Uses a yellow fixed light. Between Charlottesville and Staunton, 40 miles, where light signals, three-indication, are now being installed, the regulations will permit all trains to proceed at low speed in an occupied block; but in connection with the automatic train-control apparatus being installed on that section of the road, it is planned to limit the speed, in all such cases, to 12 miles an hour.

Central of New Jersey.—This road has considered the matter carefully, but has decided to use none of these signals. On the Central of New Jersey lines, where grades are steep, the road is in a mountainous country, with many curves. In a few cases the block sections have been shortened to overcome the trouble from too frequent stops.

Cleveland, Cincinnati, Chicago & St. Louis.—On this road the double-track lines are, in many cases, signaled so that trains can be run in either direction on either track; and the special permissive signals, when introduced, will have to be arranged as on a single-track line; the connections being arranged so that the shorter arm cannot be displayed in the proceed position when a train is coming in that section from the opposite direction.

Delaware, Lackawanna & Western.—The signals on this road are lower quadrant, home and distant. Both blades are painted yellow. The night indication for the top arm is given by a yellow light, the same as for the lower arm. These signals will be found on three different divisions, as follows: Morris & Essex, 4; Scranton,



Fig. 1—B. & O.—Automatic Signal with Auxiliary Arm

roads which have not considered this question) and we give below some notes concerning practice in this detail on these roads.

Mr. Rudd's position is that it is unnecessary to stop a train when the engineman can see a clear road a considerable distance ahead, and that the non-stop rule, as practiced quite extensively on steep ascending grades (where oftentimes the starting of a train is slow and difficult) ought to be made universal, regardless of grades. Those who have expressed opinions agreeing in substance with him are F. P. Patenall (B. & O.); T. F. Brennan (B. R. & P.); C. A. Christofferson (Nor. Pac.), and W. J. Eck (Southern). Most of the roads replying to our inquiries have, however, given us no definite expression of opinion on this point. Four have expressed definitely adverse opinions, namely: Central of New Jersey, Chicago & Great Western, Great Northern, Louisville & Nashville.

The Baltimore & Ohio has in use 78 block signals arranged for this use, an auxiliary arm being used to convey to trains the indication that when the principal arm is horizontal (indicating that the block ahead is occupied) they need not stop, provided the way is seen to be

44; Buffalo, 18. The signals on the Scranton division have been in service 16 years; service highly satisfactory.

Delaware & Hudson.—Same style of signal as on the Lackawanna.

Erie.—The auxiliary arm is attached to the post 6 ft. 6 in. below the principal arm. The letter "G" denotes "grade." The fixed position of the lower arm is 45 deg. upward. These signals are to be found on two divisions: the Kent division between Kent and Marion, 11 eastbound and 16 westbound, and the Delaware division, 10 eastbound and 8 westbound.

Illinois Central.—On this road the rule permits all trains to take advantage of the signal to omit the stop,

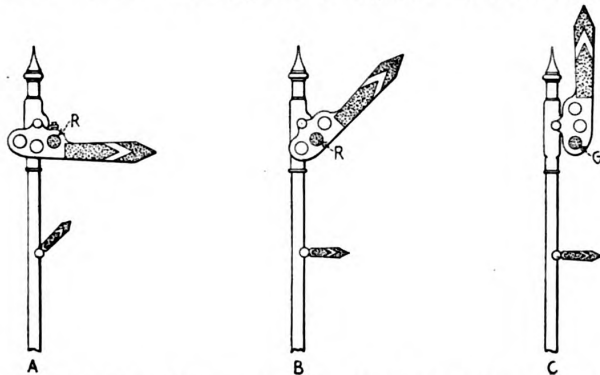


Fig. 2—Lehigh Valley.—Arms Colored Red; Lights, Red or Green

but passenger trains are not so heavily loaded as to make it necessary, and in practice the rule is applicable only to freight trains. These signals are located on five divisions, as follows: Illinois, 13; St. Louis, 6; Wisconsin, 3; Tennessee, 8; Louisiana, 1. The auxiliary indicator is a yellow disk. The letter "T" on the disk (meaning tonnage) is illuminated at night by a lamp fixed behind it. These indicators have been in use about four years, with satisfactory results.

Lehigh Valley.—Of the signals on this road, 25 are on the New Jersey division, 23 miles; 27 on the Wyoming

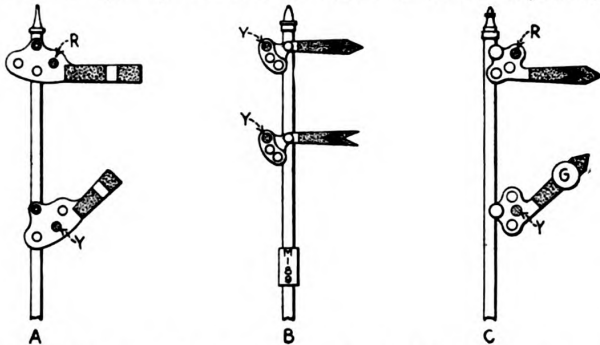


Fig. 3A—B. R. & P.—Arms Colored Red; Lights as Indicated
Fig. 3B—D. L. & W.—Both Arms and Both Lights Yellow
Fig. 3C—Erie.—Arms Yellow; Lower Arm Fixed

division, 33 miles; eight on the Seneca division, 12 miles, and ten on the Buffalo division, 22 miles. On double-track the small arms are mechanically operated by a connection from the upper arm; but on single-track they are operated by motor and are so controlled as to stand at stop when a train is moving in that block from the opposite direction. In the position shown at A, Fig. 2, the short arm is illuminated as on the Baltimore & Ohio. Signals in use 16 years with very satisfactory results.

Louisville & Nashville.—Signals similar to those of the Baltimore & Ohio.

New York Central.—On the eastern lines the signal arrangement is similar to that of the Baltimore & Ohio, except that the lower arm, which is of standard size, has a standard lamp. This light, staggered, in relation to the main light, shows yellow when the other shows red. The instructions contain an illustration of a three-position upper-quadrant signal with blades (pointed) painted red. On the western lines automatic block signals are arranged for this function by the addition of a yellow disk, as on the Illinois Central; but instead of T for tonnage, the disk shows G, for grade.

Northern Pacific.—Four of these were installed in 1915, but, as in the case of the Great Northern, the State Railroad Commission of Minnesota refused to permit the special signals to be used.

Southern.—The signal used by this company is similar to that of the Illinois Central, shown in the engraving,

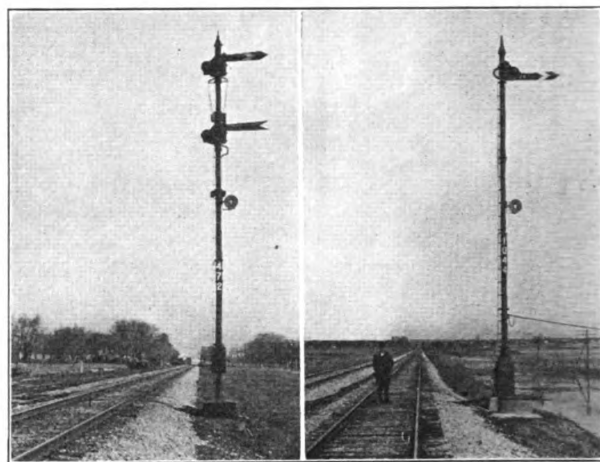


Fig. 4—Illinois Central.—On the Left a Lower Quadrant Signal; on the Right, an Upper Quadrant

except that the letter is "G" for grade, instead of "T" for tonnage. The letter is illuminated by an electric light when the signal arm goes to the stop position. These signals have been in use on the Southern for about seven years. The disk is 15 in. in diameter and painted yellow.

The notes in the second column of the table are intended to show whether the signals with auxiliary arms are provided for the benefit of (a) all trains; or (b) heavy trains or (c) only heavy freight trains. In all cases, the signals referred to in the table are on double-track lines, unless otherwise noted.

USE OF AUTOMATIC BLOCK SIGNALS

WITH SPECIAL ARRANGEMENTS TO OBLIATE STOPPING OF HEAVY TRAINS WHEN ROAD IS CLEAR FOR SOME DISTANCE AHEAD

Road	Number of Signals in use, how used, etc.
Atch., T. & Santa Fe.....	On 60 miles of road on all grades of 1½ per cent or over; all trains.
Baltimore & Ohio.....	78; mostly on grades all trains; some on single track.
Buff., R. & Pitts.	10; on grades; same as B. & O., but with yellow (or green) light at night. All trains.
Ches. & Ohio.....	6; others in contemplation; used on grades for heavy freights.
Chi. & N. W.....	5; at entrance to large freight yards.
Chi., B. & Q.....	10; on grades; for heavy freights only. In use seven years.
C. C. C. & St. L.....	Will install two.
Del., L. & W.....	66; all trains; on grades of busy freight and suburban passenger lines.
Del. & Hudson.....	12; on grades all freight trains.
Erie.....	27; on grades heavy freights. The arm is fixed.
Great Northern.....	Proposed to use in Minnesota, but was forbidden.
Ill. Central.....	31; on grades; heavy freights.
Lehigh Valley.....	70; on grades; all trains.
Louisville & W.....	19; mostly on grades all trains.
N. Y. Central (East).....	55; on grades; all trains.
N. Y. Central (West).....	152; on grades, for heavy freights.
Nor. Pac.....	None.
Southern.....	5; on grades; yellow disk 15 in. diameter, for heavy freights only.