

For example, probably the most important step taken recently in this field is the recommendation of the Joint Committee on Highway Crossing Protection, A.R.A., to the effect that an absolute stop sign be added to the standard flashing-light and wig-wag types of signals. The idea is that where power is available, the sign is to be displayed in conjunction with the operation of the signal, i.e., only when a train is approaching. Such a sign is more likely to prevent accidents involving drivers who, through ignorance of the meaning of the signal indication or due to the absence of definite instructions, take a chance and proceed over the crossing with the signal operating.

However, if the railroads can reasonably expect the automobile drivers to comply with the signal indications and cease taking chances to cross while the train is approaching, every means must be used to eliminate unnecessary operation of the signal. The Signal Section has recommended that the signal operate 20 sec. before the arrival at the crossing of the fastest train that is run. In the past many roads have gone to the extreme in using long approach circuits, which result in much more than 20 sec. for even the fastest trains, while a slow freight train may operate the signal 2 min. or more. Several roads are now shortening the track circuits to reduce the operating time to exactly 20 sec. for the faster trains. Likewise, where there is a wide divergency between the speeds of trains, time-element controls should be introduced to prevent excessively long-operating time for slow trains.

Much can also be accomplished where station layouts and switches are included in track circuits controlling crossing signals. One road has made a study of local train operations in such locations and, by introducing clever auxiliary circuits, has so reduced the amount of unnecessary operation of the signals as to secure more strict observance of the signals, especially by the local residents of the community. Where extensive switching operations are made during certain parts of the day, manual control may be necessary during such periods, as explained in articles published in past issues of *Railway Signaling* describing installations at Wabash, Ind., on the Wabash, at Clinton, Mo., on the Missouri-Kansas-Texas, and on the Missouri Pacific as related in an article in this issue.

Another point to consider is that crossing signals, being intended for observation by automobile drivers, should be located with reference to the highway and not with reference to the rail. A flashing-light unit nine feet above the level of the top of the rail may be entirely too high to be seen from the seat of an automobile, especially where there is a short steep grade ascending to the tracks. Standards must be tempered with common sense and based on local conditions to bring the signal in the line of vision of the driver of an approaching car. Where automobiles can be parked so as to obscure the signal from the view of drivers of other approaching cars, the problem is, of course, further complicated.

Thus it is evident that there are many ways in which the railroads can improve highway crossing signals to bring about better protection. For it must be remembered that the automobile driver is a free agent, not at all in the same classification as an engineman who is subject to the rules and regulations of the road on which he is employed. For this reason it is necessary to make more of a study of the installation of the highway crossing signal and by every practicable means improve its effectiveness so as to secure maximum observance on the part of the automobile drivers.

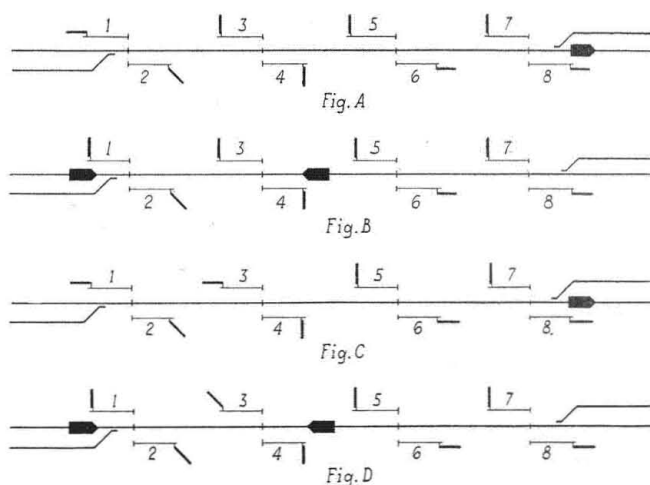
Letters to the Editor

A. P. B. Signal Indications

To the Editor:

In the July issue of *Railway Signaling*, there is considerable discussion in your editorial and "What's the Answer" columns of the arguments for and against permitting signals that govern traffic in the opposite direction to that in which a train is moving, to clear as soon as the train in question passes. It has occurred to me that possibly some significant aspects of this discussion were not so clearly brought out as the importance of this question justifies.

Let us consider first the affirmative practice of allowing these signals to clear. The arguments against this practice seem to be based upon the undesirable possibility of two opposing trains simultaneously passing



Diagrammatic presentation of A.P.B. signal indications in three modifications of the basic control circuits

leaving- and distant-to-entering caution signals, thereby creating a hazardous situation. This condition could be effected in two different ways: Assume that an eastbound train has passed through the block and that, by reason of a track circuit between signals 4 and 6 having failed or the line control wire of signal 4 having broken while the train was in this block, the directional relay at signal 4 did not release. The signal indications would then be as shown in Fig. C. Suppose now that a westbound train were to pass through the block as shown in Fig. D. It would have encountered signals 7 and 5 in the stop position and after having flagged through these two blocks would encounter signal 3 in the caution position. Both the westbound and the eastbound trains could then simultaneously pass these opposing signals at caution, each expecting the track to be clear at least as far as the next signal. This same undesirable condition might also be effected if an eastbound train were to pass signal 3, then stop, and then reverse its direction past the latter signal at caution simultaneously with another westbound move past signal 2 at caution.

On the affirmative side the arguments for the practice of permitting opposite-direction signals to clear rest principally on the fact that reverse moves out of a block are allowed only under flag protection. This rule perhaps adequately accomplishes its purpose, but how about the condition wherein the eastbound train has passed entirely through the block and the directional relay at signal 4 has not released, as described in the preceding

paragraph? This condition is obviously even more hazardous than the former.

On the negative side of this question there is obviously no doubt of safety involved as, in this scheme, opposing train movements are always blocked by at least one opposing signal at stop, as shown in Fig. *A* and *B*, and no additional expense is involved.

However, there may be certain benefits to maintenance and train crews in permitting opposite-direction signals to display at all times an indication dependent solely upon conditions in advance of same, and this benefit is not afforded in this negative plan.

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Highway Crossing Protection

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TO THE EDITOR:

In the cities there has grown up a vital need of protecting and directing traffic at crossings and various designs of signals for such purposes have been developed. The use of light signals has been practically universal with indications "green" for "go," "yellow" for "caution" and "red" for "stop."

It appears that the fundamental thing to do at such crossings is to tell traffic when to go, and traffic on a conflicting route when to stop. This idea has been carried out and has proved quite satisfactory.

On the approach of a train to a crossing, the A.R.A. standard flashing-light signal and wig-wag signal displays an indication, but when no train is approaching, no indication is given to the highway traffic. A flashing light or wig-wag signal that is not operating, is generally interpreted by the highway traffic, as an indication to cross the tracks and, if for some reason the signal fails to operate on the approach of a train, due to failure of the apparatus, the highway traffic will interpret such an indication as a signal to go. Such a condition may quite readily cause an accident.

If the laws or ordinances of the communities in which the signal is installed require all highway traffic to stop at railroad crossings, should not a stop sign be added to the signal to tell the highway traffic to stop? If the laws or ordinances of the community in which the signal is installed do not require traffic to stop and proceed, should not a visual indication be added to the signal such as green go light?

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New Books

Railways of South America, Part III, Chile, by W. Rodney Long, Transportation Division, United States Department of Commerce, Bureau of Foreign and Domestic Commerce, 373 pages, 6 in. by 9 in., 62 illustrations, bound in buckram. For sale by the Superintendent of Public Documents, United States Printing Office, Washington, D. C., price \$1.30.

Designated as Trade Promotion Series No. 93, this is the fifth of series of reports on railways in Latin American countries. The sixth and last volume in this series, covering Brazil, is scheduled to appear in the near future. The preceding numbers in the series are:

No. 5. *Railways of Central America and West Indies.*

No. 16. *Railways in Mexico.*

No. 32. *Railways of South America, Part I, Argentina.*

No. 39. *Railways of South America, Part II, Bolivia, Colombia, Ecuador, Guianas, Paraguay, Peru, Uruguay, Venezuela.*

This book presents detailed information regarding all the railways of Chile, covering such phases as the development, mileage, operating officers, methods of purchase, finances, traffic statistics, characteristics of right of way, number of employees, motive power, rolling stock, repair shops, and equipment, as well as an analysis of the railway supply market.

Automatic Train Control, Bulletin No. 7, 62 pages, 6 in. by 9 in., 20 illustrations. Published by the Committee on Automatic Train Control, American Railway Association, Transportation Bldg., Washington, D. C. Price to employees of railroads which are members of the American Railway Association, 35 cents; to others, 70 cents.

This is the seventh of a contemplated series of nine bulletins, each describing in detail a single system of automatic train control, with the diagrams and illustrations needed to make clear its operation and application. Bulletins 2, 3, 4, 5, and 6 have already been published.

Bulletin No. 7 describes the intermittent magnetic-induction type of train control of the Sprague Safety Control and Signal Corporation. Prepared under the editorial direction of G. E. Ellis, secretary of the committee, the subject matter is well handled and comprehensively, though concisely, treated.



On the Great Northern near St. Cloud, Minn.