Editorial Comment

Train Signs or Indicators

INASMUCH as the Standard Code of Operating Rules of the American Railway Association does not permit a train to make a move on the authority of information conveyed by a switch indicator, without providing flagging protection, it has been agreed among the operating and signal officers of the majority of roads that the benefits to be derived by the installation of switch indicators at all switches in automatic signal territory are not justified.

Although this conclusion may be correct, as a general rule, there are certain places where some means of indicating the approach of trains will serve to save time and prevent train stops and delays. For example, at points where considerable switching must be done on the main line, an arrangement that will inform the switching crew of the exact time that an appraching train enters a certain block, will give them time to get in the clear to prevent stopping the through train, and at the same time will permit the switching to continue as long as practicable. At several places on its lines, the Atchison, Topeka & Santa Fe has met the requirements under such conditions by using a so-called "Train" sign. On this board the word "Train" is shown in letters one foot high, the board being turned face down normally, and held in this position by a top-post signal mechanism. When a train approaches, the device is released, permitting a weight to pull the sign down so as to be read, and at the same time an electric light illuminates the board. One of the train signs serves the purpose of several switch indicators in the vicinity of stations or yards. The Nashville, Chattanooga & St. Louis has secured the same result at certain junctions and other points where considerable switching is done, by using so called "pilot lights" consisting of two small light signal units, one showing yellow normally, and the other red when a through train is approaching.

These train signs, pilot lights, or whatever the local name may be, are in reality forms of switch indicators which are serving a very useful purpose. Although the use of switch indicators as a general rule may not be considered to be justified, it would seem that special applications of the idea at certain points will save time for switching crews and prevent stops for through trains.

Why Marker Lights for Automatic Signals?

IN THE earlier installations of automatic block signals using semaphore signals and oil lamps, marker lights were considered a necessary protection against a signal lamp becoming extinguished. These marker lights also served an additional purpose in distinguishing between permissive and absolute signals when the marker was placed on the side of the pole opposite that of the signal lamp for a permissive signal and mounted directly below the signal lamp for an absolute signal. Although the use of these marker lights has required considerable additional expense for their installation, maintenance and operation, many roads have continued their use as standard practice because they desire to leave no chance for an engineman to mistake an absolute signal for a permissive one.

On the other hand, several roads contend that the use of a square end blade for an absolute signal and a pointed end blade for a permissive signal, provides sufficient distinction between the two signals for both day and night with modern locomotive headlights. Some roads accentuate this distinction by the absence of a number plate on an absolute signal, thereby placing it in the same class with an interlocking signal. It is pointed out that the enginemen are sufficiently familiar with the road to know where the signals are, so that a rule covering the location of the absolute signals, together with the distinctive differences in appearance, results in satisfactory signal observance. The St. Louis-San Francisco, the Southern, and the Missouri-Kansas-Texas, for example, use no marker lights for single-track automatic semaphore signals.

With light signals, the problem of marker lights involves another consideration, in that there is no distinction between the signals comparable to the square and pointed blades used for the semaphores. The Seaboard Air Line and the Nashville, Chattanooga & St. Louis, which have both installed extensive mileages of color-light signals in the last few years, have, therefore, used marker lights on both the intermediate and head-block signals. On the other hand the Chicago, Milwaukee, St. Paul & Pacific installed marker lights on one of its earlier extensive installations of color-light signals on single track, but after several years discontinued their use as unnecessary.

The Great Northern, which has installed several hundred miles of color-light signals in the last few years, uses a marker light surrounded by a red disc, on head-block signals to distinguish them from intermediate signals, which have no marker. The Southern followed the same practice on an extensive mileage of color-light signals installed last year. The Texas & Pacific has gone somewhat further on its new color-light signaling, in that no markers are used, other than the omission of the number plate on the head-block signals. This question of marker lights is one of several confronting the signaling field in its modernization and simplification of equipment.

Getting What You Specify

THE signal officers who are responsible for the safety of train movements, as well as for the reliability and economy of operation of the equipment of which they are in charge, should in all cases have the right to specify the materials they use. This is not now the case, for some purchasing agents are prone to demand that the using department submit a large list of alternates for the kinds of equipment needed. The materials are then purchased too largely on a price basis without adequate regard to the service requirements. In case of a failure in service, the signal officer has no defense, because he did not fight for what he knew would be best.

A few years ago a large road decided to change the color of the signal aspects to "green for clear," "yellow for caution" and "red for stop" rather than "white for clear," "green for caution" and "red for stop." This change required a large number of new yellow roundels which were ordered by the signal department with the stipulation that the roundels should meet the specifications of the Signal Section, A. R. A. The purchasing

department bought the roundels on a price basis, without regard to the specification. The date was set for the change. The roundels were delivered, and the signal officers then found the true color was not present in a uniform degree. The time was growing short and the signal officer was pressed to accept the roundels as they were. However, he stood his ground and demanded that he be supplied with roundels complying with his original requisition.

Such action should provide an example for many similar occurrences on the railroads today. The men in charge of the construction, operation and maintenance of signals and interlocking should know what kinds of material they must have if the interests of the railroad are to be protected most fully over a period of years.

Ultimate economy in the operation of the railroad as a whole is of primary interest to railway managements today. The all-too-common practice that forces a signal engineer to accept, not what he specifies, but rather what some smooth-tongue salesman convinces the purchasing agent is adequate, must be relegated to the discard. The idea that there is no appeal from the purchasing agent who saves the penny to let the using department spend a dollar later in repairs, is fast passing. Having due confidence in the heads of its departments, the management of one large road has decided that its men are to get the materials which they specify. The head of the purchasing department of a large southeastern road recently stated in a public address that "the quality must be determined by the using department well in advance of its needs, in the form of intelligent and clearly drawn specifications, supplemented by practical and thorough tests." This is a step in the right direction. Signal officers on other roads can help by insisting on similar consideration.

Apprenticeship Course in Signaling

THE construction and maintenance of signal and interlocking facilities is a comparatively new occupation. The majority of men in this phase of railroading who have risen to positions of authority have gained their experience in the field and have been educated in the course of practical experience in the "school of hard knocks." Many of these men have, in later years, supplemented their early schooling with special courses in night schools, correspondence courses, etc. In more recent years, a larger percentage of young men have the opportunity of securing a college education. While a technical training alone does not qualify a man for a supervisory position, nevertheless, if a man has the personal qualifications and necessary executive ability, a technical training is of decided assistance, and, provided he can secure enough practical experience to round out his training, he will be best fitted to accomplish results for which the company employs him.

Many of the larger manufacturing companies have for years offered apprenticeship courses to college graduates. These men are watched carefully for evidence of character and executive ability, and are gradually shifted from one department to another to learn the essentials of manufacturing, engineering and sales work of the institution that employs them. Many of these men are found to be especially adapted to particular work, while others later develop into executives.

Comparatively few railroads have seen fit to inaugurate apprenticeship courses. The Pennsylvania has for years employed a system of apprenticeship not only in the mechanical, but also in the engineering and signal departments. The Delaware, Lackawanna & Western, and more recently the Chesapeake & Ohio, have inaugurated apprenticeship courses in signaling. The Central of Georgia co-operates with the Georgia School of Technology in a course in which the student spends half of his time working on the railroad and the other half in school. Other roads offer summer employment for students, and from these men select those whom they prefer for employment after graduation from school. Those roads which have given these college men an opportunity to get some practical experience have been repaid in later years by adequate service from well trained men. With the increasing number of technical details being encountered in signaling, interlocking, train control, car retarders, etc., it would seem that other roads might well inaugurate such a system on a scale to meet the requirements of future years.

Letters to the Editor

Spare Contacts on Relays Should Relieve Overloads

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TO THE EDITOR:

While checking over signal plans on a number of different railroads, in the past two years, it was found that a number of relay contacts were left spare while some contacts on the same relay were heavily overloaded. Whenever this practice was questioned, the reply usually received was that these spare contacts were reserved for emergency use. A relay contact will wear and depreciate just as much when not in use as when in actual service (unless overloaded). All contacts, therefore, should be used.

A silver-to-carbon contact is overloaded when carrying more than one ampere, because the arcing due to breaking a heavy current causes burning of the contact points, resulting in high-resistance contacts. Less contact resistance trouble will be experienced if the current per contact be not more than 0.5 amp. Now that light signals are popular, there is a large number of circuits carrying more than one ampere. Consider for instance a 10-volt, 18-watt lamp burning on 8 volts, which takes about 1.5 amp. Wherever additional contacts are available, this current should be distributed through two contacts in multiple. If at any time a contact is needed for emergency purposes, a maintainer who is capable of making an emergency connection is certainly capable of removing the jumper from a multiple set of contacts, to use one of them in an emergency. Relay manufacturers could assist in establishing the practice of using multiple contacts, by furnishing stamped metal jumpers of proper length for paralleling the various contacts on a relay.

It is also possible to save battery, in some cases, by reducing contact resistance through the use of multiple relay contacts. At least the varying factor of contact resistance is reduced to a minimum by the use of multiple contacts. It is further believed that failures due to lightning and defective contacts will be reduced by using multiple connections. Spare contacts should not be left on any relay, when there is any circuit broken through that relay which carrys more than 0.5 amp. But many cases are recalled where a circuit with 0.05 amp. was multipled while one with three amperes was carried by a single contact.

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