

tion tool house, maintainer's tool house and construction crew supply cars over 12,000 miles of railroad we will be able to give the men what they need instead of allowing the other fellow to hang on to it under the supposition that he may need it SOMETIME. Let E. W., or any other man check up, from time to time, the various assortment of dollars, halves and quarters to be found in pigeon holes in tool shanties, under buildings, stored away in attics and numerous other places in the field, held for possible use at some unknown date and when he has totalled it all up he will be astonished.

In the meantime, someone wants this material and should have it. Every man that uses materials who keeps more than his immediate needs is responsible for the other fellows' complaints in a very large measure and cannot shift the blame by one pretext or another on the inability of the store department to keep him supplied.

The average signalman is an adept at overcoming conditions when he meets them in an unusual way. If it were not so, our signal system would not work so efficiently. Some fellow may have taken the last allotment of what the storekeeper figured was sufficient stock for a given period and this same fellow may not need all he drew on his requisition for six months. Don't put yourself in the place of this fellow.

Chicago Ill.

H. W. NEWLIN,  
Special Inspector, Signal Materials,  
Chicago, Milwaukee & St. Paul Ry.

## Four Position Signaling

TO THE EDITOR:

Suppose that we use a signaling scheme in which a semaphore can assume four positions, namely, horizontal for the stop indication, 45 degree in the lower quadrant for the permissive indication, 45 degree in the upper quadrant for the approach indication, and vertical for the clear indication; suppose that we use a square-ended blade on signals which can indicate "Stop," a pointed blade on signals on which the most restrictive indication is "Stop and proceed," and a forked blade where no stop indication of any kind is given; and suppose that wherever there is any choice of routes ahead of a signal we use two or three arms on the same mast, the top arm to govern one route over which movements can be made at high speed, the middle arm (if there are three) to govern all other routes over which movements can be made at medium speed, and the bottom arm to govern all other routes.

From the point of view of an engineman in a land of perpetual daylight, a better signaling scheme could hardly be devised. But a semaphore working in the four positions named, although not impossible, is mechanically impracticable; and for all practical purposes a semaphore is invisible at night. The very natural result is the three-position semaphore, carrying colored glasses to vary the color of the light, the other possible scheme for night indications, that of illuminating the arm itself, having found very little application. Although the light shows a different color for each position of the arm, the idea of having the semaphore itself show a different color for each position has probably never been standard practice on any railroad of any importance. In two-position signaling, where some horizontal arms mean "Stop," while others mean "Be prepared to stop," it is of course necessary to distinguish the two kinds of blades by either shape or color, and usually they are made to differ in both respects; the most common practice is to make the color of the blade the same as that of the light shown when the arm is horizontal. Even in

this case each arm is always of the same color, and it may be said that it is only because of the necessity for using colors at night that colors and indications were ever associated in the mind of anyone dealing with signals.

The desirability of having a signal which will present the same aspect day or night for a given indication, and of dispensing as far as possible with moving parts, has led to the development of various types of light signals. The position light signal, by dispensing with anything in the way of a mechanism and thereby eliminating the mechanical difficulties, enables us to realize the ideal scheme with which this discussion began, namely, a four-position semaphore visible day or night, giving its indications by *position alone*. Of course we can not have square, pointed, or forked ends on such a "semaphore"; this distinction must be otherwise made, as for instance by a marker. It seems to me that any attempt to mix colors with such a scheme is a step away from the ideal.

Mr. Patenall in an article on page 150 of the April issue of the *Railway Signal Engineer* speaks of an inconsistency in that a *vertical* row of red lights means "Stop," while a *horizontal* arm means the same thing. But as a matter of fact a *vertical* row of red lights usually means a *vertical* row of *horizontal* arms, each red light being in general equivalent to a horizontal arm. I fail to see any inconsistency.

Mr. Patenall's proposed scheme has the advantage over the Pennsylvania scheme in regard to the number of lamps in use at any one time, since the various aspects use two, three, or four lamps, while the various Pennsylvania aspects use three, four, or six lamps. But against this will be a slightly greater power requirement per lamp, to obtain with colored lenses the same range of visibility that the clear lens of the Pennsylvania scheme affords.

Two red lights in a horizontal line indicate "Stop." Add a lunar white marker, and the indication is "Stop and proceed," the position of the marker indicating what kind of route the signal governs. Is it necessary to tell an engineman what kind of route he is going on when he is required to stop first and then to proceed expecting to find something ahead of him or something wrong? Is it not inconsistent that the marker for a low speed route should be higher on the mast than that for a medium-spread route? I should suggest, if we are going to use both color and position, that two red lights in a horizontal row should indicate "Stop," while three red lights should indicate "Stop and proceed," for any kind of route. The failure of a lamp would then cause the signal to display a more restrictive indication.

If a railroad now using purple on dwarf signals to indicate "Stop" should adopt purple for the permissive indication, either it would be obliged to change its dwarf signals, or it would be obliged to depend on position to distinguish between some purple lights that mean "Stop" and some that do not. If we are going to have one case where the color means nothing, let us dispense with color in all cases. On the other hand, the fact that only a few railroads are using purple on dwarf signals would indicate that the argument in favor of that color is not absolutely conclusive.

Washington, D. C.

PAUL E. DAHM.

Radiophones, for transmitting news and other matter to passengers, are to be introduced on one of the fast trains of the Louisville & Nashville running between Cincinnati and New Orleans, successful experiments having been made with apparatus on a train which was run out of Louisville on September 13. The apparatus worked all right while the train was in the tunnel beneath Muldraugh's Hill, 300 ft. below the surface of the earth. This hill contains iron.