a heavy branch line traffic. It was decided here that an automatic interlocking, including the control of the signals but leaving the switches to be thrown by hand, would not only be adequate, but would reduce the cost of operation about $5,000 annually by eliminating the levermen.

This idea of adapting interlocking installations to the requirements of train operation in each individual case opens up a great field for the construction of plants at crossings, where the expense for more extensive plants might not be justified. A new study of the operating conditions at many points might well be made with this idea in mind.

The Purchasing and Stores Departments Can Be an Aid or a Hinderance

DURING an official inspection of a signal installation placed in service recently, the chief engineer of the road stated that "one of the factors that contributed to the completion of the construction program on schedule was the co-operation of the purchasing and stores department." On further questioning, he explained that the engineering department specified what they wanted, the purchasing agent proceeded to secure the materials without delay, and the storekeeper saw to it that the equipment was delivered on time, according to a schedule outlined by the construction forces.

This sounds very simple, but in far too many cases the signal construction forces receive the paint before the concrete materials. Loss of time caused by delayed delivery of materials increases the cost of construction needlessly, but the greatest exasperation is caused by receiving an entirely different class of equipment than was specified on the requisition.

Where such troubles are prevalent, the first move for the signal department is to check up on its own part of the work to see that plans are complete, and requisitions for all materials have been properly made and forwarded to the purchasing department in plenty of time. The second idea, brought out by the chief engineer mentioned previously, can then be given consideration i. e., "the purchasing agent secured it without delay." A signal engineer should be in a position to know what is needed for each job, and on the majority of roads he enjoys the confidence of his superior officers to the end that there will be no haggling or brow-beating on the part of the purchasing department to force him to take any equipment or material other than what he specifies.

On a certain road where a new signal engineer was appointed a few years ago, the purchasing agent and stores officers had long held sway on account of a record which they maintain showing that each year they have purchased certain equipment cheaper, and the total saving is held forth as their personal accomplishment. In the regular procedure, every requisition for materials ordered is eventually, in the course of the argument, signed by the head of the using department. Therefore, in years to come, if any criticism of the material arises, or any accident occurs as a result of using an inferior device, the ranking officer of that department, and not the purchasing officer, will be held responsible.

This is, of course, a classic example of where the purchasing officer is anything but a "great help" to the signal department, and the same condition, to a certain extent, exists on other roads. This attitude may be the result of circumstances that have influenced the purchasing officer in his training, and the situation may in some cases be clarified by the signal engineer explaining his side of the problem. If results are not obtained by co-operation, the signal officer should not calmly sidestep his duty, but should carry his side of the case to the proper executive.

Signal and interlocking apparatus is provided to promote safety and facilitate train movement. Any concession in the way of inferior quality of materials or equipment may result in hazards and an increase in the number of unnecessary train delays as well as an increase in the cost of maintenance and operation. The signal engineer's responsibility, therefore, does not end with specifying what he knows to be best fitted for a certain requirement, but he must also see that his specifications are fulfilled in spite of the desires of over enthusiastic purchasing officers. In the majority of cases, the signal engineer who puts up a stiff fight not only gets the equipment needed, but also gains the respect and confidence of his executives, including the purchasing officer.

Letters to the Editor

Simplification of Apparatus Will Expand Usefulness of Signaling

Cleveland, Ohio.

TO THE EDITOR:

Reference is made in your editorial on page 69 of the February, 1929, issue to the viewpoint of "more conservative men" in connection with new developments. In my opinion this subject is important enough to warrant considerable discussion. As a general proposition, the purpose behind all simplification is progress without sacrificing safety. By progress we mean the widening of the scope and utility of signal apparatus. Under present circumstances, interlocking has grown into such complications that it is limiting its own usefulness, particularly from the standpoint of cost and engineering involved. The matter of safety has probably been overdone. For years we talked about nothing but safety in connection with signals, and made little progress, but we made plenty of progress when we began to talk about the utility of signals. Safety can be taken for granted as a general proposition as it is inherent with signaling systems.

It is the utility and economy, through the saving of train time, and the expedition of train movement which give us the greatest opportunity of selling signals to our railroads. We are only beginning to find it out. One excellent way to widen the application of signaling and signal apparatus is to reduce the cost. This is sure to do it. About the only way to reduce the cost and still have wages go up is to increase production. In order to increase production we must widen the demand for such equipment. When it is considered that the price of one electric switch machine is greater than the price of one Ford automobile an example is presented of what production can do to reduce the cost.

A fair sample of complication to the "nth degree" is the present day modern electric interlocking machine. Of necessity the cost is in proportion to the complication. The manufacturer is confronted with the problem of having scarcely two machines alike. This is everything but a production proposition, and necessarily the cost is in conformity therewith. Is there any real reason