Editorial Comment

An Added Attraction at the March Meeting

THOSE planning to attend the March convention of the Signal Section, A. R. A., and visit the exhibit of the National Railway Appliances Association at Chicago have an added attraction this year that should not be overlooked. The signaling exhibit provided for the Baltimore & Ohio Centenary Exhibition, known as the "Fair of the Iron Horse," will be reproduced in the North Assembly Hall adjacent to the meeting room of the Signal Section in the Stevens Hotel. In harmony with the purpose of the B. & O. Centenary, the signaling exhibit illustrated the development of interlocking and signals on the American railroads during the last one hundred years. In addition, this display carried the message of the accomplishment of modern signaling in facilitating the safe movement of trains.

Among the 1,250,000 visitors at the B. & O. Centenary were thousands of railway men interested in signaling. These men thought that the signaling exhibit was so much worth while that an opportunity should be given to the members of the Signal Section, to see and study this assembly of drawings, sketches, and colored photographs, which portray so vividly the remarkable progress of signaling. Now that the desired result has been accomplished, everyone should avail himself of this unusual opportunity, and see the exhibit.

Track Circuit Bonding

THE first closed track circuit for the control of an automatic signal was installed by the inventor, Dr. William Robinson, on the Philadelphia & Erie, in 1872. The light rails were connected by a 4-ft. wooden bar on the outside and a 12-in. fish plate on the inside. Two holes were drilled through the iron fish plate, one for each rail, and four holes through the wooden bar, two for each rail. With care, Dr. Robinson managed to get the current working through the whole section, a mile and a quarter in length. It was evident, however, that on such a section as this, a rail bond of some kind would be necessary for reliable, continuous service, and at this time, in 1872, Dr. Robinson conceived the invention of the bond wire method of connecting the rails. In the years following Dr. Robinson used different methods of applying bonds, such as plugs driven in the rail, soldering the wire to the flange, and a compression spring to maintain contact. Various improvements and developments have since been made in bonding for track circuits.

It is significant that Dr. Robinson was able to get the first track circuit to work without bonding, the circuit being completed through the crude fish plates. With modern angle bars, heat treated bolts, nut locks, etc., it has been noted by different roads that when new rail is laid and the new joints tightened, the bars make such good contact as to operate the track circuit satisfactorily for a time without bonding. The Missouri-Kansas-Texas has found it to be an advantage to delay the bonding of new rail until the track forces have completed the ballasting and tamping. On a few circuits they have purposely left the rail unbonded to determine how long the joint could be maintained tight enough to carry the current without failure of the track circuit. These experiments are explained in an article elsewhere in this issue. Although the idea may not be acceptable to the majority of signal engineers, nevertheless one point is proved, which is, that with modern rail fastenings well tightened, the signal department may be able to bond new rail on a more efficient schedule if the work can be delayed until the track forces are well out of the way.

What Is the Cost of a Train Stop?

WITH modern methods of train operation using more powerful locomotives to handle longer trains, the elimination of train stops, wherever possible, is of increasing importance. Automatic block signals, interlocking plants, remote power switches, automatic interlockings, and train control without wayside signals are being used effectively, not only to expedite train movements, but also to eliminate train stops. It is, therefore, highly important when making studies of the benefits to be derived from proposed installations to use some value for a train stop that is approximately correct.

In October, 1905, J. A. Peabody, signal engineer of the Chicago & North Western, presented a report before the Railway Signal Association in which the cost of stopping and starting a 2,000-ton, 80-car freight train, from and to a speed of 35 m.p.h. was estimated as $1. The itemized cost included 550 lb. of coal, $0.56; brake shoe wear, $0.15, and other items $0.29, totaling $1. Since 1905 the tonnage handled by freight trains has more than doubled and speeds have been increased. However, so many intangible factors enter into the cost of stopping and starting a train, such as the number of cars, the tonnage, the type of locomotive, the grade conditions and the weather, that many roads have given up such calculations as a hopeless task and use the average figure of $1 per stop for all trains. Other roads, such as the Missouri-Kansas-Texas, use $2.50 as the average cost for freight trains.

In this confusion it is, therefore, enlightening to learn that at least one road has made some accurate tests to establish a basis for the cost of stopping and starting trains. The Illinois Central has done just this thing and the results are explained in an article in the "What's the Answer?" department of this issue. The cost of stopping an 11-car passenger train is three minutes time and $0.5046, while freight train stops cost from $1.70 to $2.30, depending on the type of locomotive, the number of cars, and whether the stop entails any overtime. Particular attention should be given the fact that per diem charges on cars are included, amounting to $0.499 per train stop on an 80-car train.

These values are adaptable to other roads operating under similar conditions, and further tests might well be made to determine the effect of adverse grades. The cost of a train stop is such an important item of economics that it might be well for Committee I—Economics of Signaling, to assemble the available data and make further tests.