

Several leads of 10-conductor No. 14 were used for line circuits and switch controls. Through leads of two-conductor No. 9 were installed for the alternating-current power, the high-voltage battery bus, and the low-voltage common.

North of the tower the type of construction used is what might be termed as loose wire cable, supported by a copperweld messenger and cable clips. With this type of cable it is not necessary to have complete plans drawn in order to determine the correct number and sizes of wire, as is required when a manufactured cable is used. For example, there are 125 No. 14 wires running north from the tower junction pole, this amount reducing in number at each junction box, thus avoiding the necessity of running various sizes of cables.

Cross-lead wires from a junction box to a switch, a signal or a track connection are underground ar-

mored cable. Number 14 wire is used for all circuits except the 110-volt switch feeds and the track connections, which are No. 9. All the cables to a switch are terminated in the Type-F controller, and the one centrally located in a group of switches serves as a distributing point for the high-voltage battery wire and battery "low."

The type of track circuit bootleg used by the Rock Island is simple and inexpensive. It consists of a piece of two-inch galvanized iron pipe, length two feet six inches, with the bottom end split and flared out four ways to form a base. A soldered joint is made connecting the bootleg wire to the cable wire, taped and pulled back into pipe, which is then filled with petroleum asphaltum. To prevent grounding of the wire on the pipe, a wood plug with a hole in the center for the wire, is driven in the top of the pipe while the sealing compound is warm.

## Signal and Train Control Hearing Ends

*Railroad representatives contend that issuance of further orders be withheld to permit exercise of individual judgment*

WASHINGTON, D. C.

THE hearing before Division 6 of the Interstate Commerce Commission in connection with its investigation of the adequacy of existing installations of automatic block signals and automatic train-control devices was brought to a close on April 30 after representatives of most of the 168 respondent railroads had urged the commission not to issue orders requiring any further installations at this time.

The large increase in fatalities at highway grade crossings was emphasized by a large proportion of those who testified as presenting a problem requiring large expenditures by the railroads, in contrast with the remarkable improvement that has been brought about in recent years in the safety of train operation. Also the large capital expenditures for general improvements were described as tending to promote safety and the commission was asked to leave the managements free to distribute the expenditure of the available funds in the ways which in their judgment would produce the best results.

While many roads indicated their intention of extending their installations of automatic block signals or to experiment further with the use of cab signals, and many said that the automatic train control devices they had installed have been satisfactory, the opinion was generally expressed that there are more pressing needs for the use of the money available in other directions, and several testified that greater results per dollar of expenditure could be obtained by extending their signal installations rather than automatic train-control.

At the conclusion of the hearing R. H. Aishton, chairman of the executive committee of the Association of Railway Executives, presented a statement calling attention to the great progress in safety made during the past eight years, culminating in 1927 in the best record ever established, and recommending that the issuance of any additional formal orders requiring the installation of automatic train-control or other forms of safety appliances be withheld at this time, so as to permit the managements to exercise their own judgment in deter-

mining what expenditures can be made that will attain the highest degree of safety. An abstract of Mr. Aishton's statement follows:

"Despite the hundreds of millions of persons who ride on the railroads each year, only 10 were killed in train accidents in 1927, a new low record for any one year and a decrease of 69 under 1926. An improvement in safety among employees was also reported in 1927.

"When it is taken into consideration that during the past eight years freight speed between terminals increased 19 per cent, freight car miles per day increased 20 per cent, and gross ton-miles per freight train-hour increased 47.5 per cent, the results obtained in safety to those using the service, or employed in the operation of trains are a growing indication that the efforts of the railways in directing expenditures to those things which will produce the greatest measure of safety have been productive of a commendable result, and need no further justification as to their having been made in directions best promoting the public interest."

Mr. Aishton told the commission that in the past eight years the railroads have expended \$323,701,000 of new capital for safety purposes, of which, all except \$22,395,000 have been expended voluntarily by the individual managements and without orders from the commission, for various safety devices such as automatic and other signals, interlocking plants, crossing signals, highway grade separation, and the extension of automatic train control beyond the two orders that have already been issued by the commission. Mr. Aishton explained that the \$22,395,000 represented the cost of automatic train control devices installed by the various railroads in response to the orders of the Interstate Commerce Commission.

"This statement of capital expenditures," he continued, "is limited to the period January 1, 1920, to January 1, 1928, and therefore does not take into consideration similar capital expenditures for installations prior to 1920. The figures so far presented take account only of the capital cost of physical installations, and have no reference to annual charges for operation, maintenance, and retirements. Annual expenditures for

\*For a report of earlier sessions of this hearing see *Railway Signaling* for May, page 177.



