

which defeats the purposes of the order. This violation of the intent of the 31 order is not only due to the action of the employees, but I have known it to be encouraged by division officers."

Research by the committee indicates the gradual use of the 19 order on various railroads, eliminating the use of the 31 order entirely or in part. Some exceptions are reported as follows: (1) To protect an unsafe condition of a railroad; (2) to act as a holding order; and (3) receipt for new time table.

The use of the 19 order in absolute permissive block signal territory has expedited train movement and effected economies reported by one line of 65 miles, amounting to \$12,000 per year in overtime, fuel, etc., without allowance for damage to equipment on account couplers pulled out, etc., due to stopping and starting trains. The principal lines discontinuing the use of the 31 order all report favorable results, statements being to the effect that not a single accident has occurred due to the use of 19 order, while a material improvement has been effected in the movement of trains and resultant economies.

Discussion

In opening the discussion on this paper, W. S. Williams, general superintendent, I. C., expressed hesitation about abandoning the 31 order. P. B. Luke, general manager, Canton railroad, Baltimore, Md., stated that when on the Virginian railway he found that the heavy trains operated on that road lost 30 minutes every time they were required to stop to sign and pick up a 31 order and that this time was saved when the road adopted the 19 order in its place. V. Parvin, superintendent, Ann Arbor, stated that the overtime of train crews was reduced from 30 per cent to 6 per cent following the adoption of the 19 order and that the trainmen favored this change although it increased their individual responsibility. The road operates without automatic signals. J. M. Reines, trainmaster, C. G. W., stated that the 19 order has been used exclusively on the Eastern division of that road for the last three years. Although this division has been entirely

equipped with automatic block signals, the results have been so satisfactory that he advocated the use of the 19 order on lines without signals. His experience led him to believe that the 19 order is safer than the 31 order because it makes the operators more alert and reduces the chances of a train running by a train order board. Before clearing the train order board for a train for which he holds a 19 order, an operator is required to secure a release from the dispatcher and a clearance card carrying a serial number and showing on it the numbers of the train orders to be delivered with it. Mr. Parvin opposed the use of the clearance card on busy dispatcher's tricks, fearing that this release would be perfunctory. In its place the Ann Arbor requires an operator to bring a train to a stop before delivering to it an order restricting the movement of that train at that station. H. G. Hulze (N. P.) stated that the Northern Pacific has used the 19 order since 1912 on automatic block, manual block and non-signalized lines alike. A yellow board or the middle position of a three-position signal is used to indicate the delivery of train orders unless these orders restrict movement at that point when the red or stop board is used.

Quick Restoration of Wire Service at Broad Street Station

THE BURNING of the train shed of the Pennsylvania railroad at Broad street station, Philadelphia, on June 11, involved partial destruction of about 500 wire circuits, the majority of which were for telephone connections, besides some 35,000 ft. of twisted pairs used for fire alarm connections, call bells and other services; and within 72 hours after the fire started, the telegraph and signal department had 400 pairs of wires ready for use, many of them suspended from the housetops on Filbert street and connected thence to the wire terminal room in the office building



View in Pennsylvania Railroad Station Trainshed, Philadelphia.

where connection is made to the general office telephone and telegraph instruments. Intermediate pole supports were provided on the west side of 15th street.

The circuits destroyed were, briefly—

One 102 pair, one 78 pair, one 75 pair, one 30 pair, and one 33 pair paper and lead cables used by the

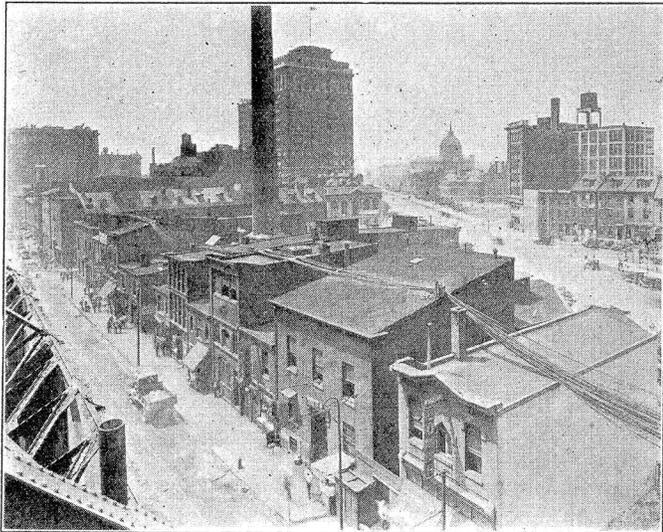


Fig. 1.—Extra Wire Run Over House-tops

Philadelphia Terminal division for telephone and telegraph purposes.

One 53 conductor rubber insulated lead cable.

One 20 pair rubber insulated lead cable used for the telephone and telegraph system.

Three 19 conductor rubber and braided signal cables.

One 7 conductor rubber and lead power cable.

Two 1 conductor rubber and lead power cable.

One 24 conductor paper and lead telegraph cable used by the Postal Telegraph Company.

35,000 ft. twisted pair as noted above.

Fifteen sets, fire alarm switchboard batteries, etc., in the 16th street power house, together with associated apparatus in the train shed including 12 electric clocks.

The Western Electric Company was called at 4:15 a. m. on Monday, June 11, and by 7:15 had delivered the first load of No. 17 twisted pairs, amounting to 75,000 ft. By afternoon about 300,000 ft. had been delivered and most of this was put in use in a very short time after it was on the ground. The division superintendent had been connected with the general offices before noon. The Western Electric trucks were kept running day and night until Wednesday evening, the 13th, by which time they had delivered over 10,000 Mazda lamps with large quantities of sockets, batteries, flashlights, telephones, heat coils and other material, in addition to 9,000 ft. of 12-pair emergency cable.

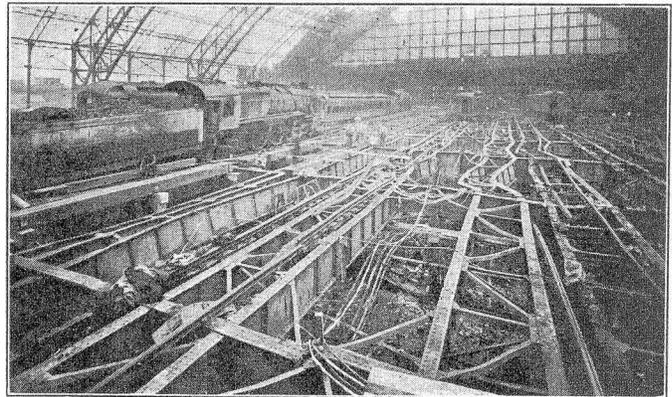


Fig. 2.—Supporting Beams and Track Were Distorted by Heat

The wires strung on the housetops north of the station (Filbert street) are shown in Fig. 1. The magnitude of the work of restoring the tracks in the train shed is illustrated by Fig. 2, where the distortion of the beams by the heat is shown.



on Wednesday, June 20, Nine Days After the Fire