IN RE INVESTIGATION OF AN ACCIDENT WHICH OCCURRED ON THE PHILADELPHIA AND READING RAILWAY AT LANGHORNE, PA., ON DECEMBER 4, 1920.

March 5, 1921.

On December 4, 1920, there was a head-end collision between a light engine and a Central Railroad of New Jersey passenger train on the Philadelphia and Reading Railway at Langhorne, Pa., which resulted in the death of 1 passenger and the injury of 21 passengers. After investigation of this accident, the Chief of the Bureau of Safety reports as follows:

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Location.

This accident occurred on the New York Division, extending between Bound Brook Junction, N. J. and Philadelphia, Pa., a distance of 58.4 miles. In the vicinity of the point of accident this is a four-track line over which trains are operated by time-table, train orders, and an automatic block-signal system. From south to north the tracks are numbered 3, 1, 2 and 4; tracks 3 and 1 are used for eastbound movements and tracks 2 and 4 for westbound movements.

The automatic signals involved are of the enclosed-disc type, mounted on bracket posts carrying two signal masts, two disc signals being supported vertically on a single mast; the indications are red and yellow, green and yellow, and two green discs, for stop, caution and proceed, respectively. Signals 88 and 86 are located 5,978 and 1,098 feet, respectively, east of the point of the accident. On the same mast above automatic signal No. 86 there are

two semaphores operated from PV tower, located about 35 feet east of the point of accident. About 100 feet east of the point of accident on track 2 is the west switch of a crossover connecting tracks 2 and 1 and a short distance east of this crossover there is a crossover leading from track 3 to track 1, the crossover switches being operated from PV tower. A dwarf signal governing movements over the first mentioned crossover is located a few feet west of the point of accident.

Approaching from the east there is a tangent 2406 feet long, a 2-degree curve to the right 1,462 feet long, near the western end of which is signal 86, followed by a tangent extending beyond the point of accident, 1,170 feet distant. The grade is .45 per cent descending for several thousand feet. Signal 88 is visible about 5100 feet and signal 86 about 1.050 feet. The weather was cloudy.

Description.

Light engine 1549, in charge of Engineman Ott, after working between Langhorne and Ewing as a pusher for eastbound trains, backed up to Langhorne, arriving on track 2 at 8.40 p.m., and waited until eastbound train No. 506 cleared the crossover connecting track 2 and 1. The engineman then received a signal to cross over to track 1 and immediately started his engine eastward, but it had gone only a few feet when he saw the headlight of a train

approaching on track 2, realizing that a collision was imminent, he reversed his engine, but it did not respond promptly so he closed the throttle and jumped. The collision occurred at about 8.48 p.m.

Eastbound passenger train extra 581, consisting of 6 wooden coaches hauled by engine 581, was in charge of Conductor Homler and Engineman White. It passed Roelefs, the last open telegraph station east of and 4.8 miles distant from the point of accident, at 8.41 p.m., passed signal 88 displaying a caution indication and signal 86 displaying a stop indication, and while travelling at a speed estimated by the engineman at 15 or 20 miles an hour collided with engine 1549.

Engine 581 was derailed and considerably damaged, while the first coach in the train telescoped the second coach for approximately one-half its length. Engine 1549 had its pony truck derailed and its front end somewhat damaged.

Summary of evidence.

Engine 1549 was headed eastward when it arrived at Langhorne, backing up on westbound track 2, and according to the crew the classification lamps on the front end were displaying red to the east, while the headlight was not burning. It was the intention to cross the engine over from track 2 to track 1, and thence to track 3. The statements of Engineman Ott, Fireman Bowden and Flagman Seip indicate

that after engine 1549 stopped clear of the crossover, the flagman started east to protect against westbound trains. He had gone but a short distance when train No. 506 passed on track 1 and the signal for the crossover movement was displayed. He said he then returned to the engine, went directly to the rear of the tender, and began to turn the markers; he had not turned the markers on the front end. Engineman Ott verified these statements of the flagman; he also said it was not customary for the fireman to protect in such a locality unless the interlocking plant was disconnected. The first indication the employees had of the approach of extra 581 was when they saw its headlight.

Engineman White, of extra 581, thought he received a clear indication at signal 88; he dimmed the headlight for a freight train on track 3 and then for train No. 506 on track 1, and on rounding the curve approaching signal 86 saw that it was displaying a stop indication. The speed of his train at this time was about 60 or 65 miles an hour and he at once made an emergency application of the air brakes, reducing the speed to about 15 or 20 miles an hour at the time of the collision. He did not see any lights on the front end of engine 1549, Signalman Bailey said the flagman moved them from the front to the rear of the engine at about the time train No. 506 passed. Engineman White said that on account of dimming the head-

light, and also on account of having noticed the reflection of a burning fusee which had been thrown off by a freight train on track 4, he might not have seen signal 86 as soon as would have been the case otherwise, and he thought it was possible that he misread the indication of signal 88. Fireman Wohnus did not observe the indication of signal 88. Crossing Watchmen Morrill and MacInteer, on duty at Glenlake Crossing, near signal 88, said this signal was displaying a caution indication when extra 581 approached.

Signalman Bailey, on duty at PV tower, said engine 1549 arrived at 8.40 p.m., that train No. 506 passed at 8.46 p.m. and that he then lined the switches for the cross-over movement of engine 1549; it was at about this time that extra 581 passed signal 86. The indicator in the tower showed that signal 88 was displaying a caution indication when passed by extra 581. Examination and tests of the signal system failed to develop anything which could have caused the display of improper indications.

Conclusions.

This accident was caused by the failure of Engineman White, of extra 581, properly to observe and be governed by automatic block-signal indications; a contributing cause was the failure of Flagman Seip, of engine 1549, properly to protect his train.

The evidence clearly indicates that signal 88 was displaying a caution indication and that for some reason its indication was misread by Engineman White. When his train

approached signal 86 he saw it displaying a stop indication and at once applied the air brakes in emergency, but at the high rate of speed at which his train was travelling it was then too late to avert the accident.

The evidence indicates that although engine 1549 had stood on track 2 for approximately 7 minutes, Flagman Seip only went out a short distance, and that when he saw the signal displayed for his engine to cross over to track 1 he returned to the engine, and at the time extra 581 approached he was engaged in changing the markers on the rear of the tender. These actions upon his part, combined with his statement that with the switches open he felt he had some protection against westbound movements, indicates that he was relying entirely upon the block-signal system for protection.

Engineman White was employed as a hostler in 1899, promoted to fireman in 1900, and to engineman in 1905; Flagman Seip was employed as a brakeman in 1902 and promoted to flagman in 1903. At the time of the accident the crew of engine 1549 had been on duty about 9½ hours, after about 14 hours off duty, the engine crew of extra 581 had been on duty about 3 hours, and the train crew about 2 hours, after periods off duty varying from 8 hours to several days.