IN RE INVESTIGATION OF AN ACCIDENT WHICH OCCURRED ON THE PENNSYLVANIA RAILROAD NEAR BAILEY, PA., ON MARCH 2, 1921.

March 25, 1921.

On March 2, 1921, there was a rear-end collision between a freight train and a passenger train on the Pennsylvania Railroad near Bailey, Pa., which resulted in the death of 2 employees and the injury of 4 passengers After investigation of this accident the Chief of the Bureau of Safety reports as follows:

Location.

This accident occurred on the Middle Division, extending between Altoona and Harrisburg, Pa., a distance of 130.8 miles. In the vicinity of the point of accident this is a 4-track line over which trains are operated by time-table, train orders, and an automatic block-signal system. The signals are of the 3-position upper-quadrant semaphore type, night indications being red, yellow and green, for stop, caution and proceed, respectively The tracks are numbered from north to south as follows. 4, 3, 2 and 1; the accident occurred on track 1, at a point 1,989 feet east of signal bridge 1286. The signal bridge west of signal bridge 1286 is 1296, the distance between these two signal bridges is 4,396 feet. Approaching the point of accident from the west there are 1,400 feet of tangent, a curve to the right of 1° 45', this curve being 1,220 feet in length, followed by 212 feet of tangent to the point of accident The view of the engineman of an eastbound train is considerably obscured by an embankment on the inside of the curve. The grade is slightly descending for eastbound trains. The weather at the time of the accident was very foggy.

Description.

Eastbound freight train PF2 consisted of 49 cars and a caboose, hauled by engine 1364, and was in charge of Conductor Yaple and Engineman Welcomer. It left Altoona at 12.15 a.m., passed MS Block Station, 5.9 miles from Bailey, at 5.20 a.m., and at a time estimated to have been about 5.33 a.m. stopped at the water station at Bailey. While standing at this point its rear end was struck by train No. 32.

Train No. 32 consisted of 1 Arms Palace horse car, 1 mail car, 1 combination mail and baggage car, 2 mail cars, 1 combination baggage car and coach, 2 coaches and 1 Pullman sleeping car, in the order named, hauled by engine 238, and was in charge of Conductor Werner and Engineman Line. It left Altoona at 3.29 a.m., 5 minutes late, passed MS Block Station at 5.35 a.m., practically on

time, and collided with the rear end of train PF2 while travelling at a speed estimated to have been between 50 and 60 miles an hour.

The caboose and 3 cars on the rear of train PF2, all of which were steel-underframe cars, were demolished and the next two cars badly damaged. Engine 238 came to rest on its right side on the south side of the track in a badly damaged condition. The first 3 cars in train No. 32 were derailed, the first being overturned, while the second was leaning against the embankment on the inside of the curve on the south side of the track. Only slight damage was sustained by these cars. The employees killed were the engineman and fireman of train No 32.

Summary of evidence.

Flagman Hoffman, of train PF2, supposed that the stop at Bailey was being made for the purpose of attending to a blazing hot box. He got off just before the train came to a full stop and went back to flag, carrying with him two fusees. two torpedoes, and red and white lanterns. He said he continued to go back until he heard a whistle signal recalling him. He thought he was then about 25 or 30 car-lengths from his train, and said that he placed the two torpedoes on the rail, left a lighted fusee and returne to his train. When he came within sight of the markers he saw that the train was not moving, stopped, heard the engineman whistle "off brakes", lighted another fusee and had just placed it on the track when he heard the explosion of the torpedoes. He turned around, saw the headlight of the engine hauling train No. 32, and waved the lanterns and called to the engine crew as the train passed him, at a speed he estimated to have been 45 or 50 miles an hour, with the engine working steam.

Varying statements were made by other employees of the crew of train PF2 as to how far they had walked between the time their train stopped and the time the flagman was recalled. The hot box was 38 car-lengths from the rear of the train. Middle Brakeman Smiley, who had been riding in the caboose, said he had reached the hot box and had travelled a distance of about 12 car-lengths on his way back to the caboose. Head Brakeman Leithiser said that after his train stopped he filled a bucket with water, went back to the eleventh car, threw the water on the blazing hot box, noticed that the brass was cracked, went back to the seventeenth car, on which there had previously been a hot box and had returned to the eleventh car. The statement of Engineman Welcomer indicated that Conductor Yaple had reached the engine and told him what the next movement was going to be before he sounded the signal calling in the flagman.

Conductor Werner, of train No. 32, was riding in the eighth car at the time of the accident. He did not hear the explosion of torpedoes or any whistle signals, nor did he notice any application of the brakes before the accident occurred. After the accident occurred he met Flagman Hoffman opposite the front end of the eighth car and saw a burning fusee under the seventh car. All of these statements were corroborated by Baggagemaster McGraw, Head Brakeman Balthaser and Flagman Cook, of train No. 32. The conductor thought the last application of the brakes had been made at a point 27 miles west of the point of accident. He also said that the fusee under the seventh car had not just been lighted, being partly burned.

According to Engineman Numer, of eastbound freight train extra 1585, which was running on track 2, caution signal indications were displayed on signal bridge 1296 for tracks 2 and 1. When within 5 or 6 car-lengths of signal bridge 1286 he was passed by train No. 32 on track 1, moving at a speed of 50 or 60 miles an hour, with the engine working steam. He said the signals were visible 1 car-length from the front end of the engine, and that when he saw them they were displaying stop indications for both tracks 2 and 1. Engineman Numer did not see any sign of a burning fusee in the vicinity of where Brakeman Hoffman said he put down the first fusee. Fireman Horning, of extra 1585, verified Engineman Numer's statement that the engine of train No. 32 was working steam when it passed.

While none of the members of the crew of train PF2 and No. 32, with the exception of Flagman Hoffman, heard the explosions of torpedoes, Brakeman Winter, of a westbound freight train standing at the water station, said he heard the explosion of two torpedoes to the west of him; he was approximately 1 mile east of the point of accident.

Freight Train Master Phelan found the remaining portion of a fusee on track 1, at a point 239 feet west of the approximate point of collision, and the remains of another fusee on track 2 at a point 1,111 feet from the point of accident; at points 1,393 and 1,503 feet from the point of accident he found the remains of two torpedoes. In questioning the flagman, Division Engineer Pitcairn asked him to show how far west he had gotten, and according to Freight Train Master Phelan the flagman replied in part that if he could find the location of the fusee left on track 2 by a freight train which was leaving Bailey when his train arrived, he would be able to get very close to the point where he had put down the torpedoes; this statement was made before the discovery of the fusee on track 2. Mr. Phelan was unable to find any indication of a fusee on track 1 in the vicinity of the torpedoes. On examining engine 238 he found the throttle closed and

the brake valve in the emergency position, both of them having considerable wreckage against them, the reverse gear was set for about an 18 or 20 per cent cut-off, the running position for a speed of 50 or 60 miles an hour. He said it was possible for the throttle to have been closed by the wreckage, and in view of the circumstances he considered this to have been the case.

Mr. Otto Gilden, an undertaker of Altoona, stated that after a careful examination of the body of Engineman Line he was unable to find any indication of injury sufficient to cause death. Conductor Werner said he had talked to Engineman Line before the train departed from Altoona, while H. I. Farrabaugh, assistant to the engine dispatcher, said he had been in Engineman Line's presence for about 10 minutes at the time the engineman reported for duty. Both of these employees said they had noticed nothing unusual in his appearance or conversation, while Conductor Werner also said that there was nothing unusual in the way he had handled the train up to the time of the accident.

Conclusions.

This accident was caused by the failure of Engineman Line, of train No. 32, to observe and be governed by automatic block-signal indications.

The investigation disclosed that a caution signal indication was displayed for train No. 32 at a point more than 1 mile from the point of accident and that a stop indication was displayed on signal bridge 1286 nearly 2,000 feet from the point of accident. There was a burning fusee on track 1, 239 feet from the point of accident, while it is probable that there were two torpedoes on the rail at points approximately 1,400 and 1,500 feet distant. The evidence also indicates that no application of the air brakes was made and that the engine of train No. 32 was working steam when the accident occurred. While the reason for the failure of Engineman Line to heed any of these warning signals can not be definitely determined, the fact that he passed these signals without being governed by them, and that an examination of his body disclosed no injury sufficiently serious to cause his death, indicates that Engineman Line may have been dead before the accident occurred.

Flagman Hoffman, of train PF2, said he had gone back 25 or 30 car-lengths when he was recalled. The statements of other members of his crew indicates that with the same amount of time at their disposal they had walked a distance of about 50 car-lengths, and there is no reason why Flagman Hoffman should not have gone back an equal distance. Flagman Hoffman said he had never seen fog any thicker than that which existed at the time; in view of

this fact and considering that he knew train No. 32 had not passed and that his own train was running on the eastbound passenger track, it is believed that Flagman Hoffman should have gone back a greater distance in the time at his disposal. While under the circumstances there is no assurance that Flagman Hoffman would have been able to prevent the accident even had he gone back a greater distance, it is possible that had he gone back as far as he could in the time at his disposal and placed torpedoes at that point he would have attracted the attention of the fireman of train No. 32 in time to enable him to stop the train in case Engineman Line was incapacitated.

This accident again directs attention to the necessity for some form of automatic train control device, to be used in connection with existing automatic block signals, which will automatically bring a train to a stop whenever the engineman for any reason fails to obey a stop signal indication.

Engineman Line was employed as a fireman in 1883 and was promoted to engineman in 1889. Flagman Hoffman was employed as a brakeman in 1899 and had qualified as freight conductor in 1918. None of the employees involved had been on duty in violation of any of the provisions of the hours of service act.