IN RE INVESTIGATION OF AN ACCIDENT WHICH OCCURRED ON THE NEW YORK, NEW HAVEN & HARTFORD RAILROAD NEAR CHATHAM, MASS., ON JULY 27, 1921.

August 15, 1921.

On July 27, 1921, there was a derailment of a passenger train on the New York, New Haven & Hartford Railroad near Chatham, Mass., which resulted in the death of 2 employees. After investigation of this accident, the Chief of the Bureau of Safety reports as follows:

Location and Method of Operation.

This accident occurred on that part of the Boston Division extending between Harwich and Chatham, Mass., a distance of 7.08 miles; this is a single-track line over which trains are operated by time-table, train orders and a manual block signal system. The speed of trains hauled by engines backing up is restricted to 25 miles an hour. The accident occurred at a point about 1 mile north of the station at Chatham. Approaching this point from the north there are 941 feet of tangent and a 5-degree curve to the left 699 feet in length in about the center of which the accident occurred. The grade is 1.153 per cent descending for a distance of about 2,700 feet, followed by a vertical curve about 300 feet in length, and a 1.196 per cent ascending grade extending beyond the point of accident, nearly 1,000 feet distant. The track is laid with 70-pound rails, 30 feet in length, single-spiked to about 18 or 19 ties to the rail-length, and is ballasted

with sand. In the vicinity of the point of accident there are three rail-braces on the outside of each rail. The general condition of the track was good. The accident occurred about 10.25 a.m., at which time the weather was clear.

Description.

The train involved in this accident was southbound passenger train No. 5553, which consisted of 1 coach, 1 baggage car, and 1 combination car, in the order named, hauled by engine 1597, which was being operated backing up, and was in charge of Conductor Snow and Engineman Drew. This train left Harwich, the junction with the main line, at 10.05 a.m., 10 minutes late, made three stops en route, and was derailed while traveling at a speed estimated by the train crew to have been from 20 to 25 miles an hour.

The tender was derailed to the right, or the outside of the curve, and came to rest turned end for end, and nearly bottom up. The engine was derailed toward the inside of the curve and came to rest on its right side at a point about 180 feet beyond the point of derailment. The first car in the train was also derailed to the left, but was not materially damaged. The employees killed were the engineman and fireman.

Summary of Evidence.

Engine 1597 had arrived at Chatham, at the end of the branch, with train No. 5551 at 7.35 a.m., with the same engine and train crews in charge. Conductor Snow said that after the engine was run on the turntable they were not able to turn

the table and the engine left Chatham northbound in train No. 5554 at 8.09 a.m., 18 minutes late, the engine not having been turned. The same train and engine crews were also in charge of train No. 5554. On reaching Harwich with train No.5554, at which point the engine usually is turned on the wye, Conductor Snow said he asked the engineman if he intended to turn the engine and that Engineman Drew replied in the negative, saying he did not think they would be able to turn the engine at Chatham and that if he operated it backing up on the trip to Chatham it would then be headed right for the next trip it would make, which would be on train No. 5558 from Chatham to Yarmouth, which is on the main line, 9.05 miles north of Harwich. After leaving Harwich on train No. 5553, at 10.04 a.m., according to the train sheet, short stops were made at Harwich Center, South Harwich, and South Chatham, stations 0.85, 2.76 and 3.82 miles, respectively, from Harwich. After leaving South Chatham, and on approaching the point where the accident occurred, Conductor Snow, who was in the rear car, felt a jar such as he thought would have resulted from a broken air hose, but did not realize what had occurred until he got off after the train stopped He did not make a detailed examination of the equipment, and said that from what examination he made of the track he judged it to be in good condition. He estimated the speed at the time of the accident to have been about 25 miles an hour.

Brakeman Eldredge, who was riding in the rear of the first car, and Baggagemaster Phelps, who was in the rear car, said

they felt a service application of the air brakes, followed by an emergency application and the derailment of the train. They estimated the speed at 20 miles an hour, as did three other employees who were deadheading on the train. From his position in the first car, Brakeman Eldredge was able to see the tender go toward the outside of the curve, apparently pulling the engine with it and causing it to turn over across the track, at the time he first noticed the derailment of the tender, the engine was riding smoothly. Shortly afterwards he saw what looked like a streak on the top of the inside rail of the curve, this streak starting in about the center of the running surface and working toward the gauge side to a point where a wheel apparently dropped off on the inside, making a mark on a splice bar. None of the employees expressed any opinion as to the cause of the accident.

It was not definitely determined whether an application of the brakes was made while descending the grade approaching the point of accident. Brakeman Eldredge did not notice such an application, but said that the speed did not seem to increase on this descending grade. Engineman Nichols, one of the employees deadheading on the train, said that if a 10-pound reduction is not made while descending the grade the speed will increase to 35 or 40 miles an hour at the foot of the grade.

The first sign of derailment was a slight mark on the ball of the right or outer rail, which ran along a distance of 10 or 15 feet, according to Division Engineer Ruff, before dropping off on the outside opposite the joint at which Brake-

man Eldredge noticed the marked splice bar. From this point the derailed wheels ran on the ties, to the right of the rails, gradually leading toward the outside of the curve, until finally the track was entirely torn up.

On the afternoon of the accident, Division Engineer Ruff made measurements of the gauge and elevation for a distance of 660 feet north of the point of derailment. These measurements showed that there was one point on the curve where the gauge was 4 feet 9-1/2 inches and two points where it was 4 feet 9-3/8 inches, there were a few instances where the gauge was 4 feet 8-3/4 inches, but with these exceptions the gauge varied between 4 feet 9 inches and 4 feet 9-1/4 inches. The elevation on the curve was quite uniform except at points 270 and 390 feet north of the point of derailment, where the elevation was 3/4 inch less than at the preceding points of measurement, 255 and 375 feet, respectively, from the point of derailment. Mr Ruff said the condition of the track was such that there should be no derailment on account of track conditions, provided the speed limits were observed.

The statements of Chief Dispatcher Ahern developed that from July 13 to 19 inclusive, engine 1597 was on the Hanover Branch, which is 7.84 miles in length; while in service on that branch the engine made six round trips each day, making a back-up movement one way on each trip. No difficulty was experienced while the engine was in this service. It was sent to Chatham on July 26, and was operated on that day by Engineman Nichols; he said it rode unusually well.

Master Mechanic Daley said that at first he was inclined to think the accident was due to something dropping from the engine, but his examination of the engine did not develop anything to support this theory, while his further examination of the engine, trucks, etc., showed that such parts as were intact were in good condition. He was unable to say what caused the accident, although of the opinion that the distance run beyond the point of derailment was unusually long provided the brakes were applied in emergency.

The running gear of the engine and tender was considerably damaged as a result of this accident, and examination of the equipment failed to disclose anything which could have caused the accident.

Conclusions.

The cause of this accident was not definitely ascertained.

Examination of the track showed it to be maintained generally in good condition., while examination of the equipment did not develop anything which it is believed could have caused the accident, although there were signs of uneven wear on the forward wheels of the rear tender truck. If no application of the air brakes was made on the descending grade north of the point of accident then the speed of the train when starting around the curve must have been much higher than was estimated by the employees; it was not, however, definitely determined to what extent, if any, the speed of the train was a factor in causing the accident.

With the exception of Fireman McKerney, all of the members of the crew of train No. 5553 were experienced men; at the time of the accident they had been on duty about 5-1/2 hours, after 15 hours or more off duty.