In re Investigation of a grade-crossing collision between a Manistee & North Eastern Railroad passenger train and Manistee Railway trolley cars, near Manistee, Mich., on July 4, 1917.

July 31, 1917.

On July 4, 1917, there was a side collision between a passenger train of the Manistee & North Eastern Railroad and a train of trolley cars of the Manistee Railway, at a grade crossing known as Orchard Beach Crossing, near Manistee, Mich., resulting in the death of three passengers and the injury of nineteen passengers and one employee, all of whom were on the trolley cars. As a result of the investigation of this accident, the Chief of the Division of Safety submits the following report:

The Manistee Railway is a street car line extending from Parkdale, Mich., to Filer City, Mich., a distance of 6.28 miles, and cars are operated between these two points the year round. About one mile west of Parkdale, from a place known as Peanut Junction a branch extends northward 1.42 miles to Orchard Beach, a summer resort, and cars are operated between Filer City and Orchard Beach for about four months of the year. About 365 feet north of the switch at Peanut Junction, this branch crosses the Pere Marquette Railway, and about 460 feet farther north it crosses the Manistee & North Eastern Railroad. This latter crossing is called Orchard Beach Crossing and is the point where the accident occurred.

That part of the Manistee & North Eastern Railroad on which this accident occurred is known as the Manistee & Traverse City Division. It is a single track line, trains being operated by time-table and train orders. The general direction of this division is north and south, but at the scene of the accident the track runs northeast and southwest. The point of accident was just outside the city limits of Manistee and approximately one and three-quarters miles north of Manistee station.

The trains involved in this collision were Manistee & North Eastern northbound passenger train No. 3, en route from Manistee to Traverse City, consisting of locomotive, baggage car and three coaches, with Conductor McIntosh and Engineman Kearney in charge; and a motor car and two trailers, coupled, of the Manistee Railway, en route from Orchard Beach to Filer City, with Conductor Howell and Motorman Smith in charge. The collision occurred at about 5.10 or 5.15 p. m., the weather being clear at the time of the accident.

Between Orchard Beach and the scene of the accident, there are two heavy grades on the Manistee Railway, the first one, near Orchard Beach being approximately 600 feet long; the track is practically level from the foot of this grade to a point 600 feet north of the Manistee & North Eastern tracks, the grade then being descending to the point of accident, the gradient being 1.5% for 100 feet, 4.03% for 100 feet, and 5.46% for 400 feet. It is a single track line laid with 45-pound rails, 28 feet in length, with from 12 to 14 ties under each rail. Approaching the scene of the accident the track is tangent for approximately 840 feet, but the view of an approaching train on the Manistee & North Eastern Railroad is cut off by trees and houses up to a point 294 feet from the crossing, at which point a glimpse may be had of an approaching train approximately 445 feet from the crossing; a clear view of an approaching train can not be had until the street cars are only 204 feet from the crossing.

Approaching the scene of the accident on the Manistee & North Eastern Railroad, the grade is slightly descending for a distance of approximately 1,500 feet. The curvature at the point of accident is 3 degrees 30 minutes toward the right or east, and the view is obstructed by trees so that the first view from an approaching train that can be had of approaching street cars is at a point 445 feet from the crossing, when a street car 204 feet from the crossing can be seen from the left side of the locomotive. The crossing can be seen from an approaching train at a point 1,125 feet away, but at that point there is a clear view of only about 90 feet of the street car track. From the right side of a locomotive cab, an enginemen can at no time see more than 90 feet of the street car track in the direction of Orchard Beach, this distance decreasing as the crossing is approached.

The street cars involved in this accident were motor car 1011 and trailers 1030 and 1036, the motor car being a closed car with cross seats and an aisle through the center, and the trailers being open cars with seats extending entirely across the cars. The motor car was equipped with a ratchet hand brake and a straight air brake, working in harmony; the trailers were equipped with ratchet hand brakes arranged to be operated from either end of the car, and so applied that the operation at one end of the car would not interfere with the operation at the other end. The rear end of the motor car was equipped with a fixed pocket coupler, and a steel bar seven feet in length was used between this car and the radial coupler of the first trailer, the two trailers being coupled together by means of radial draw bars.

These cars, loaded with about 100 people, left Orchard Beach at about five o'clock in the afternoon on the date of the

accident; leaving Orchard Beach, they descended the first grade safely, and no stops were made on the level track following. Approaching the top of the second grade, however, the cars were slowed down nearly to a stop, but no actual stop was made. From this point the cars coasted down the hill at a speed considered by the motorman and conductor to be under control, and variously estimated by different witnesses at between 4 and 10 miles per hour. On nearing the crossing, however, although they saw smoke and the approaching train soon came into view, the motorman and conductor found that they were unable to stop their cars, and the motor car ran on to the crossing directly in front of the oncoming train.

Manistee & North Eastern train No. 3 is due to leave Manistee at 3.00 p. m., but on July 4th, the date of the accident, this train was run two hours late on its regular schedule. It left Manistee at about 5.01 p. m., made one stop at the Pere Marquette station to take on passengers, came nearly to a stop before reaching the Pere Marquette Railway crossing approximately 4,000 feet from the scene of the accident, and the signal being clear for this train it proceeded, the whistle being sounded and the bell rung for a highway crossing and for the Orchard Beach crossing. It was estimated that this train had attained a speed of 28 or 30 miles per hour before the accident. The fireman saw the trolley cars approaching the track when a short distance away from the crossing, and as soon as he realized that they were not being stopped he called a warning to the enginemen, who made an emergency application of the brakes. It was thought this brake application was made approximately a hundred feet from the crossing and the speed of the train was checked somewhat before the collision occurred. The force of the collision separated the motor car from the trailers, and the train passed between them; the total length of the train was slightly more than 290 feet and the rear end came to a stop about 30 feet from the point where the tracks cross. The motor car was badly damaged, and one trailer was somewhat damaged, all three of these cars being derailed. The locomotive was only slightly damaged, and after temporary repairs continued on its run.

Motor car 1011 was of steel-underframe construction, the sides being reinforced with 13-inch plates attached to the underframe. The examination of the damaged equipment indicated that the coupler on the front end of the locomotive struck at about the center of the reinforcing steel side plate two feet back of the rear wheel. The steel underframe and reinforcing plate undoubtedly prevented the rear portion of the motor car from being entirely demolished. The two trailers were of wooden construction.

Motorman Smith stated that he had had three or four

years' experience in the employment of the Manistee Railway, but that he had left the service about three years ago and had returned to the service only about ten days before the date of the accident, and that he had been working every day during his last period of employment by the company. The run to Orchard Beach was made on alternate trips on week days, and every trip on Sundays. On the date of this accident he went on duty at 8.30 a. m., and had been working continuously, except for a period of half an hour off duty at noon. He stated that on four or five trips made previously that day he had no difficulty in controlling the speed of his train while coming down the hill at Orchard Beach crossing, or other heavy grades, and that he had tested both the hand brake and the air brake on his motor car and knew that they were in good condition. He stated that on the trip during which the accident occurred he collected fares from passengers as they entered the motor car, and started. He controlled the speed down the first grade properly by means of the air brake, coasting down at approximately four miles per hour; at the bottom of the grade he released the brakes and applied current to the motors, until nearly to the top of the second grade, where he shut off current and applied the air brakes. He stated that when the top of the hill was reached the car was just moving and he knew he had it under control there; he released about half the air to permit the car to start over the brink of the hill, and then allowed the cars to coast at a rate which he estimated at four miles per hour, controlling them with the air brake. He stated that any one could easily have stepped off the car at any point on the grade. As they approached the crossing he saw the smoke of the approaching train and he then put on all the air there was, the gauge then registering abut 65 pounds, but the car kept on going, and seeing that it would not stop he reversed the motors, releasing about half the air at the same time. He said he felt the brakes take hold, and reversing the motor slackened the speed considerably; but the cars failed to stop short of the crossing and were still moving when struck by the locomotive. He said that he had made four or five trips down that hill with the same equipment that day, and that he had always stopped before passing over the crossing. He thought the brakes were operating properly for the reason that otherwise the speed would have increased on account of the grade. He stated that he did not have time to use the hand brake.

Conductor Howell had been in the employ of the Manistee Railway as section foreman for about two monthsl during times of heavy traffic, as on Sundays and Fourth of July, he was called upon to act as conductor. He thought that he had worked fifteen or twenty days as conductor. He stated that it was a part of the conductor's duties to assist the motorman in controlling speed down grades by applying the brakes on the trailer cars,

and that they had never before had any trouble in controlling the train down this grade; frequently he applied the brake on only one of the trailers. He said that on this last trip he applied the brake on the rear car as they approached the top of the grade until the train came nearly to a stop, and then released that brake to permit the train to start down the grade; he then applied the brake again and made his way on the running board from the rear platform of the rear car to the rear platform of the second car and set the brake on that car also. He thought the cars were approximately a hundred feet from the crossing when he first knew that a train was approaching and when he realized that the cars would not be stopped before reaching the crossing he called to the passengers to jump; a considerable number of them got off from the trailers before the collision, but he did not think any of them got out of the motor car. He said that the cars were not overloaded, and that he had made trips that day with more passengers; that it was customary to stop about fifty feet from the crossing regardless of whether a train was approaching or not, and it was the purpose to stop on this trip at the same point where stops had been made on previous trips. He thought he could walk as fast as the highest speed the cars ran down this hill, and he estimated the maximum rate of speed at about four miles per hour. He could not account in any way for the failure of the brakes to hold the cars and bring them to a stop short of the crossing.

The investigation disclosed that two passengers riding on the rear platform of the rear trailer tightened up the brake on that car as the train approached the crossing. One of them said they made four or five turns of the brake handle. He did not see the conductor after starting down the hill. Some of the passengers stated that they heard the approaching train whistle, although the motorman and conductor both denied hearing the whistle. The moderate rate of speed of the car proceeding down this grade was testified to by two women riding in an automobile following the street cars, as well as by the fact that passengers alighted from the trailers without difficulty and without being thrown to the ground, just before the collision occurred. Furthermore, two passengers in the motor car each picked up a small child, dropped them out of the car windows and then jumped through the windows themselves, just before the collision occurred, none of them being injured.

Leaving Orchard Beach there were approximately one hundred passengers on the three trolley cars involved in the accident. Motor car 1011 was 31 feet 6 inches in length and weighed 14 tons. Car 1030 was 28 feet in length, and car 1036 was 30 feet long, each weighing 3 tons. Each car had one four-wheel truck. After the accident an examination of the brake equipment on these cars was made, and while it had been damaged to some extent in the collision such tests as could be made indicated that both the air brake and the hand brakes had

been in operative condition before the accident.

The rules of the Manistee Railway Company require that trains must approach railroad crossings at grade under full control and come to a dead stop within safe distance so that a clear view of the track can be had in all directions, and a bulletin and a special notice had been issued, calling attention to these requirements. It was also understood that there was a rule in effect requiring trains to stop at the top of the hill approaching Orchard Beach crossing, go down the hill under control and stop not less than 50 feet from the track; further, that in case there is a conductor on the train, he must go ahead to the crossing and signal the motorman before the train crosses. While this was supposed to be the general practice, a copy of this rule could not be found.

The crossing where this accident occurred was not protected by a watchman or by any special device such as gates, a bell or derail. A law of the State of Michigan requires street cars to be brought to a full stop before going upon a street railway crossing or the tracks of a steam railroad unless the crossing is protected by interlocking or some other device approved by the Michigan Railroad Commission.

This accident was caused by the failure of the motorman and conductor of the Manistee Railway train to keep their train under control while descending the grade approaching the crossing, and to bring their train to a stop before passing over the crossing, as required by the rules.

It is apparent from the investigation that there was no defect of brake apparatus or equipment which could have contributed to the cause of the accident; also that the cars were not overloaded, and that on previous trips the same cars had been properly controlled down the grade and stopped before passing over the crossing. There can be no question but that if the brakes had been properly manipulated the speed could have been properly controlled and the cars stopped; and while the motorman and conductor involved had had comparatively little experience in their respective positions, there can be no excuse for the failure of these men strictly to obey the rules of the railway company provided to safeguard travel over this crossing.

It is noted that at this crossing the Manistee & North Eastern Railroad approaches on a curve of 3 degrees 30 minutes, and that the view is further obstructed by trees, while the descending grade of the Manistee Railway is nearly five and one-half per cent. Under these conditions the means employed to prevent such accidents as this are inadequate, and a proper regard for safety would seem to require the use of derails which would necessitate cars on the street railway coming to a full stop before reaching the crossing and a man being sent ahead to the crossing to line up the rails before it would be possible for the street cars to pass.