

INTERSTATE COMMERCE COMMISSION

INVESTIGATION OF ACCIDENT

ON THE

DELAWARE, LACKAWANNA & WESTERN
RAILROAD NEAR EAST CORNING,
N. Y., JULY 4, 1912

REPORT OF CHIEF INSPECTOR OF
SAFETY APPLIANCES

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INTERSTATE COMMERCE COMMISSION

REPORT OF THE CHIEF INSPECTOR OF SAFETY APPLIANCES OF THE INTERSTATE COMMERCE COMMISSION COVERING HIS INVESTIGATION OF AN ACCIDENT WHICH OCCURRED ON THE DELAWARE, LACKAWANNA & WESTERN RAILROAD NEAR EAST CORNING, N Y , ON JULY 4, 1912

JULY 29 1912

TO THE COMMISSION

On July 4 1912 there was a rear-end collision on the Delaware Lackawanna & Western Railroad near the freight station at East Corning N Y This collision resulted in the death of 39 passengers and the injury of 86 passengers and 2 employees, many of the injuries being serious An investigation into the nature and cause of this accident developed the following facts

Westbound passenger train No 9 runs from Hoboken N J , to Buffalo, N Y On the day of the accident this train consisted of 1 buffet car, 7 Pullman sleeping cars and 2 coaches, all of wooden construction except one of the coaches, the second car from the rear of the train, which was a modern steel car This train was hauled by engines Nos 1052 and 973, and was in charge of Conductor Staples and Enginemen Still and Schick Train No 9 left Elmira, N Y , at 4 37 a m , and on approaching the freight station at East Corning, 16 miles from Elmira, at about 5 a m , was flagged by the flagman of westbound freight train extra No 393, which had stopped on account of the draft sills of a car having broken It was necessary to cut off the head engine of train No 9 to push the rear end of extra No 393 into the westbound siding After this had been done and while the engine was returning, the rear end of train No 9 was struck by train No 11

Westbound train No 11 is an express train, carrying no passengers, and also runs from Hoboken, N J , to Buffalo, N Y At the time of the accident it consisted of seven express cars and one combination mail and express car It was hauled by engine No 1026 and was in charge of Conductor Sullivan and Engineman Schroeder This train left Elmira, N Y , at 5 a m , and after passing two block signals, one at caution and one at danger, as well as the flagman of

train No 9, collided with the rear end of that train at 5 21 a m, at a point approximately 250 feet west of automatic signal No 2771. The speed of train No 11 at the time of the collision was about 60 miles per hour.

The wooden coach on the rear end of train No 9 was completely destroyed. The vestibules and platforms on both ends of the steel coach next to it were crushed, the damage on the rear end continuing in as far as the second seat in the car. This car was stripped of its trucks, and after telescoping the wooden sleeping car Esthonia the third car from the rear, for two-thirds its length, was thrown on its side to the north of the track. The rear coach and the sleeping car Esthonia were so badly damaged that the wreckage was burned at the scene of the accident. Engine No 1026 remained upright although derailed and quite badly damaged. The forward end of the first express car of train No 11 was also derailed and slightly damaged. None of the other cars in this train was derailed.

Illustration No 1 is a general view of the accident, while illustration No 2 shows the wreckage of the sleeping car after having been telescoped almost up to its forward trucks by the steel coach, which is shown on its side in the center of the illustration.

At the place where this accident occurred the Delaware Lackawanna & Western Railroad is a double track line running along the northern bank of the Chemung River. The collision occurred at the eastern end of a 1° curve. The track is level. This division is equipped with two arm, lower quadrant automatic block signals of the normal clear type. These signals are so arranged that when a train is in a block the first signal to the rear of the train indicates stop, both arms being horizontal, the second signal to the rear of the train indicates caution, the lower arm being horizontal and the upper arm at an angle of 45°, while the third signal to the rear of the train indicates clear, both arms being at an angle of 45°.

Elmira, N Y, is a division terminal for engines and engine crews. The first westbound passing track after leaving Elmira is located at East Corning freight station and has a capacity of 94 cars. Approaching East Corning freight station from Elmira the track is straight for a number of miles, until within approximately 7,500 feet of the switch at the eastern end of the passing track, where there is a curve of 2° 20'. Automatic signal No 2773 is located at about the middle of this curve and automatic signal No 2781 is located 4,435 feet farther west. The distance between automatic signal No 2781 and the eastern passing track switch is 1,700 feet. Between automatic signal No 2781 and this switch there is a short 1° curve, while east of automatic signal No 2781 the track is straight for 2,300 feet.





ILLUSTRATION NO 1 GENERAL VIEW OF WRECK, LOOKING WESTWARD SHOWING COMPLETE DESTRUCTION OF REAR COACH
STEEL COACH LYING ON ITS SIDE

On the date of this accident, westbound freight train extra No 393, consisting of 55 loaded cars, left Elmira, N Y, at 3 50 a m, in charge of Conductor Holleran and Engineman Hemphill. Engineman Hemphill stated that as his engine was not steaming properly he was unable to reach the siding at East Corning freight station in time to clear train No 9, and as he approached this siding he sounded the whistle signal for the flagman to protect the train. He stated that it was very foggy and that signals could not be seen a distance of more than one or two car lengths. Extra No 393 arrived at the eastern end of the passing track at 4 46 a m, and the train entered the siding without stopping. When it had proceeded about 15 car lengths on the side track it was flagged by the flagman of train No 61, a freight train which was standing on this siding. As the siding was not long enough to hold both trains, No 61 pulled up into the freight house track west of the passing track to make room for extra No 393. Engineman Hemphill then started his train but had proceeded only a few car lengths when the train parted, due to the breaking of the draft sills on one of the cars.

As extra No 393 approached the siding at Corning freight station two green fuses were thrown off, and Conductor Holleran instructed Flagman O'Connor to protect the rear end of the train. Conductor Holleran stated that at this time it was so foggy he could see only a few car lengths. Flagman O'Connor dropped off the train at a point just west of automatic signal No 2773. He stated that it was foggy at that time, and he placed two torpedoes on the rail. He saw train No 9 approaching when it was, in his opinion, about 25 car lengths distant. He flagged this train, and as it slowly ran by him he signaled to Engineman Still, of the leading engine that his train was taking the siding and that train No 9 was to pull ahead. Flagman O'Connor then returned to his train, meeting Flagman Lane, of train No 9, at a point about 300 or 400 feet from the rear of the passenger train as the latter was on his way out to flag.

Engineman Still stated that as he approached East Corning freight station the fog was very thick and it was hard to distinguish signals, at times he could see them a distance of only one car length. Signal No 2773 was at caution, and after running over two torpedoes and passing Flagman O'Connor he brought his train to a stop at signal No 2781, which was in the stop position. He then proceeded slowly and stopped his train behind the caboose of extra No 393, the rear end of his train at this time being about 250 feet beyond automatic signal No 2781. Engineman Still immediately sounded the whistle signal for the flagman to go back and protect the train. His engine was then cut off and used to push the rear end of extra No 393 in on the siding. He stated that while doing this work he could see signals at a distance of seven or eight car lengths. Conductor Hol-

leran stated that at this time the fog was not so thick, and he could see signals about 15 or 20 car lengths distant. Flagman O'Connor and Engineman Hemphill stated that the fog was clearing away in that place at the time of the accident, which occurred while the engine was returning to the train.

Engineman Schick, who was on the second engine of train No. 9, stated that while the weather was very foggy he was able to distinguish all the signals between Elmira and the place where the collision occurred. The fog was lying in banks, being much thicker in some places than in others.

Conductor Staples, of train No. 9, stated that when his train stopped he saw Flagman Lane start back with his red flag, it was daylight, but foggy. He thought he could see a distance of 20 or 30 car lengths.

Flagman Lane, of train No. 9, stated that when his train stopped behind extra No. 393 he immediately took his red flag and one green fusee and went back to a point about midway between signals Nos. 2781 and 2773, on straight track, about 2,000 feet from the rear end of his train. He remained there for 10 or 12 minutes. Flagman Lane stated that while the weather was a little foggy at that time he could see a distance of 30 or 40 car lengths. When he heard train No. 11 coming he lighted his green fusee and placed it on the end of a tie on the engineman's side of the track. He did not place any torpedoes on the rail, as required by the rules during foggy or stormy weather. He saw the engine of train No. 11 coming around the curve some 300 or 400 feet from him, running at a speed of from 60 to 65 miles per hour. He flagged the train with his red flag until he was compelled to step off the track, and the train passed him without having answered his stop signals, and with the engine still working steam. He further stated that he could see the engineman in his cab as the engine passed him, and that he was not looking out of the cab window, but appeared to be looking over the boiler toward the left-hand side of the engine.

Conductor Sullivan, of train No. 11, stated that at Elmira the air brakes on his train were properly tested and were found in good working condition. The first knowledge he had of the collision was when he felt the shock. He stated that the weather was foggy, and that prior to the collision there had been no application of the air brakes.

Flagman Sweet, of train No. 11, corroborated the statements of Conductor Sullivan, and stated that after the collision he immediately went back for the purpose of protecting his train. He stated that as soon as he started back he could see the green fusee which Flagman Lane had left burning, and he met Flagman Lane at a point about halfway between signals Nos. 2773 and 2781. He immediately went

to signal No 2773 and found it in the stop position, this being the proper position for the signal at that time, as the rear end of train No 11 was standing in that block

The weather was clear when Engineman Schroeder left Elmira on train No 11 at 5 a m He arrived at the roundhouse late that morning, and ran his engine down to the station, coupled onto the train, and received the signal to start without having had an opportunity of oiling or inspecting the engine He did not notice any fog for some distance from Elmira, but as he approached East Corning it became very thick and he was able to distinguish signals only by very carefully watching for them, at times they could not be seen a distance of one car length The speed of his train was about 60 miles per hour

After leaving Elmira, Engineman Schroeder had some trouble with his injector, it was apparently feeding too fast, and he cut it off and found that the water had been foaming He turned it on again, but reduced its feed The injector then "broke," or shut off He attempted to use the other injector, but could not make it work properly, because the cab was loose and the injector rod came in contact with the cab and could not be opened far enough He worked over these injectors for some time, and went out in front of the cab on the running board and tried to bend the upright rod so as to open the injector farther As he returned to the cab Fireman Huntley came up and spoke about the water While working on the injectors, and while the fireman was speaking to him, Engineman Schroeder was not constantly on the watch for the signals He did not see the caution signal, the flagman or the green fusee He saw signal No 2781 in the stop position when about 150 feet away from it and just beyond it the rear end of train No 9 He said he made an emergency application of the air brakes and thought he closed the throttle, but remembered nothing more

At the coroner's inquest evidence was introduced tending to show that Engineman Schroeder was under the influence of liquor on the night of July 3, but this he denied He admitted that he had two drinks of gin between 10 and 11 o'clock, and later visited a number of saloons, but did not drink any more intoxicating liquor He stated that he had slept during the afternoon from 2 o'clock until 6 o'clock, that he left his home at 9 p m, and returned at 12 10 a m, sleeping from that time until he was called for this run, which was at about 3 a m He answered the call boy, but did not get up and it was necessary to send for him a second time At about 4 10 a m the call boy went into the room where he was sleeping, took him by the hand and called twice before arousing him Engineman Schroeder then got up and went to the roundhouse, arriving there at 4 48 a m

Fireman Huntley of train No 11, stated that some time after leaving Big Flats a station halfway between Elmira and Corning, he

went from his cab into the engineman's cab and talked with Engineman Schroeder about the condition of the water in the boiler. He thought this must have been while going around the curve and passing signal No. 2773, as he did not see this signal, the fusee, or Flagman Lane. He had not returned to his cab, but was standing on the running board, when he looked over the top of the engineman's cab and saw signal No. 2781 in the stop position, with the rear end of train No. 9 immediately beyond it. He could not state whether or not Engineman Schroeder made an application of the air brakes.

Engine No. 1026 is of the Wootten type, having two cabs, the engineman's cab being located ahead of the fire box at about the center of the locomotive, while the fireman's cab is located about 13 feet back of the engineman's cab at the rear of the fire box and on a level with the floor of the locomotive tender. There is a running board along the side of the fire box leading from one cab to the other. On this type of engine the water glass and injectors are located in the engineman's cab. Gauge cocks are the only means the fireman has in his cab of finding out the amount of water in the boiler, and if he desires to see the water glass or to ascertain whether the injectors are working properly he has to go into the engineman's cab.

On July 6 the injectors on engine No. 1026, without any repairs having been made, were placed on engine No. 1025, tested, and found to be in first-class condition.

At the time of this accident, Engineman Schroeder had been on duty 1 hour and 8 minutes, after a period off duty of 30 hours and 31 minutes. He had been in the employ of this railroad about 42 years, 37 years of which he had been employed as an engineman. Engineman Schroeder had been the regular engineman for train No. 11 for 26 years, making the run from Elmira to Buffalo and return on alternate days. He had been suspended only twice since 1883, once in 1909 on account of failure to report a broken trunnion, and once in 1912 for 15 days for failing to observe an order board. Flagman Lane had been on duty 2 hours and 33 minutes, after a period off duty of 27 hours and 10 minutes. He had been in the employ of this railroad for about 23 years. His record was clear.

This collision was caused by the failure of Engineman Schroeder to observe and be governed by automatic block signal indications intended for the prevention of accidents of this character, as well as the signals given by a flagman. While the automatic block signals in use operated properly, and would have prevented the collision if observed and obeyed, a much greater degree of protection would be afforded by the signals on this road if they were properly overlapped, so that trains would be protected by two stop signal indications and one caution signal indication. While overlapping signals in this way would reduce the maximum capacity of the road for the move-

ment of trains, nevertheless this arrangement is used on a number of railroads and is recognized as a much safer method of train operation. Had this arrangement been in use on this road this accident would probably have been averted, as Engineman Schroeder failed to observe only one fixed signal. But where trains are operated at high speed while the weather is so thick that signals can be seen a distance of only a few feet no system of fixed roadside signals can provide that measure of protection to which the traveling public is entitled, and the use of automatic train stopping devices is urgently demanded. Devices of this character would automatically stop the train in case the engineman failed to observe or obey the indications of fixed signals, due, for example, to the engineman being asleep, dead, or physically incapacitated, or to his attention being diverted by other duties, or to the signals being obscured by fog, snow, or smoke. Attention has heretofore been called to the necessity for the use of automatic train control devices in reports covering the accidents which occurred at Bridgeport, Conn., on the New York, New Haven & Hartford Railroad, at Fort Wayne, Ind., on the Pennsylvania Railroad, and in Hoosac Tunnel, near North Adams, Mass. on the Boston & Maine Railroad. In the absence of such automatic train control devices, during foggy or stormy weather, when signal indications can be seen but a short distance, positive and definite instructions should be given prohibiting the running of trains at high speed.

A contributing cause of this accident was the failure of Flagman Lane to use torpedoes. Rule No 99 of the rules of the transportation department of the Delaware, Lackawanna & Western Railroad, which is a literal copy of so-called Standard Code rule No 99, reads as follows:

99 When a train stops or is delayed, under circumstances in which it may be overtaken by another train, the flagman must go back immediately with stop signals a sufficient distance to insure full protection. When recalled he may return to his train, first placing two torpedoes on the rail when the conditions require it.

In addition to the above rule, the rule book of the Delaware, Lackawanna & Western Railroad contains rule No 99 (a), reading as follows:

99 (a) At night, and in fog or severe storm day or night, flagmen will, the last thing when recalled, place one lighted green fusee upright outside the rail on engineman's side in addition to placing torpedoes.

Time table No 20, in effect on the date of this accident, contains the following general instructions:

14 Where automatic block signals are in use, torpedoes must not be used except in foggy or stormy weather, and when used they must be placed not less than 12 feet from the rail joint.

18 When necessary, red fusee must be used in addition to other stop signals to insure stopping trains.

Attention is called to the lack of definite certainty in the rules of this and many other railroads covering instructions to employees in an emergency similar to that presented in this case. When a train stops or is delayed under circumstances in which it may be overtaken by another train, a condition of danger is present which is not met by a requirement that a flagman must go back a *sufficient* distance with signals to insure full protection. This leaves it entirely to the judgment of the individual employee to determine what is a sufficient distance, making the rule uncertain, and leaving room for error in judgment where such error may be disastrous. Rules like these fail to provide a definite guide to employees. Many railroads by their rules fix a minimum distance which the flagman is required to go back, and this is the safer practice, although in the case here in question the flagman had gone back far enough to permit the train to have been brought to a stop had his warning signals been heeded. In this connection attention is called to the recommendation of the Commission contained in its twenty-fifth annual report to Congress for the "standardization of operating rules of all interstate carriers."

The determination of the existence of conditions which require the use of torpedoes should not be left to the judgment of employees. In this instance the rule leaving the use of torpedoes to the judgment of the flagman is further complicated by time-card rule No. 583, quoted above, which prohibits the use of torpedoes in block signal territory unless it is foggy or stormy. Flagman Lane, using his individual judgment that there was not sufficient fog to warrant the use of torpedoes did not use them. Had the rules required their use under all circumstances this accident would undoubtedly have been prevented. The requirement of the use of torpedoes under all circumstances should be mandatory and absolute. No chances should be taken and every precaution should be employed. If the engineer were engaged in other duties, or his mind preoccupied, the detection of the torpedoes would arouse and warn him of a dangerous situation.

Not only are the provisions of the rules of this railroad as to the use of torpedoes less stringent than safety requires, but this investigation has also disclosed the fact that rule No. 583, requiring flagmen to have not less than four torpedoes securely attached to their flag staffs, is being habitually disregarded by the employees of this railroad, and has been for a number of years.

On account of extra travel incident to the Fourth of July, train No. 9 had one coach and four sleeping cars in addition to its regular equipment. This train is ordinarily made up with a steel car at each end, but on the date of the accident the rear car was wooden coach No. 86, built in 1904. It was 57 feet in length with box vestibule platforms carried on steel I-beams running back through the



ILLUSTRATION NO 3 THE STEEL COACH AFTER REMOVAL FROM THE SCENE OF THE ACCIDENT SHOWING THE SIDE ON WHICH THE CAR RESTED AFTER THE COLLISION

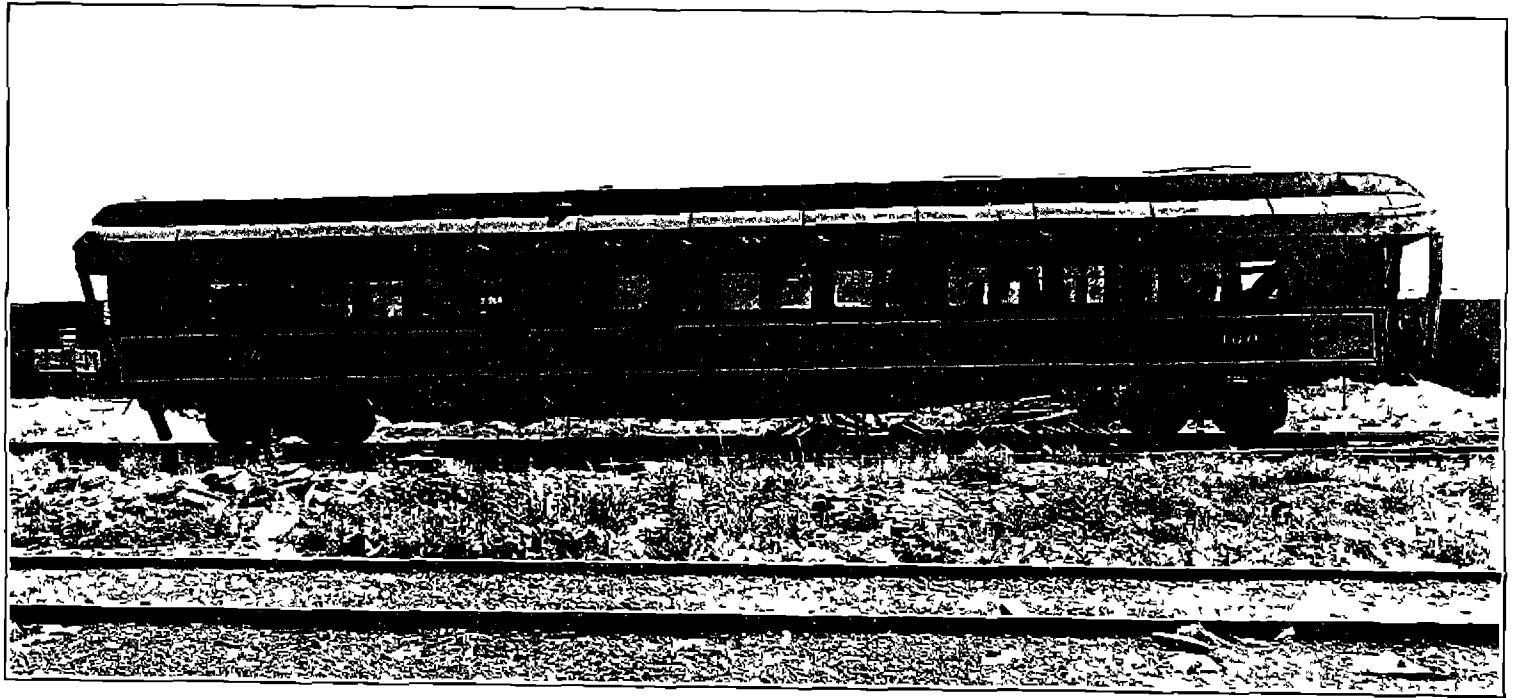


ILLUSTRATION NO. 4 VIEW OF OPPOSITE SIDE OF THE STEEL COACH

ransoms The majority of the fatalities occurred in this car the debris of which is shown in the foreground of illustration No 1 Steel car No 160, which is a combination smoking and passenger car, was the second car from the rear of the train The underframe of this car is of the fish-belly type, the body of the car being carried on two longitudinal steel sills running from buffer beam to buffer beam The platforms are carried on steel I-beams running through transoms to the body bolsters The conductor of train No 9 stated that only two fatalities occurred in this car The third car from the rear of the train, sleeping car Esthonia, was also a wooden car, with platform construction similar to coach No 86

The extent of the damage to the steel coach at its east and west ends, respectively, is shown in illustrations Nos 1 and 2, which are reproductions from photographs taken immediately after the accident Illustration No 3 shows the side on which the steel car rested after the accident, while illustration No 4 shows the opposite side Illustrations Nos 3 and 4 are reproductions of photographs taken after new trucks had been placed under the car and it had been removed from the scene of the accident This accident has again demonstrated the superiority of all-steel equipment In this connection attention is called to the following recommendation which was made in the report dealing with the accident which occurred on the Pennsylvania Railroad at Fort Wayne, Ind, on August 13, 1911

That, in order to provide the safety to which the traveling public is entitled, the substitution of all steel equipment for wooden equipment in high speed passenger service shall be required at the earliest practicable date

It is also noted that in its twenty-fifth annual report to Congress the commission recommended "the adoption of steel cars, postal, baggage, and passenger"

As a result of the investigation of this accident the conclusion is confirmed that the use of steel cars would materially reduce the number of fatalities in accidents of this character It is also believed that a greater degree of safety would be provided (1) if flagging rules were more explicit and the use of torpedoes were required, and (2) if automatic block signals were properly overlapped and the speed of fast trains was reduced in foggy or stormy weather, unless automatic train-control devices were installed

Respectfully submitted

H W BELNAP,
Chief Inspector of Safety Appliances

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