

INTERSTATE COMMERCE COMMISSION

IN RE INVESTIGATION OF ACCIDENT ON THE NEW YORK,
NEW HAVEN & HARTFORD RAILROAD AT STAMFORD,
CONN , ON JUNE 12, 1913

Approved July 7, 1913

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REPORT OF THE COMMISSION

McCHORD, Commissioner

On June 12, 1913, a rear-end collision occurred between the first
and second sections of westbound train No 53 at Stamford, Conn ,
on the New York, New Haven & Hartford Railroad, resulting in the
death of 6 passengers and the injury of 20 passengers and 2 mail
clerks. Inspectors who were in the immediate vicinity proceeded
to Stamford within a short time after the occurrence of the accident,
while others were ordered to that point to assist in the investigation.

A public hearing was held by the Commission at Bridgeport, Conn ,
on June 18-19, 1913, and the Public Utilities Commission of the State
of Connecticut, which was then engaged in an investigation on its
own initiative, was invited to and did participate in this hearing.

The investigation of this accident developed the following facts:

Westbound passenger train first No 53 was en route from Spring-
field, Mass , to New York, N Y. At the time of the accident it con-
sisted of one smoking car, three day coaches, and one Pullman parlor
car, in the order given, hauled by locomotive No 1025. All of the cars
in this train were of wooden construction, the parlor car being equipped
with steel platforms. This train was in charge of Conductor Vincent
and Engineman Worthington. It left New Haven, Conn , at 3 53 p m ,
two minutes ahead of time, left South Norwalk at 4 35 p m , one min-
ute ahead of time, and at 4 46 p m , two minutes ahead of its sched-
uled arriving time, came to a stop east of Stamford station for the

purpose of substituting an electric locomotive for the steam locomotive, trains being operated by electric power between Stamford and New York. While this change was being made the rear end of the train was struck by second No 53, the collision occurring at 4 50 p m. At the time of the collision the rear end of first No 53 was nearly 2,000 feet east of Stamford station.

Second No 53 was en route from Boston, Mass., to New York, N Y, and at the time of the accident consisted of the following cars, all of which were of wooden construction:

	Year built	Trucks	Weight
New Haven postal 3251	1905	6	102,000
New Haven baggage 3106	1907	4	86,400
Pullman Centredale	1911	6	132,000
Pullman Frisling	1906	6	116,000
Pullman Foxboro	1900	6	122,000
Boston & Albany coach 441	1899	6	94,000
Boston & Albany coach 414	1899	6	94,000
New Haven coach 1914	1912	4	85,000

This train was hauled by locomotive No 1338, a superheater of the Pacific type, weighing 154,000 pounds on its driving wheels, and having a combined weight of engine and tender, ready for service, of 384,000 pounds. The train was in charge of Conductor Dunn and Engineman Dougherty. It left New Haven at 3 57 p m, South Norwalk at 4 39 p m, and collided with first No 53 at Stamford at 4 50 p m, as previously stated.

The force of the collision drove the first section ahead a distance of about one and one-half car lengths. Locomotive No 1338 telescoped the wooden parlor car on the rear end of first No 53 nearly the entire length of the engine, only the cab being visible. This parlor car was so badly damaged that it was burned a few hours afterwards. Neither the engine nor tender, nor any of the cars in second No 53 was derailed, and the engine sustained only slight damage. None of the other cars in either train was materially damaged. After the accident it was found that the second section had parted between the baggage car and the first Pullman car, breaking the knuckle on the forward end of the latter car, the cars being separated 15 or more feet.

This part of the New York, New Haven & Hartford Railroad is a four-track road. Train movements are governed by the controlled-manual block-signal system. The signals are of the two-position, suspended type, and at Stamford are supported on signal bridges, each signal being over the track it governs. Train orders are not used unless a train is moving against the current of traffic. When first No 53 came to a stop its rear end was 171 feet west of the home signal, which in turn was 1,800 feet west of the distant signal. This latter

signal could be seen plainly by approaching westbound engine crews a distance of 1,847 feet. About 900 feet east of the home signal is the beginning of a 2-degree curve leading toward the north, 827 feet in length, the eastern end of this curve being about 100 feet west of the distant signal. The home signal can not be seen from the distant signal. East of the distant signal the track is straight for 1,500 feet, then there is another 2-degree curve leading toward the north, 1,731 feet in length. The grade for a distance of 1 mile or more east of the point of collision is slightly descending for westbound trains, at no time being greater than one-third of 1 per cent. The speed of second No 53 prior to the time steam was shut off at a point east of the distant signal is believed to have been in excess of 60 miles per hour, in fact, the train sheet shows that second No 53 passed Darien, Conn , at 4 46 p m , and that it traveled the distance of 4 5 miles to Stamford in four minutes, or at an average speed of 67 5 miles per hour. At the time of the collision the speed had probably been reduced to 15 or 20 miles per hour. The weather was clear.

The home signal protecting the rear end of first No 53 was in the stop position when second No 53 approached, while the distant signal was in the caution position, indicating to the engineman of second No 53 that the home signal was in the stop position. At the hearing the engineman of second No 53, C J Dougherty, testified that on the day of the accident the air brakes were not working well, and gave that as his reason why he was unable to obey and be governed by the signal indications, and bring his train to a stop in time to avoid the collision. He said that when stopping at a signal tower leaving New Haven he experienced no difficulty in controlling his train, as he was running slowly. At Bridgeport he took extra precautions, and he did likewise at South Norwalk. While within the city limits of South Norwalk he had occasion to apply the emergency brakes to avoid striking a boy, and he testified that at that time he was not satisfied with the way the brakes worked, as the train was not stopped as soon as he thought it should have been. Approaching Stamford he shut off steam on the curve before coming within sight of the distant signal. When his engine approached near enough to enable him to see the distant signal, it was in the caution position. At this time he said he was about 300 feet away, and he at once made a 15-pound reduction in the train-line pressure. The brakes did not seem to take hold well, and after passing the distant signal he made a further reduction of 10 pounds. When his engine had reached a point about 300 feet from the rear end of first No 53 he applied the brakes in emergency, but was unable to stop his train. He also testified that when he saw that there was danger of a collision he tried to reverse

his engine, but as he had hurt his back a short time previously while attempting to reverse an engine of this type, which worked hard on account of being new, he was able to move the lever but a short distance—not enough to do any good.

In testifying as to his experience Engineman Dougherty stated that all of his railroad experience had been with the New York, New Haven & Hartford Railroad. He had had nine years' and eight months' experience as a fireman, most of which had been on that part of the New York, New Haven & Hartford Railroad between Midway, Conn., and Harlem River, N. Y., which embraces the territory involved in this accident. He had had three years' experience firing in passenger service, most of which had been spent on a local tram running between New Haven and Shelburne Falls, Mass. He became an engineman on March 16, 1912, but was reduced to firing on May 31, 1912, on account of a reduction of force. On June 26, 1912, he was again promoted and had been employed as an engineman since that date. Before becoming an engineman he had to take mechanical, air-brake, and book-of-rules examinations. He failed to pass the mechanical examination, but was afterward reexamined on that subject and passed. In his brief experience as an engineman he had never been in fast passenger-train service at any time up to the Tuesday preceding the date of the accident, which occurred on Thursday, practically all of his experience as an engineman having been spent upon switch engines and slow freight trams. Prior to June 12, 1913, the day of the accident, Engineman Dougherty had worked 265 days as an engineman. This service was distributed as follows: Yard service, 158 days, slow freight service, 79 days, fast freight service, 10 days, passenger service, including pay cars and mixed trains, 18 days. Of his 18 days in passenger service, only 2 days, June 10 and 11, 1913, had been spent in fast passenger-train service.

On his first day as an engineman in fast passenger-train service, two days preceding the date of the accident, he made two round trips from New Haven to Stamford, which stations are 40 miles distant from each other. On his first trip to Stamford, which was made on second No. 53, he had trouble with the air brakes, and at Bridgeport the train ran by the station before being brought to a stop. When he reached Stamford he made a written report in a book furnished for that purpose, and among other things reported "brakes no good." Before starting on the return trip to New Haven he looked at the book and saw a machinist's name signed there, indicating that the necessary repairs had been made. He was not entirely satisfied, however, and en route to New Haven took extra precautions in making the stops, starting to brake "way back," securing good

results The locomotive in use on Tuesday was No 1338, which was the locomotive involved in this accident This was a new locomotive, having been delivered to the railroad recently, and Engineman Dougherty had never used a locomotive of that type previous to Tuesday He further stated that he had much difficulty in watching the water, and thought that all the water glasses were out of order on the engines of this class

Since he had been an engineman none of the traveling engineers, who were employed for that purpose, had ever ridden on an engine with him, or given him any instructions or assistance of any kind When he was taking his engine from the turntable preparatory to starting on the first trip to Stamford on Tuesday, Traveling Engineer Carroll asked him where he was going He replied that he was going out on second No 53 Engineman Dougherty's further testimony as to this conversation was as follows

He said, "Well, for Christ's sake look out for yourself" He says, "Harmon got into it yesterday" He says that "the brakes ain't holding, and the water glass is out of order" Now he says, "Bardo is raising holy hell" So he says, "Start braking back far enough so as to make sure you will stop" That was the only instructions I ever got

Engineman Dougherty also testified that although on the trips preceding the accident he had stopped east of Stamford station for the purpose of cutting off his engine and allowing an electric locomotive to couple on in order to handle the train from that point to the terminal at New York, yet he did not know where it was customary to make this change in motive power, as no one had ever said anything to him about it During the three weeks in which he had acted as fireman, or assistant, on an electric locomotive between Stamford and New York, the change in power had sometimes been made at Stamford station and sometimes at a point east of the station

Fireman Smith, of second No 53, was an extra fireman with about 15 months' experience He testified that when approaching Stamford the engineman called his attention to the caution signal and that by the time he looked out and saw it the air brakes had been applied, that is, he heard the exhaust of the air, but did not feel the brakes take effect He did not hear the engineman apply the emergency brakes just prior to the collision, but on looking at the brake valve saw it set in the emergency position

Conductor Dunn stated that coming into Stamford he first noticed an application of the air brakes at a point just east of the distant signal This application of the brakes did not seem materially to reduce the speed of the train Just before the collision occurred the brakes were applied in emergency After the accident he did not examine the cars in his train, but when going back to send out a

flagman to protect the rear of the train he noticed on one of the cars a piston out of the brake cylinder on the extreme end

Baggageman Wilson stated he did not notice any application of the brakes until they were applied in emergency just before the collision

Engineman Waite, an employee of the New York, New Haven & Hartford Railroad, who was standing near the point of collision at the time of its occurrence, testified that he was curious to know why second No 53 should have run by the signal set against it, and on this account walked along the train to see if he could find anything wrong. He stated that two of the cars appeared to him to be in fine condition with respect to the air-brake piston travel, but that in the case of the other cars the piston travel seemed to be too long. He thought, however, that the brakes were about the average. He found one car on which the brakes were not applied, but stated that the air might have leaked off after the accident. Engineman Waite further testified that unless the brakes were in very good condition it would require an emergency application to stop a fast train in the distance between the distant and home signals at Stamford.

Master Mechanic McCabe stated that he reached the scene of the accident at about 5 p m, at which time there was no one on the engine. He found the brake valve in the emergency position, the reverse lever in the center, and the sand blower open. The air pump was working and the reservoir pressure was about as high as usual, in the neighborhood of 125 pounds. After seeing that there was enough water in the boiler he got off the engine and asked the engineman, who was standing on the ground, what the trouble was, and he replied that the brakes did not hold. Master Mechanic McCabe further stated that he thought the accident was due to Engineman Dougherty's inexperience as an engineman on first-class trains, that he was approaching Stamford at an excessively high rate of speed, and did not possess sufficient judgment, as far as the air brakes were concerned, to enable him properly to control his train.

General Air-Brake Inspector Joy testified that he was on the scene 20 minutes after the accident occurred and made an examination of the equipment of second No 53. He found the piston travel on the cars in this train to be as follows

	Inches
Mail car	6
Baggage car	8½
Pullman car Centredale	7
Pullman car Pristina	10½
Pullman car Foxboro	Released
Boston & Albany coach 441	8½
Boston & Albany coach 414	6½
New Haven coach 1914	9

He accounted for the brakes being released on the Pullman car Foxboro by stating that he found to be broken a pipe which conveyed air to the water-distributing system. Because of the period of time which had elapsed between the time of the accident and the time of this examination he thought the brakes possessed good holding power. In his opinion the breaking of the knuckle on the coupler of the Pullman car Centredale was probably due to the emergency application of the brakes on that car while running at a low rate of speed. Referring to the distance between the home and distant signals at Stamford, Inspector Joy was unable to say whether or not an engineman would be able to stop his train at the home signal if he applied the brakes at the distant signal while running at a speed of 50 miles per hour. He thought, however, that there was ample room to make this stop if the brakes were applied as soon as the engineman came in sight of the distant signal.

Second No 53 ran from Boston to Springfield, Mass, over the tracks of the Boston & Albany Railroad. Engineman Mead, of the Boston & Albany Railroad, who was in charge of the engine hauling this train from Boston to Springfield on the day of the accident, stated that the brakes were a little slow in operating, and that he had to make a large reduction of air before he felt the brakes take hold.

At Springfield and at New Haven air-brake tests and general inspections of the equipment of second No 53 were made, engines were changed, and one car was cut out at each of these points. These inspections covered safety appliances, hose, wheels, journals, brake rigging, brake shoes, and all other devices and parts which might become defective. It is customary to make no record regarding an inspection of this character unless some defect is found. In air-brake tests, if the piston travel is found to be more than 8 inches, it is adjusted or the air cut out, but on through trains this is seldom necessary. When second No 53 came into the station at Springfield the engine was cut off, an application of the brakes was made by opening the angle cock, and the inspectors examined the train to see that all the pistons were out. The engine of the New York, New Haven & Hartford Railroad was then coupled on, the train line was coupled up, and the brakes were released, then another application of the brakes was made, the inspectors only noting that the brakes applied, no inspection being made as to the operation of the brakes in service application. When the brakes had been again released the conductor was notified that the train was ready to proceed. There were three inspectors who made this inspection and brake test at Springfield, and the station time of this train at that point is five minutes.

Engineman O'Connor, who was in charge of engine No 1345, which hauled this train from Springfield to New Haven, stated that the

brakes on the train were in good condition and that he had no difficulty in operating them

At New Haven the engine was taken off and the dining car cut out. There were four inspectors to do this work, and then two inspectors made an inspection of the train and tested the brakes. After engine No 1338 was coupled on and the train line was coupled up, the engineman made an application of the brakes, and when it was noted that they applied through to the rear end a signal to release the brakes was given and the train proceeded. The train stopped seven minutes at New Haven.

It is believed that the inspections and tests of the air brakes of this train which were made at Springfield and New Haven were not sufficiently thorough to furnish accurate information regarding their efficiency. At Springfield the brakes were applied by opening the angle cock at the head end of the train after the engine had been cut off, and this no doubt was equivalent to an emergency application. Under these conditions an inspection could furnish no information regarding the operation of the brakes in an ordinary service application. It is believed that a more complete and reliable air-brake test should be conducted at Springfield, particularly in view of the fact that at that point the train is received from a foreign road. At New Haven the air-brake test was even more superficial, the object of this test apparently being merely to insure that the train line was coupled up and that air flowed through the train line to the rear end of the train.

When Engineman Dougherty brought engine No 1338 to the roundhouse at Stamford on June 10 he made out a report in the book provided for that purpose, in which he mentioned three defects, one of which was that the back end of the main rod ran warm, another, that the water glass didn't work, and the third, at the bottom of the page under the heading "Other work needed," was "Brake no good." When this engine was brought to the pit at Stamford, Foreman Brady took charge of it. He saw Engineman Dougherty and talked with him a few minutes, but nothing was said about the condition of the brake. Foreman Brady stated that he handled the engine himself, he ran it on to the turntable and as there was only about a 2-foot clearance he had to be very careful in making the stop on the turntable, but the brakes operated properly and he did not have any trouble. After the engine was turned he ran it to the water plug, and the brakes again operated properly when he stopped there. He stated that both times he used the independent brake, and that he did not operate the automatic brake or reverse the engine. He did not inspect the engine, neither did he hear the engineman say anything about the condition of the brakes, although it was customary

for an engineman to warn the man at the pit in case of a defective brake

Machinist Gash, who was on duty at the pit at Stamford on June 10 when engine No 1338 was delivered there, stated that he was a general man about the roundhouse and his duties included inspection and repair of locomotives. He had been a machinist for about 5 years and had been employed at Stamford for about 10 months. He stated that it was his custom when inspecting locomotives to examine the piston travel, applying both the independent and the automatic brakes, he also looked for leaks in the brake pipes and examined the brake rigging and brake shoes. He knew how to adjust piston travel and repair leaks, but admitted he did not know much about the air-brake system. He stated that when a locomotive requiring attention or repairs was brought on the pit it was customary for the engineman to report to the foreman, and the foreman would then direct the necessary work to be done. If anything special was required the engineman would personally see the machinist. After completing the inspection and repair of an engine it was customary to check off from the engineman's report the items which had been attended to. He saw Engineman Dougherty's report regarding engine No 1338 on June 10, he inspected the brakes, made the necessary adjustments on the main rod, and examined the sander. He said he checked off the last two items and signed the report, but he did not check off the item referring to the brakes for the reason that he found nothing wrong with them. His examination of the brakes consisted merely of noting that the piston travel was properly adjusted when the hostler stopped the engine on the turntable. He did not know whether the independent or the automatic brake was used in making this stop. When he found nothing wrong with the brakes he thought the defect noted by the engineman could not have been very serious, for he said if it had been the engineman would have told him about it, or would have called the matter especially to the attention of the foreman. He made no report to anyone regarding the condition of the brakes or his failure to repair them, as he said that it was not customary to make any report when anything mentioned on the engineman's work report was examined and found to be in proper condition. The engine went out without any further inspection being made and without any repairs to the brakes. He did not remember the item referring to the water glass, and stated that he did not examine the water glass and that no work was done on it before the engine left Stamford.

No book for reporting defects was maintained at the old engine house at New Haven, and the master mechanic stated that if a defect in the brake system occurred on an engine coming in there it would

be the engineman's duty to call it to the attention of the inspector. If an engineman brought his engine in and said nothing about any defects the inspector would be justified in assuming that everything was in good condition unless he discovered defects while making his inspection.

Engine Inspector Quinn, who worked at the old engine house at New Haven, stated that his duties consisted of inspecting everything on an engine under the running board, but he did not touch the brakes, unless he found loose jam nuts, and then he adjusted them. He stated that on June 10 engine No. 1338 was brought to the spark pit and he made an inspection of it, he found everything in good order. He saw Engineman Dougherty, but the latter said nothing about the condition of the engine or of work required to be done.

Master Mechanic Clarkson, of the Shore Line Division, who was located at Cedar Hill roundhouse, New Haven, stated that about 110 or 115 engines came into that roundhouse daily. A general foreman has charge of the inspection and repair of locomotives. A book is kept there, in which enginemen make reports of work required to be done on locomotives brought in by them, and a clerk makes copies of these reports, which are turned over to the foremen of the proper departments, who in turn assign men to do the work. The man who does the work in each case is supposed to sign the book in which the original report is made, but this is not always done. At that roundhouse four engine inspectors and two air-brake inspectors are on duty in the daytime, and two engine inspectors and one air-brake inspector at night. An engine inspector inspects the running gear and an air-brake inspector inspects the brakes on each locomotive that comes in. The air-brake inspector makes a record of the defects he finds, and if he can repair them he does so, if not, he makes out a report which he turns over to the air-brake foreman, who then assigns a man to do the work, this man reports to the air-brake foreman when the work is completed. As a rule no further inspection is made.

General Foreman of Repairs Harris, who was located at Cedar Hill roundhouse, stated that when an engineman brings an engine to that roundhouse he makes a report in prescribed form, in the book provided for that purpose, of work that is needed on his engine. A clerk makes copies of these items on slips, which are given to the foremen of the proper departments, who assign men to do the work. There are about 450 men employed at Cedar Hill and there are enough foremen so that each one has only a small force and can keep track of the work done. When the work called for on the slips has been done the men who do the work are supposed to sign the engineman's work report, but if the work is not done the slips are returned

to the foreman, and no notation is made in the book regarding it. Men are not required to sign the book except for work done by them which had been reported by enginemen. Many of the men were unwilling to sign the book when they had completed the repairs called for, fearing that if some defect developed after the engine was sent out they would be held accountable. An examination of the work book at Cedar Hill roundhouse disclosed the fact that in a large majority of cases men had failed to sign the book as required, and there was nothing to indicate that the work reported by enginemen had been done. In checking up the records regarding engines of the 1300 class from May 23 to June 6, it was found that there were 24 instances in which defective water glasses had been reported, in one instance the engineman stating that he had reported the same defect three times, and there was no record whatever that any of these defective glasses had been attended to. General Foreman Harris stated that he had given orders to make the necessary repairs as fast as practicable and that all except three of these defects had been repaired. There were also 21 instances in which air-brake apparatus or reverse levers on engines of this class were reported as defective, and in only one of these cases was there any record that the necessary work had been done. General Foreman Harris stated that these were new engines and that they required some adjustment. He believed that the work reported had all been done but that the men had failed to sign the book. There was no complete record of work done at this roundhouse nor was there any system of supervision or inspection of repairs which would insure that work reported had been properly done and that those in authority would know that an engine was in proper condition when it was sent out.

Air Brake Inspector Fowler, who was located at Cedar Hill roundhouse, stated that on June 12 he made an examination of the brakes on engine No. 1338 and found that the piston travel on the right side was about 11 inches while on the left side it was about 7 inches. The long piston travel was the only defect he found, and he wrote on a slip, "Take up driver brakes," and sent this report to the office. He stated that he operated both the independent and the automatic brakes, and both worked properly. He did not see the engineman who brought this engine in, or his report of work required to be done on it, and he did not make any repairs to the brakes on this engine. He did not know whether or not the piston travel on engine No. 1338 was properly adjusted before that engine went out. He had examined the brakes on a number of engines of this class and had found that if the piston travel was out of adjustment it was usually too long rather than too short. It was not his custom to measure piston travel but merely to estimate it or guess at it. He usually

inspected from 35 to 38 engines each night, if engines came in so fast that he could not inspect all of them the day inspectors examined those that he missed

Air Brake Machinist Coden, who was located at Cedar Hill roundhouse, stated that on June 12 he received a slip from Inspector Fowler calling attention to defective brakes on engine No 1338, he found the piston travel on the right side to be about 11 inches and on the left side $4\frac{1}{2}$ inches, and he adjusted the piston travel on the right side to $4\frac{1}{2}$ inches. He stated that after this work was done he destroyed Inspector Fowler's slip, as he did all slips of this kind after the work specified had been completed. He stated that a complete record of all work done was not kept, but in making out time slips the machinists were required to state the time spent on each engine.

Road Foreman of Engines Carroll stated that he had been employed in that capacity since August 21, 1912, and that there were four road foremen of engines on this division having general supervision over about 400 enginemen in steam service. Road foremen of engines are required to instruct enginemen, to ride over the road with them from time to time, and to see that they perform their duties properly. He stated that he did not know how many trips in passenger-train service Engineman Dougherty had made, but knew this was not his first trip, he did not know whether or not any road foreman of engines had ever ridden over the road with Dougherty. He stated that he had been instructed by the general manager to caution enginemen regarding the operation of trains, and that on Tuesday afternoon he had warned Dougherty to exercise great care in running his train. He also talked with Dougherty on the day of the accident about running past the station at Bridgeport on a trip two days before, and made the remark that the reason for overrunning the station was that Dougherty was running too fast, he told Dougherty to begin to apply the brakes back far enough so that he could stop his train properly. He did not say anything about the condition of the brakes, but called attention to the fact that the water glasses on some of the engines of this class were not working properly and were not reliable, and told him to be sure to use the gauge cocks. When Carroll was asked why he did not ride with Dougherty on this trip, in view of the fact that he considered it necessary to caution him about handling the engine properly, he replied that he believed he had already performed a day's work. As second No 53 left New Haven at 3 57 p m on the day of the accident, Carroll's talk with Dougherty probably took place about the middle of the afternoon. In view of the importance of this train and in view of the fact that Carroll knew Dougherty had had little experience as an engineman in fast passenger-train service, was not accustomed to the

new engines, and had failed to control his train properly at one place on a trip just two days before, and also since he did not know whether or not a road foreman of engines had ever ridden over the road with Dougherty, a proper sense of the responsibility of his position and a proper regard for the safe operation of this train should have impelled Road Foreman of Engines Carroll to accompany Dougherty on this trip

After the accident a number of tests were made to determine the condition of the brakes, both on the engine and the cars. These tests were made under the direction of the following air-brake experts: P J Langan, air-brake inspector of the Delaware, Lackawanna & Western Railroad, C W Martin, air-brake inspector of the Pennsylvania Railroad, and T L Burton and Chester H Larimer, of the Westinghouse Air Brake Co. The train was in the same condition in which it had been on the date of the accident, evidence being produced to show that no repairs had been made to any of the cars. The brakes on the engine were also in the same condition as they had been on the date of the accident, no repairs having been made to them, with the exception of repairing pipes on the front end of the engine, which had been broken in the collision.

Seven complete tests were made. It was found that the governor to the air pump on the engine was erratic in its action and would occasionally stop the pump, requiring a slight tapping to start it to work and enable the pump to operate. Outside of this erratic operation of the pump governor the air brakes on the engine were found to be in good condition.

The first test was made at a speed of 64.5 miles per hour. An emergency application of the brakes was made at a point 1,571 feet east of the distant signal. The stop was made in 40 seconds and the distance covered was 2,097 feet from the point where the application of the brakes was made.

Test No 2 was made at a speed of 55 miles per hour. A full service reduction of 30 pounds was made at the same point as in test No 1, and the train stopped in 39 seconds at a point 1,994 feet from where the brake application was made.

Test No 3 was made at a speed of 57.5 miles per hour. An emergency application of the brakes was made at the same point as in the two previous tests. In this test the train was stopped in 35.6 seconds, and the distance covered was 1,617 feet.

Test No 4 was made at a speed of 60.5 miles per hour, the brake application being made at the same point as in tests Nos 1, 2, and 3. A full service application of 30 pounds was made, the same as in test No 2. In this test the train stopped in 47.6 seconds and the distance covered was 2,525 feet.

Test No 5 was made at a speed of 59.5 miles per hour. A service application of the brakes was made in this test, there being two reductions of brake pressure, the first reduction of 15 pounds being made at the same point as in the previous tests, after an interval of three or four seconds, a further reduction of 15 pounds was made. The time consumed in stopping in this test was 49.6 seconds and the distance covered was 2,586 feet.

Test No 6 was conducted with the idea of reproducing the conditions under which Engineman Dougherty said he operated on the date of the accident, as understood by those conducting the tests, namely running at a speed of 60 miles per hour and making a 10-pound reduction, followed by a 5-pound reduction, and then an emergency application of the brakes. The speed of the train in this test was 59 miles per hour. The first application of 10 pounds was made at the same point as in the previous tests. This was followed by a further service reduction of 5 pounds, and when the locomotive passed the distant signal the brake valve was placed in the emergency position, where it remained until the completion of the stop. In this test the time required to make the stop was 50.8 seconds, and the distance covered was 2,767 feet.

Test No 7 was a duplicate of test No 6, with the exception that instead of applying the brakes at a point 1,571 feet east of the distant signal they were applied as the locomotive passed under the bridge on which the distant signal is located. This test was intended to reproduce the brake operations which the experts supposed had been employed by Engineman Dougherty on the day of the accident. The speed of the train was 59.6 miles per hour at the distant signal. The brakes were applied by first making a 10-pound service reduction followed by a 5-pound reduction, after which the brake valve was placed in the emergency position and allowed to remain there until the train stopped. The stop was made in 42.8 seconds and the distance run was 2,296 feet. The train ran 496 feet past the home signal and 325 feet beyond the point where the collision occurred. In examining the brakes of the train as a preliminary to making these tests, it was found that the piston travel on the cars was not uniform and on one car having the latest form of passenger equipment the brake did not respond to an ordinary service application. On a standing test it required a reduction of at least 20 pounds of air to set the brake upon this car, and upon another occasion it required a reduction of between 30 and 40 pounds of air. This indicated that the brake on this car would not apply except with an emergency application. Immediately after the collision the knuckle on the coupler on the front end of this car was found broken, and there was a gap of about 15 feet between this car and the one imme-

diately ahead of it This break in two was probably caused by the brake on this car being set with full force by the emergency application which Engmeman Dougherty made, the brake previous to that time probably not holding at all

In addition to the above described tests, two break-in-two tests were made to determine the distance in which the train could be stopped separately from the engine, that is, to show the gap between the train and the engine On one of these tests the speed was 61 miles per hour and the gap between train and engine when both were brought to a stop was 196 feet The time in stopping the engine was 27 seconds and the time in which the train was stopped was 23 4 seconds This indicated a very good brake on the engine The train brakes, however, were not as good as they should have been, that is, the expert, Mr Langan, said that he expected to find a greater gap between the engine and train

On the second test the speed was 53 miles per hour and the gap between the engine and train was 251 feet The time of stopping the train was 24 4 seconds and the time for the engine was 26 seconds In this test the engine was on a descending grade, which explains the greater length of gap between the engine and train In the opinion of Mr Joy, the air-brake inspector of the New York, New Haven & Hartford Railroad, a train running 60 miles an hour on such track as that at Stamford where the wreck occurred ought to be brought to a stop in about 2,000 feet All four of these experts agreed in the statement that a train going 60 miles per hour ought to be stopped within 1,800 or 2,000 feet on such track as the New Haven road had leading into Stamford Mr Martin, the expert of the Pennsylvania Railroad, said in his opinion that the signals ought to be spaced so that there would be sufficient distance between the home signal and the distant signal to insure that a train could be stopped with a service application of the brakes when going at a speed of 60 miles per hour He further said that on the Pennsylvania Railroad a man who had not been properly examined and had not passed the examination required by the road foreman was not assigned to a passenger train without orders from the road foreman The practice is that when a man bids in a run, or a place where he is liable to be assigned to extra passenger trains, he is instructed to report to the officials of the different terminals where he has to run and is examined by each of these officials as to his efficiency in signals If he passes their examinations he is put through the air-brake examination by the air-brake inspector of the division where he is employed, and in addition to this, if it is thought necessary by the road foreman of engines, he is put through a mechanical examination These examinations are additional to the examination he is required to take when promoted

to the position of engineman. He said that Engineman Dougherty would not have been assigned to a passenger train on the Pennsylvania Railroad if any other man was available for service, and if it was found absolutely necessary to send him out because of no other man being available, then there would have been a traveling engineer or road foreman of engines assigned to ride with him to see that he handled his train properly. Replying specifically to a question, he said:

Considering fully the experience that Engineer Dougherty had had as fireman of a passenger train and his experience as an engineer either on fast freight or passenger trains—that is, fast freight on the road—I do not think personally that he was the man who should have been assigned to a passenger train.

Mr. Martin stated also that a train in the condition in which second No. 53 was at the time of the test would not be permitted to leave the terminal on any of the fast passenger runs on the Pennsylvania Railroad. This was due to the fact that the brakes on the Pullman car Centredale did not apply with a service application and would not operate with an application of less than 20 pounds of air. He said that in tests it took from 20 to 40 pounds of air to set the brakes on this car. Theoretically the brakes should have applied with a 7-pound reduction. In testing piston travel on engine brakes it was found that the brakes on the engine front truck had a travel of $5\frac{3}{16}$ inches. On the driver brakes the travel on the right cylinder was 9 inches and on the left cylinder 11 inches. The tender brakes had 6 inches of travel. Mr. Langan, the expert of the Delaware, Lackawanna & Western Railroad, stated positively that a train in the condition in which second No. 53 was found at the time of the test would not have been permitted to leave the terminal on the Delaware, Lackawanna & Western Railroad in fast passenger-train service. This was due to the fact that the brake on the Pullman car Centredale would not apply with an ordinary service reduction but required from 20 to 40 pounds reduction in order to set the brakes. He said that Engineman Dougherty would not have been permitted to handle a fast passenger train on the Delaware, Lackawanna & Western Railroad. The practice on his road was to require at least 3 years' experience before an engineman was permitted to run in fast passenger service, and even then he was required to pass a special examination on air brakes and was not permitted to run a train until after his qualifications had been approved by the general air-brake inspector. Mr. Langan also stated that there should be sufficient room between the distant and home signals to permit trains to be brought to a stop with an ordinary service application of the brakes. He said that the distance between the signals should be approximately one-half mile.

In their report on the results obtained in the break-in-two tests, the experts said that "the brake on the locomotive was in first-class condition" No statement in this connection was made regarding the condition of the train brakes, although some such statement would seem to be needed, inasmuch as the primary object of a break-in-two test is to obtain a showing of the comparative efficiency of engine and train brakes

In their final conclusion they say that in their opinion the brakes on the cars at the time of the accident were in "good serviceable condition" This conclusion lacks definiteness because there is nothing in their report to indicate what they meant to include in the term "good serviceable condition"

While they were unanimous in saying that such a train as second No 53, under such track conditions as existed at Stamford on the date of the accident, could be brought to a stop from a speed of 60 miles per hour within a distance of 1,800 to 2,000 feet, it will be noted that in none of the tests where the speed approximated 60 miles per hour was this result obtained In four of these tests the train speed varied from 59 to 60 5 miles per hour, and the length of stop from 2,296 to 2,767 feet With a full service application at a speed of 60 5 miles per hour the length of stop was more than 2,500 feet, and with a partial service followed by an emergency application, the length of stop in one instance was more than 2,700 feet, and in another instance nearly 2,300 feet At the highest rate of speed attained in any of the tests, namely, 64 5 miles per hour, the length of stop was 2,097 feet with a full emergency application of the brakes These results were doubtless sufficient to justify the statement that the train brakes were in serviceable condition, but it is not believed that they were in that high state of efficiency which the requirements of safety demand in fast passenger-train service Train second No 53 traveled at an average speed of 67 5 miles per hour from Darien to the point of collision Measured by the results obtained in these tests, it is obvious that at this high rate of speed it would have been impossible for the engineman to have brought his train to a stop in the distance between the distant and home signals, even had he made a full emergency application of the brakes at the distant signal That the train brakes were not in that high state of efficiency demanded in a train of this character is further demonstrated by the comparatively short gap between the engine and train in the break-in-two tests In reply to a question at the hearing as to what these tests showed concerning the efficiency of the train brakes, one of the experts said that he expected to find a longer gap between the engine and train

These tests further demonstrated that the distant signal is not located far enough away from the home signal to provide safe stop-

ping distance between the signals for high-speed trains. In only one of the tests was a stop made in less than 1,800 feet, and that was a full emergency stop from a speed of less than 60 miles per hour. The experts said that the distant signal should be located far enough away from the home signal to provide safe stopping distance for a train running 60 miles per hour, with a service application of the brakes. One of them placed this distance at one-half mile. There is no physical reason why the distant signal at Stamford could not be located 800 feet farther east, and had it been so located, there is every reason to believe that this accident would not have occurred, even though the engineman exercised poor judgment in failing to apply the brakes until within a short distance of the distant signal.

The direct cause of this accident was the failure of the engineman on second No. 53 to apply the air brakes in time to stop his train before reaching the home signal. This failure was the result of an error in judgment on the part of the engineman, due to his lack of experience in handling high-speed passenger trains and the absence of instructions regarding the proper method of handling his train.

The responsibility for placing an inexperienced and un instructed engineman in charge of a high-speed passenger train rests with the operating officers of the New York, New Haven & Hartford Railroad Co.

Contributing causes of the accident were the improper location of the distant signal at Stamford and the fact that the train brakes were not as efficient as the requirements of safety demanded on a train of that character.

The rear car on first No. 53, the parlor car Skylark, was built by the Pullman Co. in 1905. It was of wooden construction with the exception of the platforms, which were of steel, and was equipped with nontelegraphing ends. As previously stated, this car was badly telescoped and afterwards destroyed. In its twenty-fifth annual report to Congress the Commission called particular attention to the desirability of all cars used in passenger-train service being constructed of steel. Not only was it considered that these cars would better withstand the force of a collision or derailment and afford a greater degree of safety to their occupants than cars of wooden construction, but there would be eliminated the danger of fire breaking out and adding to the suffering of the passengers and employees. That the steel car is considered to be an improvement over the wooden car is shown by the fact that in ordering new cars for passenger-train service many railroads have for some time past ordered nothing but steel cars, and at the present time it is the exception rather than the rule to find wooden cars on the fast passenger trains of these roads. The New York, New Haven & Hartford Railroad, however, is among

those railroads which have made comparatively slow progress in the matter of steel-car construction. This condition, however, possibly may be accounted for by the attitude of the officials as shown in testimony taken in connection with the accident which occurred on this railroad at Westport, Conn , on October 3, 1912, wherein Vice President Horn, at that time in charge of operation, stated that he was doubtful as to the desirability of steel cars compared with wooden cars, and added that if the New York, New Haven & Hartford Railroad could be convinced that there was something better they would adopt it. It is interesting therefore to note that the New York, New Haven & Hartford Railroad is now ordering steel equipment instead of wooden equipment, as evidenced by the testimony of Mr. Wildin, mechanical superintendent. Mr Wildin stated that the number of cars under order by the New York, New Haven & Hartford Railroad was 354, all of which were to be of all-steel construction. These cars were divided as follows

Motors	18
Trailers	26
Mail	26
Compartment mail	10
Smoking	64
Passenger	136
Combination baggage and smoking	10
Baggage	50
Dining	9
Club	5

Mr Wildin further stated that out of a total of 2,288 cars of various types comprising the passenger equipment owned by the New York, New Haven & Hartford Railroad on June 12, 1913, 31 were of all-steel construction, the balance being constructed of wood. Out of this total of 2,288 cars, 33 were built between 1862 and 1871, 138 were built in the decade ending in 1881, 744 in the decade ending in 1891, 311 in the decade ending in 1901, 930 in the decade ending in 1911, 89 in the year 1912, and 3 in 1913, while as to the remaining 40 cars, all old and used chiefly as work cars, no record of the year of their construction was available. Mr Wildin further stated that the average life of a wooden car in modern passenger service should be from 25 to 30 years, provided it was kept in good repair. With reference to the Pullman cars in use on this road, Mr Wildin showed the total number of such cars in service to have been 236, of which 24 were of all-steel construction, 57 had steel underframes, while the remaining 155 were of wooden construction. These wooden Pullman cars composed a part of the equipment owned by the New York, New Haven & Hartford Railroad at the time it turned over its parlor and sleeping car business to the Pullman Co in February of this year.

The parlor car Skylark was never owned by the New Haven Railroad, however, having been sent over its lines by the Pullman Co

Clinton L Bardo, general manager of this railroad, stated that when he came with the property February 15, 1913, "the forces were in many respects disorganized. The train service was bad, and things generally were out of gear", he at once took up with employees and with division superintendents safety conditions and the question of safety in train operation, and on the Monday before this accident he had a conference with the general committee of enginemen and "discussed practically that whole afternoon the whole question of safety, in an effort to find what had crept into our engineers and some of our forces employed on trains"

While graphically describing conditions on this railroad in his own terms to be such that "things generally were out of gear," he deprecated "this milk-and-water investigation that we get" and "the newspaper articles which have been published in connection with this investigation," and sought by general reference to organizations of employees to palliate conditions and to relieve the management from its responsibility for existing conditions

As to the effort to place blame for this accident upon the enginemen's working agreement with this railroad, attention is called to the rules laid down in that agreement

Rule 1 of article 9 Spare engineers shall be run first in and first out so far as it is possible with the requirements of the service, and when engineers are assigned to temporary vacancies they shall remain on same, provided they are competent, until the regular engineer returns. They shall receive rates of regular engineers while on the road

Rule 1, as amended, exception C No engineer who has less than one year's roster rating as an engineer shall be allowed to run through passenger trains

This rule has two plain and definite exceptions

(1) "So far as it is possible with the requirements of the service," and

(2) "Provided they are competent"

Primarily the determination of (1) "the requirements of the service" and (2) "competency" of engineers is for the management of the railroad

The most important requirement of the service is the safety requirement

In this case it is shown that no reliable or effective system was in operation for the determination of the safety requirements of the service in the selection of an engineman for a particular service or for the determination of the competency of an engineman when he was first given a high speed passenger train

The neglect of precautions for safety was here a neglect upon points which the enginemen's agreement left open to the management

The mere absence of demerit marks while in freight service was considered a good record, sufficiently determined, to justify employment on fast passenger trains, a class of service requiring the highest degree of qualification. No determination of special qualification for higher grade of service was made.

The agreement with the enginemen in no manner restricts examination or competency tests on the part of the management.

The absence of all competency tests of this engineman is a matter for which the management is solely responsible.

His good judgment in bringing an express passenger train to a stop ought not to have been tried out at the risk of passengers' lives.

When, in handling a first-class passenger train, this engineman on his first trip went by a station and reported that it was due to the brakes being no good, it is strange that no one in authority then saw any necessity for a test, either of the man or the brakes, before he was again sent out in the same line of service.

The general manager, however, reached the conclusion that "there was no suspicion that he was not in all respects capable" when this engineman was assigned to this high-class train. This conclusion was in no respect justified by the facts.

Even though Dougherty's work in other grades of service was satisfactory, the absence of any supervision or tests for a work in which his failure was so complete and disastrous can not be evaded by the officials of this railroad. The safety of the public requires that these officials shall take all reasonable precautions by test and supervision to know that such men have the positive qualifications of good judgment and knowledge of their duty.

Other railroads have rules providing safeguards in this respect, as was shown by the testimony of the railroad experts.

The general manager said that the judgment of the engineman "was bad, unjustifiably bad", and after describing his version of Dougherty's handling of this train, he said "I can not conceive of any man in his right mind doing a thing of that kind."

He then stated in general terms his belief that the trouble arose from the employees' organizations and the attitude of the public, and said that "it is true of the New England railroads to-day, they have not much left but their corporate identity."

No organization but that of the New York, New Haven & Hartford Railroad Co. is responsible for placing a man in charge of this locomotive without tests or supervision by traveling engineers of his qualifications and judgment for this special work. The determination of the ability, fitness, or qualifications of an engineman is the duty of the railroad itself. It was not delegated to any other organization, nor could it be so delegated. It was neither delegated

nor performed. It was neglected. It was unwarrantably assumed that a man at the head of the list of spare enginemen was qualified, without any special consideration of the character of the service in which he had experience.

Something is "out of gear" on a railroad where high-class trains may be given over to an uninstructed engineman.

And this is true even if he is sent out on a run with the caution of his superior, "Don't let it get away from you."

Here was doubt from the man who ought to know.

It was Carroll's duty to know Dougherty's capacity, and if he had any doubt he, as traveling engineer, should have gone with him on the engine until all doubt was dispelled. The general tone of Carroll's warning to Dougherty as he started out on this trip is a confirmation of the general manager's statement that "the forces were in many respects disorganized."

The responsibility for having a competent man with positive qualifications at a post of duty is a corporate responsibility. The fault for placing an untested man in a position fraught with danger to life is the fault of the company and its officials.

"Man failure" can only excuse the railroad and its officials where the man has been properly tested and found to possess the positive qualifications required.

No automatic working of names from a list of men who may or may not have the requisite qualifications can excuse from the duty of making reasonable effort to ascertain that the man selected is qualified.

There is no evidence which raises any doubt that for the work he had previously been engaged upon Dougherty was competent, reliable, and trustworthy. His reputation and record were good. But when he was placed in charge of a new engine attached to one of the fast passenger trains some one in authority signally failed in duty in entrusting such an engine and train to his charge without any test of his capacity for this grave responsibility.

It seems hard to realize that no practical tests were applied to such a situation on this railroad, and that there was no supervision by traveling engineers over an engineman called upon for the first time to take up a class of work calling for the highest qualifications.

This investigation discloses that there was no rule upon this subject. Mr. Bardo stated that he presumed it was a rule, that he didn't know until this investigation that it was not a hard-and-fast rule, that the rule was made by the previous general manager, that the responsibility for rules of that kind is finally with him, that he thought it was in existence in unwritten form, and when

are actually repaired. This lack of supervision is dangerous and it ought not to be permitted to continue.

5 The distant signal at Stamford is too near the home signal, and should be at least 2,500 feet distant therefrom.

6 Modern steel equipment for high-speed passenger trains should be installed at the earliest possible time, as recommended in previous reports of this Commission, and legislation fixing such a time should be enacted without delay.

7 Establishment of safer and more efficient operation of this railroad is immediately necessary if congressional legislation extending the scope of governmental regulation of railroads is not to be called for and justified in the interest of public safety.

By the Commission

[SEAL]

GEORGE B. MCGINTY,
Secretary

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asked if he intended to make such a rule for the future he responded that he did

It is but fair, however, to say of the present general manager that his connection with this railroad is recent and that his efforts in the promotion of safety during the short time he has been in charge encourages the hope that he may succeed in placing it on a safer operating basis

It appears that no instructions were given Dougherty assigning the point at which a change of power was to be made, whether at Stamford station or a point about 2,000 feet east of Stamford station, where the collision occurred

It is claimed by the railroad that this does not have any bearing upon the cause of the collision, but such an important point ought not to have been left indefinite when a new man was in charge of the second section of this train The second section left New Haven four minutes after the first section, which was scheduled for a five-minute stop at Stamford The time schedule referred to "Stamford," and no instructions appeared in the case showing that the first section would stop east of Stamford for the purpose of changing power No chance or possibility for any misunderstanding on this subject ought to have been left open The change of power should have been at one definitely fixed place

A train running in two sections on very nearly the same time calls for special official supervision Especially is the position of engineman of the second section one of highest responsibility A man for such position should be one tested by long experience and qualified by instruction of superiors for the ordeals of this special work This was no place to try out an engineman of limited service principally on slow freights and in yard service

Any system under which this is permissible or possible is a loose system It is indefensible

The whole evidence taken in connection with the knowledge we have of the requirements of railroad service justifies the following conclusions

1 The engineman of second No 53 did not have the special experience and instruction required for the operation of such a train

2 The New York, New Haven & Hartford Railroad Co had no reliable method for determining the capacity of enginemen before placing them in charge of high-speed passenger trains

3 There was negligence on the part of the corporation in putting in charge of such a train as second No 53 an engineman inexperienced and uninstructed for this class of work

4 This railroad has no proper system of checking work reports so as to determine whether or not defects reported on locomotives