INTERSTATE COMMERCE COMMISSION

IN RE INVESTIGATION OF ACCIDENT ON THE NEW YORK, NEW HAVEN & HARTFORD RAILROAD AT WESTPORT, CONN., ON OCTOBER 3, 1912.

Approved December 2, 1912.

E. G. Buckland, vice president and counsel, for New York, New Haven & Hartford Railroad Company.
Benjamin I. Spock, counsel, for New York, New Haven & Hartford Railroad Company.
H. E. Belnap, chief inspector of safety appliance division of the Interstate Commerce Commission; and Philip J. Doherty, attorney, for the Interstate Commerce Commission.

REPORT OF THE COMMISSION.

McCHORD, Commissioner:

On October 3, 1912, the New York, New Haven & Hartford Railroad reported by telegraph the derailment of the second section of passenger train No. 53 at Westport, Conn. Immediately upon receipt of this telegraphic notice, inspectors were ordered to proceed to Westport.

While, as a rule, the Commission entrusts the investigation of accidents to its chief inspector of safety appliances and his assistants, in view of the seriousness of the Westport wreck it was deemed advisable for the Commissioner in charge of the safety appliance division to go upon the scene of the accident to hold a public investigation in conjunction with the Public Utilities Commission of the state of Connecticut, which was then engaged in an investigation on its own initiative, and for that purpose this latter Commission was invited to and did participate in the hearing.

which was held at New York on the 8th day of October.

The investigation of this accident developed the following facts:

Westbound passenger train second No.53 was en route from Boston, Mass., to New York, N.Y. At the time of the accident it consisted of 1 mail car, 1 baggage car, 4 parlor cars, 3 coaches, and 1 smoking car, in the order given, all of wooden construction, and hauled by engine No. 1014. The train was in charge of Conductor Jenkins and Engineman Clark. It left Bridgeport, Conn., at 4.30 p.m., 12 minutes late. At Westport crossover the switches were lined up to cross the train from track No. 1 to track No. 2, and it was while making this crossover movement that the train was derailed, at 4.44 p.m.

The engine left the rails at a point about 87 feet west of the west point of the crossover switch, and ran about 400 feet before turning over. The tender rolled down the embankment, which at this point is about 15 feet high. The mail car followed the engine, and rolled down the embankment, landing some distance from the track. The baggage car passed the engine and landed upright some distance ahead of it. The first parlor car was forced against the firebox of the engine, while the forward end of the second parlor car was forced over the top of the first parlor car. The two following cars and the first coach were derailed, while the other three cars remained on the track. In passing over a highway bridge located about 100 yards beyond the west end of the crossover, one of the bridge girders tore a hole in the side of the engine boiler, allowing the water and steam to escape and making it seem at first

as if the boiler had exploded. The wreckage caught fire at once probably at the point where the parlor car rested against the fire-box, and three of the parlor cars were consumed by the flames.

This part of the New York, New Haven & Hartford Railroad is a four-track road. The rails weigh 100 pounds to the yard and are laid on oak, chestnut, and creosoted pine ties, there being about 18 ties under each rail. Rock ballast is used, and the roadway at this point is in good condition. The accident occurred at the beginning of a curve of $1^{o}6'$ leading to the left. There is a descending grade for westbound trains of 0.07 per cent. Approaching the scene of the accident from the east the track is straight and the view is unobstructed for more than one mile. Train movements are governed by signal indications, and train orders are not used (except in the case of moving a train against the current of traffic,) the road being equipped with controlled manual block signals, which the evidence and investigation show were in proper working condition. Enginemen can tell by the signals displayed which track their train will use, whether it shall stop, proceed on the same track, or be diverted to another track.

At Westport there is a tower equipped with a 40-lever mechanical interlocking plant, with 4 controlled manual block instruments, 15 electric locks, 6 signal repeaters, and 6 bells. The switches governing crossover movements are controlled from this tower by means of the interlocking mechanism, and are interlocked with the block signals. A careful examination of this interlocking plant was made after the accident. The circuit plans, locking sheet and dog

chart were checked with the plant as installed, and the operation of the signals and locks fully tested. Everything connected with this plant was found in proper condition, and there was nothing to indicate that it would have been possible for the engineman on train second No. 53 to have been misled by improperly displayed signals.

From time to time, to facilitate traffic, the routes of trains are changed as conditions require. These crossover movements are directed by the train dispatcher, who notifies the tower signalman when he shall divert a train from one track to another, but no notice is given to the engineman, as he is expected to be governed entirely by the signals displayed.

Train No. 53 was running in two sections on October 3, and at Bridgeport, a station 11 miles east of Westport, both first and second No. 53 were diverted from track No. 3 to track No. 1 in order to run them around work trains which were occupying track No. 3 between Westport and Bridgeport. A few minutes before the arrival of first No. 53 the dispatcher directed the towerman at Westport to cross both first and second No. 53 from track No. 1 to track No. 3 and the switches and signals were arranged for the crossover movement.

The crossover at which this accident occurred is a standard No. 10 crossover. Located 4,075 feet east of the crossover is a distant signal, which can be seen a distance of about one-fourth of a mile when approached from the east. This signal was set at caution, which permitted the train to proceed expecting to find either of

two home signals in advance in the stop position. The first signal in advance is a drawbridge signal, located 2,017 feet west of the distant signal. This was in the clear position, indicating that the drawbridge over the Saugatuck River, east of Westport station, was closed and locked for the passage of trains. There is a speed limit of 30 miles per hour over this bridge. The next signal in advance is the home signal located 3,883 feet west of the distant signal and 240 feet east of the crossover. This signal was in the stop position. At this same point is a dwarf signal which governs the crossover movement from track No. 1 to track No. 3. This signal was in the clear position, and indicated that the train could pass the home signal in the stop position for the purpose of taking the diverging route. The dwarf signal is of the common type, displaying its indication about 2 feet from the ground, and can beseen but a short distance by the engineman of an approaching train. When a train is approaching from the distant signal the engineman sees only the home signal set at danger and in obedience to this indication he reduces speed in order to stop his train before the signal is passed. When he has approached sufficiently close he can see the dwarf signal, and if it is in the clear position it indicates that his train need not be brought to a stop, but is to take the crossover at a speed limited by time-card rule to not more than 15 miles per hour. It will thus be seen that when the signal indications are obeyed the speed of trains ordinarily is checked before reaching the crossover.

First No. 53 passed Westport at 4.33 p.m., and passed through

the crossover in safety at a speed estimated to have been about 15 miles per hour. T wsman Coyle stated that he did not change his switches after first No. 53 passed, but in order to get an unlock to Green's Farms, the first block station east of Westport he was required to place the levers in the interlocking plant in normal position, which he did. After second No. 53 passed the block at Green's Farms he cleared the signals for the cro*sover movement, and train second No. 53 approached the crossover, passed throught it at high speed, and was derailed by the overturning of the engine and tender.

The interlocking plant is not equipped with approach locking to prevent signalmen from changing the switches of a route while a train is closely approaching them. While all the evidence shows that the absence of approach locking did not in any way contribute to the accident, it might, in case the signalman became confused, result in trains being improperly diverted after switches and signals had been set authorizing a movement, and thus be the means of causing similar accidents.

The New York, New Haven & Hartford Railroad crosses the Saugatuck River just east of Westport station, and located approximately, 1,180 feet west of the river is the beginning of a 1°30' curve. On the tangents between this curve and Westport station are located three No. 10 crossovers, one leading from track No. 2 to track No. 4 for eastbound trains, one leading from track No. 2 to track No. 1 to be used in case it is necessary to change the current of traffic of trains at this point, and one leading from track No. 1 to track No. 3, for westbound trains. Located in track No. 3, 44 feet west of

the west switch point of the crossover leading from Track No. 1, is a facing point switch leading from track No. 3 to track No. 5, a commercial track used to allow cars to be placed on the unloading tracks at Westport, which are located on the north side of the main track.

Two of the crossovers are each 191 feet long and the remaining one is 192 feet long, all three being crowded into the restricted distance of 705 feet between the interlocking tower at Westport station and the facing point switch leading from track No. 3 to track No. 5. It does not appear that any physical or operating reason exists which makes necessary the use of such short crossovers at this place. The facing point switch leading from track No. 3 to track No. 5, which limits the extension westward of the crossover leading from track No. 1 to track No. 3, should be removed, independent of any consideration relating to the crossover. Facing point switches should not be used on high-speed tracks where it is possible to avoid them, as they create an element of danger that is eliminated by the use of trailing switches. Track No. 5 should be entered through a trailing switch at some point farther west. There is sufficient tangent between the drawbridge and the point of the curve to make it entirely feasible to replace the No. 10 crossovers leading from tracks Nos. 1 to 3 and 2 to 4, with No. 20 crossovers. There is no danger in the use of a No. 10 crossover between tracks Nos. 1 and 2, as it is used only for back-up movements when it becomes necessary to run trains against the current of traffic. Had No.

20 crossovers been used at this place, being 352.7 feet long and only producing a $1^{0}42'$ curve as shown by the New York, New Haven & Hartford standard dimensions of turnouts, it is probable that the derailment of train second No. 53 on October 3, would not have occurred, even though the signal indications were disregarded and the train entered the crossover at unsafe speed.

Time-card rule No. 2 of the New York, New Haven & Hartford Railroad reads as follows:

> Unless otherwise restricted a speed of 15 miles per hour must not be exceeded over routes governed by dwarf signals.

The signal indications governing this crossover movement were clear, and afforded sufficient protection had they been observed. It is plain, therefore, that the direct cause of this accident was a disregard by the engineman of train second No. 53 of signals and rules provided by the railroad company to prevent the occurrence of such accidents.

Engineman Clark of second No. 53 was 55 years of age and was the assigned engineman for this run. He entered the service of the New York, New Haven & Hartford Railroad as fireman in 1863; he was promoted to be an engineman in 1888 and was dismissed December 20 of that year for responsibility for a collision. He reentered the service as a fireman in 1893 and was again promoted to be an engineman in 1894, and had been so employed since that date. He was disciplined January 14, 1898, for passing a home signal at Danger at New Rochelle, and again July 7, 1905, for passing a home signal at danger at Naugatuck Junction. His habits were

good and he had been on duty 5 hours and 29 minutes when the accident occurred, after a rest period of 7 hours and 35 minutes, previous to which he had work 11 hours and 16 minutes in the 24-hour period from 3.40 a.m., October 1.

In all essential particulars this accident was a duplicate of the accident to the Federal Express on the New York, New Haven & Hartford Railroad on July 11, 1911, which resulted in the death of 14 and the injury of 54 persons.

As a result of our investigation of the Bridgeport accident the following recommendations were made:

(1) That in all situations where accidents are likely to occur through the nonobservance by enginemen of signals or rules calculated to insure safety, automatic train control apparatus should be provided to insure that trains will be brought to a stop in case the signals or rules are not properly observed.

(2) That in the absence of such automatic control apparatus, on tracks were high speed trains are run, switches should not be set to divert a high speed train from one track to another at a crossover which is not safe for high speed until after the train has been brought to a stop.

(3) That at all interlocking plants where trains are operated at high speed over facing switches, approach locking should be provided to prevent the switches being changed from the main or through route to a diverging route after a train has received the signals for the through route.

At the joint hearing in New York City, the vice president in charge of operation of the New York, New Haven & Hartford Railroad when his attention was directed to the above recommendations, stated that the only action taken by his company to prevent the recurrence of accidents similar to the Bridgeport accident was "a stiffening up of discipline". No new devices had been installed because, as he expressed it, "We have not been able to find any that we are satisfied would help". When asked if lengthening the crossovers would not materially decrease the element of danger, this official

answered: "No. I would think in the end it would make a worse situation on a railroad than a better one", his reason for this belief being that "It is simply putting a premium on the violation of a rule".

It is hard to understand how the conclusion can be reached, under any contingencies arising in the operation of a railroad, that there would not be greater chance for an accident with a crossover only 190 feet in length, producing a curvature of 6°48' than with one 3,52.7 feet in length, as a No. 20 would be, with a curvature of 1° 42'.

It was also stated by this official that in his opinion a regulation requiring trains to be brought to a stop before switches are set for a crossover movement would not increase safety, his reason for this belief being that when signals were disobeyed, as was the case in both the Bridgeport and Westport accidents, the train would be sent along straight track with a probability of running into the rear of a train in the block beyond the crossover. Thus, as he expressed it, "you change one accident for another, that is all". The evidence brought out in the investigation of this particular accident, however, shows that had the crossover switch not been set for the diverging route the accident would not have occurred, as Engineman Clark applied the emergency brakes immediately after his engine passed the stop signal, and had his train continued on track no. 1, it would have been brought to a stop about two train lengths beyond the switch.

With regard to the use of automatic stops, the vice president stated that there was no mechanical appliance that he knew of

which he thought would meet the conditions. His attention was called to the following from the report of the Commission's block signal and train control board:

> The information obtained from tests, together with knowledge of the general state of development of the art of automatic train control, leads the board to conclude that there are several types of apparatus and methods of application which, if put into use by the railroads, would quickly develop to a degree of efficiency adequate to meet all reasonable demands. Such devices properly installed and maintained would add materially to safety in the operation of trains. In many situations under conditions existing in this country the board is convinced that the use of automatic train stops is necessary to the safe operation of trains.
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> The board does not wish to be understood as stating that the conditions of entirely acceptable automatic train control, as formulated by it in the ten characteristics published in its report of last year, are fully met by any one of the devices it has thus far examined. On the contrary, the art of automatic train control is still largely in the experimental stage; but it is far enough advanced to warrant the installation of available devices with a view to their further development to meet the demands of safety in train operation.
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> Further, the board has no hesitance in saying that had the railroads directed the same effort toward the development of automatic train-control apparatus that has been devoted to the development of interlocking and block-signaling apparatus we should now have adequate installations of automatic train-control devices which would permit an engineman to handle his train without interference so long as he did it properly, but would intervene to stop his train if he disregarded a stop signal or ran at excessive speed where speed restriction was prescribed.
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> The railroads have been decidedly lax in developing the automatic stop, and progress has been so slight in this direction that the actual experience which is necessary for the formation of proper legislative judgment is lacking. The board, therefore, does not believe that at the present time legislative compulsion to this end would be wise. It does believe, however, that the railroads should be urged and expected to develop the art of automatic train control so as to provide devices which will meet their operation conditions. This appears to the board to be entirely practicable and should it not be done with a reasonable degree of expedition steps should be taken by the Government to stimulate such action.

When asked what had been done by his company toward the actual development of automatic stops in view of this recommendation, the vice president in charge of operations said that no definite steps had been taken other than to investigate what was available, and no specific conclusions had been reached as a result of such investigations.

In this connection attention is called to the following extract from the last annual report of the Commission;

> While the Commission is not prepared at this time to recommend legislation compelling the adoption of automatic train control upon all lines of railroads, it strongly recommends to the railroads themselves the experimental use of such systems as are now available intended to secure efficient automatic train control.

As previously noted, the roadway and track conditions in the vicinity of the accident are good, and the construction of the crossover was substantial. All renewals are made with creosoted ties, and on these ties tie plates are used, as well as screw spikes. In some places the chestnut ties are badly worn, due to the base of the rail cutting into them, in some instances to a depth of three-fourths of an inch, but a sufficient number of tie-plated creosoted ties are in use to maintain a safe track. At the crossover practically all of the ties were new and screw spikes were used, and the track conditions at this point were good.

From the evidence taken in this investigation it appeared that the speed limit of 30 miles per hour over the drawbridge at Westport is habitually disregarded. The operator at this bridge testified that the average speed of trains passing his tower

(which is located on the bridge) was from 45 to 55 miles per hour when signals were set for a clear track. He had never reported a train for exceeding the speed limit over the bridge, and had never been instructed to do so. Vice President Horn testified that he had no personal knowledge of a violation of this speed limit, but considered it safe to cross the bridge at higher speed then allowed by the rule. He said that he could never in his own mind determine why a speed of 50 miles per hour over this bridge would not be as safe as the limit fixed by the rule, and in reply to a question as to how he distinguished between the violation of a rule of 30 miles per hour across the bridge and 15 miles per hour on a No. 10 crossover, so far as the safety of passenger or property is concerned, he replied: "One is safe and the other is suicide".

The investigation further developed that there were no speed restrictions governing passenger trains except at specified points which are covered by signals and rules, and passenger trains are expected to make up time when late. Bulletin No. 291, issued by Superintendent Woodward on September 23, 1912, reads as follows:

Bulletin Notice No. 291.

Our passenger service has not been running very satisfactorily since the heavy business set in on the 1st of September, although the travel has been very much decreased, and there is considerable fault being found on account of so many trains being late.

Every effort should be made to keep the trains on time and conductors are requested to avoid loss of time at stations loading and unloading passengers and baggage, so far as possible, and engineers are requested to do everything they can to make time, except that it is not desired to in any way run trains beyond a safe speed, neither do we wish to have the orders on slow-downs disregarded.

Be very careful when you have delays to make correct reports, and conductors must confer with engineers to make sure that reports are entirely accurate.

The desire of the company to maintain schedules is shown by the fact that the engineers frequently receive letters requesting explanations regarding delays, and are required to explain a loss of one minute in making the run of 40 miles between Stamford and New Haven, as shown by a letter to Engineman Moore, of which the following is a copy:

New Haven, Conn., Sept. 26, 1912.

Mr. C. Moore, Engineer,
Springfield, Mass.

Dear Sir:

On Sept. 21, train 26 is reported as losing one minute on run engine 1018, Stamford to New Haven. Advise me at once cause of losing this time, and also advise me why you did not turn in an M-145 advising delays on this trip according to instructions.

(signed)
W. S. Clarkson,
Master Mechanic.

(Copy to Mr. F.W. Stanley, foreman.)
I want you to see to it that engineer Moore advises at once in regard to this delay.

When questioned concerning this letter Engineman Moore testified that he did not regard it as a criticism but simply as an effort on the part of the officials to find out what was the cause of delays and to eliminate them as far as possible. While Engineman Moore's view of the purport of such letters is probably correct, it is none the less true that many enginemen would not so regard it. To be called upon for an explanation of a delay of one minute, taken in connection with Bulletin Order No. 791, would undoubtedly lead many men to give undue prominence to the question of maintaining the schedule, and cause them to take chances in the effort to bring their trains in on time.

Excessive speed as a factor in train accidents deserves serious consideration. The remarkable increase in speed and weight of trains within recent years, and the crowding of tracks and ter-

minals caused by movement of the enormously enlarged volume of railroad traffic, have greatly increased the duties of employees and multiplied the chances of error on their part.

In a recent accident investigation made by our chief inspector of safety appliances it appeared that the general inspector of transportation of one of our largest railroad systems said: "Excessive speed is the cause of 75 to 80 per cent of the catastrophies in the last few years". When asked who was to blame for this, the official said: "The public, in my opinion, because they ride on the railroad that has the fastest train and the railroad that doesn't make that fast time is not patronized. The railroads are forced to do it. They don't want to do it".

We can but repeat what was said in the published report of this accident: "It is true that the public patronizes the railroad that makes the fastest time. But did the public have knowledge that any railroad was operating its trains at such high speed as to make travel upon that road unsafe its patronage would be quickly withdrawn. The great majority of people who ride on railroads desire to travel quickly if it can be done with safety, but their first consideration is safety. They rely upon the judgment of railroad managers, knowing that they are the only ones who have full knowledge of conditions existing upon their roads, and the assumption always is that the road operating high-speed trains will bring them safely, as well as quickly, to their journey's end".

The cars in train second No. 53 were of wooden construction, and the forward end of the first parlor car was lying against and across the fire box of the overturned engine and immediately caught

fire. Three parlor cars were burned. It is obvious that had these cars been of modern steel construction they would not have been destroyed by fire, and it might have been possible to have saved the lives of some of the injured passengers who were caught in the wreckage and cremated. The circumstances surrounding this accident once more demonstrate the inherent weakness of wooden cars and their unsuitability for service in modern high-speed trains, and emphasize the necessity of compliance with the Commission's recommendation in its last annual report relative to the adoption of steel cars.

The volume of passenger and freight traffic on the New York New Haven & Hartford Railroad is heavy, and trains frequently are required to cross from one track to another. To provide for such movements between New York and Boston, a large number of crossovers are in service. The longest of such crossovers are No. 15; the majority of the crossovers used are No. 10, and some of them are No. 8.

The lowest numbered crossover that can reasonably be expected to provide for safe passage of a train from one track to another at normal speed is believed to be No. 18 or No. 20, with 12-foot track centers and 100-pound rails, according to "N. Y., N. H. & H. R. R. Standard Dimensions of Turnouts", the radius of curved rail for a NO. 18crossover is 2,804.60 feet, producing a curve of 2° 2' 34"; the radius of curved rail for a No. 20 crossover is 3,369.90 feet, producing a curve 1° 42'. As given in this blue print, the length of a No. 18 cros over is 306.36 feet, and the length of a No. 20 crossover is 352.70 feet.

Proper measures for the safety of the traveling public have not been provided where crossovers are installed which may be used with safety only at low speed and which are protected simply by signals and rules requiring reduced speed. This fact is emphasized by disasters which have occurred as a result of the disregard of such signals and rules. Longer crossovers than those used by the New York, New Haven & Hartford Railroad should be installed at all points where high-speed passenger trains are to be diverted from one track to another track on which the current of traffic is in the same direction; then if signals or rules are disobeyed, or if an engineman was incapacitated, the possibility of disaster would be greatly reduced, if not entirely eliminated. Until these long crossovers are installed, to provide adequate precautions for the safe movement of trains at any crossover shorter than a No. 20, the switches should be left for a straight route, stop signals should be displayed, and the crossover switches should not be set for the diverging movement until after the train which is to make the movement has come to a stop.

The position was taken by the executive officers of this road that no finding or recommendation with regard to the Bridgeport disaster was ever made by the Interstate Commerce Commission.

It is apparent that this was but a resort to a technicality to evade the point at issue. The records of the Commission show that a report upon the Bridgeport accident, including the recommendations previously quoted herein, was made public by the commission on August 16, 1911. A copy of this report was mailed to Vice President Horn, at his request by wire, on August 13, 1911, and his acknowledgment of its receipt dated August 21, 1911, was

received at the office of the Commission on August 22. Had the recommendations contained therein been complied with, the Westport accident undoubtedly would not have occurred, and it is therefore apparent that the officials of the New York, New Haven & Hartford Railroad did not take adequate measures to prevent a recurrence of the Bridgeport accident, in view of these recommendations, of which they were informed.

As a result of the investigation of the Westport accident President Mellen of the New York, New Haven & Hartford Railroad Company has now wired the Commission that on the 26th day of November instructions were issued to the operating and engineering departments of this road ordering that wherever practicable No. 20 crossover be used between all parallel main tracks used for trains going in the same direction and through which trains are detoured; and that all trains having a schedule speed of 15 miles an hour, or over, on straight tracks be required to come to a full stop before making a crossover movement. These instructions are not limited to the crossover at Westport, but apply to the whole New Haven system wherever four tracks are used.

It is a deplorable fact, as shown by the following table from the accident statistics published by the Commission, that train accidents have steadily increased in number and magnitude since 1909.

ANNUAL TABLE NO. 2

Collisions and derailments; damage to cars, engines, and roadway, years ended June 30.

	1910				1909			
	Number	Damage to road and equipment and cost of clearing wrecks.	Killed	Injured	Number	Damage to road and equipment and cost of clearing wrecks.	Killed	Injured
Collisions, rear	1,311	$1,398,763	119	2,324	859	$ 933,375	83	1,556
Collisions, butting	695	1,514,381	194	3,008	485	874,729	159	1,878
Collisions, trains separating	418	164,883	5	197	386	146,067	6	159
Collisions, miscellaneous	3,437	1,551,252	115	2,236	2,681	1,154,520	94	1,802
Total	5,861	4,629,279	433	7,765	4,411	3,108,691	342	5,395
Derailments due to defects in roadway, etc.	1,115	914,642	42	1,337	991	708,658	25	1,195
Derailments due to defects of equipment	2,734	2,227,352	40	636	2,362	1,875,646	29	651
Derailments due to negligence of trainmen, signalmen, etc.	377	238,843	23	311	307	186,768	25	329
Derailments due to unforeseen obstructions of track, etc.	350	484,414	58	825	331	444,308	61	486
Derailments due to malicious obstruction of track, etc.	66	165,185	18	227	51	93,037	21	166
Derailments due to miscellaneous causes	1,276	1,184,243	159	1,478	1,217	1,063,095	83	1,338
Total	5,918	5,194,679	340	4,814	5,259	4,371,512	264	4,165
Total collisions and derailments	11,779	9,823,958	773	12,579	9,670	7,480,203	606	9,560

Railroad managers and their employees, as well as state and Federal commissions, must unite in a determined effort to reduce these harrowing railroad disasters to the limits of the unavoidable. This can only be done by ascertaining the real causes of train accidents and taking proper measures to eliminate them.

The Commission is making every effort possible in this direction and has been very ably assisted in the present investigation by the public utilities commission of Connecticut - in a number of other instances by the commissions of other states as contemplated by the accident investigation law of 1910. Railway managers and their employes seem to have awakened to their responsibilities in this matter. This is shown by the general formation of safety committees, and some railroads have shown a reduction in their casualty list that is worthy of commendation.

But notwithstanding these facts unavoidable train accidents continue to occur and exact an increased toll of life and limb. Such accidents occur on large railroads as frequently as on small ones; on well-managed roads as well as on roads that are less well-managed; on block-signaled roads as well as on roads where the train-order systems are still in force; and by far the greater number of them are due to the same fundamental cause, namely, fallibility of the human element responsible for the safe operation of trains.

It can not be assumed that employees whose long service records have shown them to be competent, reliable, and temperate should suddenly and without reason deliberately elect to take chances which may involve death to themselves and many others under the most distressing circumstances.

As a result of this investigation it is evident that the recommendations made in the report on the accident near Bridgeport, Conn., July 11, 1911, and previously quoted in this report, apply equally in this case, and to provide proper safety for the traveling public they should be placed in effect by the New York, New Haven and Hartford Railroad Company. It may be noted that this has now been done.

The Commission is satisfied that the neglect to comply with the recommendations in its report on the Bridgeport wreck was largely a contributing cause of the Westport accident and its accompanying loss of life.

The recommendations of this Commission are not mandatory. If, however, they are ignored and neglected and large loss of life results therefrom, there can be little doubt of our duty to plainly report it.

If railroad directors and managing officials remain passive and give to such occurrences no such serious consideration as the situation demands, then it becomes the duty of public officials to bluntly and plainly point out to them their duties as trustees of the safety of the traveling public.

No action was taken by any of the operating officials following the Bridgeport wreck, such as the serious situation demanded. Railroad officials testified that there had been "A stiffening up of discipline", but this did not seem to reach cases of speed in excess of that allowed by the rules at bridges where speed is limited by the rules. For there was evidence that at the bridge at Westport speed ruleswere habitually violated even after the accident near this point.

To meet the requirements of a situation disclosed by the Bridgeport wreck, similar in all respects to the accident under consideration, no new devices have been installed, or seriously investigated, nor have any attempts been made by this railroad to even experiment with devices intended for the purpose of meeting these emergencies. Devices to automatically stop trains are in constant use in tunnels and elevated railroads in and about New York. In the adaption of some similar device to use on such a railroad as the New York, New Haven & Hartford the practical operating difficulties are by no means insuperable.

The whole result of such consideration as officials of this railroad have given the subject is a pessimistic hopelessness, indicated by testimony that "we are at our wit's end," etc.

The operating vice president when asked what hope he saw of being able to accomplish anything to prevent the recurrence of these accidents answered that he knew of nothing that would prevent absolutely such recurrence.

The public interests involved and a decent regard for the safety of the lives of those who travel do not justify a great railroad in passively awaiting until some private inventor at his own cost develops to full perfection appliances which will "absolutely" prevent the occurrence of such accidents.

All large railroads whose capital and earnings justify it should make such experiments with modern mechanical appliances intended to promote safety of travel as will aid and promote the approach, if not the actual attainment, of the ideal of absolute prevention of accident.

The block signal and train control board reported that there were train-control devices now in existence which, although not absolutely perfect, were such that they should be taken up experimentally by railroads with a view to their practical development and mechanical perfection for general use upon railroads.

The appalling railroad catastrophes of the past few years imperatively call upon all connected with railroad management for more strenuous efforts to secure safety for those who travel.

When a diversion from the lookout for a few seconds on the part of an engineer, caused by perhaps some imperative duty to be performed on the machinery in the inside of his cab may cause disaster to his train and death to his passengers, there should be no hesitation in actively taking up the perfection and installation of such supplementary appliances as will bring the train to a stop where danger threatens.

The mental attitude toward these occurrences is well shown by the vice president of this railroad in charge of engineering and maintenance of way, when he said, "Then why should not a train be wrecked that runs signals?"

Wreck prevention is the highest duty of railroads. This obligation is not satisfied by merely making rules which prove insuffident in operation. If the "human element" repeatedly fails, then safety requires that the highest degree of mechanical skill be applied to properly supplement the human element at the particular point of danger.

To adequately satisfy their obligations to passengers, railroads should avail themselves of the use of some workable automatic train stop, and in high-speed trains should use all-steel or at least steel underframe construction in place of wooden cars.

The vice president of this railroad in charge of engineering and maintenance of way said of the automatic train stop, "I think it has got to come in some form, but the consensus of opinions of engineers is that there is no device that is suitable for fixed operations".

The query of this railroad official before quoted, "Then why should not a train be wrecked that runs signals?" seems to be answered by his own statement that the automatic train stop has "got to come".

Railroads ought to unitedly experiment with the automatic train stop until a device of practicability for general use shall be available.

Until it does come the alternative recommendation of this Commission in its report on the Bridgeport wreck, and which this company has now adopted, "that in the absence of such automatic control apparatus, on tracks where high speed trains are run, switches should not be set to divert a high-speed train from one track to another at a crossover which is not safe for high speed, until after the train has been brought to a stop", should be strictly complied with. Until some better safeguard can be devised, and this railroad has suggested none, compliance with this recommendation places no undue burden upon railroads and will in our opinion prevent accidents of this character in the

future.

The recommendations herein made are addressed to all railroads operating under similar conditions to those herein disclosed.

By the Commission.

JOHN H. MARBLE,

Secretary.

(Seal)