

INTERSTATE COMMERCE COMMISSION.

REPORT OF THE CHIEF OF THE BUREAU OF SAFETY COVERING THE INVESTIGATION OF AN ACCIDENT WHICH OCCURRED ON THE LOUISVILLE & NASHVILLE RAILROAD AT SHEPHERDS- VILLE, KY., ON DECEMBER 20, 1917

JANUARY 28, 1918.

To the Commission

On December 20, 1917, there was a rear-end collision between two passenger trains on the Louisville & Nashville Railroad at Shepherdsville, Ky., resulting in the death of 46 persons and injuries to 52 persons. After investigation as to the cause and nature of this accident, I beg to submit the following report.

The Louisville division of the Louisville & Nashville Railroad, on which this accident occurred, extends between Louisville and Bowling Green, Ky., a distance of 113.6 miles. It is for the most part a single-track line, but from Louisville to Lebanon Junction, a distance of 29.7 miles, the track is double. It was on this double-track section, about 18 miles south of Louisville, that the collision occurred. On this division trains are operated under a time interval and dispatching system, no block system being used.

The trains involved in this accident were southbound passenger train No. 41, consisting of engine 18 with three cars, in charge of Conductor Campbell and Engineman Keyer, en route from Louisville, Ky., to Springfield, Ky., and southbound passenger train No. 7, consisting of engine 230 and nine cars, in charge of Conductor Ogle and Engineman Wolfenberger, en route from Cincinnati, Ohio, to Montgomery, Ala.

Train No. 41 is a local train which leaves the main track of the Louisville division at Bardstown Junction, 22 miles south of Louisville. On the date of the accident this train left Louisville on time, at 4:35 p. m., but was unable to make schedule time on account of holiday travel. At Brooks, a station 5 miles north of Shepherdsville, the train dispatcher told Conductor Campbell, through the station operator, to let train No. 7 pass at Shepherdsville if he could not go to Bardstown Junction on time. The train left Brooks at 5:13 p. m., seven minutes late, and arrived at Shepherdsville at 5:24

six minutes late. After doing the station work, Conductor Campbell notified Engineman Keyer, through the train porter, to move ahead beyond the south passing track switch, located about 400 feet south of the station, and back into the sidetrack to permit train No. 7 to pass. It was after the passing track switch had been opened, and the train was about to back in, that its rear end was struck by train No. 7, moving at a speed estimated at 25 miles per hour. The collision occurred about 5 30 p. m. at which time it was dark, but the weather was clear.



FIG 1—Showing wreckage of rear coach of train No 41

Train No 7 left Louisville at 4 53 p. m., 1 hour and 53 minutes late. It passed Brooks at 5.23, 10 minutes behind train 41, and collided with that train about 400 feet south of Shepherdsville station about 5 30 p. m., as above stated.

The force of the collision drove train No 41 forward a distance of 800 feet, completely telescoping the rear coach and crushing the rear compartment of the compartment car next to the rear coach. Figures Nos 1 and 2 are views of the rear coach and compartment coach, respectively, of train No 41 after the accident. All of the wreckage was shoved ahead with train No 7 until it came to a stop. The engine and baggage car of train No 41 remained coupled together and were driven ahead about 150 feet beyond where the

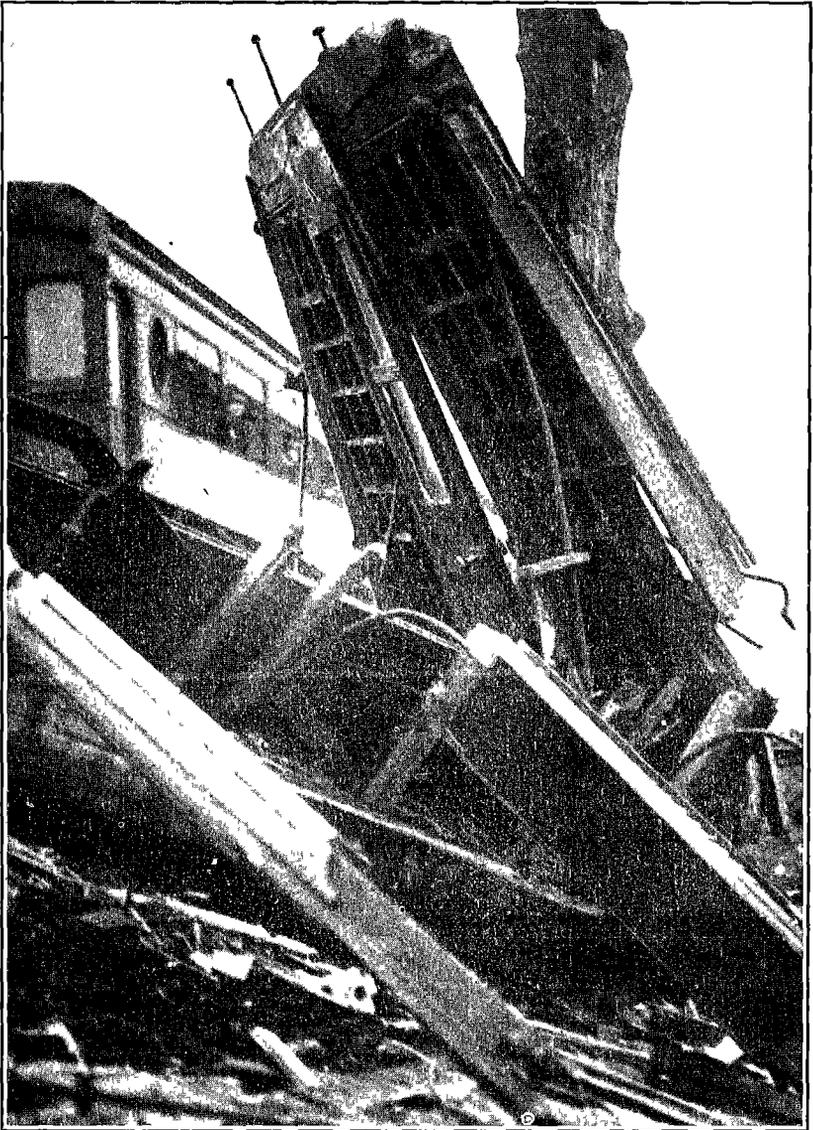


FIG 2 --Showing wreckage of compartment coach of train No 41

wrecked cars stopped. All of the cars in this train were of wooden construction.

On train No. 7 the express car next to the engine was crushed for 8 or 10 feet and the sides of the car were bulged. The baggage car was not damaged with the exception of a broken steam pipe and no other cars in the train were damaged. The engine of train No. 7 had its front end crushed and some other parts broken, as shown by figure No. 3, but was not derailed. Five of the cars on this train

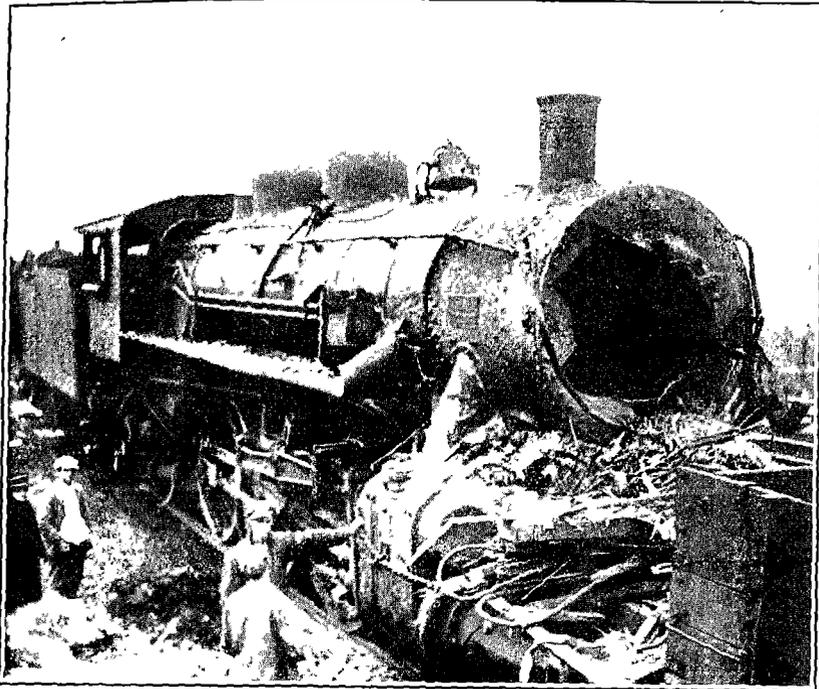


FIG. 3.—Showing locomotive No. 230 of train No. 7 after the accident.

were of wood with steel underframe, and three were of all-steel construction.

Conductor Campbell and Flagman Greenwall were on the platform between the rear coach and the compartment car at the time of the collision, and both were killed.

Approaching Shepherdsville station from the north the track is level for a distance of 2,100 feet, and is straight for 8,400 feet north of the point of collision. In this distance of more than 9,000 feet there is nothing to obstruct the view of the engineman of an approaching train.

At a point 2,500 feet north of Shepherdsville station the main tracks are spread to provide for a middle passing track, 2,900 feet long and extending 400 feet south of the station. The station itself

is on the west side of the tracks and adjacent to the southbound main track

Train order signals are used for the purpose of maintaining a time interval of 10 minutes, at open telegraph offices, between trains running in the same direction. The signals are of the two-arm type, operating in two positions in the lower right hand quadrant. The night indications are green for proceed and red for stop. The signals are normally held in the stop position, and the rules require enginemen of trains, when approaching a train order office, to sound four short blasts of the whistle, whereupon, if it is proper for the train to proceed, the operator is required to clear the signal, and hold it in the clear position until the rear end of the train has passed 200 feet beyond the signal, when it must again be changed to the stop position. Enginemen are required to see the position of the signal change. If it is not changed in full view of the engineman he is required to bring his train to a stop and not proceed without an order or a clearance card.

Train Dispatcher Sams stated that he knew train No. 41 was not making schedule time, and he instructed the operator at Brooks to notify Conductor Campbell that if he could not go to Bardstown Junction on time to let train No. 7 pass at Shepherdsville. He said he talked with Conductor Campbell of train 41 at Shepherdsville, and repeated these instructions to him over the telephone, but he does not remember what reply was made. Later the operator at Brooks reported train 7, but Dispatcher Sams said he was unable to get Shepherdsville again. The collision was reported to him over the telephone, but he is not sure by whom. Dispatcher Sams further said there were no blocking rules in effect between trains 41 and 7, and under the rules it was permissible for train 41 to leave Shepherdsville close ahead of train 7, and the information that train 7 was close was given to the conductor of train 41 to aid the conductor in flagging and in order to avoid delay to train 7. While it is the custom to give this information no record is made of such messages, and he expected the conductor of train 41 to protect his train against train 7.

Agent Thompson, in charge of Shepherdsville Station, stated that after he had the mail and baggage unloaded from train 41 he started with the truck toward the station and met Operator Weatherford coming out of the office with a red lantern. There was more than the usual amount of work to do and more passengers to get off, so that train 41 laid at his station a minute or a minute and a half. He did not know whether Conductor Campbell went to the office or not to consult the dispatcher, and did not know where the conductor or flagman were when train 41 pulled away from the station. He noticed that the markers on train 41 were burning brightly, but he did not

observe the order board and did not see it change. When he first saw train No 7 it was at the crossing north of the station, but he heard no whistle. When that train passed the station he judged it was running at 35 or 40 miles per hour, its usual speed, and there were no signs of the brakes being applied.

Operator Weatherford, on duty at Shepherdsville, stated that when train 41 arrived at Shepherdsville he went out to assist the agent in unloading mail, baggage, and express. After the packages were unloaded he jumped from the truck and started for the telegraph office door, a distance of 80 or 90 feet, without waiting to help handle the mail and baggage from the truck into the station. On his way he met Conductor Campbell, asked him what he was going to do, and he replied that he was going to back in for train 7. Immediately after that he saw train 7 coming, ran into the office, threw the signal to stop, and ran out again with his lantern to flag the train. When the train was first seen by him it was 600 or 700 feet north of the office and 300 or 400 feet from the signal when it was put to the stop position. He said he heard no whistle from train 7, and saw no indications of the brakes being applied as the train passed him. He had talked with the dispatcher and had been told to report when train 41 cleared; he also saw Conductor Campbell in the office talking with the dispatcher. He had no conversation with the operator at Brooks regarding either train and saw no protection given to train 41. He said the markers on train 41 and the switch light were red and were perfectly clear, as there was no smoke or fog to interfere. He said the rules require the signal to be left in clear position until after the rear of a train has passed it 200 feet, and as the rear of train 41 while at the station was north of the signal he had left it clear. In this position it was an imperfect signal for an approaching train and the engineman should have stopped and come to the office to see why the signal was not changed when he called for it.

Operator Sanders, on duty at Brooks, stated that train 41 arrived at 5 12 p. m. and departed at 5 13 p. m., and train 7 passed between 5 23 and 5 24 p. m. The dispatcher told him to tell the conductor of train 41 that train 7 had passed FX tower at 5 02 p. m., as he remembered it, and for him to stay at Shepherdsville if he could not get to Bardstown Junction on time, which message was delivered to the conductor, who replied "All right." He had no conversation with the operator at Shepherdsville regarding either train and did not know of the accident until he heard it reported at 5 30 or 5 31 p. m.

Engineman Keyer, of train 41, stated that he did not know that train 7 was following his train closely, although he knew it was behind him. He said he left Brooks about on time, made three stops, and reached Shepherdsville at 5 21 p. m., remaining there about two

minutes, long enough to unload six sacks of mail and more than the usual number of passengers. As he pulled away from the station the train porter got on the engine and said the conductor wanted to back in, as train 7 had just left Brooks. He had just stopped south of the switch and the porter had jumped off to throw the switch when train 7 struck them. He looked at his watch and compared its time with his fireman, which was 5.24 p. m. Approaching Shepherdsville he could see the semaphore without difficulty from a point north of the siding, called for the signal, and got it promptly. He had no advice as to train No. 7, nor any instruction to let it pass until the porter came to the engine at Shepherdsville. He did not see either his conductor or brakeman at Shepherdsville and did not know whether any protection had been given the train, but he depended on the semaphore and the flagman for protection when backing in. When he found the conductor and flagman after the accident they were between the two coaches. Brakes were not applied at the time he was hit. At the time of the collision it was clear and calm, and he did not think his engine was making any smoke.

Fireman Masden, of train 41, said it was dark, but he had no trouble in seeing the switch or other lights, and thinks he saw the Shepherdsville signal from the north switch. He had no information of train 7 until the porter came up to the engine just after they received the signal to go ahead, and he did not see the train approaching. Just before the accident he had stepped to the engineman's side to help him reverse the engine, but the collision occurred before they had reversed the lever.

Porter Chase, of train 41, said that the conductor told him, leaving Brooks, that he had an order to run ahead of train 7 to Bardstown if they could get there on time; if not, they were to head in at Shepherdsville. At Gap-in-Knob he asked the conductor if the engineman knew they were to head in, and was told they would go on to Shepherdsville, and the operator could tell them where train 7 was. He did not deliver any instructions to the engineman before they got to Shepherdsville, because he had no orders to do so. At Shepherdsville he was told by the conductor to tell the engineman to back in, and reached the engine after it had started. He got off, threw the switch, and looked back to see if the flagman had thrown the inside switch, but he did not see either him or the conductor. About that time he heard train 7 whistle, saw it approaching at a high rate of speed, and jumped over the fence at the side of the track. He stated that neither the conductor nor flagman went back to flag train 7, and he did not know where they were. The engineman of his train did not signal for the flagman to go out, nor did he hear him give any signal. His markers were showing red.

Engineman Wolfenberger, of train No. 7, stated that he had orders to run 1 hour and 30 minutes late, Louisville to Bowling Green, but actually left Louisville at 4:53, 1 hour and 53 minutes late. Stops were made at Oak Street and the Southern Railway crossing, due to other trains in the way and he passed Brooks close to 5:24 p. m. He knew that train 41 was ahead of him and knew of the local work which that train had to do. He thought it was 600 or 700 yards north of Shepherdsville when he first saw the train-order signal. The signal was green when he first saw it, and he called for the signal with four blasts of the whistle, but the signal was not changed so he called again, after he had gone about 200 yards. It was then changed to red and he applied the brakes in emergency previous to that time he had only made a slight application, or enough to bring the brake shoes up against the wheels. He said there was fog or smoke which caused the light to disappear for an instant and then to reappear, so he was not certain when he first saw the signal whether it had been cleared for him or not, but he believed that the operator would find it had not been cleared after he called the second time and would return it to clear before he got by. He estimated that he was running 40 or 45 miles per hour when the brakes were applied the first time, but that the speed had been reduced to 20 or 25 miles at the time of the collision. He further stated that he understood the rules require that he approach a train-order office prepared to stop before any portion of the train had passed the train-order signal, and that it was required that he should see the signal change from red to green, any other indication being an improperly displayed signal, requiring him to stop. When he saw the markers on train 41 he was within 100 yards of the train, as he was looking at the train-order signal and smoke from train 41 was blowing his way, causing the lights to appear dim. He said he saw no flagman from train 41 and met no flag, saw no fuses, nor heard any torpedoes between Louisville and Shepherdsville, neither did he see the operator at Shepherdsville attempt to flag him. It did not occur to him that not getting the signal at Shepherdsville was due to train 41 being close ahead, although he knew he left Louisville 18 minutes behind it, as he had been losing time himself and had received clear signals at the other stations. The fireman was on his seat but did not say anything to him about the signal. The brakes were tested before leaving Louisville and were in good order and worked properly at the stops he made at Oak Street and the Southern Railway crossing, but the rail appeared to be a little slippery. He said that if he had made a heavy service application of the brakes when he first saw the signal he thought he could have stopped.

Conductor Ogle, of train No. 7, said he had an order to run 1 hour and 30 minutes late and left Louisville at 4:53 p. m., 1 hour and 53

minutes late. He examined the register and knew that train 41 had gone. He knew when they passed Gap-in-Knob, and noticed the curve just south of that point, at which time he was working in the second passenger coach, the sixth car from the engine. He heard the engineman call for the signal approaching Shepherdsville, but was not in a position to see the signal and did not look out when he heard the engineman call the second time. There were two applications of the brakes, one between the two calls for the signal and the other, a heavier one, he thought before the station was passed, and speed was reduced to 20 or 25 miles per hour. It did occur to him that they might be overtaking train 41, but as it was 12 minutes late on that train's time, he thought they would be protecting themselves. He said it was not customary to watch out for a preceding train, as they were expected to be protected. He stated the accident occurred at 5:30 p. m., as given by his watch, and that the weather was clear.

Flagman Bowman, of train No. 7, stated that he heard the engineman sound the station whistle approaching Shepherdsville. He also heard the second signal very soon after the first, the rear of the train then being about half way between the north switch and the station. He felt the brakes applied when the train was some distance south of the north switch and it appeared to be an emergency application. He noticed only the one application, but as the brakes are often applied slightly at the curve where the tracks are thrown for the middle track, it may have been done in this case and so not noticed. Very little time elapsed between the brake application and the shock of the collision.

Fireman Gossom, of train No. 7, stated that he got his first view of the train-order signal at Shepherdsville about at the north switch and it then showed green. The engineman called for the signal the first time at the north switch, again between that point and the north switch of the house track, and it changed to red almost as they were at that switch. He said the engineman was applying the air when he called for the signal, and apparently put the brakes into emergency position as he passed the north house track switch. He first observed the markers at the house track switch, and it was smoky and foggy so that he could not see them before. The speed of the train had been considerably reduced after applying the air and the brakes seemed to take hold well. He saw no flagman, nor did they run over any torpedoes or see any flags between Louisville and Shepherdsville, and all train-order signals were given promptly. He saw the orders leaving Louisville and knew train 41 was running ahead of them. He had no conversation with the engineman about the position of the signal at Shepherdsville as they were approaching, and the rules do not require that they announce the position of signals to one another.

Operator Morrison, first-trick operator at Shepherdsville, stated he was not on duty at the time of the accident, but had been to the station to get a paper from train 41, and had started back home when he heard train 7 whistle. He stepped back to see where train 41 was standing and saw it just south of the middle track switch. Train 7 was approaching at a speed which he estimated to be 40 or 45 miles per hour, and did not seem to decrease speed until it struck train 41. There was no evidence of brakes being applied as the head end of the train passed him, and he did not see anyone protecting the rear of train 41. The weather was clear and calm, and there was no smoke to obscure the view. He could see the markers and switch light clearly, saw the train-order signal was green and the light burning brightly, but did not see it changed. He did not see the conductor or flagman of train 41 at any time, saw no fusees, nor heard any torpedoes explode.

Engineman Johnson, an employee not on duty, said he was standing on the Shepherdsville Station platform at the time of the accident. He saw the work done while train 41 was at the station, heard the conductor instruct the porter to tell the engineman to back in, and saw the conductor and flagman get on the steps between the two coaches as the train pulled out, but there was no one on the rear end when it passed him. The markers on train 41 were burning brightly, and he said there was nothing to interfere with the view, except it was smoky. When he first saw train No. 7, he judged it to be about at the north switch of the passing siding. When the train passed him the brakes had been applied and steam was shut off, and he estimated the speed to be 20 or 25 miles per hour. He did not see the flagman or conductor of train 41 make any effort to flag train No. 7, saw no fusee, and did not see the operator come out and attempt to flag.

Conductor Willett, of train No 13, which was waiting on the siding at Brooks, stated that he took the time when both trains 41 and 7 passed him, it being 5.13 p. m. for the former and 5.23 p. m. for the latter. He did not see the conductor of train 41. He did not think there was anything to obstruct the view of the signals, and it did not appear to be in any way foggy.

The direct cause of this accident was the failure of the conductor and flagman of train 41 properly to protect their train. Knowing that they were on the time of train 7, and that it could not be far behind, the action of these two experienced employees in failing to protect their train is inexcusable.

A material contributing cause of the accident was the failure of Engineman Wolfenberger properly to observe the train order signal at Shepherdsville and so control his train as to stop before passing the signal, as required by rule.

A large measure of responsibility for this accident must rest with the operating officers of the Louisville & Nashville Railroad for their failure to provide proper means of spacing trains in this territory.

Between South Louisville and Lebanon Junction, which territory embraces the scene of this accident, there are 44 scheduled trains in both directions daily. Traffic of such density can not be safely handled under the rules and practices of the time-interval system. For the prevention of similar accidents the operating officers of the Louisville & Nashville Railroad should take immediate steps to provide an adequate block system for the protection of trains on this section of road.

Rules 221 (a) and (d), which assume to provide means for the proper spacing of trains in this territory, are grossly inadequate, if not positively unworkable. Rule 221 (a) requires that when an approaching train has reached a point 600 feet from the signal, "or nearer if the signal can not be seen that far," the engineman will call for the signal, and if it is not changed to the proceed position at once the train must be brought to a stop before the signal is reached, as required by rule 221 (d), which reads as follows:

Conductors and enginemen when approaching train-order offices must have their trains under control and must not assume that the signal will be changed from "stop" indication when within the distance prescribed, as if any portion of a train runs beyond the signal before it is so changed an infraction of these rules will have been committed.

Rules 221 (a) and (d) establish a maximum braking distance of 600 feet, which is entirely inadequate for the safe movement of high-speed passenger trains. The schedule rate of speed of train No. 7 between Brooks and Shepherdsville is 50 miles per hour, and had the signal been in its normal position the engineman of train No. 7 could not have stopped short of the signal without having reduced speed very materially at a point considerably farther away than 600 feet. In short, compliance with this rule means that, irrespective of their schedules, trains must approach all open train-order offices prepared to stop within a distance of 600 feet.

The method of operation also by which trains are informed through verbal messages of the whereabouts of following trains which may be expected to pass them is not a safe one to follow, except where a proper block system is in use. Rule 103 requires that messages directing the movement of trains must be in writing. This rule was violated by the dispatcher in his handling of train 41.

The Louisville & Nashville Railroad in its annual reports to the Interstate Commerce Commission has repeatedly stated that this section of the road from Louisville to Bardstown Junction was operated under manual-block rules. It is clearly disclosed by this

investigation, however, that such protection is not afforded, and furthermore it is evident that such protection was not intended to be given. Several witnesses stated that it was the practice to space trains 10 minutes apart. This is provided for in rule 91, which reads as follows:

Unless some form of block signals is used, trains in the same direction must keep at least 10 minutes apart except in closing up at meeting and passing stations.

This rule is found among the general rules for movement of trains, and there is no rule among those providing for train movement under the manual block which permits this method of operating trains. It is therefore apparent that the manual block system is not in force on this portion of road, notwithstanding the Louisville & Nashville Railroad Company's reports to that effect.

During the past 5 years about 700 miles of road of the Louisville & Nashville Railroad have been protected by automatic block signals, most of which is on single tracked portions of the road. According to its reports for 1916, 132 miles of road are worked under the manual block system. With 4,700 miles of road operated, this gives about 20 per cent of its passenger mileage protected by some form of space interval, and of its principal main lines about 45 per cent is so protected. While this shows commendable progress, the fact remains that there are still long sections of its main lines carrying heavy traffic without adequate protection.

All the employees involved in this accident were experienced men. The engine crew on train 41 had been on duty about 5 hours and 45 minutes and the train crew about 12 hours previous to the accident. The crew of train 7 had been on duty about 1 hour and 30 minutes.

Respectfully submitted

H. W. BELNAP,
Chief Bureau of Safety

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