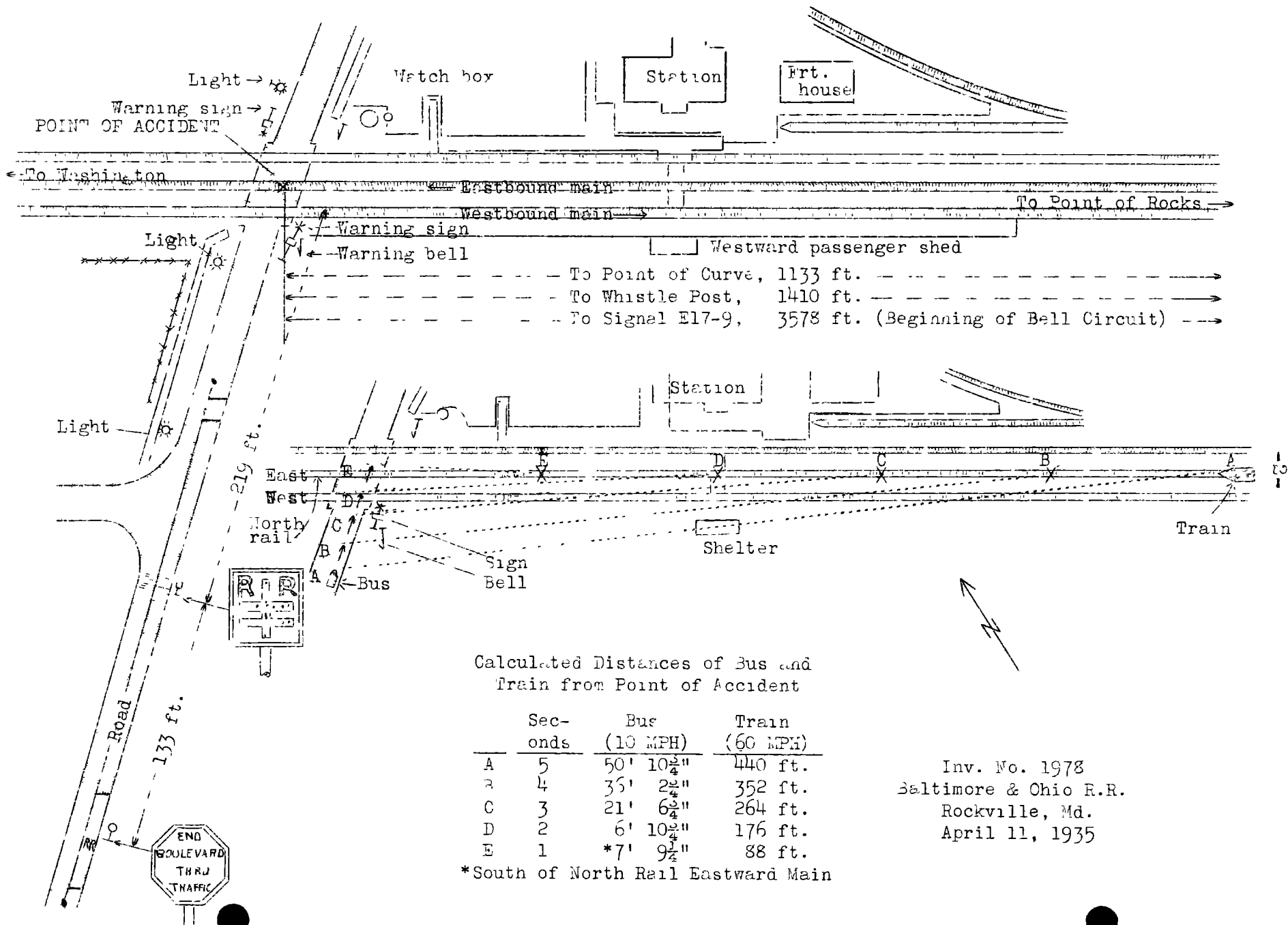


BUREAU OF SAFETY

REPORT NO. 1978

Railroad: Baltimore & Ohio
Date: April 11, 1935
Location: Rockville, Md.
Kind of accident: Collision
Train involved: Passenger : School bus
Train number: 12 :
Engine number: 5550 :
Consist: 10 cars :
Speed: 58 m.p.h. : 10-15 m.p.h.
Track: Tangent :
Highway: - : 3°30' curve
Weather: Light rain
Casualties: 14 killed; 15 injured
Cause: Failure of bus driver to take adequate precautions before starting over railroad crossing at grade and inadequate crossing protection resulting from failure of authorities to enforce, and of railroad company to obey, law requiring watchman.



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INTERSTATE COMMERCE COMMISSION

REPORT OF THE DIRECTOR OF THE BUREAU OF SAFETY CONCERNING AN
ACCIDENT ON THE BALTIMORE & OHIO RAILROAD AT ROCKVILLE,
MD., ON APRIL 11, 1935.

May 21, 1935.

To the Commission:

On April 11, 1935, there was a collision between a passenger train and a school bus on the Baltimore & Ohio Railroad at Rockville, Md., which resulted in the death of 14 students, and the injury of 13 students, their teacher, and the bus driver, all of whom were occupants of the bus, the majority of the injuries being of a minor nature.

Location and method of operation

This accident occurred on that part of the Baltimore Division designated as the Metropolitan Sub-Division, which extends between Weverton, Md., and Washington, D. C., a distance of 52.3 miles, and is a double-track line over which trains are operated by timetable, train orders, and an automotac block-signal system. There are three tracks at the point where this sub-division crosses a public highway known as Baltimore Road at a point about 200 feet east of the center line of Rockville passenger station, these tracks being designated, from north to south, as westward main, eastward main, and eastward siding; the accident occurred on the eastward main track at its intersection with the highway. Approaching this point from the west, the track is tangent for more than 1 mile, followed by a compound curve to the left 2,318 feet in length, with a maximum curvature of $1^{\circ}32'$, and then a tangent for 1,133 feet to the crossing, this tangent extending for a considerable distance beyond that point. The grade is 0.3 percent descending at the point of accident. A whistle board for eastward trains is located 1,410 feet west of the crossing, and the speed limit for passenger trains in this territory is 60 miles per hour.

Baltimore Road extends nearly north and south; approaching the crossing from the north, the highway is tangent for a distance of several hundred yards and is at an angle with the tracks of $73^{\circ}25'$; at a point approximately 88 feet north of the north rail of the eastward track, however, there is a curve to the right of $3^{\circ}30'$ which continues to a point 85 feet beyond

the eastward track, after which the highway is tangent for some distance. Approaching the crossing, the roadway has a concrete surface 16 feet in width, with dirt shoulders on each side which are from 5 to 7 feet in width; where the road crosses the tracks it is paved with macadam to a width of approximately 24 feet, measured along the rails. The grade of the highway is slightly ascending toward the crossing when approaching from the north.

On the west side of the highway at a point 353 feet north of the north rail of the eastward track, there is a sign reading "End of Boulevard, Thru Traffic"; 219 feet north of the eastward track is a railroad crossing reflector-button warning sign; 29 feet north of this track is a standard railroad cross-bar warning sign bearing the words "Railroad Crossing" on the crossed bars, and at the time of the accident there was another sign on the post, under the crossed bars, reading "NO WATCHMAN ON DUTY 10.00 P.M. TO 6.00 A.M.", while below this sign there was a box enclosure with an opening which faced approaching highway traffic in which the crossing watchman who went off duty at 10 p. m. placed a lighted red lantern; 26 feet north of the eastward track is a crossing bell mounted on a concrete post. A similar cross-bar sign and crossing bell are located on the opposite side of the tracks. The crossing bells are controlled by electric track circuits and are so arranged that when an approaching east-bound train reaches a point 3,578 feet west of the crossing, both bells commence to ring and continue to ring until the rear end of the train has reached the crossing. In addition to these devices, on the date of the accident the crossing was protected by a crossing watchman between the hours 6 a. m. and 10 p. m. There are three electric street lights on the east side of the highway, two being north and one south of the crossing, which provide ample illumination, while the reflector-button warning sign shows up very clearly when approached in a motor vehicle with the headlights burning. Railroad warning signs which had been painted on the pavement, however, were very indistinct and in that condition were of little or no practical value. The speed limit for highway traffic in this vicinity is 25 miles per hour.

The view to be had of an approaching east-bound train from a south-bound vehicle is restricted by rising ground on the right of the highway and also by the westward passenger shelter, which is located 195 feet west of the edge of the highway with its southeast corner about 23 feet north of the eastward track; from a point on the highway 23 feet from this track, however, a locomotive headlight could have been seen when nearly 1,500 feet distant.

There was a light rain falling at the time of the accident, which occurred about 11:28 p. m.

Description

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Train No. 12, an east-bound passenger train, consisted of 2 express cars, 1 postal car, 1 express car, 2 baggage cars, 1 combination passenger and baggage car, 1 coach, and 2 Pullman sleeping cars, all of steel construction with the exception of the second express car, which was of steel under-frame construction, hauled by engine 5550, and was in charge of Conductor Compton, and Engineman Shewbridge. This train passed Point of Rocks Md., the last reporting station, 26.2 miles west of Rockville, at 10:54 p. m., according to the train sheet, 1 minute ahead of time, and was passing the station at Rockville on time on its schedule when it collided with a school bus on the crossing at that point while traveling at a speed shown by the speed recorder on the engine to have been 58 miles per hour.

The school bus involved in this accident was occupied by 27 students and a teacher, was being driven by P. C. Line, of Hagerstown, Md., and was on its return trip to Williamsport, Md., from College Park, Md., where the students and teacher had attended a chemistry lecture and exhibit at the University of Maryland. The bus was proceeding southward on Baltimore Road and was moving over the grade crossing at Rockville at a speed estimated to have been between 10 and 15 miles per hour when it was struck by Train No. 12.

The bus was struck on the right side about 14 feet from the front end, and the right side and interior back of the second window, and also the rear end, were torn away. The remaining portion of the bus was thrown to the south and east of the crossing against an embankment at that point, without being overturned. The train stopped with the head end of the engine 3,111 feet east of the crossing; none of the equipment was derailed and the front of the engine was only slightly damaged.

Summary of evidence

Engineman Shewbridge, of Train No. 12, said he shut off steam in the vicinity of Westmore, which is 1.2 miles west of Rockville, and allowed the train to drift; on reaching the whistle board west of the crossing at Rockville he began sounding a road crossing whistle signal. When about half way between the whistle board and the crossing he started ringing the engine bell, which is operated by air, and when within a few car lengths of the crossing he saw an automobile pass over the crossing from the right or south side of the track; he continued sounding the last blast of the crossing whistle signal, thinking that this automobile might be followed by another automobile. He saw no other automobile

in either direction, however, but when the engine had nearly reached the crossing the fireman called a warning to him; he at once applied the brakes in emergency, heard a crash, and saw fire flying at the front end of the engine; the fireman then said that they had struck a bus but Enginemen Shewbridge had not seen it until that time. Shortly after passing the crossing the engine brakes locked, no sand being available for use on the slippery rails, and he released the engine brake but kept the train brakes applied until the train stopped; the sand dome was empty, the supply of sand having been used up in the vicinity of Barnesville, 16.6 miles west of Rockville. Engineman Shewbridge further stated that the brakes worked properly at all times and that the engine was in good condition, with no steam leaks to obscure his vision, also that the whistle was sounding properly and the electric headlight burning brightly and in good condition; he also stated that the fireman was on his seat box on the left side of the cab and had been riding there for a considerable distance before reaching the point of accident.

Fireman Bussey, of Train No. 12, stated that he was riding on his seat box continuously after passing Gaithersburg, 5.1 miles from Rockville. The crossing at Rockville came within his range of vision as the train was leaving the curve west of the station and he watched the crossing from the open side window while the engineman began sounding the whistle signal and at the same time started the automatic bell ringer. When at a point afterwards found to have been near the west end of the station platform, which begins about 380 feet from the crossing, Fireman Bussey saw the headlights of a motor vehicle and it seemed to him at first that the vehicle was slowed down when close to the crossing as if it would be stopped, but that the driver then saw that he could not stop and tried to get across ahead of the train. The engine had just passed the westward station shelter when Fireman Bussey realized that the driver of the vehicle, which in the meantime he had identified as a bus, was not stopping and he at once called to the engineman to apply the brakes. The engineman still was sounding the crossing-whistle signal but when the fireman called to him he immediately applied the air brakes in emergency. Fireman Bussey confirmed the engineman's statements to the effect that the engine was in good working order and said his view of the crossing was not interfered with by smoke, steam or weather conditions.

Baggagemaster Culbertson, of Train No. 12, who was in the seventh car, did not know whether the whistle was sounded or the bell ringing as the train approached Rockville, while Conductor Compton, also in the seventh car, heard the whistle but did not know whether the engine bell was ringing. Flagman Collier, who was in the rear of the last car, did not know whether the whistle had been sounded or the bell was ringing. When Train No. 3 approached west-bound shortly afterwards, however, Flagman Collier

was down the track a short distance from the crossing giving the engineman of that train signals to proceed slowly, and he said the noise made by the sirens of various pieces of rescue apparatus at the crossing was so great that he could not hear the crossing bells but that one of the firemen told him the bells were ringing.

Road Foreman of Engines Clark said he examined the locomotive speed-recorder tape and it indicated that the train had made a uniform run with a maximum speed of 60 miles per hour, and that the speed was 58 miles per hour at the time the brakes were applied at Rockville. This speed recorder, which was of the Boyer type and also indicated the speed for the benefit of the engineman, was subsequently tested and found to be recording properly, Master Mechanic Grove, on duty at Washington, D. C., said he examined the headlight and generator of engine 5550 on its arrival in Washington and found them in first-class condition; he also tested the engine whistle and bell and found them to be in good condition.

Assistant Division Engineer Routenberg said he arrived at the scene of the accident at 1 a. m., April 12, and noted that the crossing bells were ringing when the first east-bound train passed some time after his arrival; the bells had been examined by Signelman Oden immediately after the accident and found to be in good condition. He noted also that the crossing was illuminated and that there was a red lantern on each side of the crossing which was burning properly, and said that under rule 116-b of the "Instructions Governing the Maintenance of Way Department" it was the duty of the crossing watchmen to place these red lanterns in position when going off duty, which in the case of this particular crossing on the day of the accident would have been at 10 p. m. The signal and interlocking inspection report indicated that the examination made by Signelman Oden took place at 12:25 a. m., April 12.

Signal Supervisor Perrell arrived at 2:12 a. m. and found the crossing bells and circuits to be operating properly. The bells are of the Chicago type, which is standard on the Baltimore & Ohio Railroad, and both bells operate for an east-bound train as well as for a west-bound train. Supervisor Perrell also stated that there is a switch by means of which the watchman can cut out the bells when switching is being done within the limits of the bell circuit; upon reaching the scene he unlocked the box in which this switch is located and found the switch in proper position.

P. C. Line, driver of the bus, stated that he had been operating the bus at a speed not in excess of 30 or 35 miles per hour at any point and that he had followed another motor vehicle for several miles before reaching the crossing, being about 40 or 50 feet behind it when coming into Rockville. His bus was

approaching the crossing at a speed of 12 to 17 miles per hour and he then further reduced speed to about 10 miles per hour. Driver Line saw a red light beside the highway when at a point 100 feet or more away from it but did not see any of the crossing warning signs; he said he was looking continually both to the right and to the left, and that he looked to the right when passing the red light, the light he referred to being the one located on the cross-bar sign 29 feet from the eastward track. He did not see any indication of an approaching train, however, and was about to enter upon the crossing, still moving at a speed of 10 or 12 miles per hour and with the bus in high gear, when he heard a bell which he thought was the engine bell and he at once stepped on the accelerator in an endeavor to get out of the way; the bus picked up speed quickly but not fast enough to avoid the accident. Until he heard the bell, Driver Line had not realized that he was on a crossing although he knew he was approaching one, but he said he did not know he was actually near it, that the red light seen by him might have been on an open ditch, and that he did not hear a whistle or the crossing bells, neither did he see the headlight of the engine although he would not say that it was not burning; it also appeared that he did not notice the headlights of an automobile coming toward him over the crossing. Driver Line said that Miss Funk, the teacher who was in charge of the students and was seated on the left side of the bus on the first seat back of the driver's seat, had been pointing out dangerous places in the road before he reached them, and had mentioned the crossing when they were about 1 mile from it; she did not say anything when approaching the crossing, presumably because she saw he was reducing speed. Several days after the accident, Driver Line was questioned again as to how he failed to see the reflector-button warning sign, and he said he had been trying to figure it out ever since he returned home, but that if he did see it he did not remember it.

Driver Line further stated that prior to the night of the accident he had not been over this road for 4 years; he had passed over it on the way from Williamsport to the University of Maryland earlier in the evening and at that time stopped for the crossing. He did not know anything about a requirement of the Board of Education of Washington County that school busses should stop before passing over railroad crossings at grade, and said his regular practice was to slow down, but not to stop. It further appeared from the statements of Driver Line that the bus was in first-class condition; the brakes, which were of the hydraulic type, could have stopped the bus within a distance of 2 or 3 feet from a speed of 10 or 12 miles per hour; the headlights were in good condition and burning properly, in fact, they still were burning after the accident, and the windshield wiper was working properly; he had, ^{now} ~~wiped~~ ^{wiped} off the inside of the windshield and also the glass in the door panels when a short distance from the

crossing, due to moisture collecting on the inside. There was no noise inside of the bus, the occupants apparently being tired and some of them about half asleep and so far as he was aware there was no one moving around at the time, nor was there any one standing up in the front end of the bus, while the construction of the doors was not such as to interfere with his view. Driver Line further stated that he had been working in garages and driving motor vehicles for about 15 years but this was his first accident, that he possessed a chauffeur's license, and that he had driven this same bus on many previous occasions and was thoroughly familiar with its operation. He had gone to work on the morning of the accident at 7 a. m. and while he usually retired for the night at 8:30 p. m., yet he said he did not feel sleepy on the return trip from the University of Maryland, nor was he feeling ill, and a finger which he had injured earlier in the day did not interfere in any way with the proper handling of the bus.

Miss Anna L. Funk, the teacher in charge of the students, said the bus was approaching the crossing at a speed of about 25 miles per hour and that the speed was decreased to 10 or 12 miles per hour when the bus was close to the first track. It then started over the crossing without any further reduction in speed and the driver began to increase speed suddenly but not until the front end of the bus was on the third track of the crossing. Miss Funk's first knowledge of anything wrong was just after seeing the cross-bar sign, when she noticed a flash of light a considerable distance down the track, at which time the bus was on or very close to the first track; the light then disappeared from view and seemed to reappear suddenly, still apparently quite a distance down the track; she realized that it was the headlight of an engine, and it was about this time that the driver began to increase speed. She did not hear the whistle, due possibly to the roar of the train, nor did she hear the crossing bell or the engine bell. Miss Funk further stated that she had seen an automobile approaching from the opposite side of the track and that there was nothing unusual about its headlight, while Driver Line had appeared to be keeping the lookout normally to be expected of any driver who is paying attention to where he is going, and was reducing speed sufficiently to cause her to think he had seen the crossing signs and knew he was approaching a crossing. It further appeared from Miss Funk's statement that she did not say anything to him about the crossing and had not found it necessary to caution him, the last time she spoke to the driver having been when approaching the last sharp curve in the highway before reaching the straight road leading to the crossing and at that time he nodded his understanding of what she had said to him; it also appeared from her statement that on the way from Williamsport to the University of Maryland the bus had passed over two crossings near Williamsport, as well as the one at Rockville, reducing speed but not stopping at any of these crossings.

On the return trip from College Park, stops were made at all highway intersections where stop signs were located. She did not know anything about the hours on duty of the watchman at Rockville.

The statements of 12 of the surviving students indicated that some of them were nearly asleep at the time and did not know there was anything wrong until the accident occurred. The statements of some of those who were aware of what was transpiring were to the effect that they saw the reflector-button warning sign, but that the speed of the bus was not reduced until it was close to the crossing and that the bus was actually on the crossing before they had any warning of immediate danger, it being at this time that they saw the headlight of the approaching engine while one of them thought he heard a whistle about the time the crash occurred; some of these statements also indicated that the driver began to increase speed suddenly, but not until the bus was on the crossing. One of the students did not think the driver saw the headlight until the front end of the bus had reached the track on which the train was traveling and this student also said that the headlights of the automobile coming toward the crossing in the opposite direction did not blind him in any way; another student said he saw the headlight of the engine as the bus was about to enter upon the second track, this being the one on which the train was traveling, and he thought that if the driver had not released the brakes after apparently satisfying himself that there was nothing coming, the bus could have been stopped at the first track; this latter student also said that the construction of the door of the bus was such as to interfere with his view to the right. The statements of the majority of the students indicated that they did not hear the whistle, the engine bell, or the crossing bells, and that there was no singing or unusual noise inside of the bus, while one of them heard the crossing bells ringing when a west-bound train approached shortly after the accident. One of the students subsequently heard Driver Line say that the first he knew of anything wrong was when he looked up the track, saw the headlight, and then stepped on the gas, and that as he did so he heard what he thought was the engine bell.

E. L. Stevens, a resident of Rockville, stated that he was driving northward on Baltimore Road and when within a few yards of the crossing he saw the bus, which then was about opposite Stonestreet Avenue or perhaps a little nearer; this street is located about 175 feet from the east-bound track. He said that his own automobile, which was a roadster with side curtains, was moving at a speed of about 20 miles per hour and that he was close to the track when he heard the crossing bells ringing, and when he was on the track he saw what appeared to be a ball of fire coming toward him, this being the headlight of the engine which then seemed to be about opposite the station, traveling at high

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speed. While difficult to state definitely, Mr. Stevens thought his own car had cleared the crossing by about 5 yards when the bus passed him moving at a speed he thought was about 20 miles per hour. He stopped quickly in order to see if the train missed the bus but had time only to open the side door and look back as the accident occurred. Mr. Stevens further stated that he did not hear the whistle or bell of the engine, and that the headlights of the bus were burning and giving a good light. The opinion was expressed by Mr. Stevens that the residents of the community regarded the protection provided at the crossing as inadequate, while three other residents of Rockville who were interviewed thought the crossing was of a dangerous nature. Two of these witnesses said they had driven motor vehicles over the crossing within a few minutes of the time of the accident and had stopped before passing over it, and each of them said that shortly afterwards he had heard the train whistling as it approached the crossing; this latter statement was supported by a passenger in one of the vehicles and also by the statements of two other residents of Rockville.

H. R. Poe, owner of the bus and a resident of Hagerstown, stated that the bus was bought new in September, 1933, and was in excellent condition. He is the inspector for busses in Washington County, in which Hagerstown is located, and makes it a point to see that his own bus is in good condition; the last school board inspection of the bus was made in the fall of 1934 and he said he did not participate in the inspection of his own bus, this being handled by the president of the school board and some one he had with him for that purpose. Shortly afterwards the bus received its last state inspection, while the hydraulic brakes were inspected about 6 weeks prior to the accident. Mr. Poe stated that he had known Driver Line for 10 or 12 years, had employed him as a mechanic about 4 years, and also used him as a relief driver on the bus, estimating that his services as relief driver had been required approximately 20 times since the beginning of the current year, and he said he considered Driver Line's ability as a bus driver to be as good as the best; subsequent to the accident he had made inquiries at Williamsport concerning Driver Line and had been unable to find any one who would say anything against his ability as a driver. Questioning of Mr. Poe concerning his contract with the Board of Education of Washington County brought out the statement that he was not given a copy of the contract or of the specifications and conditions applicable thereto, and that he never had seen a copy of those specifications, did not know anything about the provision contained therein which requires school busses to be brought to a stop at all railroad crossings at grade, had never been instructed by anyone that he was to make such stops, had never instructed Driver Line that such stops should be made, and that he himself had never stopped

for railroad crossings during the course of his daily trips, his practice being to reduce speed sufficiently to require him to change gears before moving over a crossing. It further appeared from Mr. Poe's statements that under his understanding of the contract, it was a part of his duty to transport students to school functions, and that the trip on which the accident occurred was within this category, no extra compensation being paid to him.

The contract to which Mr. Poe referred was examined in the office of B. J. Grimes, Superintendent, Secretary and Treasurer of the Board of Education of Washington County; the contract was dated December 18, 1931, covered only the school year 1931-1932, and made no provisions for trips outside of the regular route to be covered on each school day, but did contain a provision whereby Mr. Poe agreed to transport the school children "in accordance with the specifications and conditions attached to and made a part hereof". No copy of the specifications and conditions was attached to the contract, but examination of a copy which was furnished showed that they contained a clause reading as follows:

"All buses must be brought to a full stop at least 25 feet from any steam or electric railway crossing. The driver must be sure that there is no danger from approaching trains or cars before attempting to drive the bus across the tracks."

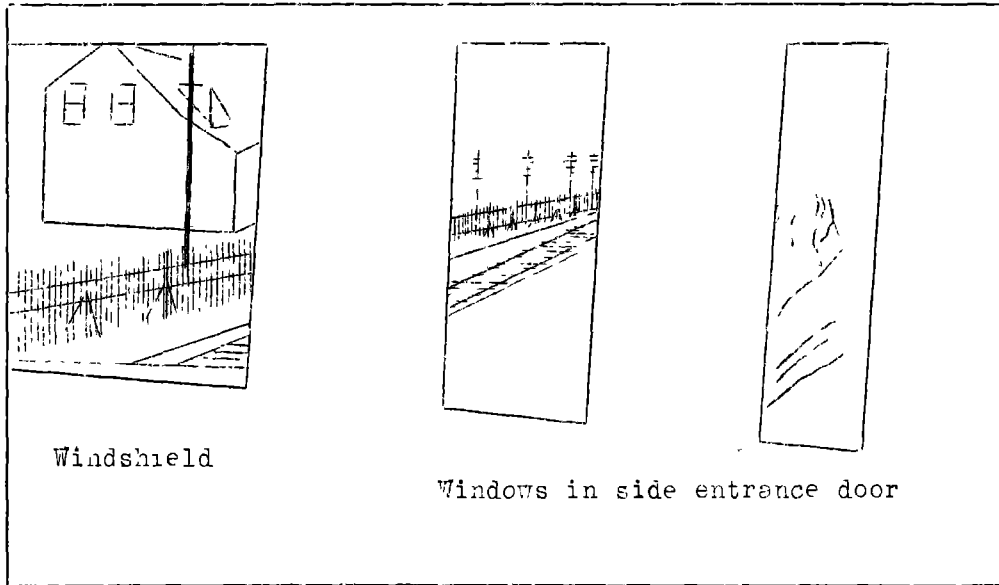
When questioned concerning the fact that the contract covered only the school year 1931-1932, Mr. Grimes stated that there was a definite understanding that it was to be extended for three years, and in answer to a question as to whether this contract would be considered binding upon Mr. Poe except when transporting children upon the regular route, Mr. Grimes said that while it was not a requirement of the Board of Education, yet it had been the practice to respond to calls from the principals or teachers for special occasions and that the trip to the chemistry show at the University of Maryland was one which had been made every 2 years for quite a number of years; in making this trip the Board of Education always had taken the position that the provisions of the specifications which are made a part of the contract would apply, and under such an understanding, therefore, it was Mr. Grimes' opinion that Driver Line should have stopped before passing over the crossing at Rockville. Mr. Grimes further stated that the observance of the various safety measures set forth in the specifications by the Board of Education was not checked in a large way but that a representative of the Board had followed the busses, at least when the Board had been given an unfavorable report; there was, however, no fixed policy in checking the bus drivers, for reports concerning them would be received from the parents of the children, and the Board thought a check provided in this manner would be sufficient check on the operation. Mr.

Grimes also stated that he had seen Driver Line on the town portion of his route and that he always had seemed to be driving carefully.

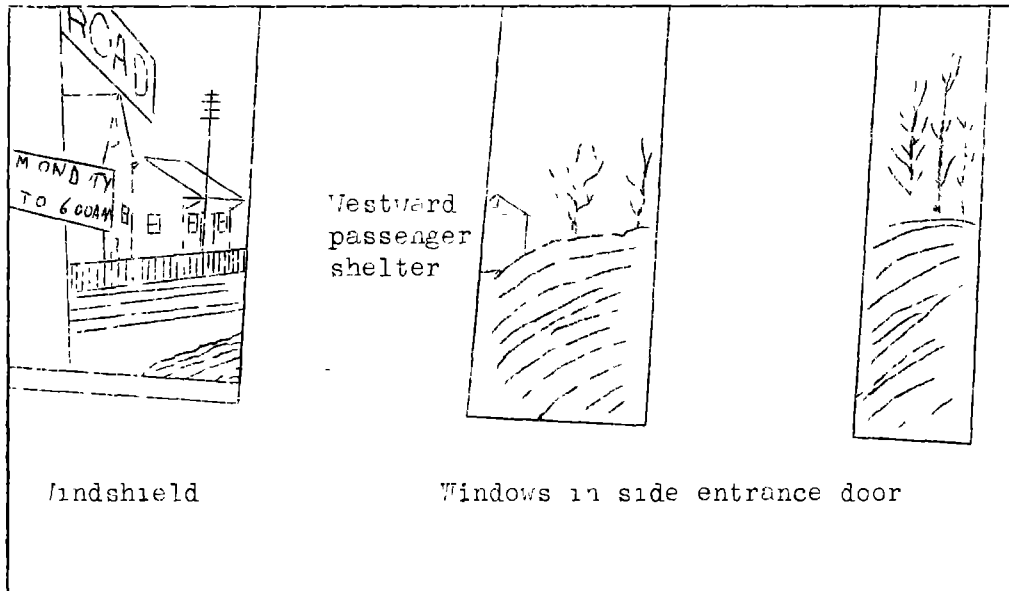
Several of the drivers and holders of contracts for the transportation of students in Washington County were interviewed and it was found that while some of them did not recall having been furnished with a copy of the contract, yet all of them had received copy of the conditions and specifications applicable thereto. These conditions and specifications had been received in some cases several years previously and all of the drivers interviewed said it was their practice to comply with that portion which requires busses to be brought to a stop at railroad crossings.

The records in the office of the commissioner of motor vehicles of the State of Maryland indicated that Driver Line first obtained his driver's license on August 15, 1919, and that his first chauffeur's license was issued on April 18, 1923. There were eight entries on his record beginning with November 1, 1923, and ending with March 13, 1935. On December 29, 1923, he was fined \$10 and costs for failing to reduce speed at an intersection, and was called in and reprimanded for this violation on January 4, 1924. On October 14, 1924 he was charged with reckless driving and fined \$5 and costs. Two accidents were listed in March, 1935; no serious injuries resulted and the reports made by him were filed and no action taken.

The bus involved in this accident was equipped with a Hackney body mounted on a Diamond T chassis, was built in 1935, and had a capacity of 28 passengers in addition to the driver. The front door was built in two sections, with the front section folding outward and the rear section folding inward; there also was an emergency door located on the right side of the rear end of the bus. The driver's seat was located immediately to the left of the center, and in front of the first row of seats; the bus was equipped with a single windshield wiper and hydraulic brakes. The folding front door measured $30\frac{1}{4}$ inches between hinges and each half of the door was equipped with a glass panel, the glass in the front portion of the door measuring $7\frac{1}{4}$ inches in width while in the rear portion it was $5\frac{1}{4}$ inches in width, thus affording an aggregate of only $12\frac{1}{2}$ inches of glass within a distance of $30\frac{1}{4}$ inches; the blind space between these two glass panels measured $10\frac{3}{4}$ inches. Between the right edge of the windshield and the forward side of the first window on the right side of the bus, there was a total distance of approximately 40 inches, with glass only $12\frac{1}{2}$ inches in width available for the vision of the driver. The door is at an angle with the line of vision of the driver, which would reduce these distances to some extent.



23 feet from eastward track



39 feet from eastward track

Operator's View of Tracks from Bus.

A traffic check made from 12 noon, April 18, to 12 noon, April 19, showed that a total of 2,281 vehicles and 37 trains passed over the crossing. During the 16 hours when there was a watchman on duty there were 2,112 vehicles and 29 trains, and during the 8-hour period from 10 p. m. to 6 a. m., when there was no watchman on duty, there were 169 vehicles and 8 trains. The maximum hourly traffic of 167 vehicles passed during the period 4 p. m. to 5 p. m. and the minimum hourly traffic of 3 vehicles passed during the period 3 a. m. to 4 a. m. The heaviest hourly train movement was 5, between 2 p. m. and 3 p. m., and there were several periods of 1 hour when there were no train movements. One of the days on which this traffic check was made was a school holiday. During the period of this traffic check, observation of the time the crossing bells were operated indicated that through east-bound passenger trains traveled at speeds ranging from 55 to more than 70 miles per hour.

According to the records of the Baltimore & Ohio Railroad, since January 1, 1920, there have been two accidents at this crossing, one on November 28, 1924, when an automobile struck the side of an engine, injuring three of the eight occupants of the automobile, and another on April 29, 1930, when a train struck an automobile, killing the driver; each of these accidents occurred after 10 p. m. It further appeared that the railroad had no record of any changes made in the character of protection provided at this crossing during the 10-year period prior to the accident here under investigation. Gates were located at this point more than 20 years ago, controlled from a nearby tower, but the residents wanted the services of the crossing watchman to be continued and the gates, therefore, were subsequently removed.

Numerous tests and observations were made by the Commission's representatives in connection with the investigation of this accident, and the fact was developed that at times the steam escaping from an engine whistle could be seen but apparently because of atmospheric conditions, the contour of the ground, location of buildings and trees, or other local conditions, the sound could not be heard until the engine was less than 650 feet from the crossing, while in the case of a rapidly-moving train the engine bell could not be heard at any time from a point on the highway close to the tracks although the clapper was seen to be operating; it also appeared that the crossing bells would be difficult to hear by a person in a closed car moving along the highway, but when standing opposite one of these bells it could be heard until the front end of the engine was close to the crossing. Using the engine which was hauling Train No. 12 on the night of the accident, it was found that from a point on the highway in the center of the southward traffic lane 23 feet from the north rail of the eastward main track, the headlight of the engine could

be seen when 1,486 feet from the crossing while the fireman could see automobile headlights located at the above-mentioned point on the highway when the engine was 920 feet from the crossing; at a point 39 feet from the eastward track the corresponding distances were 522 and 407 feet, respectively, and at a point 63 feet from the eastward track these distances were 300 and 242 feet, respectively. It also was noted that from the position on the highway 39 feet from the eastward track a brief view could be had back of the westward station shelter when the headlight was 1,545 feet distant. It was particularly noted that when closely approaching the 23-foot point, the sign under the cross-bar sign reading "NO WATCHMAN ON DUTY 10.00 P.M. TO 6.00 A.M." blended with the south side of the westward station shelter in such a way as to cut off practically all view of an approaching east-bound train; this condition, however, prevailed only for a fraction of a second when observed from a moving vehicle passing the sign. Attention also is called to the fact that observations made of the operation of school busses over this crossing during the period covered by the traffic check previously mentioned, and also at other times, showed that in several cases no material reduction in speed was made, even when loaded to capacity with school children; in fact, the only school bus which made a stop contained no passengers.

Subsequent to the accident changes were made in the protection provided for highway traffic. The warnings painted on the highway pavement to indicate approach to a railroad crossing, which were very indistinct on the day after the accident, were repainted to show a white centerline for a length of 285 feet, ending 114 feet north of the eastward track, and yellow bars were painted across the right half of the pavement beginning at a point 382 feet north of the eastward track, with the letters "RR" between them; yellow bars also were painted across the right half of the pavement about 128 feet north of the eastward track. On April 27 the Baltimore & Ohio Railroad received a letter from the town clerk of Rockville requesting that an additional watchman be placed at the crossing in question to cover the hours from 10 p. m. to 6 a. m., and in compliance with this request the additional watchman was placed at the crossing, effective on the same date, while the sign notifying users of the highway that a watchman was not on duty from 10 p. m. to 6 a. m. was removed and the use of the red lights which had been placed on the cross-bar signs was discontinued.

Discussion

Driver Line said in substance that the speed of his bus had not exceeded 30 or 35 miles per hour at any point, that he approached the crossing at a speed of from 12 to 17 miles per hour, and that he made a further reduction in speed to 10 miles per hour; as he was about to enter upon the crossing at a speed of 10 or 12 miles per hour, with the bus still in high gear, he heard a bell which he said was the engine bell, and then stepped on the accelerator in an endeavor to get the bus across the tracks.

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It further appeared from his statements that he saw the red lantern which was mounted on the cross-bar sign but that he did not see any of the other crossing warning signs, neither did he see the headlight of the engine or hear the whistle or the crossing bells; at the same time, however, he said he knew he was approaching a crossing. Driver Line was unable to explain why he failed to see the reflector-button warning sign.

Not only did observations made by the Commission's representatives indicate that the bell heard by Driver Line was a crossing bell and not the engine bell, but several of the occupants of the bus said they saw the reflector-button warning sign and also the headlight of the engine. Careful inquiry was made, therefore, as to conditions which might have interfered in any way with the proper handling of the bus by Driver Line, or with his observance of warning signs, but none could be found. He said he did not see the automobile approaching from the opposite side of the track, thus indicating that the headlights of that automobile did not interfere with his view; there was evidence that there was no singing or other noise inside the bus to distract his attention; there was nothing about the operation of the bus or its headlights to cause him any concern, nor was there anyone standing up in the front end to cut off his view either to the front or to the side, while he said the construction of the side entrance door did not cause him any difficulty in maintaining a proper lookout. In view of these facts, and the further fact that the various signs of the reflector-button type used on the highways in the vicinity of the point of accident, including the sign here involved, show up very clearly at night, there is no reason why he should not have known of the exact location of the crossing in ample time to enable him to take the precautions necessary to be taken by every motorist before passing over a railroad crossing at grade, and which were especially incumbent upon him when driving a loaded bus at night on a strange road and in rainy weather. Driver Line should have seen the warning signs, and then approached close to the crossing, stopped, and ascertained definitely whether a train was approaching, opening the entrance door if necessary in order to enable him to see or hear distinctly; this action should have been taken regardless of the fact that he had not been told of the requirement of the Board of Education about stopping for railroad crossings, and would have resulted in his seeing the headlight of the engine and hearing the crossing bells, in which event the accident could have been prevented.

In response to an inquiry concerning the authority of state, county and town authorities to require protection at railroad crossings, generally and in respect to the crossing involved in this accident, the Attorney-General of the State of Maryland advised that undoubtedly the state under its general police powers has authority to make reasonable regulations and requirements, uniform and general in their application, for the protection of grade crossings, and that the county and town authorities

would have only such authority as is given to them by the legislature.

In the town of Rockville the council has been given power to pass all ordinances necessary for the good government of the town, while under article 23, section 240, of the Public General laws of Maryland, the county commissioners of Maryland counties are given certain powers on the subject in question, the section referred to providing in substance that at grade crossings outside of the corporate limits of cities it shall be the duty of the county commissioners, if the crossing be considered dangerous and they find further protection is necessary, to notify the railroad involved either to place a flagman or bells or gates, or that it shall change the crossing so as to pass the highway with an under or over grade crossing. An act of 1908, specifying that the Baltimore & Ohio Railroad maintain gates and watchmen at two crossings in Prince George's County, was held unconstitutional by the Maryland Court of Appeals because it was a special law making particular provision for two crossings of the same kind as provided for in ^{the} general law referred to above, the attorney-general advising that this case decides nothing with respect to crossings within corporate limits such as the one at Rockville.

Section 846, article 16, of the Public Local Laws of Maryland, reads as follows:

"The Baltimore and Ohio Railroad Company is hereby required to keep in addition to the safety gates operated from the present or any tower a flagman or signalman stationed during each and every day from 6 A.M. to 12 o'clock midnight, at the crossing of its railroad over Baltimore Street in said town, to warn persons using said crossing over said railroad at said crossing of the approach of trains upon said railroad, and that said railroad company shall not require any one such flagman or signalman to serve for more than nine hours during the course of any day at said crossing."

The attorney-general pointed out that this section has not been passed upon by the Maryland Court of Appeals, but has been in the statute books since 1910 and apparently in force. It further appeared that the attorney-general knew of no county or town regulations applying to the crossing in question, and that no statutory provisions were found which applied particularly to school or bus drivers approaching grade crossings.

The question of responsibility for enforcing local laws, however, is a matter which does not lie within the province of this investigation. The provision of law quoted above requires watchmen until midnight "in addition to the safety gates operated

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from the present or any tower", but there have not been any gates at this point for many years.

Particular attention is directed to the requirement of the Board of Education of Washington County to the effect that all busses must be brought to a full stop at least 25 feet from a railroad crossing at grade and that the driver must be sure there is no danger from approaching trains or cars before attempting to drive across the tracks; this requirement is embodied in the specifications and conditions applicable to the holders of contracts for the transportation of students in busses. Mr. Poe, the owner of the bus involved in this accident, said he had never seen, heard or been instructed concerning the requirement about stopping for railroad crossings, that he had never done so in actual practice when personally driving the bus, and that he had never instructed his relief driver, Mr. Line, to do so, while the relief driver stated that he had never heard of the requirement and that it was not his practice to stop at crossings. In contrast to these statements by Mr. Poe, interviews had with five other holders of contracts for the transportation of students in Washington County, together with two others who drive school busses in that county, developed that all seven were acquainted with the requirement about stopping for railroad crossings, had known of it for several years, and had been furnished with a copy of the specifications; they also said that it was their practice to stop at railroad crossings. There is no corroborative evidence to prove that Mr. Poe did or did not know of the requirement in question other than the statement of Mr. Line that he never had been instructed to stop at crossings, and each of these two witnesses said it was not his practice to stop. Such a situation should not be permitted to continue; rules and regulations having to do with safety in the operation of busses should be enforced and obeyed at all times and under all circumstances and such enforcement and obedience should be placed above any other consideration.

The view at this crossing is not good; in fact the conditions are such that for all practical purposes it is necessary for the driver of a south-bound vehicle to be beyond the cross-bar sign before he can obtain a good view of a train approaching from the west, and at that point the front end of his vehicle, especially in the case of a large truck or bus, would be dangerously close to the westward track. While the view is somewhat improved in the case of a north-bound vehicle, yet the need for better protection then obtained at the time of the accident is evident. The circumstances surrounding the occurrence of this accident, however, serve to emphasize the limitations of any system of grade-crossing protection which depends entirely upon audible signals. Not only was it impossible when close to the crossing involved in this

case to hear the engine bell of a rapidly-moving train, but under certain circumstances it also was impossible, even when not occupying a closed automobile, to hear the whistle until the engine was less than 650 feet distant. Crossing bells may have constituted an adequate warning many years ago, but they are insufficient for modern methods of highway transportation. A much greater degree of protection would be afforded by the display of a visual signal giving positive warning of the close approach of a train. Recognition must be given to the fact that there is no effective substitute for the exercise of common sense and sound judgement on the part of drivers of motor vehicles, and while no form of grade-crossing protection suitable for every-day use is a certain preventive, yet steps can and should be taken to provide such protection of a visual nature as will enable a driver, by the exercise of reasonable precaution, to cross railroad tracks even at crossings where the view is obstructed, without running unnecessary risks.

Driver Line said that the manner in which the side-door entrance to the bus was constructed did not interfere with his view; careful examination of this portion of the bus, however, did not support this statement, for measurements of the space between the right end of the windshield and the beginning of the first side window on that side of the bus showed that within this distance of approximately 40 inches there was only about $12\frac{1}{2}$ inches of glass through which a view to the right could be obtained from the driver's seat, this $12\frac{1}{2}$ inches consisting of one panel $7\frac{1}{2}$ inches wide and another panel $5\frac{1}{4}$ inches wide, with a dead space on either side of each glass which was considerably wider than the glass itself. The company which manufactured the body of this bus also equips bus bodies with a sedan-type entrance door, at extra cost, which furnishes practically the same vision as an ordinary window; had the bus involved in the accident been so equipped, it would have given Driver Line a much better opportunity of observing the headlight of the approaching engine.

With the extensive development of bus transportation there is increasing necessity for measures to guard against the occurrence of accidents of the kind here involved, and it has been observed that in many states commercial busses operating on regularly established routes are brought to a full stop before passing over railroad crossings at grade, even when such crossings are protected by flashing-light signals or other devices. In Maryland the Public Service Commission, in its Order No. 12184, dated December 7, 1927, prescribed rules and regulations governing the control and operation of motor vehicles engaged in the public transportation of persons or property for hire, operating under permits issued by that Commission, and paragraph 32 of these rules requires such

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passenger motor vehicles to come to a full stop at all grade crossings. This order of the Maryland Public Service Commission, however, does not apply to school busses, which under section 252 of article 56 of the Annotated Code of the Public General Laws of Maryland are exempted from the provisions applicable to public passenger motor vehicles. At the last session of the Maryland legislature a bill was introduced for the purpose of revising the motor vehicle laws and section 238 of this bill directed the Public Service Commission to adopt and enforce regulations governing the design and operation of school busses; this bill however, entitled "Senate Bill No. 457", was not enacted into law. Certainly a bus load of school children should be given as much protection as a load of passengers in a commercial bus; notwithstanding the example of this disastrous accident, however, busses loaded to capacity with school children have since been operated over this same crossing without stopping and in many cases without any material reduction in speed. The fact that a watchman is on duty when these busses pass over the crossing is entirely beside the issue; drivers of all types of busses carrying passengers should so operate their busses as to be in position themselves to safeguard the lives of those riding with them instead of depending upon some one else to do it for them. Busses as well as other vehicles stop at boulevard intersections on the public highways, and in view of the disastrous results which might otherwise follow, busses should as a minimum safeguard take similar precautions at railroad crossings.

The evidence developed as a result of the investigation of this accident clearly shows that there is no reasonable excuse to be offered for its occurrence. Even though the driver did not know anything about the requirement of the school board that he stop before passing over grade crossings, it was his duty to take the precautions which every driver should take before entering upon a crossing, and had he done so in this case, or had the protection required by law actually been provided, the accident would beyond reasonable doubt have been prevented. The bus should have been stopped and the driver should have made certain that it was safe to proceed; the railroad company was required by law to maintain a watchman during that part of the day within which this accident occurred, and responsible state or local authorities should have seen to it that this requirement of law was enforced.

Conclusions

This accident was caused by a school bus being driven upon a railroad crossing at grade directly in front of a rapidly-approaching train, due primarily to the failure of the driver to take adequate precautions before starting over the crossing, and to inadequate protection of the crossing which resulted from failure of responsible authorities to enforce, and of the railroad company to obey, the law requiring maintenance of a watchman until 12 o'clock midnight.

Recommendations

The following recommendations are made:

1. That responsible authorities take necessary steps to enforce the existing laws, regulations or ordinances regarding protection required to be provided at grade crossings within their respective jurisdictions.
2. That continuous crossing protection be provided permanently at this point, by watchmen, flashing lights, or other visual signal devices to give warning at all times when a train is approaching.
3. That responsible authorities see to it that all holders of contracts for the transportation of students by bus are thoroughly informed and instructed regarding the requirement that all busses must be brought to a full stop at least 25 feet from any grade crossing and that the driver must be sure there is no danger from approaching trains or cars before attempting to drive his bus across the tracks, and then take adequate measures to insure that this requirement is rigidly enforced and obeyed.
4. That front-end construction of motor vehicles should provide the driver with a full view to each side as well as to the front.
5. That, whenever practicable, busses should be routed so as to avoid grade crossings which are not protected by watchmen, or devices to give visual warning at all times when a train is approaching.

Respectfully submitted,

W. J. PATTERSON

Director.