INTERSTATE COMMERCE COMMISSION

REPORT OF THE DIRECTOR OF THE BUREAU OF SAFETY CONCERNING AN ACCIDENT ON THE PENNSYLVANIA RAILROAD AT PITTBURGH, PA., ON FEBRUARY 26, 1934.

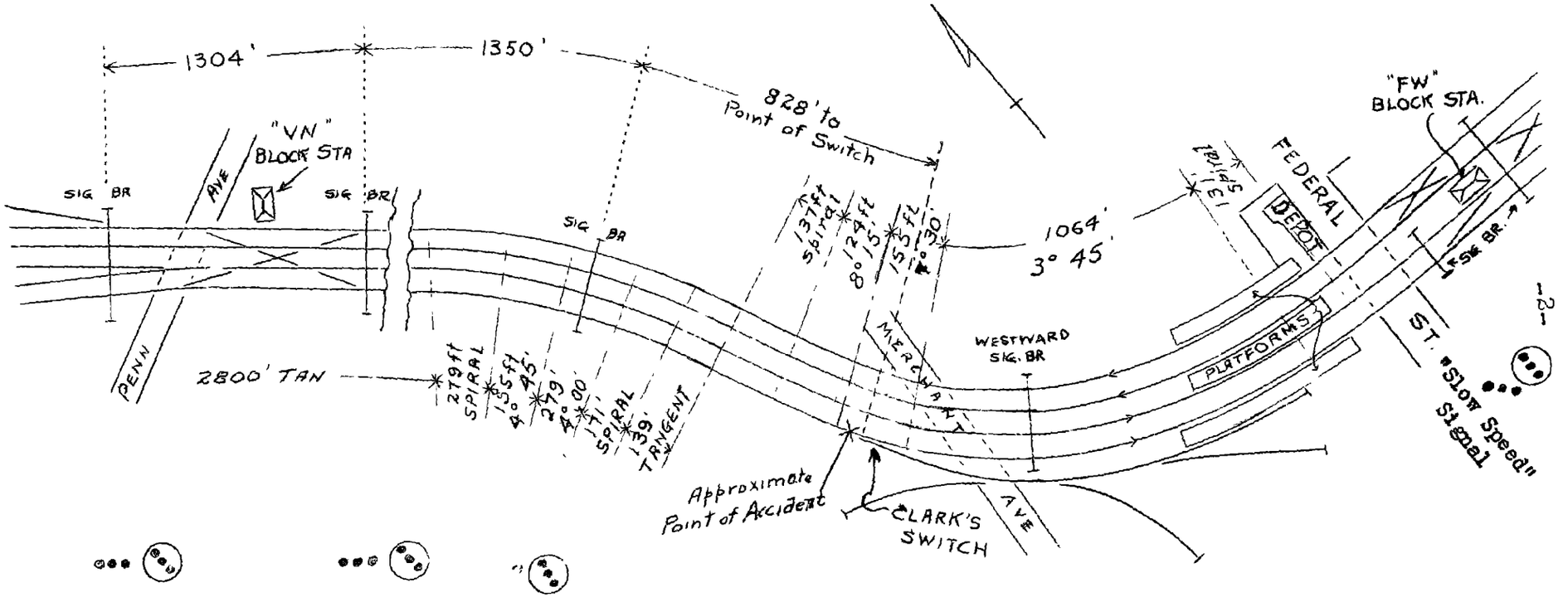
April 4, 1934.

To the Commission:

On February 26, 1934, there was a derailment of a passenger train on the Pennsylvania Railroad at Pittsburgh, Pa., which resulted in the death of 9 passengers and 2 employees, and the injury of 28 passengers, 4 employees on duty, 8 employees off duty, 4 dining-car employees, and 2 Pullman employees. The investigation of this accident was made in conjunction with a representative of the Public Service Commission of Pennsylvania.

Location and method of operation

This accident occurred on the main line of the Eastern Division, Central Region, which extends between Pittsburgh and Crestline, Ohio, a distance of 188.8 miles. The section of track directly involved in this accident was that portion extending between Federal Street and Pennsylvania Avenue, these stations being located 1 and 1.8 miles, respectively, west of Pittsburgh. Within this territory this is a 4-track line and all tracks are signalled for movements in either direction, trains being operated by time table and a controlled-manual block-signal system, with automatic signals for spacing following movements. The tracks are numbered consecutively from south to north; the accident occurred on track 1, the eastward passenger track, at a point about 1,350 feet west of the station at Federal Street, at or near a facing-point switch known as Clark's switch. Approaching this point from the west, the track is tangent for a distance of 2,800 feet, followed by a compound curve to the right 884 feet in length with a maximum curvature of 4° 45'; there is then a tangent 139 feet in length followed by a compound curve to the left 1,611 feet in length, this latter curve consisting, from west to east, of a spiral 137 feet in length, a curve of 8° 15' which is 124 feet in length, a curve of 7° 30' which is 155 feet in length, a 3° 45' curve 1,064 feet in length, and 131 feet of spiral, the point of accident being approximately at the leaving end of the 8° 15' portion of the curve. The grade is 0.44 percent descending for a considerable distance, following which it is nearly level for 1,500 feet and then 0.58 percent ascending for nearly 500 feet to the point of accident and for a short distance beyond that point.



"Approach Restricting" Signal

"Approach Restricting" Signal

"Approach" Signal

Signal Indication shown for Train No.1638

INV. NO. 1897
PENNSYLVANIA RAILROAD
PITTSBURGH PA.
Feb. 26, 1934

The track is laid with 130-pound rails, 39 and 43 feet in length, with 22 treated ties to the 39-foot rail length, ballasted with limestone to a depth of 12 inches below the ties. On the curve where the accident occurred heavy-duty tieplates are used, with two rail-holding spikes and one plate-holding spike on the inside of each rail and one rail-holding spike and one plate-holding spike on the outside. Approaching Pittsburgh, the speed limit for passenger trains is 70 miles per hour but on the curve to the right first mentioned above, the speed limit is 40 miles per hour, and a restriction of 25 miles per hour is in effect on the curve where the accident occurred.

West of the point of accident the tracks extend through a cut for a distance of about 3,000 feet but on nearing the point of accident the tracks are at the natural ground level and then they pass upon a fill, Merchant Avenue passing under the tracks a short distance east of the point of derailment. Clark's switch, which is located on the receiving end of the 7° 30' portion of the curve to the left, leads off to the right to a spur track which parallels the main track for a short distance.

The signals in the vicinity, of the position-light type, are mounted on signal bridges which span all of the main tracks. One of these signal bridges is located at Pennsylvania Avenue west of the tower, another is a short distance east of the tower, and a third is located on the curve to the right immediately preceding the curve on which the accident occurred. These signal bridges are located 3,482, 2,178, and 828 feet, respectively, west of Clark's switch, and the circuits are so arranged that when the track ahead is clear the engineman of an east-bound train receives an approach-restricting indication at each of the first two signals and an approach indication at the last signal, these being the most favorable indications displayed by these signals. Under the rules, a train receiving an approach-restricting indication is required to "approach next signal at not exceeding one-half its maximum authorized speed at point involved but not exceeding 30 miles per hour," while an approach indication requires the train governed thereby to "approach next signal prepared to stop. A train exceeding one-half its maximum authorized speed at point involved must at once reduce to not exceeding that speed."

It had been snowing but had stopped at the time of the accident, which occurred about 9:32 p.m.

Description

East-bound passenger Train No. 1638 consisted of 1 combination baggage and passenger car, 1 coach, 1 dining car, and 2 Pullman sleeping cars, all of steel construction, hauled by engine 7274, and was in charge of Conductor Shank and Engineman Shaw. It entered upon the tracksof this division at Homewood Junction, 34.8 miles from Pittsburgh, at 8:40 p.m., according to the train sheet, 3 minutes late, and made a station stop at Roch-

ester, Pa., 25.8 miles from Pittsburgh. It left that station at 9:06 p.m., according to the train sheet, 17 minutes late, having lost time on account of the engine not steaming well, stopped at Sewickley, 12.5 miles from Pittsburgh, passed Pennsylvania Avenue, 0.8 mile from Federal Street, at 9:31 p.m., 13 minutes late, and was approaching the station at Federal Street when it was derailed while traveling at a speed estimated to have been approximately 60 miles per hour.

The entire train was derailed; the engine then struck a steel box car standing on the spur track and knocked it into a nearby building, then passed through and demolished a brick transformer house on the west side of Merchant Avenue, following which it fell into Merchant Avenue on its right side with the front end of the engine 280 feet beyond the point of switch. The tender remained upright in line with and behind the engine and the first car stopped practically upright with its front end in the corner of the building first mentioned above. The second car passed to the left of the first car and its head end crossed Merchant Avenue and demolished an abandoned brick interlocking tower, the car stopping on its right side with its rear end on top of the engine; the third car followed the siding to a point east of Merchant Avenue and then headed down the embankment and stopped upright nearly at right angles to the track, with its head end across a street which parallels the tracks at that point and its rear end resting on the embankment; the head end of this car was about 200 feet from the engine; the fourth car also remained upright and stopped on the right-of-way with its rear end just beyond the head end of the second car, while the fifth car was partly overturned and stopped with its head end partly embedded in the rear of the coach, over the engine, and its rear end resting against the head end of the combination car. The engine was badly damaged, the combination car and coach were practically destroyed, the dining car was badly damaged, and considerable damage was sustained by the two sleeping cars, while the box car struck by the engine was destroyed. The employees killed were the engineman and fireman, and the employees on duty who were injured were the conductor, baggageman, brakeman, and flagman.

Summary of evidence

Conductor Shank, who was interviewed in a hospital on March 8, did not remember at what point in the train he was located at the time the accident occurred nor how fast the train was traveling; he stated, however, that the speed had not been such as to cause him to think that the train was going too fast, although he knew it was making a good run.

Brakeman Weaver said he had just gone into the combination car when the train passed Pennsylvania Avenue at a speed of about 40 miles per hour and was talking with Trainmaster Lowery about helping a passenger in the coach when the train was derailed; he did not think the train was going any faster than usual.

Baggagemaster Nee thought the speed was about 50 miles per hour and did not think it was excessive, although he said the train was farther along toward Federal Street than he thought was the case. It seemed to him that there was a reduction in speed between Pennsylvania Avenue and the point of accident.

Flagman Thorndell heard the whistle sounded at Island Avenue, 1.7 miles west of Federal Street, and when passing Pennsylvania Avenue he opened the rear door of the rear car and exchanged signals with the towerman; he had just come into the car and shut the door when the accident occurred. It had seemed to him that the speed was too high in view of the 25-mile speed restriction and he estimated the speed at the time to have been 35 or 40 miles per hour.

Passenger Trainmaster Lowery, who was riding in the combination car, was interviewed briefly and said he did not hear the whistle sounded when approaching Island Avenue; the train approached Pennsylvania Avenue at a speed of about 60 miles per hour. When the head end of the train passed the tower at that point without any reduction in speed having been made, he got up and signaled the engineman to reduce speed and he said he had just returned to his seat when the accident occurred, without any application of the brakes having been made; none of the members of the train crew had noticed an application of the brakes, nor had any of them seen or heard a reduce-speed signal given by any one.

Several employees off duty were on the train at the time, riding in the combination car; their statements did not indicate that there had been any unusual swaying of the car and none of them noticed the whistle being sounded or a reduce-speed signal being given. One of them said the speed west of Pennsylvania Avenue was 50 miles per hour, that the brakes were applied after passing Pennsylvania Avenue reducing the speed to between 25 and 35 miles per hour, and that the speed at the time of the accident was 25 or 30 miles per hour; the others, however, did not notice any application of the brakes and their estimates as to the rate of speed at the time of the accident varied from 45 to more than 60 miles per hour, while some of them had been alarmed at the way in which the train was being operated.

Block Operator - Leverman McLaughlin, on duty at Pennsylvania Avenue, said Train No. 1638 passed the tower at a speed of 45 or 50 miles per hour, this being the usual rate of speed; he noted, however, that there were no sparks flying from the wheels, indicating that the brakes had not been applied, although it was customary for the brakes to be applied when passing the tower. It also appeared from his statements that the signal east of the tower governing track 1 was displaying an approach-restricting indication. Telephone Operator Lively, also on duty in the tower at Pennsylvania Avenue, estimated the speed to have been from 50 to 55 miles per hour but he said he was not a good judge of speed.

J. W. Fellinger, an eyewitness, was driving his automobile on the north side of the tracks at a speed of 35 miles per hour; he said the train passed him at a speed of at least 45 miles per hour. His attention was attracted to the train because of the fact that it was running so much faster than other trains he had observed in the vicinity, his thought being that it would be derailed if it continued at that speed. He saw the engine start to turn over before falling into the street and had not noticed any fire flying from the brakes.

Passenger Brakeman Loveland, who lives near the scene of the accident, heard the noise at the time of its occurrence and immediately proceeded to the scene; on his arrival he took a red lantern from the flagman and started west along the tracks, first telephoning from the telephone at Clark's switch and then continuing back to Pennsylvania Avenue. Brakeman Loveland did not make a detailed examination of the switch but said he noticed that the south point was about 3 inches away from the stock rail and that the north point was about 2 inches from the running rail.

Supervisor of Track Callahan was in his office at Federal Street at the time of the accident; he reached the scene a few minutes afterwards and proceeding westward until he came to Clark's switch, he found the switch points open; he measured them later and found that the south point was $2\frac{3}{4}$ inches from the stock rail; this condition appeared to have been due to damage which the switch mechanism had sustained. There were no marks on the switch points or the frog, and the rails in the main track between the switch points and the frog were intact, the only marks he found on the rails in this vicinity consisting of a slight rubbing on the gauge side of the outer rail which began near the heel of the switch point and extended eastward a distance of about 4 feet diagonally across the head of the rail to the point where it disappeared in the center of the running surface, and a similar mark of the same length also was found directly opposite, on the south rail of the siding. East of the frog three rails were torn loose in the south rail of the main track while the south rail of the siding was torn out beginning 15 feet east of the heel of the switch point and both rails of the siding were torn out starting at a point 30 feet east of the frog. The first evidence of anything wrong was a broken track circuit connection 18 feet 1 inch west of the point of the switch, this wire having been broken at a point 35 inches from the outside of the south rail, and he said that if it had been broken prior to the accident it would have caused the preceding signal to display a stop indication. The next marks east of this broken wire consisted of indentations on the tops of the fourth, second and first ties west of the point of the switch; these marks were 15 or 16 inches from the south rail, on the outside, and were 3/8 inch deep and 2 or $2\frac{1}{4}$ inches wide. The switch mechanism, of the T-10 type, which had rested on the head-block ties had been torn off and the locking mechanism de-

stroyed, releasing the operating rod and the front lock rod and permitting the points of the switch to be free. Beginning at the third tie east of the point of switch the south ends of the ties were badly marked and splintered. Supervisor Callahan was unable to find any flange marks in the vicinity of the switch or between the two main-track rails, and it was his opinion that the switch mechanism was demolished by the same object that made the marks on the outside of the south rail. He did not think the switch caused the accident, saying that if the train had been derailed by an open switch there would have been flange marks to indicate that condition. Supervisor Callahan also stated that the gauge side of the stock rail had been milled so as to form a recess into which the south point of the switch would fit; this is their standard practice, and is done so as to have a continuous gauge line and prevent any possible chance of a flange striking the point.

Superintendent Adams, of the Panhandle Division, reached the scene of the accident about half an hour after its occurrence and verified the statements of Supervisor Callahan as to the switch points being free as a result of the destruction of the switch mechanism, and as to the absence of marks on the switch points and between the main-track rails. After a study of the various marks which were found, and the condition and position of the equipment, it was his opinion that there was an overturning movement of the engine as it was approaching the switch and that the marks found on the outside of the outer rail were made by the pedestal springs of the trailer truck with the engine partly overturned, and that the switch mechanism case might have been struck by the back end of the main rod when at its bottom point.

Master Mechanic Chafin reached the scene about 3:40 a.m., and on examining the engine he found the brake valve in emergency position with the throttle lever open to the extent of 8 notches. His examination of the engine at the scene of the accident, and subsequent test of the air compressor, independent and automatic brake valves, feed valve and brake cylinders, failed to develop anything which could have had any bearing on the cause of the accident. Examination also was made of all air hose that were recovered and of the train-line pipe on the rear of the tender, and they were found to be free from ice or moisture. Master Mechanic Chafin further stated that at the point of accident the fireman customarily is riding on his seat box in order to observe signal indications at Federal Street, which can not be seen by the engineman on account of the curvature of the track, and judging from where the bodies of the engineman and fireman were found he thought the engineman was on his seat box when the accident occurred but that the fireman was down on the deck, possibly on his way over to the engineman's side for the purpose of applying the brakes and stopping the train.

Locomotive Inspector Cox, on duty at Akron when engine 7274 arrived with west-bound Train No. 1639 on the morning of the accident, said he inspected the engine and tender, this inspection including testing of the air-brake equipment, and he found everything in good order. Car Inspector Henthorne at Akron inspected the cars in Train No. 1639, which subsequently went out in Train No. 1638, and found no defects. Car Inspector Andrews made the air-brake inspection and test on Train No. 1638 prior to its departure from Akron and found the brakes to be working properly.

Crew Dispatcher Lewis said Engineman Shaw, together with Fireman Douthitt, reported at the crew dispatcher's window at Akron at the usual time, about 5 p.m., signed the register and presented their time tables for checking, and Engineman Shaw also examined the general order board. Dispatcher Lewis talked with both men and he said they appeared to be in normal condition and in good spirits. Locomotive Inspector Cox saw both the engineman and fireman earlier in the afternoon while Car Inspector Andrews talked with Engineman Shaw prior to the departure of the train, and both of these inspectors said the engineman seemed to be normal in every way. Enginehouse Foreman Rhine said engine 7274 arrived in Akron that morning and reached the inspection pit at 9:05 a.m.; the usual work report was made out by the incoming engineman, covering only defects of a minor nature, and these were attended to and the inspector's report examined before the engine was dispatched. Foreman Rhine also said that he boarded the engine and rode a short distance from the engine house with Engineman Shaw, and the engineman seemed to be in good health and in normal condition in every way although he had been off duty some time previously on account of illness. In this connection, it was noted that A. W. Wilkinson, Assistant Medical Examiner, New Castle, Pa., examined Engineman Shaw on February 23, 1934, this being the annual examination, and in a statement dated March 1, he said Engineman Shaw, who gave his age as 59, was a healthy, robust-appearing man and that his heart action was regular, the quality of sounds good, with no murmurs, and that there was no sclerosis present; the blood pressure was 134 systolic and 72 diastolic, the pulse regular and of good volume, and the urinalysis had a strong acid reaction with no albumen, sugar or casts. Conductor Shank talked with Engineman Shaw before the train left Akron and also compared time with him and he said the engineman appeared to be in normal condition and did not say anything about a cold he had complained of on a previous trip as having caused him to have pains in his chest and lungs.

E. M. Fisher, Assistant Trainmaster and Assistant Road Foreman of Engines, said he had known Engineman Shaw for many years and considered him to be a sober, industrious employee, interested in his work, and one who paid careful attention to his duties; he had last made observation of Engineman Shaw's work on February 21 while on the engine with him. He said Engineman Shaw was as-

signed to this run on January 18, making the first trip on January 21. Assistant Trainmaster Fisher also stated that when moving at speed under normal conditions the engineman of an east-bound passenger train approaching Federal Street would begin braking 1,000 feet or less west of Pennsylvania Avenue. The statements of five other road foremen and assistant road foremen of engines, some of whom were acquainted with Engineman Shaw, practically corroborated those of Assistant Trainmaster Fisher.

The last train which passed over the track prior to the derailment was Train No. 736, which passed Federal Street at 9:07 p.m., and Engineman Fletcher, who was running that train, said he did not notice any unusual condition in the vicinity of Clark's switch and that on arrival at Pittsburgh he examined his engine, found nothing wrong with it, and subsequently turned it and departed on a west-bound train. The car inspector who examined the equipment in Train No. 736 on its arrival at Pittsburgh said there was nothing wrong with the equipment and the cars were dispatched immediately in another train.

The last yard crew to use Clark s switch on the day of the accident was the crew of engine 9911, which made a movement from Pennsylvania Avenue to Federal Street and return, all on track 1, leaving Pennsylvania Avenue at 3:05 p.m. and returning to that point at 3:51 p.m. Conductor Holliday, who was in charge of the crew, said there was no trouble in operating the switch, that he personally closed and locked it, and that the points fitted properly and the switch was in good condition. Movement Director Haley said the movement made by engine 9911 back to Pennsylvania Avenue was the last reverse movement made on track 1 prior to the accident and that subsequent to the movement of engine 9911 there had been 21 east-bound trains moved over the track from Pennsylvania Avenue to Federal Street prior to the derailment of Train No. 1638.

The switch at Clark's siding was operated by a Union Switch & Signal Company type T-10 mechanism, electrically locked by a circuit controlled from FW tower, at Federal Street; it is also mechanically locked and in addition is equipped with a point detector the purpose of which is to shunt the track circuits in case the switch points should become damaged by a trailing movement while in normal position. Signal Maintainer Palmer, on duty at Pennsylvania Avenue at the time of the accident, said that before Train No. 1638 passed he had noticed that an approach-restricting indication was displayed at the signal bridge east of the tower and an approach indication on the signal bridge a short distance west of the point of accident. Shortly after the passage of Train No. 1638 he saw the latter signal at stop, with an approach indication displayed on the bridge immediately east of the tower. E. B. Pry, Superintendent of Telegraph and Signals, said the speed restriction of 25 miles per hour at the point of

accident was due to the curvature of the track and not to the presence of the facing-point switch. It was Mr. Pry's opinion that had cab signals been in use in this territory the fireman would have been warned if the engineman failed to acknowledge the restrictive signals displayed for his train as it approached the point of accident. He also thought that a speed control device would have functioned so as to control the speed of the train, but that an automatic stop device would not have been of any more benefit than a cab signal device unless both the engineman and fireman had been incapacitated, in which event such a device would have functioned to bring the train to a stop. Signal Supervisor Lutz said a semi-monthly inspection was made of Clark's switch by the maintainer and the section foreman, who signed a joint report relative to the general condition of the switch and its connections, and he said that there had never been any difficulty in maintaining the switch nor had there ever been any excessive wear on the locking mechanism.

The Commission's inspectors made careful examination of the track, equipment and signals, but were unable to find any conditions essentially different from those described by the various witnesses, although from one of the blue prints it was noted that the gauge was 4 feet 8½ inches at a point 15½ feet east of the point of switch while 62 feet west of the point of switch the gauge was 4 feet 9¼ inches; the maximum elevation of the curve was 3 inches. After the engine had been removed to the shops, the wheel treads were cleaned with gasoline and it was found that there were distinct marks on the treads of all wheels on the right side of the engine with the exception of the lead engine-truck wheel; these marks were continuous around the entire circumference of the treads, varying from 1/16 to ½ inch in width. On the rear engine-truck wheel these marks were from 2½ to 2-7/8 inches from the throat of the flange; on the front driving wheel these distances varied from 1 to 1-3/8 inches; on the main driving wheel on which there was a blind tire the marks were from 7/8 inch to 1-1/16 inches from the inside edge of the tire; on the back driving wheel the distance from the throat of the flange varied from 7/8 inch to 1 inch, and on the trailer truck wheel the distance varied from 3/8 inch to 5/8 inch. These marks were quite pronounced and were very different from marks usually found on wheel treads. There were no such marks on the wheels on the left side of the engine and examination of the wheels of another engine of the same type did not disclose the presence of any of these marks; it was thought they were caused by the treads of the wheels bearing heavily against the rounded outside edges of the rails when the engine was in process of overturning; these rails had been somewhat flange-worn while laid on tangent track and had been relaid on this curve in such manner as to bring the flange-worn edge of the running surface on the outside. An examination of these rounded surfaces did not reveal any marks which probably would have appeared had the outside edges been square in shape.

Conclusions

This accident was caused by excessive speed on a sharp curve.

Out of the four surviving members of the crew and several employees off duty who were riding in the first car in the train, together with the passenger trainmaster, only one said that he noticed an application of the air brakes; not only did none of the others notice any application of the brakes but their statements indicated that the train was moving practically at normal speed when passing Pennsylvania Avenue and that there had been no reduction in the rate of speed when the accident occurred. After the accident the brake valve was found in emergency position and the throttle open. Conclusive evidence of the high speed of the train at the time of the accident was furnished by the condition of the wreckage and the position of the derailed equipment, as well as the fact that there were no flange marks anywhere on the left side of the main track or between the rails, while the only marks on the outside of the outside rail, including the destruction of the switch mechanism case, appeared to have been caused by projecting parts of the engine while it was partly overturned. Train No. 1638 consumed about 26 minutes in making the run from Rochester to the point of accident, a distance of about 24.5 miles, with a station stop at Sewickley, an intermediate station. These figures indicate that it had been averaging about 60 miles per hour and it is believed that it was traveling approximately at this rate of speed at the time of the accident.

The speed of trains on the curve on which the accident occurred was restricted by rule to 25 miles per hour while the speed on the preceding curve was restricted to 40 miles per hour. In addition to these speed restrictions, there were restrictive signal indications displayed on the last three signal bridges preceding the point of accident; the first two were approach-restricting indications on signal bridges located both west and east of Pennsylvania Avenue, which indications required Engineman Shaw to approach the succeeding signal at one-half maximum authorized speed but not to exceed 30 miles per hour, while at the last signal bridge he passed an approach indication was displayed meaning that he should approach the next signal, which was at Federal Street interlocking, prepared to stop and also that he was to reduce speed at once to not more than one-half maximum authorized speed. Engineman Shaw was a thoroughly qualified employee, well acquainted with the territory, and had been on this particular run more than a month, while the records indicated that prior to 1930 he had been on this run for a period of 2 or 3 years. He was considered to be a reliable, efficient engineman, with excellent habits and a good record, and had undergone a physical examination only 3 days prior to the accident. No definite explanation can be given for his apparent failure to control the speed of his train in accordance with signal indications displayed as well as the speed restrictions in effect on the curves involved;

however, the investigation did not indicate that there was anything wrong with the brake equipment on this train; it had been inspected and found to be in proper condition at Akron before starting on this trip, it operated properly en route, and a station stop had been made only a few minutes prior to the accident. Such examination of the damaged equipment as could be made after the accident did not disclose any defective condition which was thought to have existed prior to the accident. In view of the circumstances it appears that Engineman Shaw must have been either dead or so incapacitated as to prevent him from taking the proper steps to bring his train under control.

Passenger Trainmaster Lowery said that when the head end of the train passed the tower at Pennsylvania Avenue without any reduction in the speed, which he estimated to have been 60 miles per hour, he got up and signalled the engineman to reduce speed. There was no other evidence to substantiate the statement that such a signal was given but if in fact the trainmaster did think that the speed was high enough to justify such action upon his part, it was his duty to apply the brakes in case the engineman did not act in accordance with his signal.

On account of the presence of a facing-point switch at or near the point of derailment and the fact that the switch points were found open immediately after the accident, this phase of the matter was given careful attention, but the investigation clearly indicated that the switch had nothing to do with the cause of the accident; it is believed that when the switch mechanism case was demolished as a result of being struck by projecting parts of the engine while it was partly overturned, this allowed the points to be free to move and that they opened under the train, allowing the cars in the rear portion of the train to enter the siding and be derailed on encountering the track which had been damaged by the derailed engine.

At the present time automatic cab signals are in use on this railroad between New York and Washington and between Baltimore and Indianapolis. Approaching the point of accident there were three signals which displayed restrictive indications for this train. Had cab signal devices been in service here, of the type used on other parts of the Pennsylvania, restrictive indications would have been displayed in the cab and a whistle sounded when the cab indications changed; if not acknowledged by the engineman, the whistle would have continued to sound, thereby warning the fireman that something was wrong and prompting him to take necessary action to insure the safety of his train. No such protection is provided by this railroad on that portion of its line extending

from Pittsburgh to Chicago, which includes the territory in which the accident here under investigation occurred. This is high-speed territory with frequent train service, and it is believed that the carrier should give careful consideration to the need for additional protection in this territory.

Respectfully submitted,

W. J. PATTERSON

Director.