INTERSTATE COMMERCE COMMISSION

REPORT OF THE DIRECTOR OF THE BUREAU OF SAFETY IN RE INVESTIGATION OF AN ACCIDENT WHICH OCCURRED ON THE BALTIMORE & OHIO RAILROAD AT CASSELL, OHIO, ON SEPTEMBER 27, 1927.

November 15, 1927.

To the Commission:

On September 27, 1927, there was a derailment of a passenger train on the Baltimore & Ohio Railroad at Cassell, Ohio, resulting in the death of two employees and the injury of three passengers, one mail clerk and one express messenger. This accident was investigated in conjunction with a representative of the Commission of Public Utilities of Ohio.

Location and method of operation

This accident occurred on the Central Ohio Subdivision of the Newark Division, extending between Newark and Schick, Ohio, a distance of 102.2 miles; in the vicinity of the point of accident this is a single-track line over which trains are operated by time-table, train orders and a manual block-signal system. The accident occurred at the west switch of the passing track at Cassell, which is a facing-point switch for eastbound trains. Aproaching this point from the west there is a 3° curve to the left 750 feet in length followed by 1,114 feet of tangent, the accident occurring on this tangent at a point 804 feet from its western end. The grade at the point of accident is practically level. The track is laid with 100-pound rails, 39 feet in length, with 22 or 23 ties to the rail-length, single-spiked, tie-plated and ballasted with washed gravel to a depth of about 8 inches.

The weather was clear at the time of the accident, which occurred at about 3.07 p.m.

Description

Westbound third-class freight train No. 89 consisted of 58 cars and a caboose, hauled by engines 4116 and 4260, and was in charge of Conductor Mulquin and Enginemen Pyle and George. This train left Cambridge, Ohio, 3.9 miles from Cassell, at 2.33 p.m., 4 hours and 37 minutes late, and was passing Cassell at a speed of about 30 miles per hour when a defective brake gear, dragging on the track under the twenty-first car in the train, steel-underframe box car D&RGW 62331, damaged the west switch of the passing track, a trailing-point switch for this particular train.

On entering the passing track at New Concord, 4.8 miles west of Cassell, at which point they met train No. 34, the brake-beam truss rod under this car was found to be dragging but train No. 34 departed before the car had been fully inspected.

Eastbound passenger train No. 34 consisted of one combination mail and baggage car, one combination baggage and passenger car, one coach, one cafe diner and one chair car, in the order named, all of steel construction, hauled by engine 5134, and was in charge of Conductor Richardson and Engineman Robe. This train departed from New Concord, the last open office, at 3 p.m., on time, and was derailed at the west switch of the passing track at Cassell, a facing-point switch for this train, while traveling at a speed of about 30 miles per hour.

Engine 5134 split the switch and was overturned, coming to rest on its left side to the north or left of both the main and passing tracks with its head end about 375 feet east of the switch; the tender followed the engine. The cars were not derailed at the switch but continued on the main track until after the frog was passed and started to derail where the north rail had been torn out, the entire train being derailed with the exception of the rear truck of the last car. The cars remained upright on the roadbed, with the head end of the leading car about 50 feet ahead of the engine. About 300 feet of the main track and about 250 feet of the passing track were torn up. The employees killed were the engineman and fireman of train No. 34.

Summary of evidence.

The statements of the surviving members of the crew of train No. 34 were to the effect that the speed of the train was between 35 and 40 miles per hour at the time of the accident, and that they felt no air-brake application immediately prior to its occurrence. After the accident Conductor Richardson, Flagman Perkins, Brakeman Kline and Baggageman Strear examined the switch and its appurtenances. The switch was locked and the target set for the main track but the bridle bars were bent and the switch points were slightly open. The conductor then walked eastward from the switch and saw marks between the rails where something had been dragging under a westbound train. The flagman, while on his way westward to protect against following trains, saw marks between the rails where something had been dragging and on reaching a point about 20 pole-lengths to the rear of the train he found a brake beam wedged in a tie. Flagman Perkins continued westward to protect against this obstruction until he met Track Supervisor Sharp.

Track Supervisor Sharp stated that he had inspected the switch at 1.10 p. m. on the day of the accident, at which time Signal Maintainer Holland was there, and both of these employees said the switch operated properly. After inspecting the switch the track supervisor proceeded to New Concord and was at that point when train No. 34 arrived. After that train had departed he went toward the tool house and saw men working under a car in train No. 89 and he was informed by the head brakeman that a brake beam was down. While awaiting for train No. 89 to depart the conductor of a local train, which was also in on the siding, told him that the dispatcher wanted him on the telephone, and it was then that he learned of the derailment of train No. 34, He proceeded to the point of accident on a motor car with a section gang, was flagged in the vicinity of mile post 57 by Flagman Perkins, who told him of the brake-beam obstruction and said that the Motor car could not pass over it, and on reaching the obstruction it was found necessary to cut the tie in two in order to remove the brake beam, after which they continued to the point of accident. Track Supervisor Sharp immediately examined the switch and saw where something had struck and bent the No. 1 bridle bar, while there was an indentation in the No. 1 head-block tie; this bridle bar ould have to bend more than 5 inches out of line in order to mark the tie. The No. 2 bridle bar was bent $3\frac{1}{2}$ inches out of line. Track Supervisor Sharp was of the opinion that the switch points were open far enough to permit a wheel flange in fair condition to enter the switch and that they were sprung back in place to a certain extent by the fact that the cars in the train followed the main track, being open three-eights of an inch at the time of his examination.

Section Foreman Keaser stated that he was working at a point about one-half mile east of the east switch of the passing track when train No. 89 passed; he looked over the train as it went by him but saw nothing dragging. He arrived at the scene of the accident about 10 minutes after its occurrence and saw where something had been dragging between the rails east of the switch, striking the bridle bar, bending it against the head-block tie and caused the switch points to open slightly about five-sixteenths of an inch. The marks of something dragging on the ties, between the rails, continued west of the switch.

The statements of members of the crew of train No.89 were to the effect that they had looked over their train while rounding curves and at stops en route but that they were unaware of anything dragging until the train headed in at the east switch of the passing track at New Concord.

At this point Car Inspector Drexel, who had been riding on the eighth car in the train, noticed something dragging under one of the cars as the train entered the passing track. He got off the train, saw a dragging truss rod, and informed Flagman Parsons. Conductor Mulquin and Flagman Parsons then started ahead toward the car, D&RGW 62351, but train No. 34 departed before they reached the defective car. Their examination disclosed that the fulcrum bar and channel beam were missing from the west truck, as well as the fulcrum bar from the east truck. All loose parts were then removed from both trucks and the brakes were cut out on this car before the train departed from New Concord.

General Car Foreman Quinn stated that he inspected box car D&RGW 62351 on its arrival at Newark, 42.1 miles west of New Concord. In his opinion, based on this inspection and on reports he had received concerning the accident, the truss rod of the brake beam of the lead wheels broke off at the thread on the south end, permitting the compression member to work out of the brake head on the north side of the car. This compression member then worked down in under the spring plank, marking the ties, and on reaching the switch the fulcrum bar, which had worked down low enough to strike an occasional tie, dropped down and struck the switch rod, which in turn knocked the rear brake beam loose on this truck. The hanger pins, brake hangers, brake head, brake shoes and keys were intact on the south side of the leading truck when the car arrived at Newark.

Car Inspectors Tefft and Kunens, on duty at Benwood, W.Va., stated that train No. 89 was given what is known as an "A" inspection, which required from 45 to 50 minutes in time, and as a result of this inspection two of the cars in the train were shopped; nothing wrong was noticed with box car D&RGW 62351.

Engine 5134 is of the 4-6-2 type and was built in 1917. It was turned out of the Mt. Clare shops on August 18, 1927, after having received general repairs and arrived on the Newark Division a few days later. It was classed as a 12-months engine, indicating that with minor repairs it was good for that length of service before being due to receive general repairs. It was placed on train No. 34 at Newark the day of the accident.

Acting Master Mechanic Miller stated that his inspection of this engine disclosed that the engine-truck wheels were practically new; none of them was vertical, nor would any of them take the 15/16-inch gauge, while the treads had not been worn more than 1/16 inch. There was 1/4 inch lateral in the front and back engine-truck

wheels, 5/16 inch in the driving wheels and 3/8 inch in the trailer-truck wheels. The tender-truck wheels were also in good condition with respect to treads, flanges, wear and lateral motion. Mr. Miller personally broke the seal on the speed-recorder tape and had the speed recorder removed from the engine and tested for accuracy and it developed that the recorder would register 1 mile per hour less than the actual speed. The speed-recorder tape showed that the engine had been making between 35 and 40 miles per hour and that immediately prior to the accident the speed was about 30 miles per hour.

Examination of engine 5134 made by the Commission's inspectors after the engine had been removed from the scene of the accident disclosed that the general condition of the tires, with the exception of the left No. 1 engine-truck tire, was good and that there was no indication of excessive lateral in any of the wheels of the engine or tender. The left No. 1 engine-truck tire showed the turning-tool marks on the outside of the tire but was heavily worn in the flange at the base. The right No. 1 engine-truck tire showed tool marks over the entire flange contour, with wear on the tread near the outer edge, indicating that the No.1 engine-truck wheels had been leading to the left side of the track almost continuously. While the tire on the left wheel would not quite take a one-inch gauge yet it was considerably thinner than the tire on the opposite wheel. Examination of the engine-truck swing bearings developed that the center casting of the engine truck had been broken at the right front corner in the accident; the bearing surface at the back was worn 3/16 inch at the left side and only 1/16 inch at the right side. The swinging or female casting of the truck was removed and found to have been riding on the rear part of the rocker bearing on the left side and the front and higher part of the rocker bearing on the right side. That this was no new condition was shown by heavy rust on former worn spots on the back part of the bearing surfaces at the top of the right rocker bearing. Examination of the left front tire indicated that the left No. 1 engine-truck wheel had caught the switch point approximately 3/16 inch on the inside of highest part of the flange and had dropped to the outer side of the switch point after the wheel had revolved about one-third of its circumference.

D&RGW 62351, a steel-underframe box car, was built in October, 1909; it has arch-bar trucks and the brake beams have 1 7/8 x 3 inch channel compression members and 1 1/8 inch truss rods and malleable struts. It is equipped with brake beam safety chains. Slight marks on the track made by dragging equipment were found as far east as a highway

crossing located about 5,000 feet from the switch. Examination of the track starting at a point about 100 feet east of the switch and proceeding westward disclosed that an occasional tie had been struck lightly, on its edge, at a point near the center of the track, by some metal object about 1 1/4 or 1 1/2 inches in width, but near the switch 11 out of 12 ties showed heavier markings while the turnbuckle of the No. 1 bridle bar had been struck heavily, twisted slightly and driven against the face of the No. 1 head-block tie leaving a mark about 1 3/4 inches wide, 9 inches long and 1/4 inch or more in depth. The south switch point was still in place although loose in the track, but the south rail of the turnout between the switch and the frog had been torn out at the time of the derailment.

Conclusions.

This accident was caused by the fact that train No.34 encountered a facing-point switch in defective condition, this condition in turn having been caused by dragging brake rigging under a car in westbound freight train No. 89.

Apparently the leading brake-beam truss rod snapped off in the thread at the brake head on the south side of the truck, marking the ties lightly, and then the forward end of the bottom truck rod commenced to drag on the ties, before the switch was reached. In passing over the south turnout rail the brake rigging was further damaged and the forward end of the bottom rod began to drag heavily, marking the ties near the switch and catching in the turnbuckle of the No. 1 bridle bar, pushing the bridle bar toward the west and partly opening the switch point on the north side of the track. The compression member of the leading brake-beam came out of the brake head near or at the switch and on reaching a point 4,500 feet beyond the switch it was driven through a tie. The second brake beam of this truck and the leading brake beam of the rear truck were damaged after the leading brake beam had dropped completely out of the brake head. The bottom rod, with the jaws broken off at both ends, was found about 60 feet west of the switch, while the dead lever with the adjusting bar attached was found almost 2 miles west of that point.

It was developed that the engine truck of engine 5134 apparently had not been running true, the indications being that the No. 1 engine-truck wheels had a tendency to lead to the left side of the track, and that the flange of the left wheel, although it would not take a 1-inch gauge, was much thinner than the flange of the right wheel.

It could not be determined whether this condition was a factor in causing this wheel flange to encounter the partly-opened switch point on the left or north side of the track.

The employees involved were experienced men and at the time of the accident none of them had been on duty in violation of any of the provisions of the hours of service law.

Respectfully submitted,

W. P. BORLAND,

Director.