IN RE INVESTIGATION OF AN ACCIDENT WHICH OCCURRED ON THE TEXAS & PACIFIC RAILWAY NEAR EAGLE FLAT, TEX., ON MAY 13, 1921.

June 13, 1921.

On May 13, 1921, there was a derailment of a freight train on the Texas & Pacific Railway near Eagle Flat, Tex., which resulted in the death of 4 trespassers and the injury of 5 trespassers. After investigation of this accident, the Chief of the Bureau of Safety reports as follows:

Location and method of operation.

The Toyah sub-division, on which this accident occurred, extends between Toyah and Sierra Blanca, Tex., a distance of 107.4 miles, and is a single-track line over which trains are operated by time-table and train orders, no block-signal system being in use. The accident occurred 0.9 mile east of Eagle Flat, approaching the point of accident from the east the track is tangent for several miles. The grade is level for more than a mile, followed by about half a mile of 0.5 and 0.4 per cent descending grade, the track is then level to the point of accident, a distance of about 300 feet. The track is laid with 75-pound rails, 30 feet in length, with staggered joints, and is single-spiked to about 19 oak and treated pine ties to the rail length; a few of the pine ties are tie-plated. The track is ballasted with natural soil and is maintained in fair condition. The speed of freight trains is restricted by time-table rule to 35 miles an hour. At the time of the accident, about 4.47 p. m., the weather was clear.

Description.

Westbound freight train extra 370 consisted of 38 cars and a caboose, hauled by engine 370, and was in charge of Conductor Ryan and Engineman Magee. It departed from Allamore, 7.6 miles from Eagle Flat, at 4.30 p. m., and was derailed near Eagle Flat while traveling at a speed estimated by the crew to have been about 25 miles an hour.

The engine and first 21 cars were not derailed or damaged, but came to a stop about 12 car-lengths west of the western end of the derailed portion of the train. The twenty-second car, a tank car, loaded with gasoline was derailed to the right, turned completely around, and came to rest on its right side at an angle of about 40° with the track and about 300 feet west of the point of derailment; one of its trucks was found under the twenty-seventh car. The next car was derailed to the left and stopped about 335 feet west of the point of derailment. The twenty-fourth car was also derailed to the left, and overturned; it came to rest about 370 feet west of the point of derailment. The twenty-fifth car partly passed the twenty-second car and stopped upright on the roadbed. The next five cars were derailed to the right, while the thirty-first car came to rest across and approximately at right angles with the track; the next two cars were also derailed. The rear five cars and the caboose remained on the track and were undamaged. The track was torn up for a distance of about 300 feet.

Summary of evidence.

Engineman Magee said his train was traveling about 25 or possibly 27 miles an hour when the brakes were automatically applied in emergency. He was working a light throttle at the time and had been working steam for about 3 miles. He felt no unusual swing of the engine while passing over that part of the track where the derailment occurred. Head Brakeman Weathered, who was riding on top of the seventh or eighth car behind the engine, said he felt that car swing as if it had struck a rough place, and looked back, but did not notice the following cars swing. The first car he saw leave the track was a tank car which was derailed to the left, but on account of the dust he did not see the other cars as they were derailed. With the exception of the engineman, none of the employees thought the speed was more than 25 miles an hour, and none of them had formed any opinion as to the cause of the accident.

The estimates as to speed made by seven trespassers who were riding on one of the derailed cars varied from 30 to 40 miles an hour, while one other trespasser estimated it at 15 miles an hour.

Examination of the derailed equipment showed that on the tank car, believed to have been the first car derailed, there was a chafed place just back of the drawbar on the left side of the center sill on the head end of the car, and a similar chafed place on the right side of the center sill about opposite the right rear wheel of the same truck.

The chafed place on the left side apparently was made by a downward turn of a wheel, while the mark on the other side was made by an upward turn of a wheel; these marks indicated that the truck on this end of the car had been derailed and slued to the right, the wheels striking the center sill and causing these chafed spots. The first marks of derailment visible on the head of the right rail and on the ties appeared to have been made by the rough flange of a new wheel, and the front wheels of the forward trunk of this tank car were new wheels, recently applied. Apparently this car was the first to be derailed and was struck by the two following cars, turning it end for end, and causing the cars immediately following to be diverted to the left. This examination did not disclose any defect which could have caused the accident.

Examination of the track after the accident showed that the first mark of derailment was a flange mark on the head of the right rail, beginning near the gauge side and gradually working to the right. This mark extended westward for a distance of about 24 feet before it reached the outside of the head. The next mark was on a spike head on the outside of the same rail; about 33 inches west of the spike there was a mark on a tie at the base of the rail. This mark also extended gradually to the right, finally leaving the ends of the ties at a point about 25 feet from where it first appeared. There was a corresponding flange mark on the inside of the south rail. These marks continued an

additional distance of about 10 feet to the east end of a 70-foot bridge, west of this point the track was torn up for a distance of about 300 feet.

Measurement of the track surface for a distance of 210 feet east of the point of derailment showed a gradual variation from level track 195 feet from the point of derailment to a maximum of 1 1/8 inches low for the right rail at distances of 135 feet, 105 and 90 feet east of the point of derailment; the track was level 45 feet east of point of derailment, while the left rail was 3/16 inch low at a point 30 feet east of the point of derailment, and beyond this point the track was again level. There were also found several joints swinging about 1/2 inch, and a few loose spikes.

Section Foreman Harper and District Roadmaster Andrews, who had passed over this portion of track less than an hour before the accident occurred and who made an examination of the track shortly after the derailment, said they knew of no track defect that could have caused the derailment, provided the speed limit was observed.

Conclusions.

This accident is believed to have been due to excessive speed, together with the irregular surface of the track.

In view of the fact that Engineman Magee began working steam 2 miles east of the point of accident and continued to work steam until the accident occurred, that the train

had traveled half a mile on a descending grade, and that the head end, composed largely of empty equipment, stopped about 900 feet beyond the point of derailment, as well as the position in which the derailed equipment came to rest and the statements of most of the trespassers questioned, it is believed that the train was traveling in excess of the speed of 25 miles an hour permitted by timetable rule, and that the operation of the train at such a speed over the irregular track caused the tank car to rock to such an extent that the wheels mounted the rail, resulting in the derailment of the train.

All of the employees involved were experienced men. At the time of the accident the crew of extra 370 had been on duty a little less than 7 hours, after being off duty approximately 14 hours.