IN RE INVESTIGATION OF AN ACCIDENT WHICH OCCURRED ON THE SEABOARD AIR LINE RAILWAY AT SCHOFIELD, S. C., ON JANUARY 7, 1917.

February 15, 1917.

On January 7, 1917, there was a derailment of a passenger train on the Seaboard Air Line Railway at Schofield, S. C., which resulted in the death of 1 employee and the injury of 4 employees. After investigation of this accident, the Chief of the Division of Safety reports as follows:

The South Carolina Division of the Seaboard Air Line Railway, on which this accident occurred, is a single-track line, over which train movements are governed by time-table and train orders, there being no block signal system in use. The derailment occurred at the north switch of the passing track at Schofield, approaching which point from the north the track is straight for more than a half mile and is laid on a slight fill. The grade is very slightly descending for southbound trains. The weather at the time of the accident was cloudy.

The train involved was southbound passenger train No. 7 en route from New York, N. Y., to Miami, Fla. It consisted of locomotive 31, 1 express car, 1 combination baggage car and coach, 1 coach, 1 dining car and 5 Pullman sleeping cars, all of steel construction, and was in charge of Conductor Rhodes and Engineman Petit. This train left Columbia, S. C., at 4:30 a. m. on time, passed Denmark, S. C., the last open telegraph office, at 6:15 a. m., and at 6:35 a. m. was derailed at Schofield, while running at a speed estimated to have been about 50 miles an hour.

The locomotive, first fur cars, and the leading truck of the fifth car were derailed. The engine turned over to the left and came to rest on its side across the main track, 371 feet south of the switch; the tender frame remained coupled to the engine, coming to rest between the main track and the siding; the trucks of the tender were demolished and the cistern was torn loose and rested cross-wise the frame. The first car came to rest with the front end on the main track and the rear end left of the main track, this car being about at right angles with the main track; its trucks were torn off. The trucks of the second car were also torn off and the front end of the body lay 30 feet left of the main track with its rear end still coupled to the third car. The right side of the second car was badly damaged by the end of

the first car. The third car rested on the roadbed of the siding, parallel with the main track, undamaged and still coupled to the second and fourth cars. The fourth car came to rest in a similar position while the fifth car stopped on the siding with its front truck derailed. All of the derailed cars remained upright. The two rear cars were not derailed.

The track in the vicinity of the accident is laid with 75-pound rails, 33 feet in length, with 18 to 20 cypress ties to the rail, laid on earth or dirt foundation. The ties at the switch are all new and in first-class condition. Tie plates are used at switches and on curves.

The first mark on the ties appeared about 28 feet south of the switch. These first marks, which were light and looked as if they were made by but one truck, continued up to near the frog where the track was completely torn out. Appearances indicated that the engine and tender and the first truck of the express car passed safely over the switch on the main line and the rear truck of this car straddled the points, the wheels dropping in on each side between the switch points and stock rail, and the other cars found switch lined for siding and followed on these rails to a point at or near the frog. The rear truck of the first car was found nearest the switch in a collection of other trucks that were torn loose from the cars and piled up south of the frog.

The switch-stand in use at the passing track switch, where this derailment occurred, is of the New Century type, Model B-51, manufactured by the Pennsylvania Steel Company, and had been in use about four years. At its lower end it has a double foot or crank, to one end of which is attached the connecting rod, which in turn is bolted to the switch points. The end to which the connecting rod was fastened was found broken, and an examination of the broken parts disclosed an old defect or crack, covering about one-third of the cross-sectional area of the metal. Examination of the track conditions immediately after the accident, and the position in which all of the equipment was found, indicated that the engine, tender and front trucks of the express car kept on the main line at this switch until the vibration of the train caused the switch points, not having anything to hold them in position, to open, catching the rear truck of the express car, it and all following cars following the passing track switch and pulling the tender and locomotive from the main track, overturning them to the left.

Conductor Rhodes stated that at the time of the accident the train was running at about the maximum speed allowed, which is 50 miles an hour. He was riding in the front end of the combination car and the first intimation he had of anything wrong was when he felt the car bumping on the ties; he then made an attempt to reach for the emergency brake valve cord, but was knocked down before he could do so. He further stated that he made no attempt to examine the switch until some 30 or 40 minutes after the derailment. When he made his first examination of the switch he found the throw rod connecting the switch points and crank foot laying on the ground, the broken pieces of the crank foot lying close by, disconnected from the throw-rod. He also stated that the switch lever was set and locked for the main track with the switch light burning and the target showing main track indications. He did not unlock or in any way disturb it from the condition in which he first found it.

Engineman Petit was killed in the derailment.

Fireman Campbell stated that he was putting in a fire when the accident occurred and did not know anything about how it happened. He thought the train was running at a speed of about 40 miles an hour at the time.

Section Foreman Bessinger stated that on the morning of the accident he arrived at Schofield about an hour after the derailment occurred, and immediately made a close examination of the switch, finding everything in perfect condition about the switch and roadbed, with the exception of the crank-foot, which was broken off and lying on the ground close by and disconnected from the throw-rod. His examination of the broken crank-foot disclosed an old crack or break which could not be seen without taking the switch stand up. He stated that on the day previous to the accident he made a personal examination of the switch involved, unlocked, oiled and operated it and saw that the points fitted up well in their position and left it set for the main track secured by locking it in that position. At that tie, however, he did not examine the crank shaft as to do so would require the dismantling of the switch. Section Foreman Bessinger further stated that a train running through a switch set against it, would be likely to break the crank foot, but that the switch in question did not appear to have been run through and he could not recall any derailment or accident at this particular switch. He stated that he had renewed the switch timbers a few months before, but did not dismantle the switch or do anything about the switch that would in the least strain or damage the crank foot.

Roadmaster Reen stated that he reached the scene of the accident at about 9:00 a. m. and made an examination of the switch and found the switch points set for the side track and the stand set and locked for the main line; he found the light burning and the target in proper position. He further stated that one of the cranks of the double crank-foot was broken off and that a close inspection of the broken crank-foot revealed an old crack. He stated that this was the cause of the derailment, as the broken condition of the crank foot permitted the switch points to move freely by the jarring of a moving train. He stated that no strain was on the crank-foot when in either main or side track position and he was unable to say what caused it to break, as he never knew of such an occurrence before. He further stated that the rules require him to inspect all switches on his district once a month and that he had inspected this particular switch on January 2, finding it in good condition.

Master Mechanic Crofton stated that he and Car Foreman Holden carefully examined all the wheels and axles of the derailed cars after the accident and found no evidence of wheels loose or out of gauge, while all the flanges, treads, etc., were in perfect condition with the exception of three axles which were slightly bent, undoubtedly being damaged by the derailment.

Conductor Preston of freight train No. 80, which was the last train to use the switch involved, at about 2:30 a. m., stated that his train took the siding for train No. 3. After train No. 3 had passed he uncoupled the locomotive from his train and it went to the tank for water, after which it came back and coupled to the train. He stated that his crew handled the switch three times and that the switch was in perfect condition as far as could be seen.

Flagman Wilson of train No. 80, stated that after using the switch at Schofield on the morning of the accident, he lined it up for the main track and threw the light of his lantern upon the switch points to see that they properly fitted up, which they did. He also stated that he noticed no irregularities in operating this switch.

Engineman Wilson, of train No. 4, which was the last train to pass over this switch, stated that it was in the proper position when he passed over it and he noticed nothing wrong with it at that time.

This accident was caused by a broken crank-foot on the switch which permitted the switch points to move by the jarring of the moving train over them. The defective condi-

tion which was found to exist in this crank-foot is believed to be one of manufacture. It was of such a nature that it could not be detected by any ordinary inspection and was so located that to inspect it would require its removal from under the switch-stand.

As previously stated, the cars of this train were of al -steel construction and in view of the speed of the train at the time of derailment and the manner in which the derailed cars came to rest, it is believed that had these cars not been of such substantial construction, the number of fatalities and injuries would probably have been much greater.