IN RE INVESTIGATION OF AN ACCIDENT WHICH OCCURRED ON THE UNION PACIFIC RAILROAD AT RAWLINS, WYOMING, ON SEPTEMBER 12, 1923.

On September 12, 1923, there was a collision between a freight train and a switch engine on the Union Pacific Railroad at Rawlins, Wyoming. which resulted in the death of one employee and the injury of three employees.

Location and method of operation.
This accident occurred on the Seventh Subdivision Western Division, extending between Rawlins and Green River, Wyoming, a distance of 134.2 miles, this being a double-track line over which trains are operated by time-table, train orders, and an automatic block-signal system. The point of accident was 600 feet east of the station at Rawlins; approaching this point from the west, the track is tangent for about 3,000 feet, while the grade is generally level or descending for a distance of approximately 7 miles, the maximum being 0.82 per cent. The weather was clear at the time of the accident, which occurred at about 6:15 a.m.

Description.
Eastbound freight train extra 5003 had tied up at Hadsell, 7 miles from Rawlins, on account of the 16-hour law, and a relief crew took charge of the train at 3.25 a.m. to bring it into Rawlins, Conductor Maher and Engineman Stroud being in charge. Extra 5003, which consisted of 45 cars and a caboose, was then standing on an ascending grade of 0.77 per cent. The train could not be started, and after some delay it was discovered that the supply of coal was getting low, the loosening of a slide in the stoker having allowed about 1 1/2 tons of coal to sift through to the ground. It was decided to cut off the engine for the purpose of shoveling this coal back into the tender and Conductor Maher went to the rear of the engine and closed the angle cock on the head car, but was unable to operate the uncoupling lever on that car. He said he then reopened the angle cock, without trying the uncoupling lever on the tender, went to the rear of the first car, closed both angle cooks and parted the train at that point. The engine and first car were then moved to where the coal had come out on the ground, it was shoveled into the tender, and the engine and car recoupled to the train. Soon afterwards another train was flagged and assisted extra 5003 in starting, but without any test of the air brakes having been made. At Ferris, 3.8 miles from Hadsell. a running air-brake test is required and it was when Engineman Stroud made this test, at a speed of about 25 miles an hour, that he discovered the brakes were not working through the train and realized that the train was not under control. It continued toward Rawlins and while traveling at a speed of 35 or 40 miles an hour collided with switch engine 4464, which was hauling 35 cars out on the main track at the crossover at that point.
Both engines were derailed but remained upright, considerably damaged. Fifteen cars in the train of extra 5003 were derailed, six being practically demolished; one of the cars being handled by switch engine 4464 was demolished and several others damaged. The employee killed was head brakeman of extra 5003.

Summary of Evidence.
Engineman, Hynes, who had operated the train into Hadsell, said it had handled about as well as the average coal train so far as the air brakes were concerned, and the evidence shows that the air was working through the train up to the time the engine and first car were

cut off. Engineman Hynes again boarded the engine after it had been recoupled to the train and on asking Engineman Stroud if the air had been cut in, Engineman Stroud said he thought it had and then got off and went back to examine the angle cocks. Engineman Stroud noticed nothing wrong between the tender and first car, and then examined the air hose between the first and second cars; he said he partly broke the coupling, found the air working through it, and then returned to the engine. Engineman Stroud's reason for getting off to examine the angle cocks was his remembrance of instructions he had received about being very careful when new brakemen were in the crew. Engineman Stroud also said that he was sitting on the seat box, with the brake valve in lap position, when the conductor coupled the cars, and that the train line pressure dropped back practically to zero; he then moved the brake valve to the full release position until the train line had been charged to 80 pounds pressure. Engineman Stroud further stated that 15 to 20 minutes before leaving Hadsell he had noticed two men about 10 or 15 cars back from the engine who apparently had crossed over from one side to the other, and he expressed the opinion that some unauthorized person had closed an angle cock.

Conductor Maher was positive that he opened the angle cocks between the tender and first car and also between the first and second cars, but admitted that no test was made nor did he look at the air gauge in the caboose until the train reached the point at which the running test is required. Flagman Anderson also had not looked at the caboose gauge until this time and he then saw that there was no train line pressure, and it was at about this time that the conductor realized that the air brakes were not working through the train and went out on the train and began to apply the hand brakes.

After the accident, examination of the angle cock on the head end of the first car showed that the handle had been turned sufficiently to shut off the passage of air, but Car Foreman Sandeen and Master Mechanic James, who discovered this shortly after the occurrence of the accident, were of the opinion that this position of the handle was a result of the accident; the angle cocks between the first and second cars were not located. Car Foreman Sandeen inspected the rear 35 cars about 40 minutes after the occurrence of the accident, found none of the brakes cut out and also found no indications of any air in the cylinders. Master Mechanic James reached the scene about six minutes after the accident occurred, looked at the first 10 cars back of those derailed, and found none of the pistons out or any marks of overheating on the wheels to indicate that the brakes had been applied. A test of the undamaged equipment, with the exception of three cars which were moved forward in another train, showed that the brakes of one car would not apply; the brakes on all the others were in good condition, the piston travel varying between 4 and 8 inches.

Engineman Hynes said he was riding on the engine, together with his fireman, that he did not notice when Engineman Stroud made the first application of the air brakes but that he noticed a second application, that the short exhaust indicated that the air was not working through more than six or eight cars, and that he and his fireman, together with the head brakeman, started back over the train to set hand brakes, but they did not succeed in bringing the train under control.

Engineman Omelia, in charge of switch engine 4464, said he heard the whistles sounded by the engineman of extra 5003 when that train was about one-half mile distant, and afterwards saw men jumping from the engine. He realized that the train was running away, reversed his own engine and endeavored to back into clear, but still had 24 cars on the main track when the accident occurred. He estimated that his engine was backing at the rate of 8 miles an hour and that the speed of extra 5003 was about 30 miles an hour.

Conclusions.
This accident was caused by extra 5003 running away on a descending grade on account of the air brakes not being in operation through out the train, for which Conductor Maher and Engineman Stroud are responsible.
An examination of the air brakes on the undamaged portion of the train showed that they had not been in use, further evidence to this effect being the statements of the conductor and flagman that the gauge in the caboose did not show any train line pressure when they first noticed it, and it seems probable that this condition was due to the failure of Conductor Maher to open one of the angle cocks.
Rule 1017, relating to the testing of air brakes on freight trains, reads in part as follows:
"At any place where train is switched or engine changed or brake pipe parted after train is placed together and standard pressure obtained, the engineer will apply brakes with automatic brake valve making a 10 pound reduction and will then signal by one blast of steam whistle. Rear man will note if brakes have set on last car, if so he will make a further reduction from angle cock. When engineer is satisfied by falling of brake pipe hand on air gauge, he will give two blasts of steam whistle, the rear man will close cock slowly, signal to release brake in manner prescribed and the train can then proceed. If brakes do not release promptly, it indicates some obstructions which prevents the air from flowing back through the air pipe. This must be remedied before train starts."
Both Conductor Maher and Engineman Stroud stated it was not customary to comply with this rule and Engineman Hynes practically corroborated them by saying that while a test was supposed to be made, he did not always make it unless there happened to be a doubt in his mind as to whether the air brakes were working throughout the train. The rule as it is worded makes no exceptions; a test is required whenever the train line has been parted. Had this rule been obeyed in this instance, the fact that the train line was not open throughout the train would have been discovered in time to have averted the accident. If it is customary to ignore the requirements of Rule 1017, as stated by Engineman Stroud and Hynes, a dangerous conditions exists on this division, for which the operating officers are responsible, and which they should take immediate steps to correct.

Conductor Maher made his first trip as a conductor in August, 1923, while Engineman Stroud had been employed as an engineman during the fall rush in 1920 and 1921, as traveling fireman in 1922, and again as an engineman beginning with August, 1923; each of them had had several years 'previous experience. At the time of the accident, the crew of extra 5003 had been on duty less than 3 hours, after from 14 to 78 hours off duty; the crew of switch engine 4464 had been on duty nearly 8 hours, after 16 hours off duty.