

The order, as received at Gassetts, was on form 19, and was delivered by the station operator to the fireman on the freight locomotive as it passed his office, and to the conductor on the caboose by means of a hoop. The fireman testified that the operator, in handing up the order, said: "Wait at Bellows Falls until 4:50; I haven't got time to make out a clearance; that is all there is; go ahead." The order was handed to the engineman and he read it aloud to the fireman and to the head brakeman, reading "Bellows Falls." The fireman said that it was the engineman's usual practice, after reading an order, to hand it to the fireman and to the head brakeman, but that he did not do so on this occasion. Under the rule the fireman ought to have read the order; and on seeing it at the time of the investigation he thought that if he had read it he would have done so correctly.

The conductor on the freight thought the order read Bellows Falls, and he handed it to the flagman; and after discussing it, the flagman agreed with the conductor as to its contents.

The order was No. 414 and it read, "No. one sixty five 165 wait at Bartonsville until 4 50 pm for Ex. 28 south." The order as delivered to the freight is shown in the illustration reduced in size. This is copied from the government report. The number, "314," was put on by mistake; the operator testified that in repeating the order this mistake was corrected, but that in his hurry he neglected to change the "3" to "4."

The testimony of the conductor of the freight seems to indicate that from the first he doubted the reading of the word "Bartonsville"; and yet, after taking a second look, at Bartonsville, and conferring with the flagman, he decided that the obscure word was Bellows Falls; and the assumption that the engineman, more experienced than the conductor, had read it and would act correctly, seems to have been the principal ground for this conclusion. The fact that the engineman passed Bartonsville was enough to lead the conductor to be willing to pass that point. The conductor had never worked with this engineman before. He had made 32 trips as conductor, and this was his first trip on this section of the road, though he had been over it frequently as brakeman and baggageman. This conductor had said to the conductor of the passenger train, immediately after the collision, "I couldn't quite figure out where you were to wait for us." He had told the assistant superintendent, at an earlier investigation, that he and the flagman had agreed that the station named in the order must be Bellows Falls.

Operator Spafford denied having said anything to the fireman about the contents of the order. He said that the engineman was familiar with his handwriting, and he, Spafford, had frequently issued orders to him during the past five years.

The report, in attributing the collision to the failure to correctly read the order, holds responsible not only the conductor and engineman, but the flagman, the fireman and the head brakeman, who, according to the rules, should read all such orders. Mr. Borland believes that if the engineman had read the order with care he would not have made the error, notwithstanding the illegibility of the writing. It is possible, however, that he heard the remark made by the agent to the fireman. [This remark the agent denied making.]

Referring to the evident condition of doubt in the conductor's mind, the report finds him grossly negligent in failing to stop his train at Chester, the last open telegraph office, for the purpose of finding out exactly what rights he had.

Engineman Cady had been in the service 28 years

and a runner 20 years; and had been held responsible for four collisions. Since April, 1916, however, his record was clear. The agent (operator) at Gassetts, Spafford, had been in the service 40 years, and agent at Gassetts 33 years, and had an excellent record.

The report concludes with a recommendation that the block system be installed.

## PERE MARQUETTE RESORT SPECIAL IN HEAD-ON COLLISION

**I**N a butting collision between two Pere Marquette trains on Baltimore & Ohio tracks near One Hundred and Third street, Chicago, about 7:24 a. m., June 14, one employee was killed and 14 persons seriously injured. The trains involved in the accident were passenger train No. 10 westbound and an extra freight train eastbound, the Pere Marquette having trackage rights over the Baltimore & Ohio tracks from Pine Junction, Ind., to Ninety-fifth street, Chicago, a distance of about seven miles. The passenger train, known as the "Resort Special," which runs at present on a twice-a-week schedule, was making its second trip of the season from northern resort points in Michigan.

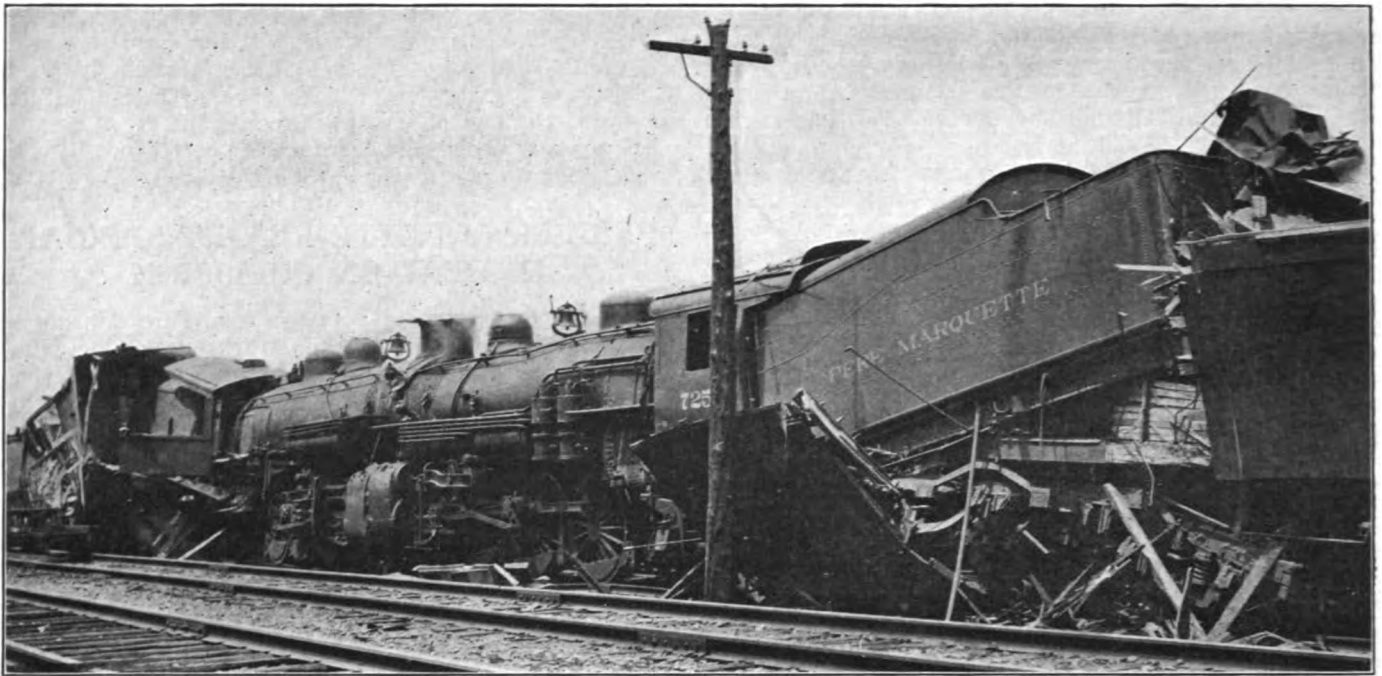
Earlier in the morning a B. & O. westbound freight train had pulled out a drawbar, blocking the westbound



Front End of Baggage Car Telescoped on Tender

main track, between Whiting, Ind., and the Indiana-Illinois state line. Pere Marquette passenger train No. 8 and B. & O. passenger train No. 15 were run around this train on the eastbound main from Whiting, Ind., to the interlocking plant at Calumet Draw, South Chicago. After these trains had cleared, the freight involved in the collision started east on the eastward tracks from Rock Island Junction (Ninety-fifth street). In the meantime, through a confusion of orders, Pere Marquette passenger train No. 10 was diverted to the eastward main at Whiting, Ind., about three miles east of the point of the accident, and was proceeding towards Chicago at about thirty miles an hour when the accident happened at a point approximately seven hundred feet west of the Indiana-Illinois state line. The morning was clear, the track is a tangent to the west, while one degree curve to the south started at the automatic signal location E257-12, approximately five hundred feet west of the state line, after which the track is again tangent for about a mile, the view being fairly unobstructed except for a pole line between the B. & O. and New York Central tracks, which are parallel at this point.

The force of the collision mashed in the front ends of the engines, which were locked in position with the smoke



The Engines After the Impact. The Telescoped Baggage Car Shown at the Right.

stacks and steam chests together. The impact telescoped the baggage car and one combination coach, which were of wood frame construction, between the passenger engine tender and the heavy steel Pullmans, killing the conductor, who was in the baggage car, and injuring those in the combination car. One Pullman car was slightly damaged. The tender of the freight engine was driven into the boiler head, destroying the cab; the steel frame box car back of the tender was demolished and the steel underframe was doubled back against the engine frame. A number of the weaker cars in the freight train were also wrecked.

While the road is equipped with automatic block signals, the passenger train, in running against the current of traffic, had no signal protection on that track, signals being set against an eastbound train ahead of the trains going west, as this train entered the different track circuits controlling the signals. Train movements, as a rule, in the South Chicago yard limits, which extends from South Chicago to Pine Junction, Ind., a distance of approximately seven miles, are handled locally instead of under the jurisdiction of the train dispatcher. In this territory there are four interlocking plants located at Calumet draw, South Chicago, Whiting, Ind., Indiana Harbor and Pine Junction, between which these movements are made. An investigation of the signal system showed it to be in perfect working condition, it being in no way involved in the accident.

The Pere Marquette operates under trackage rights over the B. & O. from Pine Junction, Ind., to Rock Island Junction (Ninety-fifth street), Ill.

The readers' attention is called to the fact that this issue of the *Railway Signal Engineer* does not contain the seventh article on "Practical Lessons in Electricity for Beginners." This series of articles has not been concluded by any means. All of the material for the next lesson has been prepared and is in type, but because of other articles dealing with subjects of timely interest it was impossible to find space for the "Practical Lessons" in this issue. This subject, however, will be continued in an early issue.—EDITOR.

## TESTS AND OPERATION OF A RECTIFIER

BY STANLEY RHOADS

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**P**RACTICAL and laboratory tests of a certain particular type of chemical rectifier were conducted in order to determine the adaptability of this rectifier

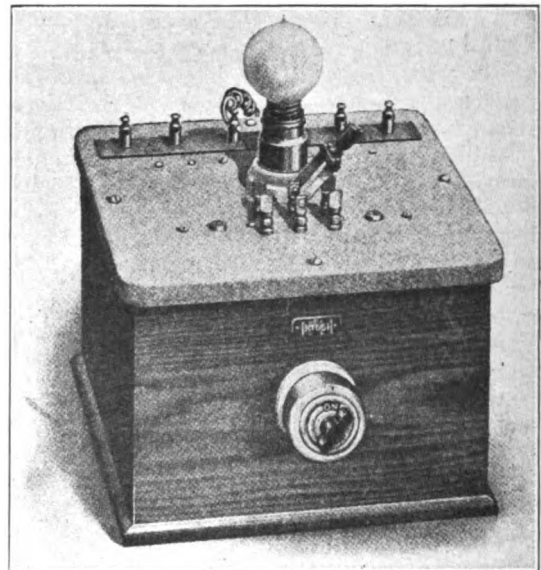


Fig. 1. The Rectifier Under Test

for railroad, telephone and telegraph service. The practical test consisted of the installation of a rectifier at Galion, Ohio, to furnish current for a telegraph circuit on the Cleveland, Cincinnati, Chicago & St. Louis from Galion to Columbus, Ohio. The laboratory tests included a load test to provide data for the preparation of characteristic curves; operation on actual selector lines for