

reached Heckmondwike at 1h. 45m., took on one empty waggon, and left at 1h. 55m., intending to stop at Barracrough's siding, to take on some loaded coal waggons, and then to proceed to Mirfield, and drop 20 loaded and five empty waggons.

The driver states that he filled up his tender before leaving Bradford, and again on arriving at Lowmoor; that he turned off the feed cock on arriving at Cleckheaton, and did not turn it on again until about a half mile before he reached Heckmondwike, and then he turned on the left feed cock, at the time when the water stood half way up the gauge glass; that on stopping at Heckmondwike the water stood about  $\frac{3}{4}$  up the gauge glass, equal to about  $5\frac{1}{2}$  inches above the bottom of the glass; that on running down from Lowmoor to Heckmondwike he used no steam, but turned it into the tender, and that the damper of the ash-box was shut. He also says that there was no steam blowing off, either at Lowmoor or Heckmondwike; that a little steam was used in starting from Heckmondwike; that he thinks a little steam was blowing off while running, with the damper closed, to the place where the explosion took place, about a mile from Heckmondwike, and that the engine and train ran 300 yards after the explosion before it was stopped, inside the distant signal used to cover Barracrough's siding. The driver says the explosion took place at 2h. 5m., when he was running down the gradient of 1 in 190 at the rate of 7 or 8 miles an hour.

On one point the driver is distinctly contradicted by the guard, who maintains that steam was blowing off while the engine was at Lowmoor.

The driver states that he was standing on the left and the fireman at the right side of the engine, and that he was about to put fuel on the fire when the boiler exploded. The fireman, who is understood to have been leaning forward at the side of the engine, was seriously scalded, but the driver was unhurt.

The effect of the explosion was entirely to detach the central plate of the cylindrical part of the boiler, 11ft. 4 $\frac{1}{2}$ in. long by 3ft. 10in. wide, and weighing  $5\frac{1}{2}$  cwts., and to project it to the left a distance of 70 yards perpendicular to the line of the railway, and some of the water or steam scalded a platelayer at work on the line, who was also struck by some fragment. The other parts of the cylindrical shell of the boiler towards the ends were left intact; but a single tube on each side at the top was pulled out of the tube plate at the smoke box end, and slightly bent outwards, apparently by something having struck them. The casing of the boiler was thrown against the hedges on each side of the line. The valve box was torn off, the eccentric rod broken, and one of the connecting rods was bent. The stays to this piece of boiler plate remained attached to it, having been wrenched off from the frame.

Patches had been placed on the boiler plates

adjoining to that which was detached where the stays that support it on the framing had been fixed.

The fireman of the locomotive department, who arrived at the spot from Mirfield in about a quarter of an hour after the explosion occurred, informed me that the safety valves worked with perfect freedom; and the driver denies that any means were taken of tampering with them while on the way from Bradford, and there does not appear to be any reason for doubting his statement.

The copper fire box is slightly cracked just inside the door, but that has evidently been the result of delay in getting out the fire after the accident happened, as there were no appearances of overheating on the crown and upper parts of the fire-box.

I examined the boiler and the plate forced off. The latter was joined together by a line of rivets running longitudinally immediately under the centre of the boiler, and the rupture appears to have taken place along this line of rivets, and thence along the rivets on each side round the boiler joining this plate to the plates at both sides.

The probable causes that produced the explosion were very apparent. A considerable portion of the plate, commencing about half-way up the tubes, and extending underneath the boiler, was very much corroded, the iron being eaten out from round holes, some of which were an inch in diameter, and very deep, and running into one another, reducing the original thickness from  $\frac{7}{8}$  to  $\frac{3}{8}$  inch in some of these holes, and in other parts near the fractured parts to  $\frac{5}{8}$  inch.

The corrosion, whether produced by galvanic action, or by the chemical action of the water on the iron, extended to the adjacent plates of the cylindrical part of the boiler.

The locomotive superintendent informed me that he had never seen a piece of boiler plate in a worse state, and that he should not consider such a boiler safe at 100 lbs. pressure on the square inch. He attributed the corrosion to the peculiar quality of the water in the district in which the engine had been employed; but as it had been at work in the same locality since 1851 without producing any sufficiently remarkable results to attract particular attention when the boiler was retubed in 1855, the explanation scarcely appears to be sufficient.

He also pointed out that the quality of the iron close to the edges of the rivets had apparently become more brittle than the adjacent parts of the same plate.

On the whole, there does not appear to be any grounds for attaching any blame to the engine driver, as it seems very certain that the boiler burst at the ordinary pressure owing to its worn-out condition.

I have, &c.

Captain Galton, R.E.  
&c.

W. YOLLAND,  
Lieut.-Colonel, R.E.

#### LANCASHIRE AND YORKSHIRE RAILWAY.

Railway Department, Board of Trade,  
SIR, Whitehall, October 14, 1858.

I AM directed by the Lords of the Committee of Privy Council for Trade to transmit to you the enclosed copy of the report made by Captain Ross, R.E., of his inquiry into the circumstances attending the collision which occurred on the 6th ultimo at the Lostock junction of the Lancashire and Yorkshire Railway.

My Lords regret to learn from this report that, notwithstanding the numerous accidents which have occurred from the absence of systematic working in the case of excursion trains, the directors of the Lancashire and Yorkshire Railway Company still continue to run those trains without the same provisions for safety which are considered essential in the case of other trains.

My Lords trust that the observations of the inspecting officer upon this accident will receive the careful consideration of the directors.

I am, &c.

The Secretary to the  
Lancashire and Yorkshire  
Railway Company.

DOUGLAS GALTON,  
Captain, R.E.

Railway Department, Board of Trade,  
SIR, Whitehall, October 1, 1858.

I HAVE the honour to report, for the information of the Lords of the Committee of Privy Council for Trade, that in compliance with your instructions of the 8th September I have inquired into the circumstances attending the collision which occurred on the 6th September on the Lancashire and Yorkshire Rail-

way, at the Lostock junction, where the line from Wigan unites with that from Boston to Manchester.

There is a station at Lostock junction situated in the fork of these two lines of railway, with ticket platforms for each, situated one on each side of the station buildings, and the ticket platform on the line from Wigan is situated on an incline falling 1 in 95 to Lostock junction.

The pointsman's box at the junction is at the foot of the incline, about 160 yards from the ticket platform.

On the 6th September an excursion train left Chorley for Southport at 6½ a.m., and had reached Lostock junction on its return from Southport at about 8·15 p.m. The train was composed of an engine and tender, guards van, one composite carriage, one third-class carriage, and 21 second-class carriages, of which five were provided with breaks. There were two guards with the train, of whom the under-guard, in coming from Southport, rode in the guards van next to the engine, and the guard in the last carriage, being one of the second-class carriages provided with a break.

As far as Lostock junction the train had come on the up main line from Southport to Manchester. To reach Chorley it was necessary that its direction should be changed to the down main line from Manchester to Preston, and this is usually effected as follows: After the tickets at Lostock junction have been collected, the station master desires the driver to hook off the engine, and the driver, after obtaining leave from the pointsman, passes through the points, and backs on to the up main line from Preston; there he waits till the carriages at the platform have been let down the incline beyond the points on to the up line to Manchester by easing the breaks. The engine then moves up behind them, and pushes them to a cross-over road, whence the engine leads the train, tender foremost, on the down line to Chorley.

There were about 600 passengers in this excursion train, and when it reached Lostock junction the ticket collectors were engaged at the other platform with another excursion train which had just arrived on the up line from Preston.

After several minutes delay, the guard and under-guard proceeded to collect the tickets, if not by order of the station master, who was on the platform, at all events with his cognizance.

While they were still so engaged the station master gave his usual instructions to the engine driver, "Hook off the engine, and go ahead through the points, and come back on the Preston line, and we will lower the train down past you."

The engine driver had gone through the points, and was coming back on the Preston line, tender foremost, when he heard the pointsman shouting, and saw the carriages approaching on the down line from

Wigan, and before he had time to avert the collision they met at the crossing. The left-hand buffer of the break-van which was in front struck the middle of the tender; the break-van was thrown over on its side, and the carriage next to it (a second-class break-carriage) was thrown off the line, some of the passengers in it being injured, but it is said not seriously. The other carriages remained on the line.

It appears that it had been the practice of the guards to turn their breaks off while waiting at the ticket platform, depending on the engine, when attached to the train, to prevent its fetching away down the incline, while the guards took care to be prepared at their breaks to control the train when the engine was detached.

On this occasion certainly one and probably both breaks were "off," as usual, and the guards were engaged collecting the tickets. On the engine being detached the train naturally started down the incline, and the guard, who rushed to the break-van, was too late to prevent the collision. The second guard occupied himself shutting the doors of the carriages as they passed, in doubt what was the matter, and the train being long the last carriage had not passed him when the collision occurred.

The station master and guard are old servants of the company.

There is some discrepancy in their statements, but the accident was doubtless immediately due to the employment of the guards on duties which did not belong to them, and which ought to have been performed by the ticket collectors; to their having left the train unbroken in a dangerous position; and to the station master having been hasty in desiring the engine to "hook off" before the collection of the tickets was nearly accomplished. The darkness of the night may have led him into error on this point.

I have also to remark, that the instructions under which the train in question was dispatched were to leave Chorley at 6½ a.m., and to leave Southport on return at 6·15 p.m.; no hours being fixed for the arrival in either direction of the train.

There are two ticket collectors at Lostock junction, and a lad to assist them. They were not free to attend to this train till it had been about ¼ an hour at the platform; and when they came it was actually in motion down the incline.

It may be questioned, therefore, whether, under the system in force, the number of ticket collectors is sufficient to meet the contingency of two crowded excursion trains arriving at the platforms at about the same time, as they happened to do on this occasion.

I have, &c.

*The Secretary,  
Railway Department,  
Board of Trade.*

*GEORGE ROSS,  
Captain, R.E.*

## LANCASHIRE AND YORKSHIRE RAILWAY.

*Railway Department, Board of Trade,  
Whitehall, Dec. 21, 1858.*

SIR, I AM directed by the Lords of the Committee of Privy Council for Trade to transmit to you the enclosed copy of the report made by Captain Ross, R.E., of his inquiry into the circumstances attending the collision which occurred on the 19th ult. at the Bellfield station of the Lancashire and Yorkshire Railway.

My Lords direct me to state that they trust that the directors will take steps without delay to remove the source of danger pointed out by the inspecting officer, caused by running the coke train in such a manner as to interfere with the mail train.

I am, &c.,

*The Secretary of the  
Lancashire and Yorkshire  
Railway Company.*

*DOUGLAS GALTON,  
Captain, R.E.*

*Railway Department Board of Trade,  
Whitehall, Dec. 14, 1858.*

SIR, I HAVE the honour to report, for the information of the Lords of the Committee of Privy Council for Trade, that in compliance with your instructions of the 24th ult. I have enquired into the circumstances attending the accident which occurred on the 19th November at Bellfield to the 9 a.m. up express train travelling from Normanton to Manchester.

Bellfield is three quarters of a mile north of Rochdale, and there is a siding there connected with a loading bank, which is reached from the down line by a through road crossing the up line.

Towards Normanton it is protected by a distant signal 580 yards from the crossing, and there is a pointsman in charge of the siding to work the points and signals. The railway is nearly level at that part, the fall to Bellfield being perhaps 1 in 800 or less.