

the siding signal. The signalman, at all events, is very confident that the siding signal, after having been lowered to allow the goods train to leave the siding, was turned again to danger before this engine-driver came in sight of it. If the engine-driver did, while still at some distance from Bootle Lane, see the red light turned off from the upper siding signal, it must, in any case, have been turned on again as he approached it. On the other hand, the waggons backing into the siding would have had no light on them, and would not have been visible to the engine-driver in the dark until he was very near them.

The distant-signal from Bootle Lane is on a bank, and is well seen in the daytime during clear weather; but it has the disadvantages of being at some little distance from, and on the wrong side of, the main lines of the railway, as well as of being only 336 yards from the cabin. It would be better to remove it to a greater distance, placing it on or near the bridge by the Kirkdale Junction cabin; and I may observe that the latter cabin is in a most dilapidated state, as regards both its timber-work and its apparatus. A new cabin should be provided here without any delay, and should be supplied with a locking-frame and with proper appliances.

But still more important are the improvements required at Bootle Lane. The shunting between the sidings and the main line may be said to be

constant, continuing day and night with comparatively little intermission. Not only is it, as I have already stated, impossible for the signalman to keep the main line clear for the numerous main line trains, but great inconvenience and danger are also caused to passengers using the station. They are frequently detained, after taking their tickets on one side of the line, by shunting or other trains, and are thus unable to cross over to join their trains on the other side of the line. The remedies for such a state of things are sufficiently obvious, and are the same as are necessarily applied under similar circumstances in other places. An independent siding should be formed at the back of the passenger station, to be used in place of the passenger line for the distribution of waggons, the marshalling of trains, and for all shunting purposes; and a new passenger station should at the same time be constructed, with a booking office, on a bridge over the line, and with suitable means of communication on both sides of the line between such bridge and the public road, which passes at a considerable elevation over the railway.

I have, &c.
H. W. TYLER.

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

Printed copies of this report were sent to the company on the 12th October.

LANCASHIRE AND YORKSHIRE RAILWAY.

*Brighouse,
25th October 1870.*

SIR,

In compliance with the instructions contained in your minute of the 24th instant, I have the honour to report, for the information of the Board of Trade, the result of my inquiry into the circumstances which attended the collision that occurred on the night of the 21st instant, near Brighouse, on the Lancashire and Yorkshire Railway.

The Brighouse station is on the main line of the Lancashire and Yorkshire Railway from Manchester to Normanton, and is rather more than 37 miles from Manchester, and rather less than 13 from Normanton. The North Dean junction and station are $4\frac{1}{2}$, and the Elland Station is $3\frac{1}{2}$ miles, on the west of Brighouse.

The Brighouse station is approached from the west on a falling gradient of 1 in 528, and on a curve of 62 chains radius. It is protected by a platform signal, and by two distant-signals, 589 and 930 yards, respectively, from the booking office. The furthest signal is visible to an approaching engine-driver for rather less than 300 yards; and, the line running through a rock cutting, the view is much obstructed in approaching both the distant-signals. The nearer is simply used as a repeater to the further distant-signal, because the latter is not visible from the station.

On the evening in question, the 7.0 p.m. train from Liverpool, and the 8.15 p.m. train from Manchester, were joined together as usual at Rochdale; and left that station at 9.5, five minutes late, for Normanton. At Sowerby Bridge, the Manchester portion was detached for Bradford; and the Liverpool portion started for Normanton at 10.5, two minutes late, consisting of an engine and tender, six carriages, and a break-van. Three of the carriages were coupled to the van by Fay's continuous breaks; and the van, in which the guard rode, was in the centre of the train. This train reached North Dean at 10.11; left it again at 10.12, one minute late; left Elland at 10.18, two minutes late; and proceeded in due course towards Brighouse, where it was due to stop at 10.21.

The engine-driver believes that he was travelling at a speed of 15 miles an hour in approaching the Brighouse distant-signal, as he had shut his steam off in the cutting some 500 or 600 yards before he came in sight of that signal. He found it at danger, and

at once whistled for the breaks. In proceeding forward he caught sight of three red lights, at the tail of a train standing about 180 yards within the distant-signal. He then reversed his engine, applied his steam, and whistled again for the breaks; and his fireman sanded the rails. They had reduced the speed to four or five miles an hour, as they believe, before their engine struck the third-class carriage at the rear of the train in front of them.

The guard of this train was busy preparing his parcels, of which he had a great number, for Huddersfield, when he heard the engine-driver whistle, first for the signal, and immediately afterwards for the breaks. He turned on his breaks as fast as he could, and had hardly got them fully applied before the collision occurred. He first noticed a reduction of speed after hearing the whistle for the distant-signal, at which time he considers that the train was travelling at the rate of 18 or 20 miles an hour; and he also considers that the speed was reduced to 4 or 5 miles an hour when the collision occurred.

The engine of this train left the rails with its leading and driving wheels, in consequence of the buffer-beam mounting a pair of wheels from under the carriage which it struck at the rear of the train in front of it; but the trailing wheels, and all the wheels of the tender, remained on the rails; and none of the carriages were thrown off the line. The buffer beam of the engine was broken; and some of the cylinder-taps, the head-lamps, and certain minor parts, were damaged. Neither the tender nor any of the carriages were damaged, but the break-wheel in the van was broken by the guard as he fell against it, and grasped it in rebounding from it. The guard was slightly injured, but neither the engine-driver nor the fireman were hurt, and only one passenger in the train appears to have complained of injury.

The passenger train with which the above train came into collision, left Bradford at 9.32 p.m. for Huddersfield, consisting of an engine and tender and four carriages, of which the leading carriage was a break-carriage, and all of which were coupled together with Fay's continuous breaks. It left Halifax, according to the guard, at 10.2, two minutes late; North Dean at 10.8, three minutes late; and Elland at 10.12 also three minutes late; and it came to a stand about 10.20, between the repeating-signal and the distant-

signal. The engine-driver had followed a goods train from Elland; and having seen that train a mile in front of him as he reached Elland, he concluded it was about two minutes ahead of him as he left Elland. Finding the distant-signal from Brighouse at danger, he drew cautiously forward, and brought his engine to a stand about 15 yards behind the van of the goods train.

Immediately before this train came to a stand, the guard got out of his van, and ran back to protect it. He had gone, as he thinks, rather more than 100 yards when he saw a passenger train approaching. His showed a red light from his hand-lamp, while running, a few yards outside of the distant-signal. He saw sparks from under the wheels, as if the tender break had been applied, before the train reached him. He heard the engine-driver whistle for the breaks directly after it came in sight of him; and it appeared to him to pass him at a speed of 20 miles an hour.

The two carriages at the rear of this train were thrown off the rails by the shock of the collision, and one of them was broken to pieces, while the body of the other was shifted off its framing. The other carriages remained on the rails. A gas-holder in the last compartment of the last carriage was ruptured by the collision, and the gas catching fire was rapidly burnt.

Unfortunately 18 of the passengers by this train are already ascertained to have been injured, besides one who was taken from under the débris of the last carriage in the train, and who died a few minutes afterwards. Two female passengers were also taken from under this last carriage, but it is hoped that both of them will recover from their injuries.

The special goods train which thus stood at Brighouse in the way of the Bradford passenger train, was on its way from Blue Pits to Wakefield, and reached Brighouse at 10.14. It was kept waiting on the down main line by another goods train, from Oldham Road to Wakefield, which reached Brighouse at 10.13, 23 minutes late; and which had drawn up behind a third goods train, from North Dean to Wakefield, which reached Brighouse at 10.10, fifty-five minutes late. This third goods train stood behind a fourth, a London and North-Western goods train, from Halifax to Huddersfield, which had reached Brighouse at 9.55 pm., an hour and fifty minutes late, the engine having previously broken down at Halifax. In front of this train stood a fifth,—running from Halifax to Normanton, which reached Brighouse at 9.47 pm., twelve minutes late.

The engine of this last-mentioned train had failed while shunting on the east of the Brighouse station, about 10 o'clock. As soon as it failed, the night signalman, seeing the engine-driver come to a stand as he was preparing, after finishing his shunting, to rejoin his train, enquired of him whether he could not take his train away. On learning that he could not even move his engine, he employed the engine of the next following goods train to push forward the waggons of the disabled train along the main line, so as to liberate a cross-over road on the east of the station, and to allow the engine of the third goods train to get round and in front of the waggons of the disabled train. There were cross-over roads at both ends of the station available for this purpose; and the waggons of the disabled train were just being drawn away by the third engine from the east of the station when the collision occurred.

It would appear that the engine of the leading goods train failed about 20 minutes before the collision, and that there was no means of telegraphing back to North Dean or Elland, with a view to warning the engine-drivers of following trains of the obstruction there caused on the down line, because the telegraph offices close at those stations, as well as at Brighouse, at 8 pm. It would further appear that, the first disabled goods train having been moved forward, the line would have been cleared, by sending

away three trains, and shunting two trains from the down to the up main line, within a few minutes if the collision had not occurred.

By the record books at the North Dean and Elland stations the trains above referred to are stated to have left those stations at the following times:—

	North Dean.	Elland.
The Halifax and Normanton goods train, the engine of which failed.	9.32	9.33
The L. and N.W. goods train from Halifax to Huddersfield.	9.42	9.40
The North Dean to Wakefield goods train.	9.46	9.50
The Oldham Road to Wakefield goods train.	10.0	10.5
The special goods train, Blue Pits to Wakefield.	10.7	10.8
The passenger train, Bradford to Huddersfield.	10.10	10.14
The passenger train, Manchester to Normanton.	10.13	10.19

The engine of the leading goods train which thus failed, had been working perfectly well until the engine-driver was preparing to start, as above stated, for Wakefield. The engine-driver found, on applying his steam, that the engine "would not move forward properly; that one side of his engine would work, and the other failed to work;" and he told the night signal-man that he could not proceed. The engine was taken afterwards to the shops, and thoroughly examined, and it was then ascertained that the steam valve of the off-cylinder was broken.

The evidence of the signalman at Elland does not agree with that of the engine-driver of the Manchester train. The signalman asserts that as the train approached him, his distant-signal was at danger, and he did not lower it at all; that the engine-driver passed it at danger, and came slowly up to the station; that he moved his platform signal from red to green, to allow him to draw up to the station; and that he gave him a caution signal by hand-lamp as he left the station for Brighouse, because the Bradford to Huddersfield passenger train was only five minutes in front of him. The driver does not remember that the distant-signal from Elland was at danger; and neither he nor his firemen saw anything of the caution-signal which the signalman states that he exhibited from his hand-lamp. The night-inspector at North Dean saw the Elland distant-signal at danger when the Manchester train left North Dean, but he cannot say whether it was subsequently taken off before the Manchester train passed it. The guard of the Manchester train inquired at North Dean, according to his usual practice, whether the Halifax train had passed, and learnt that it was in front of him, though he did not ask how many minutes; and he asserts that the Elland distant-signal, which was at danger when he left North Dean, was turned to all right before he passed it; and he saw no caution-signal from the hand-lamp of the signal-man at Elland in leaving that station. The signal-man at the North Dean end of the tunnel between Elland and North Dean, is confident, on the other hand, that the distant-signal from Elland, which he could clearly see from his cabin, was not turned from red to white, but remained at danger while the Manchester train passed it.

If the statement of the Elland signalman be correct, then the engine-driver of the Manchester train (who would not have been permitted to pass through the tunnel from North Dean until the previous train had started from Elland) would have been made aware by the Elland distant-signal being kept up against him, either that some other train was within five minutes in advance of him, or that the Elland station was obstructed by shunting. If, on the other hand, the distant-signal was lowered before he passed it, he would have understood that the next preceding train was

more than five minutes in advance of him, unless he saw a green light from the hand-lamp of the signalman. There is, however, no other evidence to corroborate the statement of the signalman as to his having so used his hand-lamp.

The traffic on this part of the line is very great, 146 engines or trains passing the Brighthouse station, including both directions, in the 24 hours. The trains follow each other so quickly that the ordinary regulations, prescribing time-intervals, with five minutes of danger, and five minutes of caution, cannot be applied; and it has been found necessary to issue in the printed notice of "working alterations" the following, besides other special rules:—

SIGNALMEN at Bradley Wood junction, Brighthouse, Elland, and North Dean stations.

They will observe that the passenger trains between Bradley Wood junction and North Dean station are timed to run at intervals of 2, 3, 4, and 5 minutes; they are therefore requested to stop with the signals any second train which may arrive within the five minutes, and inform the engine-driver what has gone before, and that he is to proceed with caution.—See rule 43, pages 16 and 17.

The above special instructions to signalmen only apply to passenger trains which run in connection at the next station; all other trains must stop the five minutes according to rule 39, pages 15 and 16.

The timing of trains to follow each other within "intervals of 2, 3, 4, and 5 minutes," combined with the instruction to signalmen to caution such trains when following one another within five minutes, would not be a very safe system of working a heavy traffic of mixed passenger and goods trains upon any

line; and it becomes the more objectionable upon a line of heavy gradients, on which the view is obstructed. In the present instance, the engine-driver of the Manchester train, travelling down a gradient of 1 in 528, could only see, round the curved slope of a rock cutting, first, a distant-signal less than 300 yards before him; and then the tail-lights of another train, visible for about the same distance, and 180 yards within that distant-signal. He was provided, it is true, with ample break-power in his train, and to that circumstance it is fortunately due that 20 or 30 passengers, in place of one passenger, were not killed. The inefficient system described in the printed notice above quoted, which the officers of the company have been compelled to adopt, in order to allow the traffic of the railway to be carried on, for the want of more suitable arrangements on this and other parts of the line, should now give place to a general block-telegraph system; and other improvements will also be required, to enable such a system to be properly carried out. Amongst these, the construction of extra siding accommodation, for avoiding obstruction to the main lines, will be necessary; and in course of the improvements which are now being effected at Brighthouse, this point should not be overlooked. This station is constantly more or less blocked up with traffic, and the extra siding accommodation so much required at it, does not appear, as yet, to have been ordered by the directors of the company.

I have, &c.,
H. W. TYLER.

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

Printed copies of this report were sent to the company on the 11th November.

LANCASHIRE AND YORKSHIRE RAILWAY.

*Board of Trade,
(Railway Department),*

SIR,

Whitehall, 14th January 1871.

IN compliance with the instructions contained in your minute of the 20th ultimo, I have the honour to report, for the information of the Board of Trade, the result of my inquiry into the circumstances attending the collision which occurred on the 17th ultimo, near Stoneclough station, on the Lancashire and Yorkshire Railway, between a passenger train and the engine of a mineral train.

Fifteen passengers are returned as having been bruised and shaken. The driver of the engine of the mineral train was killed on the spot.

Stoneclough station is situated between Manchester and Bolton, being seven and a half miles from the former, and three and a quarter miles from the latter place. The line for some distance on both sides of the station rises towards Bolton at the rate of 1 in 200.

Two sidings connected with coal workings on the south of the line join the main line on the Manchester or east side of the station. The one (Starkey's siding) nearest the station is connected with the down line only, by falling points; the other (Little Hey siding) joins the down line 315 yards east of Starkey's siding, and the up line by a through crossing 240 yards east of the points on the down line, in both cases with falling points.

A signalman employed at these sidings has a cabin opposite the points connecting Little Hey siding with the down line. For the protection of the up line he has a distant signal 450 yards from the up line points; for the protection of the down line he has one distant signal for the three points of connection, only 280 yards on the east or Manchester side of the one furthest from the station, and 835 yards from Starkey siding points, and 520 yards from the Little Hey siding point on the down line. This signal can be moved by a lever at each of these three points, and is visible a long way off in clear weather.

On the 17th ultimo, at 11.42 a.m., a train, consisting of an engine and tender (running tender first) and break van with two guards, started from Bolton for Salford (near Manchester), with work to do on the road. It was 22 minutes late in starting, its proper time of departure having been 11.20. It first stopped at Moses Gate, where three waggons loaded with telegraph poles were taken on to be left at Little Hey siding, and started at 11.52. At 11.58, according to the senior goods guard (Gill), or rather later according to the pointsman (Wagstaff) on duty at Little Hey, the train arrived at the points on the up line at Little Hey siding. Wagstaff, who was standing at his cabin door as the train passed, at once put his up signal to danger, and ran after the train. He reached it at 12.2 by his watch, and found the van on the Bolton side of the points, and the engine and waggons on the Manchester side of them, ready to set across into the siding.

According to Wagstaff's statement, the weather had been very thick all the morning, and was now a deadly black fog, so that he could neither see nor hear. A down passenger train from Manchester to Bolton, not stopping at Stoneclough, was now two minutes over-due, and an up passenger train from Bolton to Manchester, also not stopping at Stoneclough, was due at 12.5. (This was a mistake of Wagstaff's, the train not being due out of Bolton till 12.5, and consequently not due at Stoneclough till 12.10.) After putting his down distant signal to danger, he said to guard Gill, "Can you hear anything?" (alluding apparently to the over-due down train). He replied, "No." The same question and answer having been again repeated, Wagstaff said, "Call him in altogether," which message was passed on by the under guard (Noden) to the driver. The order had, however, to be repeated thrice before the engine moved, the two first orders having been, according to the fireman, not heard. As the engine passed Noden, who was holding the points, he said to