

There are excuses on this branch for such a mode of working, on the part of the officers and servants employed, which have been brought forward in the course of my inquiry, and which, considering the nature of the line, and the amount of traffic carried over it, are not without validity. For instance, if a heavy goods train, such as that which ran into the passenger train on the present occasion, is stopped at Burnley, to wait until another train has gained five minutes before it, it may just make the difference to the driver as to whether he will be able to take up his load in two trips or one to the summit of the branch, four miles distant; and if such an interval be persisted in, in starting the goods train from Rose Grove after a passenger train, as is considered to apply to other trains, that goods train might be stopped for the passenger trains on other parts of the line, and might take a longer time to get to Todmorden and back again than the exigencies of the traffic can afford.

It cannot be expected but that considerations of this sort will weigh with, and will regulate the conduct of the officers and servants of the company, who are obliged to carry on the traffic; and it may be even said that in such cases they are obliged to infringe rules and run risks which would otherwise be unwarrantable. Though liable to censure, and even to punishment, for not obeying printed rules, they cannot but fall into habits of disobedience under these circumstances, and these habits are liable to progress from bad to worse, until some serious result brings about improvements which they have otherwise no influence to procure.

In the present case, it is clear that the Lancashire and Yorkshire Company have got a single line overloaded with traffic, and that they have not even provided the best means of working it. Tunnels, curves, and heavy gradients are found on it, such as require the most careful precautions; and they have not even established a telegraph as an aid to safety. As long ago as January 1854 they stated, in reply to a complaint from Mr. Towneley, one of the present sufferers, that they had "had in contemplation for some time the laying down of a second line of rails upon this branch, and that they have simply awaited the approach of a fitting season of the year to enable the company to carry into effect, properly and substantially, a project of such a character."

They added, in the same communication, that they had "recently issued orders for the second line to be laid, and in the meantime for the traffic of the branch to be worked under such regulations as in their opinion will best conduce to the public safety."

But now, after a further interval of more than four years, during which the goods traffic of the branch is stated to have doubled itself, a single line is still employed, and the traffic is worked in a manner which cannot be considered as by any means safe.

The present accident has occurred thus:—

A heavy non-stopping goods train, with a full load, was permitted to run, over gradients on which it could not afford to stop without the prospect of serious inconvenience, at an insufficient interval of time behind a stopping passenger train. The passenger train met with extra-ordinary stoppages, of four minutes at a colliery siding, and of two minutes at a passenger station; and it was pushed back 150 yards from that passenger station. The goods driver and fireman, trusting to the passenger train being a long way ahead, in due course, instead of in this unusual position, at this unexpected time, neglected their important duty of keeping a good look-out for about one minute, while they travelled the 300 yards over any part of which they might have seen their danger; and they only found it out in consequence of a warning given them when it was too late to avoid a collision.

No possible excuse can be made for the neglect of the driver and fireman of the goods train; but considering the nature of the line, and the amount of the traffic carried over it, some excuse may be offered for those who allowed the goods train to follow too soon after the passenger train; and while this collision is directly attributable, therefore, to the carelessness of the company's servants, it is at the same time an indirect result of their want of a double line. I would urge upon the directors, in the strongest manner, the necessity that exists for their laying down a second line of rails, and for their establishing a telegraph for the safer working of the line, with the least possible delay, before a more serious accident shall prove to them the want of these precautions.

Inasmuch as the tails of any trains which may be shunted back from the Towneley station, so as to open the approach to the siding from which Mr. Towneley's carriage was taken on the present occasion, must always approach more or less nearly, according to their length, to the present distant signal, I would also recommend them to cause that signal to be moved further from the passenger platform, to such a position as would enable it to be seen both from that station, and, round the curve, from the neighbourhood of the Burnley station.

I have, &c.

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

H. W. TYLER,
Captain, R.E.

LANCASHIRE AND YORKSHIRE RAILWAY.

*Railway Department, Board of Trade
Whitehall, May 7, 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 of Captain Tyler, R.E., of his enquiry into the circumstances connected with the collision which occurred on the 15th ultimo at the Victoria Station, Manchester.

My Lords trust that the Directors of the Lancashire and Yorkshire Railway Company will take steps to increase the accommodation at this station without delay.

My Lords direct me to call the attention of the Directors to the inspecting officer's remarks on the desirableness of adopting an increased amount of break power in all their trains.

I am, &c.

*The Secretary to the
Lancashire and Yorkshire
Railway Company.* DOUGLAS GALTON,
Captain, R.E.

*Railway Department, Board of Trade,
Whitehall, May 7, 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 of Captain Tyler, R.E., of his enquiry into the circumstances connected with an accident which occurred on the 15th ultimo at the Victoria Station, Manchester, to a train belonging to the Lancashire and Yorkshire Railway Company.

My Lords trust that the Directors of the London and North Western Railway Company will take steps to increase the accommodation at this station without delay.

I am, &c.

*The Secretary to the
London and North Western
Railway Company.* DOUGLAS GALTON,
Captain, R.E.

*Railway Department, Board of Trade,
Whitehall, April 30, 1858.*

SIR,

IN compliance with the instructions contained in your letter of the 17th instant, I have the honor to report, for the information of the Lords of the Committee of Privy Council for Trade, the result of my enquiry into the circumstances which attended the accident, that occurred on the 15th instant, near the Victoria Station of the London and North Western, and Lancashire and Yorkshire Railways at Manchester.

The east end of this station is owned and worked by the Lancashire and Yorkshire, the west end by the London and North Western, Company; but a heavy traffic is carried on at each end by both of these companies. The London and North-western side of the station, at which the present accident occurred, is very much restricted as to space, and great difficulties are on that account experienced in the working of the traffic, which is attended with continual danger to the public. From 6.30 in the morning till 10.30 at night, the traffic is almost incessant. All the arriving passenger trains have to be separated from their engines 300 yards outside the station, and the engines have to run forward on the arrival line while the carriages are turned down one of the departure lines, through the different facing points that are used for the purpose, to the station platforms. The trains are frequently kept waiting outside the station, in busy seasons, on both of the main lines, because there is no room for them to come in; the departure trains, on starting from the station, have sometimes to thread their way out between trains thus standing on both main lines, and the passengers are often discharged when the lines are much blocked up, at 100 or 200 yards from the station platforms. A great deal of danger attends this practice, because it is not always possible to keep the passengers from rushing out of the trains when it is not safe for them to do so, and from running the risk of getting in the way of other trains which may be passing at the same moment. Further danger is also frequently incurred when the wooden platforms between the lines of rails at the station are obliged to be used for departure, and when the passengers are thus called upon to cross the lines as other trains are coming in.

This station is approached from the west on a falling gradient of 1 in 100, which commences at 200 yards from it. On the 15th of April, the 3.35 train from Preston came in about 4.40, five minutes late, and rather more slowly than usual, on account of the very slippery state of the rails. The engine was detached in the ordinary manner at 300 yards from the platforms, and the carriages were turned across the departure line to the siding allotted to them, in which a train belonging to the Birkenhead, Lancashire and Cheshire Junction Railway Company was standing, ready to start for Birkenhead. The guard was riding in his van, which was the fourth vehicle from the front, with two carriages behind him, and he put on his break, as he thought at the proper time, in order to stop the carriages at the platform. But the rails were very slippery, the engine of the Cheshire Junction train was standing a couple of carriage lengths further up the platform than usual, and instead of stopping short of that engine the carriages came into collision with it.

One carriage-body was shifted on its framing, but nothing more serious appears to have been the result.

This collision is not of itself worthy of much notice, but it is important as being a repetition of the accident which occurred in a similar manner at the same place in December 1856, and as illustrating the risks that are daily run at the entrance to the station; and in reporting on it, it becomes my duty to bring again under their Lordships' notice the great necessity that exists for increased accommodation. I had occasion to refer to this point in my report of the 17th December 1856, upon the accident above alluded to, but no

alteration of any importance has been made since that date.

A short siding has certainly been opened out at the back part of the station, which is capable of containing a few carriages, and there are an engine shed and turn-table, which assist to block up the entrance to the station, and which might be removed to a greater distance, by way of affording some further relief; but a considerable extension is also urgently required on both sides of the station, by means of which separate arrival and departure lines may be established, and the continual risk, to which, as I have above stated, the public are exposed may be obviated.

It would rest, I believe, with the London and North-western Railway Company to execute these works, and with the Lancashire and Yorkshire Railway Company to join them in defraying the cost.

In the meantime, it may be said that there is risk attendant upon almost all the operations that are carried on at the station, when the lines are crowded.

There is risk in getting the passengers into the carriages when the trains are about to start, and risk in getting them out of the carriages when the trains arrive; there is risk in starting the trains out of the station, and there is risk in bringing them into the station; there is risk arising from the trains standing outside of the station on both main lines, and there is risk to the trains that are standing in the station, waiting for others to run in without their engines in front of them.

It is useless to recommend any minor remedies at the station for such a state of things. The officers and servants of the company appear to get through their work, under the serious difficulties to which they are exposed, in a most creditable manner, but so long as they have to contend with such utterly inefficient accommodation, it must be expected that accidents will from time to time occur.

There is one remedy, however, which the Lancashire and Yorkshire Railway Company have it in their power to apply to their trains, and to which I must not fail here to refer.

On portions of their line they have in use a system, patented by their carriage superintendent, by means of which a number of carriages may have breaks simultaneously applied to them by one guard. A set of vehicles with these breaks attached have worked for twelve months on their Oldham branch, where the gradients are very severe, with the best results.

As they approach the Victoria station on one side on a falling gradient of 1 in 100, and on the other side on a falling gradient of, I believe, 1 in 46, it is of the greatest importance that all their carriages should be supplied with breaks constructed upon this, or a similar principle, and it is the more necessary because the carriages are run by themselves, after the engines are detached, into a crowded station, dangerously worked, unavoidably, in consequence of the insufficient accommodation which it affords.

The only excuse that the Directors can possibly have for not extending the use of these breaks, as well for greater safety in entering the Victoria Station, as for the advantage that they would derive from their employment over the remainder of the line, is, that there is a rival system on the line of the East Lancashire Company, with which they are seeking to amalgamate, and that it is desirable that the same system should be decided upon and adopted by both companies. Both of these systems have been working successfully, and it may be safely stated, without entering into the detailed merits of either of them, that the choice of them becomes of little account when compared with the importance of applying either the one or the other to the carriages, and bringing them into use with the least possible delay.

In the present case the guard was placed in the middle of the train, where he ought not to have been, with three carriages in front of, and two behind him. He was thus unable to see well before him on enter-

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ing the station, and he was also improperly placed for his journey over the remainder of the line, during which he and his van ought to have been at the tail of his train. If he had been provided with the means of putting on three or four breaks instead of one, to stop his carriages at the proper spot, he would have had much more chance of success; and if all the trains of the Company were provided with either the East Lancashire or the Lancashire and Yorkshire

system of continuous breaks, much of the danger of collision that is at present constantly incurred by the trains running into the station in the manner above described would be avoided.

I have, &c.
The Secretary,
Railway Department,
Board of Trade.
 H. W. TYLER,
Captain, R.E.

LLANELLY RAILWAY.

Railway Department, Board of Trade,
 Whitehall, June 15, 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 Lieut.-Colonel Yolland, R.E., of his inquiry into the circumstances attending the explosion of the boiler of a locomotive engine, which occurred on the 29th January last on the Llanelly Railway.

My Lords trust that the inspecting officer's remarks, that this explosion appears to have been due to the worn-out condition of the boiler, rather than to any undue pressure of steam at the time of the accident, will receive the careful consideration of the directors of the Llanelly Railway.

I am, &c.
The Secretary to the
Llanelly Railway Company.
 DOUGLAS GALTON,
Captain, R.E.

Railway Department, Board of Trade,
 Whitehall, June 9, 1858.

SIR, IN compliance with the instructions contained in your letter of the 1st February, I have the honour to report, for the information of the Lords of the Committee of Privy Council for Trade, the result of my inquiry into the circumstances connected with the explosion of the boiler of the Victoria locomotive engine on the 29th January last at the Pantyffynnon station of the Llanelly Railway, by which three persons were killed and 13 others were more or less seriously injured.

The engine which exploded was a six-wheeled coupled engine, weighing 18 tons. It had $14\frac{1}{2}$ -inch cylinders with 16-inch stroke. The wheels were 4 feet in diameter, and 8 feet 6-inch base. It was constructed by the Messrs. Hackworth, of Stockton, and delivered in 1841. The construction differed materially from the engines of the present day. The boiler of wrought iron plates, $\frac{1}{8}$ inches in thickness, was 12 feet long and 4 feet 3 inches diameter. It contained an internal main tube of wrought iron, $\frac{1}{2}$ inch thick, $8\frac{1}{2}$ feet long, and 2 feet in diameter; which tube carried the fire grate at one end, and had a combustion chamber, also of iron $\frac{1}{2}$ inch thick, attached to it at the other. The furnace, smoke-box, and chimney being at one extremity, and the combustion chamber at the other, and 68 small iron tubes, 2 inches exterior diameter, led from the combustion chamber through the boiler to the smoke-box and chimney. A steam dome was placed over the centre of the boiler. Originally the boiler had only one main longitudinal stay, secured to the two ends of the boiler, and two side stays placed over the combustion chamber. It was provided with three safety valves, two of them lever valves, (Salter's patent,) with ferules, to prevent more than the regulated pressure being put on them, and one stock valve. The largest of the lever valves, and the stock valve, were of $2\frac{3}{4}$ inches in diameter, and the other lever valve was of $2\frac{3}{8}$ inches in diameter. The boiler was furnished in 1857 with a steam pressure gauge (Smith's patent).

It is stated that there was 294 square feet of surface in the small tubes, and 99 square feet in the main tube and combustion chamber, making together 393

square feet of heating surface; and that it would evaporate 64 cubic feet of water per hour, but not above $\frac{1}{2}$ of that amount in descending an incline when no steam was used. It had the reputation, among the drivers, of rapidly raising steam. The boiler was furnished with a water gauge glass and three water cocks.

The locomotive superintendent, Mr. Hepburn, joined the company in April 1850, and shortly afterwards he examined the boiler, and it underwent a thorough repair under his directions, which repair occupied nine months, and cost 400*l.*, in 1851. On that occasion, $12\frac{3}{4}$ cwt. of new boiler plate, $\frac{1}{8}$ inch thick, was supplied; all towards the combustion chamber, and entirely in the bottom, a complete new set of iron tubes was put in, and also a new longitudinal stay. In 1853 a new main tube, $\frac{1}{2}$ inch thick, was supplied, the old one having collapsed.

In 1857 another extensive repair was made, commencing in June and ending in December, and costing 205*l.* Ten cwt. of new boiler plate was supplied, mostly towards the furnace end. Originally the boiler was constructed without stays between the end plate and the combustion chamber, but 18 one inch stays were added at this time, and about one fourth of the tubes were renewed.

When the locomotive superintendent joined the company the boiler was worked up to 80 lbs. pressure on the square inch, and when the repairs were effected in 1851 he reduced the pressure to 70 lbs, and further to 60 lbs. after the boiler had again been repaired in 1857.

It is not known what repairs had been made to the boiler before 1851, and thus the portion of the boiler which had not been repaired since 1850 was almost entirely on the top and sides; but the new boiler plate was all put on with the fibre running longitudinally along the boiler, contrary to the practice usually followed by boiler makers.

From the peculiar construction of the engine, the driver having the regulator, steam pressure gauge, water-gauge glass, and water cocks, immediately under his control, rode at the leading end of the engine; and the fireman, who had to look to the fire and attend to the feed cocks, rode at the other.

In the course of the last seven years the engine had been lying by two years and a half, having been found too light for the mineral traffic, and never powerful enough for the winter traffic, and in consequence she was of late mostly employed in ballasting.

The locomotive superintendent states, that the engine was in substantial repair when taken out of the workshops in December 1857, and by calculation capable of working at seven times the pressure she was subjected to at 60 lbs. pressure on the square inch at the time she exploded.

The circumstances connected with the explosion are as follows:—

On the 29th January, and for a month previous, the engine had been used in ballasting for the contractor, Mr. Billups, and just before the accident had been engaged in bringing down six trucks of ballast from the Amman branch, each weighing about five tons. The locomotive engineer rode down on the engine, and he states that he noticed the pressure indicated by the pressure gauge when the train