

the illegal practice pursued for many years past by the King's Lynn Dock Company in shunting and standing engine and trains on this level-crossing, in defiance of the provisions of the Railway Clauses Act of 1863, Part I., section 5, and I submit that they at once be called upon to cease this illegal practice, and to report that they have done so.

I was glad to find that prior to the occurrence of this accident the Company had commenced to erect a foot-bridge at the crossing. This is a very proper and necessary provision, but of course it in no way absolves the Company from the necessity of obeying the provisions of the Railway Clauses Act forbidding shunting at level-crossings.

With regard to the Almshouse level-crossing, near Lynn station, on the Great Eastern Railway, referred to in the Coroner's letter of the 31st ultimo, I am informed by the superintendent of the line that a foot-bridge is about to be erected at that crossing.

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

I have, &c.,
C. S. HUTCHINSON,
Major-General, R.E.

Printed copies of the above report were sent to the King's Lynn Dock and the Great Eastern Railway Companies on the 22nd December.

LANCASHIRE AND YORKSHIRE RAILWAY.

Board of Trade, (Railway Department,)
1, Whitehall, London, S.W.,
26th July 1883.

SIR,

IN compliance with the instructions contained in the Order of the 17th 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 accident that occurred on the 12th instant, at the Manchester end of Bacup station, on the Lancashire and Yorkshire Railway.

The engine and four leading carriages of the 3.22 p.m. train from Manchester got off the rails, just after passing the junction signal-box at the south-west end of the station yard.

The engine-driver and three passengers were shaken, and the fireman grazed his shin in jumping off.

The train consisted of an eight-wheeled tank-engine, six passenger coaches, and a break-van with the guard in charge at the tail of the train. The engine, which was running with the funnel in front, had its six front wheels coupled together, and the trailing wheels worked on a radial axle, which allowed them to have 2 inches lateral movement on each side. It was fitted with a vacuum and a common screw break. The four last passenger coaches and the break-van at the tail of the train were fitted with Fay's improved break, which was worked by the guard in the van.

The Facit Extension Railway joins the line from Ducie Bridge station, Manchester, at the south-west end of Bacup station. The junction points are facing points for a train coming from Manchester, but immediately after passing the branch junction points there are facing-points, which lead to a dock at the north side of the station. This platform dock line is on a curve of 400 feet radius, which increases to 337 feet at the facing-points. The super-elevation of the outer rail of the curve at these points is reported to have been $1\frac{1}{4}$ inches on the day of the accident. All the points and signals are worked from a raised cabin adjacent to the junction, and are interlocked with each other.

The approach to the Facit junction is on a rising gradient of 1 in 239, but the line is practically level for 100 yards on the Manchester side of the junction points, and up to the end of the dock, which is about 220 yards beyond the junction points.

The railway from Manchester approaches the Facit junction on a curve of 18 chains radius. There is a check-rail on this curve which goes close up to the branch junction points, and there is another check-rail beyond the facing points, on the curve which leads to the dock platform. The facing-points are locked with the signals and also with a plunger, and they are provided with a lifting-bar to secure them from being moved while a train is passing over them. The permanent way consists of an 80 lbs. bull-headed steel rail, which is fixed with outside wooden keys in cast-iron chairs, some

of which weigh 47 lbs. and others 52 lbs., the chair fastenings are half trennels and half iron spikes. There are eight rectangular sleepers nine feet long ten inches by five inches to each 24-foot length of rail. Most of the sleepers are through timbers long enough to take the crossings at these junctions.

The line is well ballasted with cinders and appears to have been in good order, except that the tie bars of the stock-rails at the facing points were loose.

The engine which was attached to the train weighed about 49 tons 7 cwts., distributed as follows :—

	Tons.	Cwts.	Qrs.
On the leading wheels - - -	13	5	0
On the front driving wheels - -	14	16	2
On the second driving wheels - -	11	15	3
On the trailing wheels - - -	9	9	3

The diameter of the six leading wheels is 5 feet 1 inch, and of the trailing wheels is 3 feet $7\frac{3}{4}$ inches. The distance between the front buffers and the leading axle is 7 feet $6\frac{3}{4}$ inches, between the leading axle and the second axle 7 feet 3 inches, between the second axle and the third axle 6 feet 9 inches, between the third axle and the fourth axle 6 feet, and there is 6 feet $4\frac{3}{4}$ inches between the trailing axle and the end of the hind buffers : giving a total length of engine over the buffers of 33 feet 11 inches.

The engine after leaving the rails fell over on its left side, on the right side of the rails, about 130 feet beyond the facing-points which lead to the dock line. It fell across the rails. The driver fell over with the engine, but the fireman jumped off just before.

The carriages became detached from the engine, and the four leading coaches left the rails and came to a stand on their wheels on the left side of the railway.

The engine, which was nearly new, was damaged. The life guards were bent, the left side steps were broken, the tank at the left side was bulged, two weather board glasses were broken, the break-rods were bent, the left side feed pipes were damaged, the footplate was ripped up, and the left leading and right side driving springs were broken.

The leading wheels were found to be $\frac{3}{16}$ out of gauge, but all these injuries are believed to have been caused by the accident.

The flanges of the leading wheels of the engine were worn about $\frac{1}{8}$ of an inch.

The carriage next the engine was a good deal damaged and the two following coaches were slightly damaged.

The evidence is as follows :—

Evidence.

John Sherry stated : I was engine-driver of the 3.22 p.m. train from Ducie Bridge station, Manchester, on the 12th July. I had an eight-wheel tank-engine running with the funnel in front. I stopped at all the stations, and as I was approaching Bacup station at the proper time, 4.35 p.m., my engine left the rails. I think my engine struck the facing-points with the leading wheels. The reason I think so is, that the hind part of the engine seemed to go faster than the front part. I fancy she had a jlewing motion, and was not going on straight ahead. I think the driving wheels kept their proper road for a certain distance. The first thing I felt after passing the points was as if the engine struck something and lifted up in front. I whistled for the train breaks, but I had not time to get on my engine-break before she fell over. The engine is fitted with a vacuum-break as well as a screw-break. I have been 19 years in the Company's service, and over 10 years a driver. I think I was running at about 8 or 9 miles an hour as I passed the signal-cabin just before reaching the points at the entrance to Bacup station. As far as I know there were no breaks on at the time. My train consisted of six carriages and a break-van with the guard in the rear of the train. I have been in the habit of driving to Bacup, and I know the road well. I was running at about my usual speed when the accident happened. I shut steam off when I came out of the tunnel. I remained on my engine and fell over with her. I was rather dazed after the fall. I was taken home in a carriage. I have felt a lurch at times previous to the

accident in coming through the points, but nothing to alarm me. I did not report it.

James Rowbottom stated : I was fireman of engine 203 on the 12th July. I think the engine was running about 8 miles per hour as we passed the Bacup signal-cabin. I think I could run as fast as she was going. The first place where I noticed anything wrong was just as we got to the points. I believe the leading wheels of the engine struck the points, and after that she gave a jump or two and turned over on her left side close to the end of the platform. I jumped off just as the engine was going over. The engine fell over on her left side across the road. I fell on my knees and scraped my shin, instead of lighting on my feet. I gave a turn to my break before I jumped off, but I do not think I got it on tight. I do not think any breaks were on when the engine reached the facing-points, but the guard said he put them on, when the driver whistled. I did not go to look at the points until we had got the carriages on the rails. I then went to look at the points and found a piece off the end of the right point. It was a piece about an inch long and seemed to be a fresh break. I never felt any jerk at the point before. I have been fireman about six years.

Thomas Lord stated : I was guard of the 3.22 p.m. train from Ducie Bridge station, Manchester, on the 12th July. My train consisted of an engine, six coaches, and a break-van at the tail of the train in

which I travelled. We ran all right until the train approached Bacup, when the engine left the rails at the facing-points near the signal-cabin at the entrance of the station. I think we were travelling about 8 or 10 miles per hour. The engine fell over on the right side of the road on which we were travelling, and the four leading carriages got off the rails on the left side but remained upright. The three rear carriages that remained on the rails had not passed through the facing-points. I went to look at the points immediately after the accident and they seemed all right. There was a piece broken off the right switch. It was a little corroded, as if ground off gradually. I have been a guard five years, and all that time going into Bacup station. We had Fay's breaks on the four last coaches and my van; the breaks are worked from the van. I always use my breaks on running into Bacup. I was applying them at the time of the accident.

John Stephenson stated: I was signalman on duty at Bacup station cabin on 12th July when the engine and carriages got off the line. My points and signals are properly interlocked, and my cabin is close to the junction points. The points were right, and I had lowered the signals for the train to run past my cabin into Bacup station. I cannot say at what speed the train was travelling as my attention was given to a pilot engine that was shunting in the loop line. I saw the passenger train; it did not appear to be going faster than usual. I have been seven years in the Company's service, and five years a signalman. I saw the engine of the passenger train. I think it was running at the usual speed. I think the engine got off at the facing-points. I did not go to the points after the accident. I cannot say when the points were examined before the accident; I did not come on duty until 2 o'clock that day. The points are examined daily by the foreman platelayer—morning and evening. They are oiled by a station porter; generally in the afternoon, the first thing after dinner. The three last coaches of the train were not through the points. The four leading coaches, which were off the rails, had gone through the points. I cannot say how far the rear coaches were from the points. The coaches that were off, were on the left side of the road that they had travelled on. I think I heard the engine strike the points; I heard a noise, and that was what attracted my attention. I have had no difficulty with the working of the points, nor have I heard any complaint before the accident happened. In April last year an engine coming off the Facit branch left the line at these points. The engine of the train from Manchester became uncoupled from the train, but all the carriages remained coupled together.

Thomas Nicholas stated: I am foreman platelayer, in charge of this part of the railway for the last three months. I have been 10 years in the Company's service before that. I was at Bacup station when the accident occurred, and I ran down at once. I found

the points perfectly right. There was a bit off the right-hand point, but it had been worn off gradually. The 24-foot rail next the right-hand switch was bent, and had fallen over on its side, lifting all the chairs up. The fish-plate joints on this rail were not broken. One chair of that rail was broken. There was one chair on the opposite rail near the joint that was also broken. A great number of chairs were broken and the rails bent between the second rail and the place where the engine fell over. The check-rail on the left side was not broken, but some of the chairs in which it rested were broken. There is a mark at the end of the check-rail. I could not detect any marks where the engine had crossed the rails. The tie-rods between the points were not broken. The points were all right after the accident, and lay well home to the stock-rails. There were two tie-bars to the stock-rails, one in front and the other at the back of the points. The two tie-bars have been taken out. The one at the Bacup side of the points was a little slack. I do not know why the other was taken out. The first new bar that was put in in place of the slack one, broke off at the bend where it laps round the rail, and another new tie-bar was put in its place. Two new tie-bars were put in after the accident; one of those broke, and a third new one was put in. It is my duty to examine these points twice a day, and I do so morning and evening. A porter at the station oils them. When I examined them on the morning of the accident they were in good order. The second tie-bar when I examined the points on the morning of the accident was a little slack. It had always been loose, but I did not alter it, as the points worked right and the line was true to gauge. It was not as tight to gauge as it is now. It has been drawn together by the new ties, which have made the road $\frac{1}{2}$ inch tighter to gauge. I do not think the length of the point connecting-rods has been altered. They were bent by the accident, and had to be put into the fire to regulate them properly. The super-elevation of the outer rail over which the engine passed was $1\frac{1}{4}$ inches at the time of the accident.

James Preston stated: I am a signal-fitter in the Lancashire and Yorkshire Company's service, and have charge of the signals at Bacup. I got to the scene of the accident about an hour after it happened. The points appeared to be all right. I found the stock-rails at the facing-points a little wide to gauge, but the points were worn owing to the pressure of the wheels going round the curve. The points fitted all right home to the stock-rails. I pulled the stock-rails to the proper gauge and then I found that the two iron ties were a little loose, so I put in two new ones. The new tie-rod, that was put in at the Bacup side of the points, was torn right off at the bend where it laps round the rail. It had moved a little by the morning after it was put in, and the next morning it had broken off altogether, so I put in a new one, which is in at present.

Conclusion.

According to the foregoing evidence the train was running at a speed of about 8 or 10 miles an hour when it reached the facing-points which lead to the Bacup dock platform line. The right leading wheel of the engine appears then to have got on the wrong side of the right-hand facing-point, owing to the stock-rail giving way under the pressure of the right leading wheel of the engine as it rounded the curve.

The points were examined that morning, and were thought to be in good order, but the slackness of the tie-bars of the stock-rails would allow the right side stock-rail to be pressed about an inch away from the right-side point, when the weight of the engine came against it, and this would allow the flange of the right leading wheel to pass at the wrong side of the point. I think this occurred, and caused the engine and four leading coaches to leave the rails; and I am borne out in this opinion, by the fact that one of the two new tie-bars which were put in after the accident was broken on the second day. The pressure of an engine of the class which was attached to the

Bacup train would be very great when running round a five-chain curve at a speed of 8 or 10 miles an hour.

I think it probable that when the stock-rail was relieved from the pressure of the leading wheel of the engine it sprung back into its place, and that the remaining wheels of the engine went along the line of rails towards the dock platform, on which the whole train was intended to travel, but that the pressure of the leading wheel of the engine being on one side of the right point and the remaining right side wheels at the other caused a cross strain, which pulled the chair fastenings of the rail which was next to the right-hand point, from the sleepers and then forced this rail on to its side, in which position it was found after the accident. The engine and four leading coaches must have left the rails at this place.

The road from this point forward to where the engine fell over on its left side was very much damaged. The foreman platelayer who allowed the slack ties to remain in the railway is responsible for this accident, but he had only been in charge for about three months, and I do not think that he would be aware of the importance of keeping the ties thoroughly tight, as the stock-rails would spring back to their proper place the moment the weight was taken off them, and the road would then appear to be true to gauge and in good order. The opening and the consequent slackness of the tie-rods of the stock-rails was no doubt gradual, and did not convey any feeling of danger to the inspector of permanent way, who admitted that he had noticed this slackness previous to the accident. The tie-rods were $2\frac{1}{2}$ inches \times $1\frac{1}{4}$ inches.

The lesson to be derived from this accident is; that the tie-rods and chairs which keep the points and stock-rails to proper gauge and in their true position, should always be most carefully watched and repaired when the slightest slackness appears.

The points and stock-rails at the place where the accident happened, are now about $\frac{1}{4}$ inch tight to gauge, and considering the sharp curves at the place in question, I think it would be safer and better if they were about $\frac{1}{4}$ inch wide to gauge. I would recommend that a better and stronger description of tie-bar should be adopted, and that the speed of all trains should not exceed five or six miles an hour when passing the Bacup signal-cabin, particularly as any failure of the Fay's or other continuous breaks would probably lead to a collision with the stop-buffers at the end of the platform.

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

I have, &c.,
F. H. RICH,
Colonel, R.E.

Printed copies of the above report were sent to the Company on the 18th August.

LANCASHIRE AND YORKSHIRE RAILWAY.

Board of Trade, (Railway Department,)
1, Whitehall, London, S.W.,
10th November 1883.

SIR,

I HAVE the honour to report, for the information of the Board of Trade, in compliance with the Order of the 25th ultimo, the result of my inquiry into the causes of the collision which occurred on the 22nd ultimo, near the east end of Victoria Station, Manchester, on the Lancashire and Yorkshire Railway.

In this case a Lancashire and Yorkshire Company's unattached engine and tender, while standing at the home-signals worked from No. 1 cabin at the foot of the Miles Platting Bank, was run into by the London and North-Western Company's 6.10 p.m. passenger train from Leeds to Manchester due at Victoria Station at 8.45 p.m.

Five passengers are stated to have been injured.

One tender-buffer and three tender axle-boxes of the unattached engine and tender were broken. In the London and North-Western Company's train—which consisted of engine, tender, and six vehicles, with a steam-break applying to the four coupled wheels of the engine and the six tender wheels, and a patent chain-break applicable by the engine-driver or guard to the four rear vehicles—the buffer-beam of the engine was broken.

Description.

The signals for giving admission to Victoria Station from the Miles Platting Bank (which falls towards the station on a gradient of 1 in 40) are worked from No. 1 signal-cabin near to the entrance of the station, and are placed at the fouling point