

# LONDON, MIDLAND AND SCOTTISH RAILWAY.

Ministry of Transport,

7, Whitehall Gardens, London, S.W. 1.

2nd February, 1925.

SIR,

I have the honour to report, for the information of the Minister of Transport, in accordance with the Order of the 9th January, the result of my Inquiry into the cause of the accident to a passenger train, which occurred on the 4th January, about 1.25 p.m. at Lostock Junction, on the London Midland and Scottish Railway.

As the 12.30 p.m. express passenger train from Liverpool to Manchester and York was passing through Lostock Junction Station, the tender of the engine and the first nine vehicles left the rails. The train was brought to a standstill, with all vehicles in an upright position, after travelling a distance of about 120 yards. Ten passengers complained of slight injury or the effects of shock.

The train was hauled by engine 1422 (type 4—4—2) with six-wheeled tender, and included the following ten vehicles:—

No. 4419	...	Eight-wheeled	...	Corridor third-class coach.
.. 5747	...	Six-wheeled	...	Covered carriage truck.
.. 1353	...	Eight-wheeled	...	Corridor third-class coach.
.. 1899	...	Eight-wheeled	...	Third-class van.
.. 2923	...	Eight-wheeled	...	Third-class coach.
.. 257	...	Eight-wheeled	...	Composite coach.
.. 831	...	Eight-wheeled	...	Third-class coach.
.. 737	...	Eight-wheeled	...	Third-class van.
.. 2624	...	Eight-wheeled	...	Brake van.
.. 679	...	Eight-wheeled	...	Third-class van.

The train was fitted throughout with the vacuum continuous brake, which was in good order, a pressure of 19 inches vacuum being maintained.

The engine and tender weighed 89 tons 8 cwt. in working order, and the coaching stock 223 tons.

After the train came to rest, the tender of the engine and the first nine vehicles were found to be derailed, the wheels of the last vehicle being on the rails. The train was divided between the fifth and sixth (Nos. 2923 and 257) vehicles owing to disconnection of the screw coupling. Considerable damage resulted from the derailment to the bogie frames, springs, etc.; axle-boxes and guards; wheels, buffer-rods, brake rigging, end panels and footboards of the first nine vehicles.

The permanent way over a length of about 160 yards suffered in the way of breakage of a large number of chairs, bent wing rails, sleepers and fastenings broken and bent. No telescoping of stock, and no breakage or damage to gas cylinders or pipes resulted from the accident.

### *Description.*

The Company's double line branches from Preston (west) and from Wigan (south-west) unite at Lostock Junction. East of this junction in the direction of Bolton, there are four passenger lines, known from north to south respectively as up slow, up fast, down fast and down slow.

The up Wigan and up Preston branch lines form a trailing end-on junction with the up fast line. The V-crossing of this junction is situated immediately east of the through crossing of the up line from Wigan by the down fast line from Bolton in the direction of Preston. The 12.30 p.m. train was travelling from the up line of the Wigan branch on to the up fast line to Bolton, when it was derailed on the trailing junction of the up line from Preston.

Lostock Junction signal-box is placed opposite the trailing points of this junction immediately north of the up slow line, and the approximate distances to the under-mentioned signals, points, etc., are as follows:—

Up outer distant from Wigan ... ..	1,346	yards	south-west.
Up inner distant from Wigan ... ..	1,078	"	"
Up outer home signals from Wigan ...	185	"	"
Through crossing of down fast and up Wigan lines ... ..	93	"	"
Buffers of rear vehicles after derailment	63	"	"
V crossing of trailing junction ... ..	38	"	"
Up inner home signals for Lostock Junction ... ..	10	"	"
Trailing points of junction of up Wigan and Preston lines ... ..	6	..	east.
Engine buffers after accident ... ..	141	"	"

The alignment of the railway east and west of Lostock Junction is on an easy curve southward. On the Wigan road, for the last quarter of a mile approaching Lostock Junction, trains travel on falling gradients of 1 in 130.

### *Report.*

A relaying gang had been working at Lostock Junction on the morning of this accident, and there can, in my opinion, be no doubt that the condition of the V crossing, at 1.25 p.m., when the express train was permitted to pass over it, was the cause of this accident.

Chief P. W. Inspector Horrocks gave evidence that, as a result of complaints received from enginemen, he was instructed by Mr. Stoker, District Engineer, to examine and report upon the permanent way at Lostock Junction. He made his examination on the 26th and 27th December, and reported that "the junction was in need of extensive repairs, being in bad alignment. It also required lifting; the fastenings and several of the crossing timbers required renewal." He considered that the cause of complaint was due to the irregularity of the curve in the up line crossing from Wigan, and the excessive speed at which some trains pass over it. He recommended an improvement by moving back the V crossing about six feet, and suggested that an examination should be made by the Assistant Engineer. He intended that a survey of the connections and curvature should be carried out before any decision was arrived at with regard to altering the position of the crossing. He was not advised that the work he had recommended was going to be carried out, and approval by the District Engineer was not received. He was on the scene of the derailment on the morning of the 5th January, and examined the two wing rails which had been taken out of the crossing. He came to the conclusion that they were unsuitable for use in the crossing by reason of their depth, which was about three-eighths of an inch in excess of the depth of the V rail. The wing rails had not been drilled for bolt holes, and the crossing distance-blocks were not in position, when the train passed over.

P. W. Inspector Halewood stated that he was in charge of 56 or 57 route miles of railway in the vicinity of Lostock Junction. He was aware of the inspection made by Mr. Horrocks, and after discussing the matter with him, understood that Mr. Horrocks would write a report, and that he was to carry out the work required. He therefore gave instructions to P. W. Sub-inspector Halliwell to utilise the services of the repair gang on Sunday, 4th January, for the purpose. He thought the work was of an ordinary character, and could be carried out between trains, and that it was not necessary to insert a notice regarding the work in the weekly programme. He told Halliwell to move the V crossing back 4 feet in the direction of Wigan, and to pull the rails into line with pegs, which he had put in by line and off-set to suit the new curvature. He told Halliwell he would require two 30-foot and two 45-foot serviceable rails for use in the crossing, and that rails of similar height to the V rail would be available from Westhoughton. His intention was to do nothing more than to pull the line into the new alignment, using all the existing sleepers, chairs, etc., except two additional crossing timbers. These instructions were given to Sub-inspector Halliwell on the 2nd and 3rd January. Inspector Halewood stated

that he was not present at Lostock Junction until 5 p.m. on the 4th January. He found on his arrival that all the chairs under the near hand rail east of the crossing were broken, and the rails of the up fast line burst out of gauge and twisted. Nearly all the spikes were bending outwards and some trenails were broken off. He came to the conclusion that the original cause of the derailment was that the outer wing rail was higher than the V rail. The outside wing rail was bent outwards, and there was a mark about 2 to 3 feet in front of the nose of the crossing, which appeared to have been made by the tyres of wheels. He found by measurement that there was nearly half an inch difference in depth between the wing and V rails.

P. W. Sub-inspector Halliwell acknowledged having received general instructions from Inspector Halewood regarding the work, but denied that he had received instructions with regard to the particular rails he was to use, in place of the old wing rails at the crossing. He used two rails that were brought to Lostock Junction by the ballast train. After these rails had been bent by foreman relayer Riley, he noticed that they were somewhat deeper, and calipered them. He found the difference between them and the V rail in respect of depth to be  $\frac{3}{8}$  inch, which he did not think sufficient to cause serious trouble. Work was commenced soon after 9.9 a.m. on the 4th when the relaying gang arrived. A flagman was sent to the signal box, and collars placed on the levers working the up distant signals from Wigan at 10.15, at which time possession was obtained of both the up Wigan and down Preston roads. The facing points on the up Preston road were clipped over in position for the up slow line. With these precautions he did not think it was necessary to send a flagman out in the direction of Wigan. Work was continued until 1.5 p.m., by which time the V crossing had been moved back 4 feet 2 inches, all the chairs in the rails moved were double spiked, but the trenails had not been driven, neither were the distance blocks in position in the crossing, the rails not having been bored for the bolts. He then went to the signal box, and told the signaller that the roads were all right, but as an additional precaution instructed him to keep his up distant signals at danger. He knew the Liverpool express was due, and remained in the signal-box to see the train pass. He watched it approach from the window. He thought it was travelling at a speed of 35 to 40 miles an hour, and noticed sparks coming from the engine wheels when it was half-way between the V crossing and the trailing points, and then saw that the train was derailed. He examined the permanent way afterwards and found the road burst out in the middle of the lead. Also, that the outside new wing rail was bent outwards, and the neck crossing chair and all the chairs in front of it under the near hand rails were broken. He attributed the derailment to the spreading of the road, the spikes being forced outwards on account of the bad decayed condition of the timbers throughout the lead. He thought the neck and other chairs were broken by the "buffering up which caused the coaches to rear up and drop down on the chairs." He was aware of Rule 255, but did not think it was necessary, in view of the condition of the road, to send out a flagman in accordance therewith.

Signaller Mather at Lostock Junction stated that, after the passage of an up train from Wigan at 9.41 a.m., and of a down train from Bolton to Preston at 10.15 a.m., he gave the permanent way gang possession of the up fast line eastward of the facing points on the up Preston road, the up line from Wigan and the down road to Preston; and the levers controlling the points on these roads, were clipped in position until the arrival of the 12.30 up express from Liverpool. A flagman was in his signal-box during the interval. About 1 p.m. the permanent way men went to dinner, and he was instructed by Sub-inspector Halliwell that he could have both roads, but must keep his distant signals from the direction of Wigan at danger. There was no flagman on the ground after the permanent way men went to dinner. He accepted the 12.30 up express at 1.20, and received "entering section" for the train from Westhoughton goods yard box at 1.24. He pulled off his up inner and outer home signals and fast line starting signal, keeping his two up distant signals at danger. He watched the train approach, and saw that the driver had reduced speed on account of the distant signals. He estimated the speed of the train as it approached his post at 10 to 11 miles an hour. Before the train had reached the front of his box, he noticed that axle-boxes of the carriages were striking the chairs, and concluded that the train was off the rails. He immediately sent the "obstruction danger signal" in all directions. The express usually passed his post at a speed of about 35 miles an hour.

Driver Abbott and fireman Haigh were on the footplate of the engine of the express. The former stated that he was prepared to stop at the outer home signal for Lostock Junction after finding the distant signals at danger, but when he saw the signals off he released the brake and allowed the train to run forward. He did not re-apply steam, and estimated his speed as he approached the junction with the Preston line at rather less than 15 miles an hour. When the engine was passing the lamp cabin (about 40 yards east of the junction signal-box), Abbott noticed a pluck on the train, and looking round, saw the carriage next to the engine jumping in such a way that he knew it was off the rails. He immediately applied the continuous brake to its fullest extent until the train came to a standstill. The tender of the engine was on the rails when he first observed that the leading coach was derailed, but was pulled off soon afterwards by the carriages—the engine keeping to the metals. He did not observe any unusual movement of the engine as it ran over the junction crossing.

Haigh, who rode on the right hand side (inside of the curve) also felt a bump when the engine was passing the platelayers' cabin (about 15 yards east of the signal-box), and turning round, saw all the coaches oscillating from side to side—the front carriage being lifted well above the back of the tender. The latter was dragged off the rails by the coaches afterwards. His estimate of the speed of the train was 10 to 15 miles an hour.

Guard Fletcher, who rode in the eighth vehicle from the engine (No. 737), estimated the speed of the train approaching Lostock Junction at 12 to 15 miles an hour. He felt a bump when the carriage in which he rode was 30 to 40 yards on the Preston side of Lostock Junction signal-box, looked out and saw that the carriage was derailed. He rushed to the vacuum brake-handle, but found that the continuous brake had already been applied.

Drivers Shaw and Jones, who were travelling as passengers in the express in the fourth carriage from the front, noticed that the train was running much slower than usual. The former felt that the continuous brake had been applied before he experienced a violent movement which told him that the carriage was derailed. Both men estimated the speed of the train at 12 to 15 miles an hour.

Mr. Stoker, District Engineer, stated that he had only been in charge of the District for a few months. It was his intention, on receiving Mr. Horrocks' report, to have the junction surveyed as soon as there was an opportunity for arranging for the survey staff, in order to determine what improvement in the lay-out was possible. He had no knowledge that the work carried out on the 4th January was being done, or that it was intended to carry it out. Inspector Halewood should have waited for instructions to do the work. He thought it was over-anxiety on his part which caused him to carry out the work without instructions. He considered from his short experience that Mr. Halewood was a very good and careful P. W. Inspector.

#### *Conclusion.*

I examined the wing rails which were in position in the crossing at the time of the accident, and found the outside rail bent badly outwards, as stated in evidence. Its inside edge over a length of about 5 feet, corresponding with the interval between No. 2 crossing and No. 1 neck chairs, was marked continuously evidently by wheel tyres. Close to No. 1 neck chair the marking over a length of about 3 inches was  $\frac{3}{8}$  inch in width. The depth of the wing and V rails, as calipered in my presence, was  $5\frac{5}{8}$  inches and  $5\frac{1}{4}$  inches, a difference of  $\frac{3}{8}$  inch. There was also in all probability some wear in No. 1 crossing chair which carried the nose of the V rail. The evidence proves that all the chairs under the left hand rail, in front of and including the neck chair, were found broken after the accident. The security of the crossing was also weakened by the fact that none of the three distance blocks, situated between the neck, Nos. 1, 2 and 3 crossing chairs respectively, was in position, and consequently none of the seven bolts which hold the rails and blocks together. The chairs were keyed, but two (spikes) only out of four of the fastenings of the chairs to the timbers had been driven.

In my opinion there can be no doubt, in view of the above marks and conditions, that the derailment was caused by the use of a deeper wing rail than should have been used for the crossing. The result was that the rail was heavily jarred, by a series

of blows struck on its inside edge by wheel tyres failing to ride smoothly on to the rail head. These blows, I think, broke the neck-chair and eventually bent and forced the rail out of position. The view taken by Sub-inspector Halliwell, that the derailment was caused by fastenings to the chairs in the centre of the lead giving way to flange pressure on the left hand rail on account of badly decayed timbers, is not, in my opinion, tenable. If this had been so, the damage would not have extended backwards to the crossing, nor would the bending outwards and marking of the wing rail in the vicinity of the neck of the crossing have occurred. His suggestion that the breakage of the chairs, between the V crossing and the centre of the lead, was caused by the sudden application of the continuous brake, which caused the rear coaches to bunch together, jump upwards, and the wheels to come down on the jaws of the chairs, is contrary to common knowledge of the effect of brake application. Moreover, if the old crossing timbers were in the decayed condition described by Sub-Inspector Halliwell, he should, instead of using them again, have replaced them by other timbers. I was informed that he had ample authority to obtain serviceable material in lieu of any timbers or chairs which, during the course of his work, he found to be untrustworthy. Halliwell's estimate of the speed of the train, 35 to 40 miles an hour, is also negatived by the evidence of all the other witnesses, and by the fact that the train ran little more than 100 yards after the continuous brake was applied. Having regard to the damage, etc., the possible maximum speed of the train, in my opinion, is unlikely to have exceeded 15 miles an hour. I prefer also to credit the statement of P.W. Inspector Halewood, that he gave Sub-inspector Halliwell distinct instructions, which were not obeyed, regarding the wing rails which were to be used for the crossing.

My conclusion, therefore, is that this derailment was caused by use in the crossing of a wing rail of greater depth than was justifiable, and that Sub-inspector Halliwell was responsible for its use.

I regret that I have also to criticise adversely his conduct in failing to protect the running roads by giving effect to General Rule 255. This rule definitely prescribes that a flagman with detonators is to be sent out half-a-mile when repair work of a line is being undertaken. The rule leaves no option to the man in charge of the work and is perfectly clear. It is fortunate that his disregard of this rule did not have more serious effects, for despite the fact that the distant signals were kept at danger, the home signals were clear for the express, and visible at a distance which would permit of a much higher speed than 15 miles an hour being attained by a train approaching the junction on falling gradients such as exist.

I wish to observe that improvement in the lay-out of a curve and junction of this description cannot properly be determined without an accurate survey and re-alignment, and understand that instructions have been given which will prevent the procedure adopted in this case by Inspector Halewood from being carried out in future.

I have the honour to be, Sir,

Your obedient Servant,

J. W. PRINGLE.

The Secretary,  
Ministry of Transport.

*Colonel.*