LONDON AND NORTH EASTERN RAILWAY.

MINISTRY OF TRANSPORT,
4, Whitehall Gardens,
London, S.W.1.

22nd February, 1936.

SIR,

I have the honour to report for the information of the Minister of Transport, in accordance with the Order of the 20th January, the result of my Inquiry into the accident which took place at about 6.16 a.m. on Sunday, January 19th, 1936, a short distance south of Barkston, on the main line of the London and North Eastern Railway from London to York.

Two engines, returning light from Peterborough to York, travelling at 45 m.p.h. or over, collided violently with the rear of a ballast train, running at about 20 m.p.h., which was conveying a relaying gang from Grantham to Newark; the rear brake van of the ballast train and five wagons immediately ahead of it were completely demolished. There were 12 men in the brake van; I regret to report that five of them were killed in the accident, three succumbed to their injuries later, and the remaining four were seriously injured. The light engines travelled about 300 yards beyond the point of collision before coming to a stand, with the leading axle of the front one derailed; the four enginemen on them escaped with trifling injuries. The permanent way was damaged for about 200 yards.

Medical assistance and ambulances reached the spot without undue delay, and valuable aid was rendered by the wives of railwaymen residing near Barkston Station. The up line was blocked until about 12.30 p.m., and the down line until about 6.30 p.m.

The ballast train was drawn by a 0-6-0 type tender engine and consisted of 30 wagons with a brake van at either end; the leading six wagons were loaded with slag ballast, and the remainder were empty. The overall length of the train, including the engine, was about 813 feet and its total weight was approximately 406 tons. After the collision it ran on to Hougham, about two miles north of Barkston, and on the journey one wagon, originally sixth from the rear, was derailed and collapsed foul of the adjoining up line when passing through Barkston Station; the wagon which was originally seventh from the rear was also badly damaged, and left the rails while the train was being shunted into a siding at Hougham.

The light engines were Nos. 2199 (leading) and 2198, both of the former N.E.R. 4-4-2 type with 6-wheeled tenders, driven from the right-hand side of the footplate, and travelling chimney first; the weight of each in running order, with full tender, was 125 tons 17 cwt. All wheels except those of the leading bogies were fitted with the steam brake, controlled by the vacuum apparatus, the ratio of brake pressure to total weight being about 51 per cent. The impact caused considerable superficial damage to both engines, especially at the leading end of No. 2199.

The morning was fine, and very dark; there was a hard frost, with a little snow on the ground. There was some mist or haze, visibility varying from point to point along the line.

Description.

From Grantham to Barkston, a distance of about 4½ miles, the line is double, and lies north and south, the former being the down direction. North of Grantham the line is undulating for about 2 miles, the down line rising at 1 in 330, then falling at 1 in 240 and 1 in 383, finally rising at 1 in 1650 to a point about half a mile south of Peascliffe tunnel. Thereafter it falls for some 3½ miles, first at 1 in 440 for about a mile, through the tunnel, which is 967 yards in length, and then at 1 in 200 past Barkston station. North of the tunnel the line is in a cutting, about 25 feet deep, extending as far as Barkston station. The north end of this cutting is on a gentle curve, left-handed for down trains, but elsewhere the section of line described is straight. The collision occurred in the straight portion of the cutting, on the 1 in 200 falling gradient.

The signal boxes concerned, in order from south to north, are those at Barrowby Road, Peascliffe, and Barkston South, the last-named being adjacent to Barkston station. The down line signals from Barrowby Road starting signal to Barkston South outer home inclusive are all situated immediately on the left of that line, and have their lamps at a comparatively low elevation, varying between 18 and 21 feet above rail level; Barkston South down inner home is a more lofty signal, on the east side of the up line, on account of the curve mentioned. The sighting distance of the Peascliffe down starting signal is restricted to about 250 yards by an overbridge, but the other signals mentioned can be seen at a considerably greater range.

Relevant distances, measured in a southerly direction from Barkston South signal box, are approximately as under :—

		Yards.
Barkston South down inner home		181
Barkston South down outer home		663
Point at which light engines came to rest		758
Point of collision		1057
Barkston South down distant		1639
Peascliffe tunnel, north face	1 mile	566
Peascliffe tunnel, south face	1 mile	1533
Peascliffe down starting signal	2 miles	35
Peascliffe signal box	2 miles	785
Peascliffe down home signal	2 miles	805
Peascliffe down distant signal	3 miles	44
Barrowby Road down starting signal	3 miles	575
Barrowby Road signal box	3 miles	927

At Peascliffe signal box, which is a block post having up and down signals only, the down line is track circuited between the home and starting signals. The down home signal cannot be lowered unless this track circuit is clear, and the starting signal arm is normal. The down starting signal is released by " Line Clear " from Barkston South, but this control is not limited to one release only. The arm and light of the down starting signal are repeated in the box, as they are concealed from the signalman by an overbridge; the down distant signal is not repeated, but is visible from the box in clear weather. This box is closed from 6.0 a.m. on Sunday until 6.0 a.m. on Monday as a rule, but was kept open on this occasion as freight traffic was unusually heavy, on account of delays caused by severe weather in the North during the previous week.

At Barkston South there is a track circuit about 220 yards in length on the approach side of the down outer home signal, and a second extending from that signal, which it controls, to the down inner home signal. These track circuits are separately indicated in the box; the needle of the down line block instrument from Peascliffe is placed and maintained at " Train-on-Line " by occupation of either of them, and cannot be turned to " Line Clear " unless the outer and inner home signals are at danger. The arms and lights of the down distant and down outer home signals are repeated in the box.

Report and Evidence.

Comparison of the train registers at the three signal boxes mentioned shows that there was no material difference in the clocks concerned, the discrepancy in the times recorded for the exchange of block signals in no case exceeding one minute. The ballast train was following a train of mineral empties, for which " Train-out-of-Section " was sent to the box in rear from Peascliffe at 6.2 a.m. and from Barkston South at 6.7 a.m. (recorded at Peascliffe as 6.8 a.m.). The ballast train was accepted by Peascliffe at 6.2 a.m., and was brought to a stand at the home signal there at 6.8 a.m. as the Peascliffe-Barkston section was not clear. While it was stationary, the signalman told the enginemen that the head-light was out, and this was rectified. This train was accepted by Barkston South at 6.7 a.m. (recorded as 6.8 a.m. at Peascliffe), the " Train-entering Section " signal being sent for it at the same time, and at 6.10 a.m. the " Train-out-of-Section " signal was sent from Peascliffe to Barrowby Road. The light engines were accepted by Peascliffe at 6.10 a.m., and " Train-entering-Section " in respect of them was received there at 6.13 a.m.

At 6.14 a.m. the " Train-running-Away " signal was sent to Barkston South by the Peascliffe signalman, who telephoned immediately afterwards saying that the light engines had run past his signals at speed; at that time the ballast train had not reached Barkston, where several members of the relaying gang were waiting to join it.

Signalman J. R. Wright was on duty at Barkston South. As the ballast train was to stop there, he had lowered the outer and inner home signals only when it was accepted by Hougham, the next box open, at 6.10 a.m., leaving the distant at Caution. On receipt of the " Train-running-Away " signal and telephone message at 6.14 a.m., he did what he could to avert the collision, by sending another signalman who had just arrived at the box to meet the ballast train with a headlamp and detonators, after instructing him to signal to the driver not to stop, and by shouting to the men on the platform to tell the driver to keep moving; the train had not then reached the track circuit in rear of the outer home signal. He also put that signal to danger as soon as the track circuit indicators showed that the engine of the ballast train had passed it, but when the train ran by his box, at about 6.18 a.m., he saw that it was incomplete, and sent the " Stop and Examine Train " bell signal to Hougham. Wright was certain that he had not lowered the distant signal for the ballast train, either originally, or in an endeavour to get the train to run forward more speedily after he had received the " Train-running-Away " signal, and said that the repeater showed that it had returned to Caution when replaced behind the mineral train, and that its lamp was alight. With regard to visibility in the neighbourhood of his box, Wright stated that although there was a little haze, he could see the lights in Barkston North box, over 700 yards away, until it was closed at 6.0 a.m.

Relayer J. Robinson was travelling on the footplate of the engine of the ballast train in order to instruct the driver, H. Spencer, where to stop to pick up men, etc. Both these men felt the shock of the collision before they saw the lamp signals from the ground calling the train forward; measurements taken on the ground showed that the engine must have been about 120 yards south of the outer home signal when the collision took place.

Both men recollected seeing the Peascliffe distant signal shortly after passing the Barrowby Road starting signal, that is to say, at a distance of three or four hundred yards; they agreed that it was showing a good yellow light, and that it was properly " on ", with no green visible. They also stated that the Peascliffe home signal was visible " some distance away," which Spencer estimated as 100-120 yards, and that the Peascliffe starting signal was showing a good light, which they had no difficulty in seeing. Spencer said that he could see the Barkston South distant signal shortly after emerging from Peascliffe tunnel, and that its light was a good yellow one, with no green visible; Robinson, who also saw the signal, corroborated this, adding that he estimated the visibility north of the tunnel at about a quarter of a mile.

Spencer stated that the Peascliffe home signal was at danger when he first saw it and that he came to a stand at it, although it was lowered before he actually stopped; he added that the signalman told him that the engine headlight was out, and that his fireman replaced it by a spare lamp from the footplate while the train was stationary.

The tail lamp and sidelights of the ballast train had been prepared and lighted by Robinson, before leaving Grantham. He said that the tail lamp was a very good one, which he had frequently used, and that it was burning brightly when he put it in position on the brake van; he did not place the sidelights on the lamp irons, but left them in the van to be fixed by Sub-Ganger Harris, who was acting as guard. It was not possible to determine with certainty whether the sidelights were actually in position, for Harris was killed in the accident, and while the signalmen at Barrowby Road and at Peascliffe said that the tail lamp was giving a good light when the train passed, they could not recollect whether they saw the sidelights or not; the enginemen too were unable to remember whether they had seen them during the journey. In this connection, Mr. Grinling, the District Engineer, said that Harris was a most reliable man and he thought it improbable that he would have omitted to fix the sidelights before starting.

Contradictory evidence was given regarding the indication of the Peascliffe signals when the light engines passed them. Signalman H. W. Hebblethwaite, who had relieved Signalman G. C. Ward at Peascliffe at 6.0 a.m., when the empty mineral train was approaching that box, stated positively that he restored his down distant signal to Caution behind that train at 6.1 a.m. or 6.2 a.m. and did not again lower it during the whole of his turn of duty. He said that it was too misty at the time to see the back-light of the signal, which is 1,019 yards from the box, but he judged from the " feel " of the lever that the signal had responded correctly to its movement and that the wire was not too tight. After daybreak, when the mist had disappeared, though the frost continued, he could see that the arm of the signal was not drooping.

Ward left the box at about the time when the empty mineral train was passing, and the signalling of the ballast train was dealt with by Hebblethwaite. He was positive that he put his home and starting signals to danger as soon as it passed them, and before he accepted the light engines from Barrowby Road; he recollected seeing by the repeater of the starting signal that it had obeyed the movement of the lever. He said that the ballast train moved ahead rather slowly after stopping at the home signal, which was lowered as it approached, and consequently he did not send " Train-out-of-Section " to Barrowby Road for it until 6.10 a.m., although he had sent " Train-entering-Section " to Barkston South at 6.8 a.m.

Shortly after receiving the " Train-entering-Section " signal from Barrowby Road for the light engines, at 6.13 a.m., Hebblethwaite heard them approaching, but he said that he did not realise that they were not going to stop until they were practically opposite the signal box, and repeated that all his down line signals were " on " when they passed. After sending the " Train-running-Away " signal to Barkston South and telephoning to the signalman there, he told Signalman Soons, at Barrowby Road, what had happened. Shortly afterwards he heard the sound of the collision and reported this to Soons, in order that the King's Cross Control Office (with which there is no communication from Peascliffe) might be informed. Hebblethwaite estimated the visibility at about 200 yards at the time the engines passed his box.

Soons confirmed the receipt of two telephone messages, and gave the time of the first as 6.14 a.m. He said that Hebblethwaite, with whom he had not worked before, had answered all block signals promptly between 6.0 a.m., when he came on duty, and the time of the accident.

The light engines had left New England (Peterborough) at 5.35 a.m. and had run from there without stopping, the only check experienced being at the distant signal for Grantham South box. The leading one was driven by Passed Fireman (Acting Driver) D. Ward, stationed at York, who had left there at 12.25 a.m. with a special fish train, reaching Peterborough at 3.38 a.m.; he said that he was very well acquainted with the line as far south as Peterborough, and that he had driven over it as recently as 3 or 4 days prior to the accident, as well as on many previous occasions. He stated that he was controlling the steam brake on both engines by means of the vacuum brake handle, and that the train pipe between them was properly coupled up.

According to his evidence he was looking out for the Peascliffe signals from the fireman's (left) side of the footplate, and had his head out of the side window of the cab practically continuously. He said that it was bitterly cold, decidedly more so than when running in the opposite direction a few hours previously, and that the glass wind deflector was covered with ice, which he had tried to wipe away, but without success; in consequence of this he had to lean out further than usual, and the cold wind caused his eyes to water a good deal. In spite of this he was certain that he observed all signals, and identified them correctly; he maintained that the three Peascliffe signals—distant, home, and starter—were all " off " when he passed them, and showing a full green light in each case. He was confident that he had not misread the green light of the Barrowby Road starting signal as being that of the Peascliffe distant, some 500 yards further north, and denied that he was expecting Peascliffe signal box to be closed; he estimated the visibility there at 50 or 60 yards.

Visibility in the cutting north of the tunnel was, he thought, a little better than at Peascliffe signal box, extending for about 100 yards. He closed the regulator before entering the tunnel, and crossed the footplate to the right-hand

side, but said that on leaving the tunnel he returned to his former position on the fireman's side to observe the Barkston South distant signal. He asserted that that signal also was unmistakably " off " when he passed it, but said that though he continued to look out of the left side of the cab for the Barkston South outer home signal he saw nothing of the tail lamp or sidelights of the ballast train, and that he was quite unaware of its presence until the collision occurred; he estimated his speed at about 40 miles an hour at the time. He suggested that his sight might have been temporarily affected by the severity of the weather, and stated that he had not looked into the fire, or attempted to warm his hands or his face at it between Grantham and Barkston.

His sight and colour vision were recorded as normal when last tested on May 17th, 1935.

Ward's fireman, H. Calvert, was not well acquainted with the road, and did not see any of the signals concerned, but said that Ward had remarked to him, after leaving Peascliffe tunnel, " We are right away "; previous to this Ward had mentioned to him that the distant signal for Grantham South box was " on ". He confirmed that Ward was looking out for the signals from the left side of the footplate until the tunnel was reached, but he was practically certain that Ward was not on that side of the footplate north of the tunnel; although he was firing at the time, he felt sure he would have noticed Ward's presence on the left-hand side of the footplate if he had been there for more than a few seconds.

The driver of the second engine, G. Smith, said that the steam from his own engine and the leading one prevented him seeing any of the Peascliffe signals, but that as both engines were running without steam when they left the tunnel, he was able to see the Barkston South distant signal, from the left side of the footplate, at a distance of about 60 yards. He was certain that it was " off ", and showing a full green light; he did not see the tail lights of the ballast train. His fireman, T. R. Robson, said that he did not see any of the signals north of Grantham, but remembered the check at Grantham South distant.

Evidence with regard to the indication of the Peascliffe distant signal when the light engines passed it was given by Signalman G. C. Ward, who had been on duty at Peascliffe box until relieved by Signalman Hebblethwaite at 6.0 a.m. He left the box at about 6.2 a.m. and walked southwards along the line on his way home. He said that the ballast train passed him about 5 minutes after he started, and that he had reached a point about 100 yards south of the Peascliffe down distant signal when the light engines passed him. Knowing that the ballast train was not far ahead of them, it struck him that they were running very fast, and he looked back as they passed to see if the distant signal had been lowered for them. He stated that there was no mist at that point, that he could see the light of the signal clearly, and that it was a full yellow one, with no green visible, that is to say, the signal was giving a proper " Caution " indication.

Conclusion.

The evidence is contradictory on two points, firstly, in relation to the indications of the three Peascliffe signals when the light engines passed them, and secondly, with regard to the indication of the Barkston South distant when the engines passed that signal. Dealing first with the latter point, I accept the statements of the two men (Spencer and Robinson) on the engine of the ballast train that the signal was at Caution when they passed it. But I consider that the conflicting assertions regarding its indication a minute or so later, when seen by the drivers of the light engines, are hardly relevant, for, in the first place, the engines should not have reached it while the ballast train was still in the section, and, secondly, even if Signalman Wright had not lowered this distant signal when the ballast train was accepted by the box ahead, as he was entitled to do, he could not have been criticised had he done so—contrary to his statement—on receipt of the " Train-running-Away " signal, in an endeavour to avoid checking the ballast train.

But the question of the indication given to Driver Ward by the Peascliffe signals is clearly of the highest importance in connection with the allocation of responsibility for this regrettable accident. So far as the distant signal there is concerned, the independent testimony of Signalman Ward, supporting Signalman Hebblethwaite's statement that it was not lowered for the light engines, may, I consider, be relied on, and to that extent Driver Ward's assertion that *all* the Peascliffe signals were " off " when he passed them is disproved; but since the arrangements at this box are such that acceptance of a train on the block does

not prove that the down home signal has been replaced behind the previous train, there still remains the possibility that although the distant was at Caution the home and starting signals were incorrectly " off ". If this was so Hebblethwaite must have failed to replace these signals behind the ballast train, for otherwise the starting signal could not have been lowered for the engines until they had been accepted on the block by Barkston South, to which box they were never offered, and the home signal could not have been lowered a second time if the starting signal had not been first replaced.

In assessing the probability of such a lapse on the part of Hebblethwaite, it must be remembered that he had only just started his day's work, and, moreover, there is confirmation that he was performing his duties correctly, and was fully alert. For instance, the evidence of other witnesses shows that he had replaced his signals behind the empty mineral train, that he was answering block signals without delay, that he informed the enginemen of the ballast train that the headlight was extinguished, that he acted promptly when the light engines passed his box, and that he took steps to notify the Control Office as soon as he realised that the accident had taken place. I accept Signalman Ward's evidence regarding the time at which he left the box, and hence no question arises of conversation between him and Hebblethwaite having distracted the attention of the latter from his duties. In the circumstances I consider that it is extremely unlikely that Hebblethwaite failed to carry out the routine operation of replacing his signals behind the ballast train.

Driver Ward, on the other hand, had been on duty for several hours and had had a trying journey from Peterborough, on account of the prevailing weather conditions. His statement with regard to the Peascliffe distant signal was, I consider, proved to be erroneous, and his fireman's evidence threw some doubt on his account of his actions after leaving the tunnel. Moreover, it is difficult to understand why he saw nothing of the tail lamp or sidelights of the ballast train, if he was looking out for the signals in the manner he described.

The foregoing considerations lead me to the conclusion that Signalman Hebblethwaithe's statement should be accepted in preference to that of Driver Ward. I think that a possible explanation for the non-observance of the Peascliffe signals by the latter is that he might perhaps have been slightly dazed by the cold and by the strain of looking out for signals under conditions of poor visibility, and that, despite his statement to the contrary, he mistook the green light of the Barrowby Road starting signal for that of the Peascliffe distant, thereafter allowing his attention to relax until he had passed through the tunnel. Even so, it is difficult to account for his apparent lack of alertness when aproaching Barkston, as shown by his failure to notice the tail lights of the ballast train, even at short range.

In my opinion, therefore, responsibility for this accident must be borne by Fireman (Acting Driver) D. Ward. He is a man of 41, with 24 years' service, for the past 22 of which he has been rated as a fireman; he has, however, been passed to act as driver for a considerable period, and is shown as having worked in that capacity on 2,929 occasions up to the end of 1935. His past record is a good one, and he had been on duty for 7 hours when the accident occurred.

Remarks.

Inasmuch as this accident was caused, in my opinion, by the driver's inattention to signals, it is one that would have been prevented, in all probability, had automatic train control apparatus been installed.

Mention may also be made of the fact that the section of line between Grantham and Barkston South, which carries fairly heavy traffic, is shortly to be equipped with continuous track circuits and colour light signals.

I have the honour to be,
Sir,
Your obedient Servant,
E. WOODHOUSE,
Lieut.-Colonel.

The Secretary,
Ministry of Transport.

NOTE.—Engine Drivers D. Ward and G. Smith and Fireman H. Calvert were brought before the Lincoln Assizes on June 15th and 16th, 1936, charged with manslaughter. Driver Ward was found Not Guilty and discharged. The Jury had previously stopped the case against Driver Smith, and the prosecution offered no evidence against Fireman Calvert. These two men were accordingly found Not Guilty and discharged.

(34631—54) Wt. 3494—2340 625 6/36 P. St. G. 376/13