The evidence of the fireman was given in anything but a satisfactory manner; and, if it were assumed to be correct, the train ought, considering the speed at which it was travelling, and the distance from the goods train at which the whistle was sounded for the guard's breaks, to have been stopped short of the goods train. The auxiliary signal is always kept at danger, as a rule, according to the practice which properly prevails at the generality of junctions; and it is either "whistled" down by the drivers as they approach it, or else it is passed by them at greater or less speed, according to circumstances. They are not required by the rules of the Company to stop outside of it, or at it, when it is kept at danger, but are permitted to draw within it, and get under its protection.

The evidence is, as will have been seen, somewhat conflicting with regard to the state of the atmosphere; but there appears, upon the whole, to be no doubt that the driver might have seen the distant signal, at all events for a very considerable distance before he reached it, and that he cannot properly be excused on this account for not having pulled up his train short of the goods train. Besides which, he might, apparently, if he had been keeping a good look out, have seen the lights at the tail of the goods train, at a distance further from it than that at which he sounded his break-whistle.

It is to be supposed that he must have trusted to the auxiliary signal being turned off until it was a little too late; and that, not expecting to find the goods train short of the Junction, or any obstruction so far to the west of it, he must have neglected to keep a good look out, and therefore to sound his break-whistle so soon as the occasion required.

At the same time he was to some extent under a disadvantage in not being specially warned of the position of the goods train. It is stated to be the invariable rule, when a train is stopped at this point, for the junior guard to run back for its protection; and it is plain, that if the junior guard of the goods train had gone further back on this occasion, and had placed detonating signals on the rails, the collision would not have occurred.

The goods train was thus detained outside of the Junction, in consequence of the Oxford train, which was about, I have stated, to cross the up main line on its way to the north, not having been able to start. The engine of that train had come to a stand, as it is technically termed, on its centres, and there was a little difficulty, for some minutes, in getting it into motion again. The goods guard, seeing it at the station, and expecting it to start, did not proceed to the rear, as I have before observed, as quickly as he might have done; and when he heard the passenger train coming, he ran back at once towards it without his detonating signals. It is to be feared that the driver had been in the habit of trusting too much to extra warning from detonating and other signals in such a case, and of regarding too lightly the indications of the auxiliary signal. At all events, the following statement of the fireman, which was not contradicted, leads to the belief that a defect of this description in the practice of working had something to do with the accident. He says, "We generally "run past that signal when it shows a red light, and "then they turn the other one (the main Junction "signal) off, to let us come into the station. That "distant signal is kept at danger when the station is "clear, and we are in the habit of whistling it off."

If it is true that they generally "run past" that signal, an amendment is much wanted in that respect; and I may add (though this had nothing to do with the accident) that an improvement is in any case required in the means of communication between the Junction signalman and the pointsman at the station. The signalman is obliged to inquire of the pointsman, on each occasion of the arrival of a train from the westward, as to whether the station is clear before he admits it. He rings a hand-bell for that purpose, to attract his attention, and has to trust to the indications of his arm by day, or those of his hand-lamp by night, for a reply, in clear weather; whilst in foggy weather they are obliged, as he says, to "holloa" to one another at a distance of about 250 yards. It is now desirable that a better means of communication between them, such as would be afforded by a bell and small semaphore arm fixed in their respective boxes, should be supplied for their use. These might be worked from one to the other, as is often done, by a wire similar to a signal wire,—the bells, to attract attention, ringing close to them, and the arms to afford the requisite indications in an unmistakeable manner, in their boxes, or near their boxes, as may be thought best.

It will have been observed that the break-carriages in the passenger train were not in this case in the position which was most desirable, the one at the front and the other at the hind end of it; but that they were placed together, and formed the second and third of the six vehicles of which it was composed, besides the engine and tender. I would remark, in conclusion, that it is the practice on the Great Western Railway for the passenger trains, and even the express trains, to travel without any break-van behind them, and that this is a decided defect in the system of management. There are many reasons why no passenger train should be permitted to run without a powerful break behind it. If a coupling gives way, such a break may be required to check the forward motion of the detached vehicles, or to prevent them from running back down an incline, as the case may be. If a carriage in the middle, or towards the front of a train, becomes disabled, in consequence of the failure or displacement of its wheels or axles, or if it is from any cause thrown off the line, it is then most important that there should be a powerful break at the tail of the train, to prevent the carriages behind such a disabled vehicle from running forward upon it, and perhaps tending to overturn it or crush it. These are no mere imaginary evils, but they are points to which, as their Lordships will be well aware, I have had occasion to direct special attention, in reporting upon many recent accidents on other lines, the results of which have been materially aggravated for the want of breaks, or of more powerful breaks, behind the trains to which they have occurred; and I think it only right to take this opportunity of suggesting so important a subject for the consideration of the Directors of the Great Western Railway.

I have, &c.

The Secretary of the Railway Department, Board of Trade.

H. W. TYLER, *Cap. R.E.*

LANCASHIRE AND YORKSHIRE RAILWAY.

Railway Department, Board of Trade, Whitehall, 4th April 1861.

SIR,

I AM directed by the Lords of the Committee of Privy Council for Trade to transmit to you, for the careful consideration of the Directors of the Lancashire and Yorkshire Railway Company, the enclosed copy of the report made by Colonel Yolland, R.E., the Officer appointed by my Lords to inquire into the circumstances which attended the collision that occurred on the 7th January last at the Mirfield Station.

I am, &c.

The Secretary to the Lancashire and Yorkshire Railway Company.

JAMES BOOTH.

Railway Department, Board of Trade,
SIR, *Whitehall, 4th April*, 1861.

I am directed by the Lords of the Committee of Privy Council for Trade to transmit to you, for the information of the Directors of the London and North-Western Railway Company, the enclosed copy of the report made by Colonel Yolland, R.E., the officer appointed by my Lords to inquire into the circumstances which attended the collision that occurred on the 7th January last at the Mirfield Station of the Lancashire and Yorkshire Railway.

I am, &c.

The Secretary to the London and North-Western Railway Company.

(Signed) JAMES BOOTH.

Railway Department, Board of Trade,
SIR, *Whitehall, 27th March* 1861.

I HAVE the honour to report, for the information of the Lords of the Committee of Privy Council for Trade, in obedience to your minute of the 9th January, the result of my inquiry into the circumstances which attended the accident and collision that occurred on the 7th January to a Lancashire and Yorkshire passenger train and a London and North-Western train of empty carriages, close to Mirfield Station on the Lancashire and Yorkshire Railway, when fourteen passengers were injured, some of them it is feared seriously.

The London and North-Western Railway Company have a right of running over 9½ miles of the Lancashire and Yorkshire Railway, between Wakefield and Mirfield, where the station is common to the two companies; but the London and North-Western trains do not stop to take up or set down passengers at either of the intermediate stations, Horbury or Thornhill.

The Lancashire and Yorkshire mail train left Wakefield at 11.23 a.m., or 8 minutes late, on the 7th January. It consisted of engine and tender, 7 carriages, and 2 break vans, one at each end of the train, and two guards, and it left Horbury Station at 11.40, or 17 minutes late, Thornhill Station at 11.55 a.m., 23 minutes late, and it passed Thornhill Junction about 12 o'clock; and, when approaching the Mirfield Junction, 600 yards on the Wakefield side of Mirfield Station, the driver found the Mirfield distant and junction signals standing at danger against him, and he sounded the steam whistle for them to be taken off, as soon as he could see that they were on against him, and he continued to run on, and passed inside the distant signal without seeing it turned off, but he noticed that the junction signal was lowered to "caution" for him to run on to the Mirfield Station, where he was appointed to stop. As an excuse for running past the distant signal while standing at danger, he stated that he could see that the station was clear for him to enter. The distant signal is 540 yards from the junction signal, and it can be seen for about 500 yards before it is reached, and there is no doubt whatever as to the fact of the semaphore junction signal having been lowered by the signalman for this train to proceed to the station.

The London and North-Western train which consisted of engine and tender, one composite carriage, and one third-class break carriage with one guard, left Wakefield at 11.35 a.m., having been late in reaching Wakefield from Mirfield in consequence of the late arrival of the London and North-Western train from Manchester that morning, so that it did not reach Wakefield until 11.30, instead of at 10.50, its appointed time.

When the London and North-Western train passed Horbury Station, 6½ miles from Wakefield, at about 20 miles an hour, there was a caution signal on at the semaphore, and the driver says that he caught sight of the Lancashire and Yorkshire mail train on the straight length between Horbury and Thornhill, when it was about 1½ miles in front of him; and before the Lancashire and Yorkshire train got into the cutting the distant signal at Thornhill Station was put on against the London and North-Western train, and the driver sounded the steam whistle, ran past the distant signal, and stopped or nearly stopped at the east end of Thornhill Station. He also states that the Lancashire and Yorkshire train was standing at Thornhill Station when he came in sight of it, and that as soon as the Lancashire and Yorkshire train went ahead the porters and signalmen waved their hands for him to go ahead also, the passengers on the platform being prevented from crossing to allow him to do so, and that he followed the other train at about 60 or 70 yards distance, at that time—not more. He also says that he kept the same distance, or nearly the same, behind the other train, but might have lost a little—a few yards, and that the driver of the Lancashire and Yorkshire train whistled for the Thornhill Junction signals, and they were thrown off. The distant signal was taken off, and the semaphore signal was lowered to caution. The driver thinks the distant signal was taken off before the Lancashire and Yorkshire train passed it, and he was about 100 yards behind the other train. He also says that this distant signal was not put on against him until he had passed it, and the junction semaphore signal was kept lowered to caution until he had passed it; and he continued to follow the Lancashire and Yorkshire train; and its driver whistled for the distant signal at Mirfield as soon as he came in sight of it, about 600 or 700 yards from it; but the signal was not taken off until the Lancashire and Yorkshire train had gone by it, and then it was taken off, and remained off until the London and North-Western train had passed it.

I have thus given the course of the two trains up to the moment of approaching the Mirfield distant signal; and I should state that evidence mainly confirmatory of the statements made by the driver of the London and North-Western train is afforded by the servants of the Lancashire and Yorkshire Railway Company. Thus the signalman at Horbury Station says, that the Lancashire and Yorkshire train left at 11.40., while the London and North-Western train passed at 11.47.; that the latter ran past the distant signal which was on against him; and he, the signalman, lowered the semaphore station signal to "caution," and showed the driver a green flag, and as soon as he did so the driver of the London and North-Western train put on the steam again, and went ahead, travelling at 15 or 20 miles an hour at the time, and the driver nodded his head, and pointed ahead, when he showed him the green flag.

The signalman at Thornhill Station says the Lancashire and Yorkshire train left at 11.55, and the London and North-Western train ran past the distant signal which was on against him, and came up to the level crossing, where he told the driver that the mail train had just left the station, which he could see about 300 yards before him, and the driver gave a signal that he understood all right, and passed slowly on. A platform porter at Thornhill Station also signalled to the driver of the London and North-Western train, and pointed to the mail train about 300 yards in front, and the driver returned the signal with his hand, to signify that he understood the signal, and saw the mail train. The signalman at Thornhill Junction, 1½ miles from Mirfield, says the Lancashire and Yorkshire mail train passed at a slow pace about 12 o'clock, and the London and North-Western train about 200 yards behind. The London and North-Western train ran past the distant signal which was on against it, but when drawing close to the junction the signalman gave the driver a caution signal, as he could see the mail train just before him.

The Lancashire and Yorkshire Railway Company have a rule that one train is not to be permitted to follow another on the same line of rails except after an interval of five minutes shall have elapsed; and according to this rule the station signals should have been kept on at "danger" against the driver

of the London and North-Western train until the Lancashire and Yorkshire mail train had left five minutes. This rule appears to have been obeyed at Horbury Station, but entirely disobeyed at each of the other places, the signalmen showing the caution signals and green flags when the leading train had only just quitted the station; and indeed it is stated by the superintendent of this section of the Lancashire and Yorkshire Railway (Captain Binstead), that they could not work their traffic if this rule were upheld.

Further evidence confirming the fact of the London and North-Western train having closely followed the Lancashire and Yorkshire train from Thornhill to Mirfield distant signal could be cited from other persons,—the driver and guard of the Lancashire and Yorkshire train and the fireman and guard of the London and North-Western train; but, as I understand the case, this point is not disputed, and all that follows is almost a necessary consequence of such a lax mode of working railway traffic. The signalman at Mirfield Junction states that the line was not clear when he first heard the Lancashire and Yorkshire train whistle for the distant signal to be taken off, and that it might be a minute before he could take it off, and when he did take it off he did not latch the lever, but dropped the signal on again immediately, seeing the engine-chimney was past the signal-post, and then he lowered the semaphore junction signal to "caution;" soon after the mail train came to a stand about 200 yards inside the distant signal, and he heard a crash at the same time; that he did not see the London and North-Western train behind the mail or hear the engine whistle for the signals; that he did not give the signal off for the London and North-Western train to come on, and that the signal was on against it.

The head guard of the Lancashire and Yorkshire train states, that he rode in the van at the tail of the train, and that on approaching Mirfield junction, running at the time about 20 miles an hour, he saw the distant signal on against the mail train, and the driver whistled for it to be taken off, but he did not see the signal taken off; he noticed that the line was clear up to the junction, and the driver drew the train slowly on; he thinks they were travelling 12 or 14 miles an hour when they passed the distant signal, and he saw the leading van next to the tender drop on one side, and heard the driver whistle for the break, but that he was putting on his break before the driver saw the van drop; that he had no means of attracting the attention of the driver, but the guard riding in the leading van called out to the driver when the van dropped; that the train was brought to a stand about 200 yards within the distant signal, and just before the train came to a stand he looked back and saw the London and North-Western train coming at a quick pace, and he got out of his van, and gave the driver a signal to stop, but he could not pull up the train in time, but came into collision with his train; that he did not see the London and North-Western train before it was passing the distant signal which was on against it; that his own train was actually stopped, and then there was a rap; that the London and North-Western train was going very fast, from ten to twenty miles an hour,—nearer twenty than ten.

The second guard, riding in the leading van, states, that when the front axle of his van broke as the train was passing the distant signal he immediately called out to the engine-driver to stop the train, which was brought to a stand about 200 yards within the distant signal, and he got off the van just at the time the London and North-Western train came into collision with the mail train; that he saw the London and North Western train follow close behind the mail from Thornhill Station, and he lost sight of it in the cutting before reaching Mirfield distant signal when it was perhaps 200 yards behind the mail, when they might be travelling twenty miles an hour. He did not see the distant signal taken off, and it was on against the mail.

The driver of the Lancashire and Yorkshire train farther states, that he shut off the steam when he was 100 yards outside the Mirfield Junction distant signal, and he kept it off until he had passed inside the signal, and saw the semaphore signal lowered, and then he put it on again, and kept it on until the second guard called out to hold on. He thinks he was forty or fifty yards inside the distant signal when the guard called out, and he was travelling ten or twelve miles an hour at that time. As soon as the guard called out, seeing the position in which the van was dropped down on the left side, he, the driver, immediately endeavoured to stop as soon as he could, by reversing the engine, while the fireman applied the tender break, and he had just time to get off his engine after the train stopped when the collision occurred.

The driver of the London and North-Western train further states, that both trains were running about twenty miles an hour when the driver of the Lancashire and Yorkshire train whistled for the Mirfield Junction distant signal to be taken off; that he observed him shut off the steam, and put it on again, before he got to the distant signal, and when he had got inside he could see the train slacken speed, and it pulled up very sharp after passing the distant signal; that he, the driver of the London and North-Western shut off steam the same time that the Lancashire and Yorkshire train did, and he reversed his engine, and whistled for the break, and the fireman applied the tender-break, and he put the steam on the reverse way, as he was about passing the distant signal. He thinks he was running twenty miles an hour when he shut off the steam, and when he passed the distant signal, as the rails were slippery, and that he was about 200 yards behind the Lancashire and Yorkshire train when it passed the distant signal. He also thinks they were running six or seven miles an hour when the collision occurred. So far all the evidence speaks to a rate of speed which must have been less than the actual speed at which these trains must have travelled over the ground, or the time could not be kept. The fireman of the London and North-Western train probably errs on the other side, in over estimating the speed. He says, "At Thornhill Junc- "tion the signal was at 'caution,' and we passed "without stopping. The Lancashire and Yorkshire "train was about 130 yards in front of us, and we "both travelled about the same speed—thirty or forty "miles an hour." That they were about the bush the other side of the river when he saw the Lancashire and Yorkshire train shut off the steam, and they were about 250 or 300 yards behind at the time, and the Lancashire and Yorkshire was 200 or 300 yards outside the distant signal, and the driver whistled at the same time; that he shut off the steam, and his own driver shut off the steam, and he applied the tender break. He thinks they were running gbout thirty miles an hour. He observed the Lancashire and Yorkshshire driver put on the steam again, when he was somewhere about the distant signal, which was not taken off until the Lancashire and Yorkshire train had about passed it, and the semaphore was lowered. He says he is positive that it was kept off until the London and North-Western train had passed it; that they put steam on again when the Lancashire and Yorkshire train put it on, but did not keep it on above two or three seconds; that the Lancashire and Yorkshire train was inside the distant signal when the steam was shut off the second time, and he did not hear that driver whistle for the breaks; that they were about 200 yards behind the Lancashire and Yorkshire train, when they shut off the steam the second time, and he then applied the tender break again, when he thinks they were about 100 yards outside the distant signal, and his driver whistled for the breaks, reversed the engine, and put the steam on the reverse way; that they were just about the distant signal when he reversed the engine, and they might be going rather more than

fifteen miles an hour, and ten or twelve when they struck the other train. He also states that the slackening and stopping of the Lancashire and Yorkshire train was a momentary affair.

The guard of the London and North-Western train thinks they were 200 yards behind the Lancashire and Yorkshire train when they got in sight of the Mirfield Junction signal, and he was looking out on the righthand side, and observed that the signals were on, and the Lancashire and Yorkshire train whistled for the signals when he was about on the viaducts (210 yards from the signal), and his steam was on at the time, but he did not notice how long it was kept on, but that it was on up to the distant signal, which was also on when the Lancashire and Yorkshire train got to within three or four yards of it; that he did not see the distant signal taken off at all, neither did he notice how long his own driver kept the steam on. He also states that when they had got about 100 yards inside the distant signal he noticed that they were decreasing the distance between the two trains, and he walked across the van, and applied his break, and that he had not heard his driver whistle for the breaks; also that the distant signal was on when his van passed it, and he had not seen it taken off at all, though it might have been taken off and put on again; that although he had not heard his driver whistle for the breaks, he might have done so; neither had he heard the driver of the Lancashire and Yorkshire train whistle for the breaks.

There are a good many discrepancies in the statements made by the several witnesses as to what was done on the engines and also at the signal stations, but they are not material to the main facts which have been elicited.

It appears, first, as regards the accident, that the leading axle of the van next to the tender of the Lancashire and Yorkshire mail train broke close to the nave of the left wheel, about 30 yards before the train reached the distant signal worked from the Mirfield Junction (the first marks were found at that spot), and the end of the van dropped down on the left side, but was partly kept up by the coupling chain from the tender, and the driver of the train heard the guard call out, and immediately took steps to stop his train, and it was brought to a stand about 180 yards inside the distant signal, which may be regarded as a sharp pull up for the proportion of break power attached to this train. Unfortunately, the driver neglected to open the steam whistle for the guards breaks, which of itself was not of any importance, but it would have served as a warning to the driver of the London and North-Western train that something was wrong, and immediate steps might have been taken by him by which the collision might have been avoided, inasmuch as he was furnished with a much larger proportion of break power than the Lancashire and Yorkshire train.

It would also appear from the evidence that the driver of the London and North-Western train had not kept a very vigilant look-out ahead.

The axle which broke was made by the Low Moor Company, and the wheels have been in use nine years, and were put under the van with new tires on 8th December last, when it was last in the company's workshop. It is not known what number of miles it had run.

The fractured axle carried the leading pair of wheels of the van, and the fracture took place inside and close to the nave of the wheel. The diameter of the axle, passing through the nave, is 4 inches; and inside, but close to the nave, where there is a shoulder, the diameter is 4⅞ inches. There was a flaw extending for about three fourths of the circumference, and half an inch deep, on the opposite side to the key which fixes the nave and wheels on the axle. This flaw was evidently of long standing, but I think it could not be seen on account of the shoulder. There are many accidents precisely similar in character to this one, where the advantage of having a projection on the inner side of the nave of the wheel, to hold up the end of a broken axle for a short distance, or until it reached the next station, is very manifest. An invention of this kind has been patented by Mr. J. Beattie, of the London and South-Western Railway. In this instance, I believe, the axle did not drop to the ground, and the left wheel did not get out of the axle box, nor away from the horn plates, but dropped, and ran along inside the rails.

2. The collision was undoubtedly the almost inevitable result of the vicious system of working in operation on the Lancashire and Yorkshire Railway, by which one train is allowed by the company's servants, in defiance of the company's printed regulations, to follow another past stations at a distance of from 60 or 70 to 200 or 300 yards, as stated by the different witnesses, and by the entire want of discipline maintained on the line, by which an engine-driver is permitted to disregard danger signals with impunity.

If such regulations are allowed to be broken, and remain unpunished, when no accident occurs, as in the 99 cases out of the 100, they should not be appealed to in the 100th when some mishap takes place; and if the very large traffic along this line, at this part amounting to 88 passenger trains and 110 goods trains in the 24 hours, cannot be worked if a 5-minute interval at the various stations be preserved, then the chances of the public travelling safely on this line will be largely increased if a lesser interval of time, say of 3 minutes, be substituted for the 5 minutes, provided the 3 minutes be rigidly observed, and that the drivers are not permitted to pass danger signals.

3. The vicious system brought to light in the investigation of the circumstances connected with this collision is only exceeded in intensity by the practice adopted on many of the most important lines of railway in the kingdom, of slipping off two or three carriages from the tail of an express train when it is travelling from 40 to 50 miles an hour, in order to avoid the necessity for stopping the express at the stations for which these carriages are intended, which carriages are allowed gradually to stop, under the control of the guard. Now if, unfortunately, any mishap should at any time happen to the front part of the express train, by which its progress is suddenly arrested, after these carriages shall have been detached, a collision will in all probability be unavoidable, and then it will be pleaded as a justification that the practice is becoming a general one with railway companies, in order to save time.

4. There was no means of communication between the guard and driver in either of these trains; not, as it happened, that it would have exercised any effect in controlling the result, as the guards appear to have been on the alert.

I have, &c.,
W. YOLLAND,
Col. R.E.

The Secretary,
Railway Department,
Board of Trade.

LANCASHIRE AND YORKSHIRE RAILWAY.

Railway Department Board of Trade,
Whitehall, 21st March 1861.

SIR,

I AM directed by the Lords of the Committee of Privy Council for Trade to transmit to you, for the consideration of the Directors of the Lancashire and Yorkshire Railway Company, the enclosed copy of the Report made by Captain Tyler, R.E., the officer appointed by my Lords to inquire into the circum-