

NORTH BRITISH RAILWAY.

Board of Trade (Railway Department),
8, Richmond Terrace, Whitehall, London, S.W.

20th March, 1913.

SIR,

I HAVE the honour to report, for the information of the Board of Trade, in compliance with the Order of the 1st March, the result of my inquiry into the causes of the collision which occurred on the 27th February, about 12.20 a.m., at Dalmuir, on the North British Railway.

In this case, some empty goods waggons with a brake-van attached, had, in the course of marshalling operations, been shunted on to the up main line, when the 11.10 p.m. up goods train (from Helensburgh to Kipps), was permitted to enter the section, and struck the standing vehicles. The collision was a violent one, and I regret to say that the driver of the Helensburgh train was thrown from the footplate and killed. The fireman also was seriously injured.

The brake-van and three of the standing vehicles were destroyed. The engine and tender were much damaged, the latter being thrown over on its side, whilst 16 waggons were broken up or badly damaged.

The standing vehicles comprised a ten-ton brake-van in rear with five four-wheeled waggons. The destructive force of the collision was enhanced by the fact that the brake-wheel of the van was screwed hard down.

The Helensburgh train consisted of a goods engine, No. 750 (0-6-0 type), with six-wheeled tender, and the following goods stock:—

- 5 loaded four-wheeled waggons.
- 39 empty four-wheeled waggons.
- 1 ten-ton brake-van.

A detail of damage to the permanent way and to stock is given in the Appendix.

Description.

Dalmuir Station, near the scene of this accident, is situated between Glasgow and Helensburgh, about six miles south-east of Dumbarton.

The railway has two lines, the northern of the two being used for up traffic.

The station yard is worked from a signal-box—Dalmuir Station or Dalmuir East—placed on the south of the railway, about 450 yards from the eastern end of the platforms. The signal-boxes on each side, which were open at the time of the accident, were Bowling Basin, three miles west, and Singer, about one mile east. Between Dalmuir Station and Bowling Basin there are two intermediate signal-boxes, viz., Dalmuir Junction and Kilpatrick Station, which were closed.

Parallel with and on the north of the railway there is a long siding east of Dalmuir Station, known as the "fore-road." This leads to the goods shed, loading bank and sidings connected therewith. Also to another separate siding called "McAlpine's" siding. Access to the "fore-road," and to all the sidings on the north of the railway, is obtained through a trailing connection on the up main line. There are cross-over roads between the main lines on each side of the signal-box.

Measured from Dalmuir Station signal-box the distances to the undermentioned signals, places, &c., are approximately as follows:—

Up outer distant signal, Dalmuir Station	...	...	...	} 835 yards west.
Up home signal, Dalmuir Junction	...	...	...
Up inner distant signal, Dalmuir Station	...	...	...
Up starting signal, Dalmuir Junction	...	...	...	} 454 " "
East end of platforms, Dalmuir Station	...	...	...
Bridge over railway	...	...	...	440 " "
Up home signal, Dalmuir Station	...	...	...	271 " "
Site of collision, up main line	...	...	...	58 yards east.
Position of engine after collision	...	...	...	120 " "
Trailing points leading to "fore-road"	...	...	...	165 " "

From the bridge above mentioned, the railway eastward is straight. A good view in ordinary circumstances would be obtainable of vehicles standing at the site of the collision for a distance of about 500 yards.

There are falling gradients, 1 in 89 to 1 in 148, for nearly a mile between Kilpatrick Station and Dalmuir on the up line. Through the junction and station there is a level stretch of 560 yards. This is succeeded by rising gradients, 1 in 834 and 1 in 368 up to the point of collision, a distance of about 460 yards.

Evidence.

Joseph McCann, goods guard, states: I am a first goods guard stationed at Stobcross depôt. I am 33 years of age, and have been in the service of the Company 11 years; 7 of these as a goods guard. I took duty the night before the accident at 9.55 p.m., having gone off duty on my previous shift at 12.45 p.m. the same day. I ordinarily book off duty at 4.45 a.m. I was working the 10.25 p.m. Stobcross and Dalmuir goods train on the night in question, and left Stobcross 10 minutes behind booked time. We left Singer Station at 11.30—30 minutes late—and reached Dalmuir at 11.35 p.m. I work the 12.5 a.m. train from Dalmuir to St. Johns. Before the engine got round the train, I went to the signal-box and got the usual note of instructions from signalman *Morrison*. I told *Morrison* that as the sidings appeared to be very full again that night we would, in all likelihood, require the up main line to make up our train. *Morrison* understood the arrangement, and replied "All right," and I proceeded with my train from the down to the up main line, over the east cross-over road, and thereafter propelled it into *McAlpine's* siding. My train consisted of 10 waggons and the brake-van, and all the waggons were to be left off at Dalmuir. Leaving Stobcross we had 34 waggons and a 10-ton 15-cwt. brake-van, and from Singer only 10 waggons. There were about 40 waggons altogether to lift, and as I could not make up my train in the sidings I shunted the van and five empty waggons in front of it on to the up main line. I had three other loaded waggons in front of the empties, which I took back on the engine to the sidings. Before going back to the sidings I reversed the side lumps and moved the tail lamp on my brake-van, and saw that they were burning brightly. I also put the hand brake on my van hard on. This would be completed about 11.55 p.m. I had already informed the signalman that I was going to use the main line for standing vehicles, and did not think it necessary to advise him again. The sidings were very full and the waggons very disarranged, and it took me until about 12.15 to complete the examination of the waggons. I then started to shunt the sidings, and had made three shunting movements within the sidings, without going on to the main line, preparatory to catching a lift out of the fore-road and placing it on the up main line on the top of the lift already standing there. The third movement had just been completed, and I had signalled my driver to go forward out of the bank road when I heard a train approaching from the Bowling direction, the engine having whistled. I thought the driver of the approaching train was whistling for the up home signal, but in order to make sure I crossed the sidings towards the main line, where the low level tunnel is, when I observed that the back spec of the up home signal was obscured, indicating that it was clear for the approaching train. The train was then close to the home signal. I saw at once from the speed the train was travelling at that it would not stop at the signal, but would come in contact with the part of my train which had been left standing on the up main line, and I immediately whistled and held up a lamp shewing a red light. The engine-driver of my train, who was standing as far as I can recollect in the fore-road opposite the signal-box, also sounded the brake whistle, and the collision occurred immediately thereafter. When the impact took place I was standing on the north side of the up main line at a point about 60 yards west of the signal-box and fully 100 yards from the brake-van of my train. I saw the driver of the Helensburgh train look over the side of his engine when passing me, and I think he

must have noticed me. I could not say if the brakes were applied on the engine. The weather at the time of the accident was showery but otherwise clear. After the collision I rushed round by the rear of the brake-van on the Helensburgh train and shouted to the guard that there had been a "pitch-in," and on hearing a reply I pushed on to the signal-box and shouted to the signalman to block both roads. I got no answer, however, and went up to the signal-box and found that the signalman was out. I observed him then returning to his box, and when he reached me I asked him if he had forgotten about the waggons being on the main line, and he said he had. I performed the same operation the previous evening, having had to make use of the main line when preparing my train, but I do not remember having had to do this for a very long time except on these two occasions. When I was running as a second guard from Cowlairst some years ago, I have seen the main line at Dalmuir used for this purpose. I have been working the Stobcross and Dalmuir train every second week for the last two months. On the previous day, when part of my train had to be put on the up main line, I had to bring the lift back into the sidings to admit of the passage of another goods train. But on the previous evening, no waggons had I think been shunted on to the up main line when the Helensburgh train passed. The Helensburgh train was travelling much at the usual speed of goods trains at this place—I should say about 30 miles an hour. Assistant guard *O'Neil* was with me this evening. About 11.35 p.m. when I went to the signal-box, there was a man in the box with *Morrison*. I don't know who he was. He was not a Company's servant, I think. In my opinion, there was nothing unusual in the appearance, or behaviour or speech of *Morrison*. The man I noticed was sitting on the bench by the stove, and did not say anything whilst I was there.

William O'Neil, second goods guard, states: I am a second goods guard stationed at Singer. I am 27 years of age, and have been in the service of the Company for about two years. I have been a second goods guard for about five weeks. I took duty at Singer Station the night before the accident at 4.50 p.m., having been off duty since 3.8 a.m. that morning. I would ordinarily book off at 2.50 a.m. I joined the 10.25 p.m. Stobcross and Dalmuir goods train at Singer, as the second guard is only provided on that train as between Singer and Dalmuir. Prior to joining the goods train mentioned I am employed as a second guard on the pilot in Singer Yard. I have heard the evidence given by *Joseph McCann*, my first goods guard on the Stobcross and Dalmuir train on the date in question, and concur with what he has said, as throughout the night at Dalmuir I was alongside of him. I would remark, however, that after the collision occurred, while *McCann* went round by the rear of the Helensburgh train, I went direct to where the accident had taken place, and assisted generally in releasing fireman *Robertson*, of the Helensburgh train. I saw the doctor arrive and heard him pronounce driver *McAdam's* life extinct. I did not go into the signal-box at Dalmuir either before or after the collision, nor did I speak to *Morrison* that evening.

David Allan, driver, states: I am an engine driver stationed at Stobcross depôt. I am 35 years of age, and have been in the service of the Company for 18 years; 6½ of these as a driver. I took duty on Wednesday, 26th February, at 9.50 p.m., having come off duty on my previous shift the

same day at 12.50 p.m. I was due to book off duty at 4.55 a.m. My engine was No. 100, six-coupled goods engine and six-wheeled tender. The engine is fitted with the steam brake on all engine and tender wheels. I was working the Stobcross and Dalmuir goods train, and we left Stobcross at 10.35 p.m.—10 minutes behind time—and reached Dalmuir at 11.35 p.m. After the engine went round about the train at Dalmuir and propelled it into the station sidings, the guard found it necessary to use the up main line, and, working to his signals, I placed the brake-van with five empty waggons attached on the up main line. I then returned to the sidings with three loaded waggons on the engine and waited in the "fore-road" until the guard had gone over the various eyes. I think I would be standing waiting about 15 minutes before the guard returned and shunting operations were commenced. Three shunting movements had been made and a fourth was about to be commenced, when I saw in the sky the reflection and heard the blast of the engine of a train approaching from the Bowling direction. At this moment my engine was standing in the "fore-road," about opposite the signal-box. I looked and saw that the up main line starting signal was standing clear, and I sounded the brake whistle, and kept on sounding it, as I was aware that the up main line was occupied by part of our train. Almost immediately thereafter the goods train from Helensburgh dashed into the stationary vehicles on the up main line. The Helensburgh train was inside the home signal before I observed it approaching. My engine was standing almost opposite the signal-box when the collision occurred, after which I left my engine and went to the scene of the accident and rendered what assistance I could. I saw the portion of our train standing on the up main line with the lamps on the brake van burning brightly before the collision took place. This was the third occasion I have been on the Stobcross and Dalmuir goods train, and the movement of occupying the up main line with part of the train was performed the night before. The Helensburgh engine passed me at a speed of 30 to 35 miles an hour, which is the usual speed for a goods train at this place with clear signals. I did not notice the driver as he passed, nor did I observe whether the brake was applied on the engine, as I was engaged sounding the whistle. On first arrival, about 11.35 p.m., whilst the engine was standing opposite the signal-box on the down line, Morrison came down the steps and asked for water in a pail he was carrying, and my fireman got it for him. This was the first occasion I had seen him. To all appearances he was perfectly sober. I did not look into the signal-box, and can't say whether there was anyone else in it.

Alexander McCallum, fireman, states: I am a fireman stationed at Stobcross depôt. I am 22 years of age, and have been in the service of the Company about two years. I have acted as fireman for one year and ten months. I took duty on Wednesday, 26th February, at 9.50 p.m., having come off duty on my previous shift at 12.50 p.m. the same day. I was acting as fireman to driver David Allan on the Stobcross and Dalmuir train on the night in question, and having heard the evidence of driver Allan read over to me, I corroborate in every particular what he has said. Signalman Morrison came to get water when we arrived, and I filled his pail and got down and spoke to him. He was perfectly sober. I saw another man in the signal-box. I don't know who he was. He was dressed in civilian clothes and had an overcoat on, I think.

He was not, I believe, a railwayman. I saw the man afterwards in the box whilst we were working in the yard. I cannot say if he was in the box when the collision took place. I asked Morrison after the collision if the man who had been with him was away. He said "Yes."

James Allan Wilkie, goods guard, states: I am a goods guard stationed at Helensburgh. I am 35 years of age, and have been in the service of the Company 18 years; about 14 of these as a goods guard. I took duty at Helensburgh on Wednesday, 26th February, at 10.50 p.m., having come off duty on my previous shift at 11.50 a.m. that day. I was guard in charge of the 11.10 p.m. goods train from Helensburgh to Kipps, which left Helensburgh on time, hauled by engine No. 750, running chimney first. We worked at Craigen-doran, were stopped at Dalroch by signals, worked at Dumbarton, and stopped at Bowling with the intention of working there also, but found there was no traffic to lift. We arrived at Bowling at 12.10 a.m., and at 12.11 we got the road. My train, when it left Bowling, consisted of five loads, 39 empties, and a four-wheeled 10-ton brake van. We left Bowling at 12.11, and after marking my train time-book, I sat down in the van, but looked out again as the train was passing through Kilpatrick Station, and gave the train a steady-up by means of the van hand-brake, a practice which I always follow when working a train on this road, there being a falling gradient at this point. If the distant signals for Dalmuir Station are standing clear the brake is released when the train is approaching Dalmuir Junction. On the night in question I observed the distant signals standing clear, and after I had released the van hand-brake I went inside, and had just sat down when the collision occurred. I was knocked up against the brake wheel, and rebounded back on to the seat again. Immediately thereafter I heard a voice shouting "That's a pitch-in," and on looking out I saw guard McCann, but he disappeared round the rear of my van. On recovering, I seized my hand-lamp and made for the scene of the collision, walking along the outside of the up main line to ascertain how my mates on the engine had fared, as I knew, from the violence of the shock and the sound of the escaping steam, that something serious had occurred. On the way thither I met driver Allan, of the Stobcross goods train, and almost at the same time signalman John Morrison came from his box on the south side of the line, underneath a waggon on my train, to the north side of the line where we were standing. I told Morrison that the signals were standing clear for my train, and this he admitted, stating, at the same time, that he had forgotten about the vehicles standing on the up main line belonging to the Stobcross train. There was nothing in his behaviour or actions to indicate that he was not perfectly sober. On reaching the engine, we found the fireman pinned between the engine and the debris, while the driver was nowhere to be found. Subsequently the driver was discovered underneath the debris of the broken waggons. The fireman was liberated as quickly as possible and sent off by ambulance waggon to the infirmary; and a doctor who arrived pronounced that the driver was dead. I took the necessary steps to protect both roads immediately after I had seen the extent of the collision. The vehicles were so badly smashed up that it was almost impossible for me to form a proper estimate of the number actually destroyed, but, in addition to the engine, I think 16 waggons on my train came to grief. After the collision,

my attention was drawn by driver Allan to the position of the air-brake valve handle on our engine, which was that of danger.

David Brown, signaller, states: I am signaller at Bowling Basin signal-box. I am 35 years of age, and have been in the service of the Company about 14 years. For 13 of these I have been a signaller, and have occupied my present position at Bowling Basin for about four years. I took duty in Bowling Basin signal-box on Wednesday, 26th February, at 8 p.m., and went off duty at 6 a.m. the following day. I left off duty on my previous shift at 6 a.m. on Wednesday, 26th February. I offered the 11.10 p.m. goods train from Helensburgh to Kipps to Dalmuir Station signal-box at 12.11 a.m. on the 27th February, and it was accepted with clear road at the same time. I also gave the "Entering section" signal at 12.11. The train was cleared back at 2.28 a.m. from Dalmuir Junction signal-box. The block working with Dalmuir Station box was just as usual on the night in question, and I have always found signaller Morrison a pleasant man to work with. I did not speak to any of the trainmen of the 11.10 p.m. goods Helensburgh to Kipps, but got the customary wave from the driver when he was passing my box. I did not speak to Morrison on the telephone that evening either before or after the accident.

George Anderson, signaller, states: I am signaller at Singer Station. I am 27 years of age, and have been in the service of the Company about eight years, seven of these as a signaller. I have been in my present position almost three years. I took duty on Wednesday, 26th February, at 8 p.m. and left off duty at 6 a.m. the following day. On my previous shift I went off duty at 6 a.m. on Wednesday, 26th February. The 11.10 p.m. goods train from Helensburgh to Kipps of the 26th February was offered on to me by Dalmuir Station signal-box at 12.14 a.m. on the 27th, and I accepted it with a clear road at the same time. From the time I took duty at 8 p.m. on Wednesday until the collision occurred, the working between Dalmuir Station and my box was conducted in the usual regular manner. I spoke to Morrison on the telephone about 9.30 p.m. making enquiry as to the condition of the sidings, and he told me they were as full that night as they were the previous night. I asked this question in order that I might have some idea as to the time likely to be occupied by the Stobcross train when it went to Dalmuir. Signaller Morrison, Dalmuir Station signal-box, is always on the night-shift with me and I find him an excellent worker and a pleasant neighbour to get on with. I offered the Stobcross train to Dalmuir at 11.29 p.m. It was accepted at once.

Thomas Logan, signaller, states: I am signaller at Dalmuir Junction signal-box. I am 29 years of age, and have been in the service of the Company about 13 years. I have been a signaller about 10 years, and have occupied my present position for 13 months. I took duty in Dalmuir Junction signal-box at 2 p.m. on Wednesday, 26th February, and left off duty at 11.46 p.m., when I switched out of circuit. On my previous shift I left off duty at 11.46 p.m. on Tuesday, 25th February. There was nothing unusual in the block working carried on by signaller Morrison, Dalmuir Station signal-box, with me from the time he took duty at 7.30 p.m. on the 26th February until I switched out of circuit at 11.46 p.m. I always got on well with Morrison, and, altogether, I consider him a very reliable and agreeable neighbour. I did not have occasion

to speak to Morrison on the telephone from the time he took duty until I left off duty.

John McCuish, relief signaller, states: I am relief signaller between Dumbuck and Dalmuir Station signal-boxes. I am 29 years of age, and have been in the service of the Company about seven years. I have been a signaller for about four years, and have been in my present position since May, 1912. I took duty in Dalmuir Station signal-box at 3 p.m. on the 26th February and was relieved at 7.30 p.m. I commenced my shift that day in Dumbuck signal-box at 8 a.m. and was relieved there at 12 noon. I left off duty the previous day at 7.30 p.m. Signaller John Morrison relieved me of duty at Dalmuir Station signal-box at 7.30 p.m. on Wednesday, 26th February, and I saw nothing in his behaviour to call for attention. Both when relieving Morrison and when Morrison relieved me, I have never found anything wrong with him.

James Brown Sheddou, stationmaster, states: I am stationmaster at Dalmuir. I am 51 years of age, and have been in the service of the Company about 36 years, 26 of these as a stationmaster. I have been in my present position at Dalmuir Station for about 10 years. On the morning of Thursday, 27th February, I was called out about 12.30 a.m. by second guard O'Neil of the Dalmuir and St. Johns goods train, who told me that a serious smash had occurred between part of his train and the Helensburgh and Kipps goods near the station signal-box. I reached the scene of the accident about 12.40 a.m., and was followed immediately thereafter by Dr. Cramb, of Clydebank, who had been called by the watchman employed at Ledgerwood Siding which is quite close to where the collision took place. I was told that the engine-driver of the Helensburgh and Kipps goods train was under the debris, and, on being examined by Dr. Cramb, his life was pronounced extinct. The fireman was pinned between the engine and tender, and after seeing him released and sent off to the Western Infirmary, Glasgow, I proceeded at once back to the station and telegraphed for the breakdown squad, &c. Before leaving the scene of the accident I spoke to signaller John Morrison, who was in charge of Dalmuir Station signal-box, and who had come to the point of collision to see if he could render any assistance. On asking Morrison how the collision occurred, he said he had forgotten that the waggons of the Dalmuir and St. Johns goods train were standing on the up main line, and he had accepted the 11.10 p.m. goods train from Helensburgh to Kipps from Bowling Basin with a clear road. Engine driver McAdam's body was recovered under the third waggon from the tender at about 7.20 a.m. As a rule I see signaller Morrison every day and have always found him to be a steady and reliable signaller. So far as I know he bears an irreproachable character. On the morning of the disaster when I met him he was cool and collected, I have known Morrison for 3½ years. I have never seen him in any way the worse for drink. He is in my opinion a thoroughly sober man. It is strictly against the rules to allow anyone except on duty to enter a signal-box.

John Morrison, signaller, states: I am signaller in Dalmuir Station signal-box. I am 31 years of age, and have been in the service of the Company about 7 years. I have been a signaller for nearly 6 years, and have been in my present position since July 1909. I left off duty on Wednesday, 26th February, at 6 a.m., and took duty again in Dalmuir Station signal-box at

7.30 p.m., relieving relief signalman McCuish. The 10.25 p.m. Stobercross and Dalmuir goods train was offered from Singer at 11.28 p.m. and I accepted it at once. It arrived at my signal-box at 11.31 p.m. The engine was coupled off for the purpose of getting round its train, and I manipulated the points for this movement. A note is left by the goods porter (before my arrival), in my signal-box nightly giving instructions to the guard of this train as to what work is required to be done in the sidings. Guard McCann came to the signal-box and took the note, and, at the same time, told me that the sidings appeared to be very full again, and that very likely he would require to occupy the main line. After the engine rounded the train, it was drawn through the crossing from the down to the up main line and propelled into the station sidings. This movement would be completed about 11.43 p.m., when I cleared the train back to Singer. A few minutes after this, after shunting in the siding, the engine whistled. I then put back the siding points, and the brake-van, with five empty waggons in front of it, was drawn out of the sidings and placed on the up main line, the van coming to rest at a point about 50 yards from my signal-box. I thereafter allowed the engine into the sidings and kept the main line points and signal in its favour for shunting purposes. The next movement I had in the signal-box was to deal with the 6.25 p.m. Bothwell and Balloch down goods train, which was offered on to me from Singer at 11.50 p.m., and accepted by me at the same time. It passed my signal-box at 11.55 p.m., and was cleared back from Bowling Basin signal-box at 12.4 a.m. At 12.11 Bowling Basin signal-box offered me the Helensburgh and Kipps up goods train, and I at once put the siding signal to danger, and closed the points leading from the siding to the main line. I then accepted the train from Bowling Basin at the same time, and, simultaneously, I received the "entering section" signal. I offered on the train to Singer at 12.11 and it was accepted. I thereafter pulled off all my up main line signals for the train, after replacing the siding points, and sat down on the form in the signal-box, forgetting that the waggons of the Dalmuir and St. Johns train already referred to were occupying the up main line. The first thing to draw to my attention that something was wrong was when I heard the engine of the Dalmuir and St. Johns goods train in the sidings whistling. This was about ten minutes later. The whistling alarmed me, and I suddenly recoiled the waggons on the up line. I then ran to the door of the signal-box, but by this time the Helensburgh and Kipps goods train

had passed the box, and though I saw at once what the whistling meant, it was too late to avert the collision. I would like to mention that when accepting the Helensburgh and Kipps goods train from Bowling, and when signalling it forward to Singer, as well as when opening my signals, my view of the lights of the brake-van standing on the up main line was somewhat obscured by the centre pillar of the two side windows of my signal-box. The same pillar also shut out my view of the lights from the seat I occupied during the ten minutes waiting. The side and tail lamps on the van were burning, however, as I saw them when the lift was first put on the up main line. This main line movement was performed in a similar manner by the Dalmuir and St. Johns goods train the previous night, but it is not a regular practice. Except on these two occasions, I do not remember that the main line has been so occupied by standing vehicles. I remember I had to shunt the waggons standing on the up line on the previous night to make way for one of the up goods trains. A man who is the lodger of the foreman surfaceman came into the signal-box shortly before McCann, and stayed there five or ten minutes. The man came to the box to ask if I had seen the foreman surfaceman, as he could not get into the house. He is not a friend of mine, nor have I spent any time in his company. Part of the time he was in the box, I was down getting water from the engine. Beyond answering his question about the surfaceman, I had no conversation with the man, as I did not wish to encourage his staying in the box. He went before I accepted the down goods at 11.50 p.m. There was no one in the signal-box between 12 and 12.20 a.m.

Allan Roberts, inspector, states: I am locomotive inspector, Western Section. I arrived at the scene of the collision about 2.25 a.m. I examined the foot-plate gear of engine No. 750 of the Helensburgh Goods Train. The application cock of the Westinghouse brake was fully applied. The regulator was shut. The reversing lever was in the 4th notch, and in back gear. The reversal must have been made before the collision took place. The engine was a six-wheels-coupled goods engine (18 x 26 cylinders) with six-wheeled tender. It was fitted with the Westinghouse air brake working blocks upon all wheels, with a hand-brake on the blocks of the tender wheels. The driver and fireman were booked on duty at 10.55 p.m. that night, and were booked off the previous shift at 12.25 p.m. The previous shift they were on duty 12 hours 20 minutes.

Statement made by fireman Robertson in hospital on the 10th March.

George Alexander Robertson, fireman, states: I am 23 years of age, and have been in the service of the Company six years; four of these as a fireman. I took duty at Helensburgh at 10.25 p.m. on Wednesday, 26th February, having come off duty on my previous shift at 10.55 a.m. the same day. I was fireman to driver David McAdam of the 11.10 p.m. goods train from Helensburgh to Kipps, which left Helensburgh at time, hauled by engine No. 750, running chimney first. We worked at Craigeudoran, were stopped at Dalreech by signals, and worked at Dumbarton. At Bowling we stopped for a minute or two, but did not do any work. We got the road clear with signals. After leaving Bowling I was engaged firing, etc., until approaching Kilpatrick, where I ceased firing and watched for the signals, and saw that the Dalmuir distant was standing clear. My driver up till this point had the regulator slightly open, and this was his usual custom. On sighting

Dalmuir distant standing clear, he gave the engine a little more steam, and I commenced to fire again. When passing Dalmuir Station and going at a speed of about 30 miles an hour, I heard excessive brake whistling from another engine. I immediately seized the tender brake handle and screwed the brake on, while McAdam shut the throttle and applied the Westinghouse brake. As far as I can remember, he then looked over the side of the engine and immediately thereafter reversed the engine. I did not see the red lights of the brake van standing on the up main line, but I think McAdam must have seen them when he reversed his engine. Neither McAdam nor I spoke from the time of hearing the whistling until the collision occurred. When the impact took place I was thrown to the left side of the engine and jammed by the knee between the back portion of the left splasher and the right pillar of the tender. I saw my driver disappear over the left

side. I remained quite conscious, although dazed, until I was released. I don't think there was any rain. The night, so far as I can remember, was quite a good one for seeing signals. The whistling

of the engine in the sidings at Dalmuir was the first thing to attract my attention, and I am almost certain McAdam was in the same position.

Conclusion.

Lack of observation, and forgetfulness, on the part of signalman Morrison at Dalmuir station, brought about this collision. The circumstances are set forth plainly in the foregoing evidence.

The goods sidings at Dalmuir on this particular night were fuller than usual. For this reason it was necessary to use the up main line to sort and marshal the waggons which were to form the 12.5 a.m. goods train from Dalmuir to St. Johns. Guard McCann explains how on arrival he told Morrison that he would require to use the main line to form his train, and, with Morrison's consent and co-operation, shunted five empty waggons, with a brake-van at the west end, on to the up line. He describes how, in accordance with the rules, he reversed the side lamps, moved the tail lamp from the east to the west end of the van, and secured the hand brake, before he resumed shunting operations, about 11.55 p.m., inside the goods yard. The buffers of the brake-van were 58 yards from the signal-box in which Morrison worked.

Morrison gave his evidence in a very straightforward manner. He admits full responsibility for the position of the brake-van and empty waggons on the up line—he had in fact to work the siding points before these vehicles could be propelled into that position. Whilst this movement was taking place, Morrison's attention was also occupied by a down goods train, which passed his post at 11.55 p.m., and was cleared back at 12.4 a.m.

At 12.11 a.m. the 11.10 p.m. up goods train was offered to Morrison from Bowling Basin. He accepted it and at once signalled it forward to Singer signal-box. The signalman (Anderson) accepted it immediately. Morrison had completely forgotten the presence of the waggons and van on the up line, and thereupon lowered all his up line signals—distant, home and starting; to do this it was necessary for him first to replace the siding points, which he had left lying open for the "fore road," to facilitate the shunting movements which McCann was conducting. After this Morrison states that he sat down on a bench under the window on the west side of the signal-box, and waited for the goods train to arrive. About ten minutes later his attention was attracted by continuous whistling from the engine in the "fore-road," and he suddenly recollected that the up line was occupied by the standing vehicles. He rushed to the door, but was too late to take any action to avert the collision.

McCann's attention was drawn by the sound of a whistle from the direction of Bowling, and he saw that a train was approaching. His position at the time was about 60 yards west of the signal-box on the siding. He recognized, by the obscuration of its back light, that the up-home signal had been lowered, and that the train was travelling too fast to stop at the signal. He tried to attract the notice of the enginemen by whistling and displaying a red light. Driver Allan, whose engine was standing in the "fore-road" opposite the signal-box, also heard the sound of the approaching train, and endeavoured to give a warning by sounding the brake whistle.

Driver McAdam and fireman Robertson were on the footplate of the 11.10 p.m. up goods train. The former, a man of exemplary conduct, was thrown from the engine in the collision, and killed by the tender falling on him. Robertson was severely injured, and I was unable to take his evidence at my inquiry. He has since made a statement to the Company, which is attached to the evidence. From this it appears that the train was passing through Dalmuir Station at a speed of about 30 miles an hour, when both enginemen heard Allan's warning whistle. It would take more than half a minute for the train to travel from the station to the site of the collision—500 yards. Judging from the evidence of McCann, Allan and Morrison, not many seconds could have elapsed from the moment Allan first sounded his whistle before the collision took place. For this reason, I think it is probable that Robertson is mistaken in thinking that they were so far away as the station, when they first heard the warning whistle. However this may be, Robertson's statement that the driver closed the throttle, applied the Westinghouse brake, and reversed the motion before the collision, is confirmed by the evidence of inspector Roberts and guard Wilkie.

The night was clear, and the tail and side lamps of the standing van were burning brightly. These lights should therefore have been visible, on a straight road, at a distance of at least 500 yards. Possibly the view obtainable may to some extent have been obscured by steam drifting across from Allan's engine. In any case the position of the signals justified McAdam in running at speed, and to some extent, in the immediate

vicinity of a signal-box, in relaxing his observation of the road before him. I am not therefore disposed to lay any responsibility for want of caution upon him or Robertson.

In the Regulations for Train Signalling by Block Telegraph, it is laid down that "before any signal is lowered or turned off, care must be taken to ascertain that the line is clear." This instruction obviously refers to the lines within view of the signalman, and inculcates the habit of visual observation of that section of the railway in the immediate vicinity of a signal-box. This is another instance of an accident being directly caused by a signalman relying solely upon his memory, and neglecting to observe the line. Morrison offers as an excuse for his failure, that his view of the lights on the brake van was obscured by the centre pillar between the two windows on the east side of his signal-box. This I proved for myself was the case when standing in an upright position at the lever frame, or when sitting in one corner of the bench on the west side. But the least movement of the head forward, such as would be made in reaching to lay hold of a lever, or operate a block instrument, would have brought the lights into view. Morrison moreover admitted to me that in his case at least, he had acquired the habit of relying upon his memory, rather than upon actual observation, to assure himself that the lines within sight were clear. I cannot therefore accept the excuse as clearing him of responsibility for the collision.

Morrison has also to explain why he permitted an unauthorised person to enter his Signal-box, and remain there. This man was seen by McCann at 11.35 p.m. and later by fireman McCallum. Morrison's explanation that the man was a lodger in the house of the foreman surfaceman, and came in to enquire if the latter had been seen, as he could not get into the house, and that he left the signal-box before 11.50 a.m. may, I think, be accepted, more especially having regard to the fact that Morrison himself bears a good character both as a signalman, and for general steadiness.

The Railway Company does not supply their signalmen with collars to place upon signal levers, or any other contrivance to remind them that the line in front of any signal is occupied or obstructed, presumably on the ground that the use of such appliances tends to discourage the habit of observation. They are not alone in this line of action. But there have been in my experience a number of cases which show that reliance upon memory alone is not an uncommon habit amongst signalmen, and has not infrequently proved a broken reed.

For this reason it appears to me that some additional precaution is needed, in the interests of general safety, more particularly during the dark hours, and in unfavourable atmospheric conditions. Complete protection can be obtained at all times by the control afforded by the use of track circuiting in station and junction yards. Additional security would, I think, be provided by enlarging the use of Rule No. 13 of the Regulations for Train Signalling, and enacting that the blocking back signal (2-4) be used in cases similar to that which is now under consideration. This particular use of a blocking back signal is already included in Rule 13 of the Regulations as published by the Clearing House, but is not, I believe, included in the Company's Appendix. If such adjuncts as lever collars, &c., are not acceptable to railway companies, it would certainly appear that the "blocking back" signal (2-4) should be utilized.

In Dalmuir signal-box the old arrangement of masonry pillars between windows should give place to the modern practice of continuous glazing with narrow rails, which certainly is to be preferred, as causing less obscuration to the view.

The Assistant Secretary,
Railway Department, Board of Trade.

I have, &c.,
J. W. PRINGLE, Major.

APPENDIX.

Damage to Permanent Way Material.

10 rails (40-feet and 92-lb. section) rendered useless, 84 sleepers, 168 chairs (45-lb. section), 16 fishplates (13½-lb.), 32 bolts, 338 spikes, 338 trenails and 168 keys broken. One set of switches (84-lb. section) more or less damaged.

Damage to Signal Material.

4 15-feet lengths of point rod, one plain C. S. and plain joint, 2 screw joints, 1 compensating crank, 1 low flat crank, and 13 yards of signal wire damaged.

Damage to Plant.

North British Engine No. 750.—2 buffers damaged, buffer beam damaged, cylinders will

require to be renewed, angle irons damaged, link motion destroyed, motion plate destroyed, cab destroyed, side rods bent, eccentric straps destroyed, eccentric rods destroyed, footstep bent and Westinghouse pump damaged.

North British Tender No. 750.—Left frame bent, tender coping bent, 3 axle boxes destroyed, 1 footstep knocked off, outside angle iron bent and brake gearing destroyed.

North British Brake-Van No. 449.—Destroyed.

North British Waggon No. 44545.—Destroyed.

North British Waggon No. 36133.—Destroyed.

North British Waggon No. 63153.—Destroyed.

North British Waggon No. 54723.—1 cape rail, 3 door rails, 3 side batons, 1 pillar, 1 end door