DUNDEE AND ARBROATH JOINT RAILWAY.

Railway Department, Board of Trade,
8, Richmond Terrace, Whitehall, S.W.,
26th February, 1907.

SIR,

I HAVE the honour to report, for the information of the Board of Trade, in accordance with the Order of the 29th December, the result of my inquiry into the circumstances attending the collision between two passenger trains, which occurred on the 28th December about 3.30 p.m., at Elliot Junction Station on the Dundee and Arbroath Joint Railway.

In this case a Joint Local train was standing in the station at the up platform, waiting for authority to proceed southwards, when a following (North British Railway) train overtook it, and a violent end-on collision ensued. Heavy snow had fallen during the two previous days, and a storm, of the nature of a blizzard, was raging at the time the disaster happened.

The first train comprised a six-wheels-coupled (North British Railway) engine (No. 198) with a four-wheeled tender, running engine first, and nine vehicles as follows :—

Caledonian Railway,	No. 20	... ...	6-wheeled brake van.
,, ,,	No. 220	... ...	8-wheeled 1st-class coach.
,, ,,	No. 184	... ...	6-wheeled 3rd-class coach.
,, ,,	No. 74	... ...	,, ,,
,, ,,	No. 141	... ...	,, ,,
,, ,,	No. 175	... ...	,, 1st-class coach.
,, ,,	No. 125	... ...	,, 3rd-class coach.
,, ,,	No. 350	... ...	,, ,,
,, ,,	No. 343	... ...	4-wheeled brake van.

The train was fitted throughout with the Westinghouse continuous brake, working blocks on all the engine and tender wheels, and on 40 out of 54 coach wheels.

The second train was drawn by a four-wheels-coupled engine (No. 324) of express type, with a six-wheeled tender. The tender was in front. Behind the engine were attached five vehicles in the following order :—

North British Railway,	No. 279	...	6-wheeled brake van.
,, ,,	No. 109	...	6-wheeled lavatory composite coach.
,, ,,	No. 1,745	...	8-wheeled 3rd-class corridor coach.
,, ,,	No. 142	...	6-wheeled lavatory composite coach.
East Coast Joint Stock,	No. 357	...	8-wheeled 3rd-class corridor coach.

This train was also fitted with the Westinghouse continuous brake, with blocks on the four coupled engine and six tender wheels, and on 28 out of 34 coach wheels. The brake equipment is stated to have been in good working order.

Twenty-one of the occupants of the first train were killed, or died subsequently from the injuries they received. Of these fifteen were passengers, and six were railway men off duty travelling home. In addition, the fireman of the second train died soon after he was released after many hours' imprisonment under the engine.

Eight passengers were seriously injured, thirteen others suffered from cuts and bruises, or from the effects of shock, and the driver and two guards of the second train also received minor injuries.

The last three vehicles of the first train were completely destroyed by the force of the collision. All the fatalities, with the exception of the fireman, occurred in these three vehicles. The engine (No. 324) and tender of the second train overturned, and the brake van behind the engine was totally wrecked.

The damage to permanent way consisted of eight chairs broken, four rails bent and 10 sleepers damaged. A list of damage to rolling stock is given in Appendix I.

Description.

The Dundee and Arbroath Railway is the joint property of the Caledonian and North British Railway Companies. The main (double) line extends from Dundee East (terminal) Station to St. Vigeans Junction, which is situated about half a mile north of

Arbroath. The length of main line is about seventeen miles. In addition there is a single line (light railway) branch to Carmyllie, which joins the down main line at Elliot Junction. This branch has a length of about five miles.

Plan I. shows a sketch of the Joint Railway with its connections at Dundee, Broughty Ferry, Elliot Junction and St. Vigeans Junction. The railway forms a very important link in the communication between Aberdeen, Dundee and the south, and the traffic which passes over the road, both passenger and goods, is heavy. From the sketch it will be seen that the railway from Dundee to Arbroath follows generally the south and east coast line of Forfarshire. In the vicinity of Elliot Junction, the high water line is only from 50 to 130 yards distant from the railway. The country is flat and low lying and therefore exposed to wind.

Plan II. shows the alignment of the railway between Elliot Junction and St. Vigeans Junction, with the position of the stations, signal-boxes, cross-over roads, &c.

Plan III. is an enlargement of Elliot Junction Station, showing the scene of the collision, and the position of the vehicles forming the two trains after the disaster. In addition there is a longitudinal section showing the gradients on the railway between Arbroath and Elliot.

At Elliot Junction there is an island platform, about 500 feet in length, and from 20 to 30 feet in width, separating the up and down main lines. Approach from the public road is arranged for by steps and a foot-bridge over the down line. The signal-box is situated at the south end of the platform, on the west side of the railway lines.

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

	South-west.
Easthaven Station (signal-box)	2 miles 7·3 furlongs
Dowrie siding	1 mile.
Elliot up advance starting signal	618 yards.
„ south cross-over road (centre) ...	200 „
„ up starting signal	66 „

	North-east.
Elliot Station building	68 and 102 yards.
„ „ footbridge	106 yards.
Site of collision	140 „
North-east end of platform	174 „
Elliot north cross-over road (centre)	260 „
„ up home signal	273 „
„ up distant signal	1,073 „
Arbroath south signal-box	1 mile 3 furlongs.
„ Station platform (south-west end) ...	1 mile 805 yards.

The longitudinal section shows that, by the up or south going road, the gradients between Arbroath Station and Elliot Junction signal-box are as follows :—

	Railway in cutting.
Rising 1 in 165	length 314 yards.
„ 1 in 127	„ 341 „
Level	„ 132 „

	Railway on low bank.
Falling 1 in 206	length 132 yards.
„ 1 in 97	„ 605 „
„ 1 in 230	„ 198 „
„ 1 in 1,300	„ 843 „

The up (south bound) line runs straight out of Arbroath for a distance of about 250 yards. A right-hand curve with a radius of 70 chains then commences and extends for 1,150 yards, until near the Elliot Junction up distant signal. A left-hand curve with a radius of 80 chains follows, which terminates after 850 yards close to the up nome signal. Here the curve on the up line quickens to a radius of 35 chains for a distance of 110 yards, to provide for the widening out of the lines on either side of the island platform, which on the up side is straight.

The footbridge at the station somewhat obstructs the view obtainable from the signal-box of the railway towards Arbroath, more especially in the immediate vicinity of the up home signal. The up home and distant signals, as seen from an engine approaching

them on the up line, have an excellent background of sky, and the arms and lights of these signals are elevated 35 to 40 feet above ground level.

The permanent way generally was in good condition, and calls on this occasion for no particular remark.

The local train, which was standing at the platform, measured 587 feet 4½ inches over buffers, and had a total weight (unloaded) of 170 tons 8 cwt. The North British (colliding) train had an over-all length of 279 feet 2 inches, and weighed 164 tons 6 cwt.

In Appendix II. will be found extracts from the book of General Rules and Regulations, from the Joint Railway Working Time Tables, and from the Appendix to the Working Time Tables for December, 1906. These have a bearing on the conduct of the men concerned.

Evidence taken in Dundee on the 1st January, 1907.

John Tytler, station master at Easthaven, states: The up line between Easthaven and Elliot Junction was blocked between six and seven o'clock on the morning of the 28th December. A goods train parted and some of the waggons were left behind. Trains continued to run in the down direction on the down line, but no movements in the up direction were made until after 1.30 p.m. that day, when single line working on the down road was commenced. Snow fell on Wednesday (26th) afternoon and night. It snowed heavily during Thursday, and there was a heavy wind. On Friday the snow fell less continuously, but heavy wind continued.

Charles Souter, states: I am traffic inspector of the joint line between Dundee and Arbroath. The snowstorm began on Wednesday afternoon, the 26th December. It fell heavier on Thursday and Thursday night. There was a high wind. There were showers of snow on Friday. The sun was shining at times between the showers. I was at Easthaven Station at the time the collision took place. A heavy snowstorm occurred at that time, but otherwise it was not a dark afternoon. It was not dark enough to have the lamps in the station lit at that time. Double line working was maintained between Elliot Junction and Easthaven up till Friday morning between seven and eight o'clock. An up goods train parted between these two points at this time. The two train engines came away with about 15 waggons; the remaining waggons were left on the up line. The front portion of the train was taken to Carnoustie, and put into a siding. One of the engines was then sent on the down road to Elliot Junction, with the object of pushing the remaining waggons up to Easthaven. Some of the waggons then got derailed, and two pairs of wheels of the tender of the engine also got off the rails. That blocked the up line. This would be about 9 a.m. Up to about 1.30 p.m. down trains were travelling on the down line, but no up trains. About 1.45 I opened single line working on the down line between Easthaven and Elliot Junction. The station master at Easthaven appointed me pilotman. The block instruments had failed before I arrived at Easthaven at 11 o'clock on the 28th. The trains were then being despatched on the down line under the "Caution" at intervals. I arrived at Elliot Junction about 2 p.m. with the single line working forms. I got the forms signed by both the signalmen. I myself travelled with every train on the single line. Some of the signals were working between Elliot Junction and Easthaven. Detonators were laid on the up road a quarter of a mile on each side of the obstruction. There are no lists of fog-signalmen kept in the station master's office or signal box. There are no appointed posts for these fogmen during fog or falling snow. Before single line working was opened, one of the waymen was appointed to act as fog-signalman at the down distant signal for Easthaven, to protect the single line working in that direction. Between Elliot Junction and Arbroath both lines were clear up to the time of the collision. As far as I can remember I think it was Friday morning that the block working between Elliot Junction and Arbroath broke down owing to the fall of the wires. Telephonic communication between Easthaven, Elliot Junction and Arbroath, was also interrupted at the same time. The signalmen at these boxes made arrangements for working the traffic in accordance with Rule 25 of the Regulations for Block Working on double lines of Railway. In accordance with these regulations the driver of every train must be stopped, warned that there is no communication with the boxes in front, and ordered to proceed cautiously. So far as I know the home signals in each direction between these points were capable of being worked by the signalmen. If either of these up or down home signals were at "Danger," engine drivers would not be justified in passing it in that position unless they got a hand signal from the signal box. In the case of a snow storm a driver would not see a hand signal from the box. In this case he would not be justified in passing the home signal at "Danger." I now remember, in accordance with the regulations, that if a signal is unworkable during fog or snow, trains have to be hand-signalled past it. I was at Elliot Junction on that day for the first time between 11 and 12 o'clock, and was then informed by the signalman that they had no block communication on either side, and that they were working the traffic in accordance with the manner described, by warning and stopping drivers. It was possible for the signalman at Elliot Junction to have received information from the trainmen on the local train that there was a special stopping train leaving very shortly afterwards, provided the trainmen had been so informed at Arbroath. I had not been as far as Arbroath before the accident took place. The signalman at Elliot Junction did not ask for any assistance in the way of hand-signalmen for his out-door signals, or fog-signalmen, on account of the snow. There is a cross-over road immediately in advance of the up home signal at Elliot Junction. There were no up trains despatched from Arbroath, between 11 a.m. and 3 p.m. on the 28th, because they must have known at Arbroath that the line south of Elliot Junction was blocked. There is no speed restriction on the up road between Arbroath and Elliot Junction.

John Grant, station master at Arbroath, states: The snow storm began about two o'clock on Wednesday, 26th December. It was snowing heavily on Thursday. On Friday it was less continuous with showers at short intervals. Double line working was maintained between Elliot Junction and Arbroath up to the time of the accident. I heard about 11 o'clock on the 28th December that the up line was blocked between Easthaven and Elliot Junction. Between 6 and 7 p.m. on the 27th December, all wires were broken down, and block working then ceased. After block working broke down, the railway between Elliot Junction and Arbroath was worked on the "Caution" system. I saw all trains started myself. An interval of ten minutes between following trains was always preserved. All up trains were stopped at Arbroath South box. They were warned to run cautiously. From 11 o'clock until 3.13 p.m. no up trains left Arbroath, because information was received that trains could not get beyond Elliot Junction. At 3.13 I started the joint local train which should have left at 11.15. This train was due to Dundee (East). The train was stopped at the south box, and I suppose was warned. At 3.28, 15 minutes after the local train started, I allowed a North British train to leave Arbroath for Dundee (Tay Bridge). This was a train originally bound for Aberdeen, which, owing to the snow block on the line, had been stopped at Arbroath and was by me turned south as a special train to take the passengers back to Dundee and Edinburgh. I knew the driver well, and spoke to him on this occasion. I told him before he started that his train was bound for Dundee (Tay Bridge), and was to stop at all stations, and run cautiously. He said "All right." I did not tell him that there was single line working south of Elliot Junction. This train had arrived at Arbroath between 10 and 11 a.m. I cannot say whether he was aware that block working had broken down between Arbroath and Elliot Junction. The up home signal at Arbroath South box was at "Danger" when this train passed it. I saw the signalman flag this train past the up home signal, and I saw the train stop at the box, and I have been told that the signalman warned the driver. The snow had just re-commenced to fall when the train started. When the local train started I had not decided about sending the Aberdeen bound train back to Dundee. I did not think of sending information to Elliot Junction as to the running of the North British up train after the local train. I did not send any information to Elliot Junction as to the interval which I was intending to allow between following trains. The Joint and North British trains, as they were ordered to stop at all stations, would be on a similar footing. The North British train would not have precedence. I do not think that the snow storm which fell during Thursday or Friday was sufficiently heavy to prevent drivers seeing the signals. On several occasions I was out during the time the snow was falling, and could see as far as the up distant signal from the station. There are no lists of fogmen kept in my office, nor is there any list of fog-signalmen's posts. Fogs are not of frequent occurrence on the East Coast, but four months ago there was a fog heavy enough to call for the services of fogmen. I then appointed the foreman platelayer to act as fogman at one point. I do not think that the snow storms between the 26th and the 28th were sufficiently heavy to call for the services of fogmen. Although there is no list of fogmen, I have a list in my office of addresses of the platelayers and railwaymen employed at the station, and can, if necessary, send for them. I know the general rule requires that a list be kept of fogmen and their posts, but under the circumstances above described, I have not thought it necessary to keep this list. From the time that block working broke down, the out-door semaphore signals at Arbroath were disused. Trains were flagged during the day, or received a green light at night authorising them to pass the stop signals. Trains are not justified, in passing a block signal at "Danger" during fog or snow unless a hand signal is given to pass it. The driver of the North British train was standing at Arbroath Junction box at the north of the station from 11 till about 3. He was employed as far as I know only once in shunting during this time, a little before 3 p.m. I don't know how he was otherwise employed. When I spoke to him on his engine at the up platform the driver was, as far as I can judge, perfectly sober. He was busy oiling when I spoke to him, and he turned his head half round, and said "All right." The driver was outside the cab when I saw him. I did not see the fireman, who was inside the cab. Inspector McLellan, North British Railway, was standing alongside on one of the occasions that I spoke to the driver, and gave him the instructions mentioned. I cautioned the driver twice altogether and between these two occasions I gave similar instructions to the guard of the train. The driver answered me on both occasions. I was very busy on the 28th, and was several times up at St. Vigeans Junction during the day. During my absence up trains would not be allowed to start from the station. Lampman James Donaldson is employed to light the signal lamps at Arbroath. I cannot say exactly what time the signal lamps were lighted on the 28th.

John Alexander, sergeant, Forfarshire Constabulary, states: I was at Elliot Junction on the point of entering the booking office when the accident occurred. I called at Elliot Junction in connection with my duty. There was heavy snow falling at the time and drifting with a strong wind. I did not see the position of any of the signals at Elliot Junction. I did not see the second train approach, nor did I hear the sound of its approach, but I heard the crash of the collision. I cannot say anything as to the speed the second train was travelling at. My attention after the collision was called to a man by one of the passengers on the platform who said that the man indicated was the driver of the second train. The passenger said that the driver was drunk. So I went up to the man and took him into the booking office, and I asked him if he had had any drink at Elliot since he arrived. At the time I am speaking of an interval of at least half-an-hour, and possibly more, had occurred after the collision had taken place, so I asked the driver whether he had had anything to drink since the accident. He said "No." I also asked him whether he had had anything to drink before he left Arbroath. He said "No, he had not." My impression of his general condition was that he was under the influence of drink, and I noticed that he sometimes staggered. I induced him to leave the platform and come and sit down in the booking office. I noticed that his ear was cut, and there were stains of blood on his face. It is possible he was suffering severely from the effects of shock, but comparing his appearance with that of other injured passengers, who had suffered in the same manner, there was something different in his condition which led me to suppose that he was the worse for drink. I smelt that he had been drinking. I called the attention of Dr. Kelly, of Arbroath, and Constable Dunoon,

of Arbroath. Both people examined him, and a little later Dr. Kelly brought Drs. Duncan and Gilruth, also of Arbroath, and the three doctors examined him together. I was with them at the time. I understand the doctors were unanimous that the man was under the influence of drink. I asked the driver what his instructions were when he left Arbroath, and he told me that he had a clear road. The storm was a bad one. I walked from Arbroath to Elliot Junction and experienced the force of the wind. It was blowing from the land towards the sea.

John Carnegie, station master at Elliot Junction, states: It was snowing heavily during Thursday, 27th December. On the morning of Friday there was a ground drift of the snow from the effect of the wind, but no snow fell until after midday when snow fell intermittently in showers. It was heavy enough sometimes to obscure signals about 100 yards distant. It was never heavy enough to obscure a signal when you were standing under it. Block working between Elliot Junction and Arbroath broke down between 6 and 7 p.m. on the 27th ultimo., and the following morning between Elliot Junction and Easthaven. The method of working traffic under the "Caution" or "Warning" arrangement was then adopted by the signalman, who informed me of the fact. The up and down home signals were worked by the signalman whilst this method of working was in use, but not the distant signals. There is no list of fog-signalmen, or their posts, kept in my office. I have never had cause to call for them. There was no means of communication between these stations after the instruments had broken down. The lampman (Porter Edward) leaves Elliot Junction after the 2.57 p.m. train has left the station, to light the signal lamps. It will take him about half an hour to get this done. He lights the up distant signal only. At the time the collision occurred there was so much daylight that the signal lamps would not, I think, be visible. I had no information of any sort that there was an up train following the local train. I was just on the point of getting the passengers out of the local train, which was standing at the up platform, with the object of either putting the carriages into a siding, or of drawing the train on to the up line south of the station when the collision occurred. The reason for my taking the passengers out of the train was that there seemed to be some considerable delay before the return of the pilotman, to take the train to Easthaven, and I wished to clear the up platform line for any other train that might follow. I did not want to allow another train to stand outside the protection of the home signal. I did not wish the passengers to be kept sitting in the train in the cold. That was why I kept the train standing at the platform as long as I could before taking further action. The 3.13 local train from Arbroath arrived at the station at 3.19. I understand the up home signal was not lowered for this train. I am informed that the driver went slowly past it. Inspector Hackney was on the engine of the 3.13 train. There was no hand-signalman employed at the up home signal. I did not think it was necessary to protect the up local train by placing detonators on the line behind it, because I thought the up home signal sufficient protection where this "Caution" method of working had been adopted. I cannot speak as to the exact position of the up home signal at Elliot Junction at the time of the accident, or the up distant, but I know that the up home signal was in working condition.

James Beattie, signalman at Arbroath South, states: I have 17 years' service as signalman, and my hours of duty on the 28th December were from 9 a.m. till 6 p.m. I had the same hours the day before. There are no fog-signalmen, and no posts for these men. Fog-signalmen are not employed on the line, and, therefore, I have never sent for them. Block working between Elliot Junction and Arbroath broke down about 6.38 p.m. on the 27th December. At 9 a.m. next morning there was no means of communication at all. I found that the method of working trains by stopping the driver and warning him that block working was out of use, and to proceed cautiously, was in use. I did not work any of the signals on the 28th, as I was afraid the signals might hang off if I once pulled them off. The up starting signal was kept at "Danger" by a counterweight. I therefore verbally authorised all trains to pass the signals at "Danger." In the case of the down home signal I used to flag the trains past it. This signal is about 100 yards distant, and I could see it practically the whole of the 28th December. I suppose that the drivers could see the signals when they were close to them. All the trains at Arbroath in the up direction were started by the station master. I had nothing to do with starting them. When I heard them whistle I flagged them past the up home to my box. I stopped the local train that left Arbroath at 3.13 dead at my box. I informed the driver that there was no communication between the boxes on each side, and that he was to proceed on to Elliot Junction and "look after himself." He said "All right." I knew they were going to send the North British train after this train, because the engine was reversed opposite my cabin. I had no instructions as to the interval of time that was to elapse between following trains. The North British train left Arbroath at 3.28, 15 minutes after the local. I brought this train up to my box past the up home signal with my flag. I stopped the driver dead at my box. I told him there was no communication offering, as it was broken down, and he would have to proceed to Elliot Junction and "look after himself." He asked me when the last train left. I said 10 minutes ago. There was a tail lamp on both the local and North British trains. I cannot say whether either of them were lighted. I should think that under instructions of this kind a driver proceeding cautiously to Elliot Junction would necessarily occupy 5 or 6 minutes. I have heard that the North British train arrived at Elliot Junction at 3.30. I cannot say whether my clock synchronizes with the clock at Elliot Junction. My clock was regulated probably two days before the collision. In the case of both of these up trains I walked out of the box, down the stair, and spoke to the engine-men from the foot of the stairway. I knew the line was blocked south of Elliot Junction. I told the driver to proceed with "Caution." I did not know that single line working was opened south of Elliot Junction. I had not received any information that single line working had been opened south of Elliot Junction. If I had known I should have informed the drivers of these two trains of this fact also. The driver when I spoke to him appeared perfectly fit for duty. He spoke in a perfectly plain manner.

Charles Souter, Joint Line traffic inspector, re-examined, states: I don't know who gave the instructions for the engine to push the waggons that were stuck in the snow towards Easthaven. It would have been wiser to have attempted to draw them instead of propelling them. I was instructed by the manager, Mr. Hamilton, to take an engine from Carnoustie and proceed to Elliot Junction, and come back to the derailed train to see what I could do to clear the line. I found the engine was derailed, and there was no chance of getting it on to the road again, and there were no appliances for rerailing it at that moment. Mr. Hamilton also told me to open single line working if I thought it necessary. So I did as described in my previous evidence. I travelled on an ordinary train from Easthaven to Elliot, and opened single line working by taking a passenger train from Elliot Junction to Easthaven. This would be about 2.10 p.m. The goods train I travelled with from Easthaven, which arrived at Elliot Junction about 2 p.m., went on straight to Arbroath. The engine driver of this train knew I was going to open single line working between Elliot Junction and Easthaven. The train which arrived at Elliot Junction at 1.58 p.m. must, I think, have been the train I travelled with from Easthaven. I did not tell the driver of this train to inform them at Arbroath South that single line working was going to commence. He must have known that the up line was blocked when we passed the derailed train on that road. The detonators on each side of the obstruction on the up line were laid either by my instructions, or by myself. I asked at Easthaven whether the single line working from the direction of Carnoustie had been arranged for, and was informed that there was a man at the down distant signal. We have never been bothered with fogs or severe snowstorms, and this perhaps accounts for the fact that there are no definite arrangements for fog-signalling, or snow-storm signalling on the line. I knew that semaphore signals should not be in operation after block working had broken down. It did not occur to me to arrange for hand-signalmen should they be required at any of these semaphore signals. If additional staff was wanted at any of these stations for any purpose, it would rest with the station master to apply for such staff to the manager, Mr. Hamilton. It would rest with me to advise the station master if I thought it was necessary. I was waiting at Easthaven station from before 3 till after 3.30 p.m. for a down train to arrive to be piloted to Elliot Junction, and this accounts for the delay of the local train at Elliot Junction. I did not enquire at Elliot Junction whether the station master had been in communication with the Arbroath station master as to the method of working the traffic between the two points. I came on duty on the 27th December at 8 a.m., and was out on duty till 11.30 p.m., in connection with the snow trouble that night. I came on duty on the 28th again at 8 a.m. I had no other suitable available man, and, therefore, appointed myself as pilotman. William Boyd, relief signalman, relieved me of my duties as pilotman between 8 and 9 o'clock at night on the 28th. There was one engine which might have been used for pilot purposes, but the engineman's day of duty was completed, and the engine had to be sent home in consequence. When I arrived at Elliot Junction about 2 p.m. with the object of opening single line working I found an up passenger train had been waiting there from 10.55 a.m., and I did not think there was any time to make further enquiries as to the condition of the traffic at Arbroath before dealing with this up train that was waiting to go to Easthaven. I had no knowledge that the line north of Arbroath was blocked, and that North British trains were being turned back. The station master at Elliot did not know either.

John Grant, station master at Arbroath, re-examined, states: I did not receive any information from the driver of the down train that arrived at Arbroath after 2 p.m., that single line working was to open between Elliot Junction and Easthaven. I forget from whom I received the information, but it was between 2 and 3 p.m. that I first heard of single line working commencing. I ran the engine of the North British train round its train before 3 p.m. The train at this time was standing at Arbroath Junction box at the north end of the station. The train stood then on the down road until after the local train had gone. I had made up my mind that this train had to return to Dundee, but had not fixed the time at which it would depart. I did not tell the signalman at Arbroath South that there was single line working south of Elliot Junction. I did not send any information to Elliot Junction as to the interval between following trains which I was intending to allow for. There may have been occasions on the 28th December when the snow was drifting so heavily that the signals would be considerably obscured. I did not think that a flagman or hand-signalman would be required at the Arbroath South up starting signal, as enginemen would be stopped at the box and authorised to proceed cautiously past this signal. There is an engine turntable at Arbroath Station near St. Vigeans Junction in the locomotive yard. This turntable is of sufficient length to turn all engines that have been received at Arbroath. It was long enough for the engine of the North British train. The turntable pit was filled with snow, and was unworkable at the time. I don't think it could have been cleared owing to the wind drifting the snow. Nearly all the engines in Arbroath at the time were in the same position, and it was necessary to get the passengers away. I did not tell the driver there was single line working south of Elliot Junction, and it did not occur to me to do so. I did not tell the driver that there was no information regarding the cleared or blocked condition of Elliot Station itself. I am not authorised to instruct engine drivers to turn their engines. This is a matter which is dealt with by the Locomotive Department. If men were required to clean the turntable it would rest with the Locomotive staff to ask for them, and I should see that permanent way men were made available to do the work. I did not have any communication with the station master at Elliot Junction after the telegraph wires broke down. I had sufficient staff at the station to deal with all the work. There was no necessity for employing anyone else. After 11 a.m. on the 28th December there were two up trains at Arbroath waiting to be despatched: one a local Joint train which I despatched at 3.13 p.m., and the second, a North British train, was despatched at 3.28 p.m. I think I was probably at St. Vigeans Junction from 1.40 p.m. till after 2 o'clock, when I heard that single line working had opened south of Elliot Junction. There were eight or ten trains at St. Vigeans Junction waiting to proceed northwards. The lines northwards were blocked on

the evening of Thursday. I was endeavouring to get these trains off the main line at Arbroath Junction as they were blocking the working of the station, and I had my hands full with work. All the siding accommodation at the station was occupied. There were additional men available at the station if I had required them. I could have utilized the services of one of these available men to send him by road or rail to Elliot Junction. I did not do so. When I was up at St. Vigeans Junction the head porter would be in charge of the station. He would not take the responsibility of sending away trains without my orders. When I told driver Gourlay to run round his train with the object of going back to Dundee he said nothing about his engine being tender first. So far as I know I carried out the instructions of the Joint Company with regard to the working of trains after the failure of the block instruments, bells, &c.

John Carnegie, station-master at Elliot Junction, re-examined, states: I received no sort of information, and sent no information to Arbroath Station after block working broke down. I did not think it necessary, as the traffic was being worked in accordance with the regulations. I did not send information to Arbroath Station when single line working was opened about 2 p.m. on the 28th December between Elliot Junction and Easthaven, because the traffic was being worked already under the "Caution" in the same way as would have been rendered necessary for the opening of single line traffic. I was not aware of the arrival of the local train at 3.19 p.m. until it came into the station. I did not hear it whistle. I did not send information or try to obtain information from the station-master at Arbroath, because I thought under the system of working with "Caution" adopted, such information was unnecessary. I did not hear the North British train whistle as it approached the station. I did not see the North British train approach, nor did I hear it. I have no idea of the speed it was running. If detonators had been at the distant signal it is reasonable to suppose that the driver would have heard them and received warning.

William Haggart, signalman at Elliot Junction, states: I have been eight years in the service of the Joint line, 6½ years as signalman, and nearly the whole time at Elliot Junction. I went on duty on the 27th December at 2.30 p.m. and came off duty at 2.30 a.m. on Friday. The usual hour is 11.30 p.m. These hours were exceptional on account of the block. I came on duty on the 28th at 2.30 p.m. Block working broke down northwards of Elliot Junction between 6 and 7 p.m. on the 27th December. When I came on duty on the 28th December block was interrupted southward. They were working single line between Easthaven and Elliot when I came on duty. After I arrived, the first up train to reach Elliot Station was the 3.19. I had no warning of this train. The home signals at Elliot Station were workable. If the train had whistled at the home signal I should have known of its arrival and lowered the up home for it to pass. The reason we were working the up home signal for trains under the "Caution or warning" arrangement of working was that drivers at this signal could not see a hand-signal from the signal-box. There has never been a hand-signalman or man appointed for fog-signalling at Elliot Junction. Fogs are never thick in that neighbourhood, and it was never snowing for more than an hour at a time. It was snowing very heavily from 3.15 until it ceased about 3.35 p.m. I could not see either the train or the home signal at 3.19 when the local train arrived. I presume the driver of the local train must have been authorised by someone to pass the signal at "Danger." I did not see or hear the North British train before the collision took place. I heard the crash of the collision. It occurred at 3.30 p.m. The signal lamps were lit, but I think it was too light for them to have been visible at the time the North British train came up. There is a down home signal close to the box. I could not distinguish the back light in this signal lamp at the time of the collision. I know that the up distant signal at Elliot Junction was in the "Danger" position on Thursday night, as the drivers of trains that passed it told me so, and I heard them whistling at the signal, which had never been drawn off since that time. The repeater wire had broken down. I have no idea of the speed the North British train was travelling at when it entered the station. I was not aware of the Rule No. 85 for putting down detonators in the absence of fogmen. This has never been done on the line. I do not think this rule would be practicable when block working is in force. It would be impossible to leave the signal-cabin for so long a time. When the local train came in I asked the engine-driver how he passed the signal. He said he had received instructions to do so, but did not say who gave him the instructions. I noticed when I came on duty there was a droop on the up home signal. There were men working at the points and signal wires. The droop did not exceed more than an inch at the outer end of the semaphore. I do not think that a driver could have mistaken the position of the signal. The driver of the local train admitted that he had passed the home signal at "Danger." After the collision I asked my mate to go and tie the signal at "Danger." I did not ask for any flagman to be appointed at the up home signal, as I did not think it was necessary. I had two permanent way men on the night of the 27th December to assist me in looking after the signals. I have never asked for assistance beyond what was supplied by the permanent way men for clearing snow from points and crossings. I have never had occasion to do so. All trains on the single line during the snow were carrying red head-lights. The North British train did not whistle outside the station nor at the distant signal. My reason for not carrying out Rule 73 and getting a competent person with detonators at the signal was that I did not think the droop of the signal was sufficient to cause the signal to be recognised as a defective one. The signal was put horizontal after the accident occurred. I could see the down outer home signal during the heaviest portion of the storm from my box. Fog signals were placed on the up line after the collision behind the second train. I heard the detonators exploded by the next engine that came up. The fireman of the local train did not come to my box whilst the train was standing at the station to warn me of the position of the train. I do not think that Rule No. 55 is applicable in the case of a train standing at a platform and booked to do so. The droop in the case of the up home signal was the same as at all the other signals that had not been tied up. I tried on Thursday night to get rid of the snow on the semaphore arms by throwing the levers back violently, but found it had no effect. The permanent way men, who were engaged at the time of the collision clearing the points and signal wires, were at the time of the collision working south of the box at the cross-over there, and on the down home signal. My attention was not drawn to the droop of the signal. I noticed it myself. I did not think it was necessary to call the men away from the work

they were doing to attend to the position of the up home signal, because the droop in the one was as bad as the droop in the other.

Dr. James Gilruth (M.A., M.D.), Hyde Park House, Arbroath, states: I arrived at Elliot Junction about 4.15 p.m. on the 28th December. My attention was called to the condition of driver Gourlay of the North British train by Drs. Kelly and Duncan, of Arbroath. This was considerably after the time I arrived at the station—perhaps about half-an-hour. I saw the man standing in the booking office. The conclusion I came to was that the man was under the influence of alcohol. I spoke to the man and he seemed dazed, heavy in the eyes, and also thick in speech. I asked him where he came from that day, but he did not seem quite to understand. I can't say whether there was a smell of alcohol about him, owing to a bad cold in my head. I have been informed by Mr. George Harcourt, of Hospitalfield, that he was in the Dundee Road at the moment the accident took place, and hastened to the station. He arrived within a few minutes of the accident and saw Gourlay before he had the opportunity of taking any liquor. He informs me that the man was walking about straight on the platform, and that some one, unknown, came and offered him some brandy. He said, "Yes! I'll take a wee drop," and this man poured out—I understand in his excitement—somewhere about three quarters of a tumbler of neat brandy, and he saw driver Gourlay drink that off. I think, if these circumstances are as I was informed, that the condition of the driver when I saw him about an hour afterwards would be partly accounted for. I have no information as to who the person was who gave the brandy to the driver. The condition of the driver when I examined him was not such as to warrant his being in charge of an engine.

Dr. Richard Kelly, L.R.C.S. and P. Edinburgh, states:—I arrived at Elliot Junction shortly after 4 p.m. Sergeant Alexander called my attention to the condition of driver Gourlay. This might possibly be about 4.30 p.m. The man was standing leaning against something in the booking office. I asked him some questions. I gathered that he was under the influence of alcohol. He was in a dazed condition. I asked him his name, and I could hardly make out his answer. I asked him his fireman's name, but he could not remember it. I had a very bad cold in my head, and can't say whether there was the smell of alcohol about him. I went to the door and looked for another doctor, and Dr. Duncan was the first I came across. I asked him to come and see a man. We both went out, and got hold of Dr. Gilruth, and he came in and examined him also. The driver's utterance was very thick. I am quite certain what I saw was not due either to shock or any blow he might have received on the head. Some one asked the driver, I think, whether he had anything to drink in Arbroath. Gourlay became quite animated and said "Keep drink out of it." If the man had received alcohol in any quantity after the collision at Elliot Junction it would undoubtedly account to a considerable extent for his condition.

Dr. John Davidson Duncan (M.B.C.M. Edin.), Arbroath, states: I have heard the statement made by Dr. Kelly relative to driver Gourlay, and agree with it in all particulars. A Mr. T. P. Anderson asked me whether I was aware that Mr. Harcourt had seen Gourlay drink off a tumblerful of neat brandy before we examined him. I told him I had not at that moment heard of it. I did not smell drink on the man, not being sufficiently close to him.

William McLellan, general inspector, North British Railway, states: I left Edinburgh on the 28th December with the 9.35 a.m. train to make my way on to the North British line north of Arbroath, where the snow blocks were. I reached Arbroath about 12 o'clock, and could get no further. The train I was in stood outside Arbroath station for about 30 minutes. I found there was no means of getting beyond St. Vigeans Junction about 12.30. I was at St. Vigeans nearly the whole time up till about 2.15. When I got back to the station the local train was just starting. I saw this train stop at the Arbroath south box. Behind this local train the North British train with Gourlay stood at the up platform. The engine at this time was at the north end of that train. When the local train moved out of the station the North British train was propelled after it beyond the crossover points close to the south signal-box, and when the points were cleared of snow the engine was run over the crossover on to the down road. Afterwards the carriages were allowed to run back by the force of gravity into the station. The engine then ran back over the crossover, and backed on to the carriages. Two or three minutes after this the train was started. I was standing at the south end of the platform watching these operations. After the engine backed on to the carriages, I saw the station master come up. I heard him tell the driver to stop at all stations up to Dundee. The driver at this time was standing inside the cab on the left hand side. He evidently did not hear what the station master said to him, for he stepped across the footplate and stooped forward whilst the station master repeated the instructions. I did not hear anything said to the driver beyond words to the effect that he was to run to Dundee and stop at all stations. Guard Kinnear then came up to where I was standing, and repeated to the driver the same instructions, "that he was to stop at all stations up to Dundee," but added, "and keep a good look out." Both of these men must have known that block working was broken down. When the guard had gone back, I gave the driver a further warning, using words to the effect that he was to be careful, and keep a good look out of that train ahead. I then walked after the guard, and overtook him, and said to him, "Now, I have warned the driver to look out. You will have a chance to see next the engine. Mind you keep a good look out as well; things are pretty rough to-day." I was anxious because of the block working having broken down. I then asked the guard before he gave the signal to start whether his Westinghouse was all right. He said, "Yes; I have tested it." Then I went away, and took a seat in the centre of the train. The train stopped dead at Arbroath south. I had the window down to hear what passed between the signalman and driver. I was too far off to catch the words that were spoken. The train then started away very slowly. It travelled at a moderate and careful speed for half of the journey, and then got into what I thought was too high a speed. I could not see any of the signals owing to the drift, but I kept the window down with the object of trying to see the posts, or hear fog signals. I could not see any signal posts. A moment or so after this the collision took place. I don't think the speed at the moment of the collision was less than 30 miles an hour. I could not feel any application of the brake. Travelling was very smooth and quiet owing to the snow, and I think I should have heard the sound of the brake applied. When I saw Gourlay at Arbroath Station, I have no hesitation in saying he was absolutely sober. If

he had been drinking I think I would have been certain to notice it, not so much from his speech, but from the way he handled his train in the shunting operation of getting round it. He ran right up with his engine after the carriages had run down into the station without any preliminary stop, applying of steam, and so forth. I saw him about an hour after the accident. I think he was imprisoned in the cab for nearly the whole of this time. His face appeared to me as if it had been scalded, and he looked as if he was in a very bad way. I don't think he was the worse for drink, but he was very unsteady in his walk. I saw him once again about 35 minutes later. In the interval, I met a young man carrying a bottle of whisky or brandy. I asked him to go and give some of it to driver Gourlay, as he appeared to me to have been badly burned, and was suffering from exposure. I did not particularly notice him on the second occasion, but I saw he was outside and asked him what he was standing outside for, and told him he had better go inside into shelter until a train was ready to get him away. His walk appeared to be the same. I cannot say whether he had had any spirits in the intervening time. I had five minutes' conversation with Gourlay about 12.30 p.m., when I first arrived in Arbroath. I had to pass his train and engine on my way to St. Vigean's Junction. He was then on his footplate. He came on to the platform and had a conversation with me. There were no signs of liquor about the man then. The North British train did not whistle on entering Elliot Junction Station, and I did not see the standing train in front of me. Whilst we were travelling between Arbroath South and Elliot Junction there was something like a blizzard. Snow was falling, and being blown across the line. I think the circumstances were such as to call for the employment of fog men. I don't think the driver was exercising due caution in the way he ran in the snow storm. I did not consider it my duty to use the communication chain in the carriage unless I had seen the train ahead and known of the danger. I didn't know also how far I was from the station. After the collision I saw the wheels of the engine revolving, and I understand the regulator had to be closed to stop them. It is possible that if Gourlay was thrown against the regulator that his weight would open the throttle, and that would account for the fact that steam was applied.

Evidence taken in Dundee on the 3rd January, 1907.

George Gourlay, engine driver, states:—I am 60 years old, and have about 47 years' service, and have been a driver for 40 years. I came on duty on the 27th December at 6.35 a.m. and was relieved at Edinburgh at 6 p.m. On the 28th instant, I came on duty at 6.35 a.m., and would ordinarily have completed my time of service at Edinburgh at 5.20 p.m. I drive the 7.35 a.m. train from Edinburgh to Aberdeen, and return with the 1.25 p.m. from Aberdeen. I often have very little time at Aberdeen for a meal. We left Edinburgh at 7.37 a.m. on the 28th December. My engine was No. 324, a four-wheels-coupled, leading bogie, express engine and six-wheeled tender. It was dual fitted, with the Westinghouse and vacuum continuous brakes—operating blocks on the six tender and four coupled wheels. The Westinghouse was in use. The brake was in good working order at Edinburgh. Owing to the snow sticking to the wheels, it was more difficult than usual to stop the train. This was the case all the way to Arbroath. The snow fell at intervals during the down journey, and a heavy wind blew continuously causing the snow to drift. We arrived at Arbroath at 10.41 a.m. We were due there at 9.38—about an hour late. We first stood outside the station, then at the down platform, and again on the down road away at the north end. Trains were following one another closely. We were hand signalled from point to point. We were then set back by the stationmaster's orders over the cross-over on to the up platform. This was after 12 o'clock, I think, as far as I can judge. I was on my engine, cleaning and oiling round, all the time up to this time. I was also employed in working the steam reversing gear to keep it from freezing. At one time during this period the Westinghouse cylinders froze. I had to keep them in working order also. I managed to maintain the pressure at about 70 lbs. I also, whilst standing on the down line north of the station, went back to the rear of the train to speak to the guard, and I also spoke at the same time to the foreman porter. I had my breakfast on the footplate. We then stood at the up platform waiting orders, and I did not know whether we were going forward or back. I was on my engine all the time whilst we stood alongside the up platform. I knew there was a train standing behind us at the up platform, and that this train left southward bound before us. Up to that time I received no instructions where we were going. Shortly before 3.26 p.m. I received instructions from the stationmaster to return to Dundee. I backed the train to the Arbroath South box—uncoupled—ran over the cross-over, and the carriages were then allowed to run back into the station. I returned over the cross-over, and backed on the carriages standing at the platform. At 3.26 p.m. I left the station. The agent told me I was to stop at Elliot where they were working single line. Before I started from Arbroath, my guard, James Kinnear, told me that Dundee was my first stop for setting down passengers. I saw inspector McLellan and spoke to him twice during the day. The up home signal for Arbroath South was hanging off when I started. I slowed by the box. The signalman said something, but owing to the noise made by the engine working, I did not hear what he said. I can't remember whether he came out of his box on this occasion. The up starting signal was hanging down owing to the weight of the snow—as all the signals were. I did not actually see the signal arms move. During this time the fallen snow was drifting heavily with the wind, and some snow was also falling. It was a perfect blizzard. I was running on this occasion tender first, with a big load of coal. The coping of these tenders overhang, and there are railings above the coping and the coal thus overhangs the coping and obstructs considerably the view. I saw the up distant signal for Elliot Junction as I passed it. It was hanging "off." It was still daylight, but beginning to get dark. If the lamp had been lit, I could not have seen it, owing to the snow obscuring it. I have heard from guard Kinnear that the collision occurred at 3.35 p.m. I remember seeing the up home signal, it was also hanging off, I did not see the signal arm move. We were running at a very moderate speed of 12 to 14 miles an hour at a maximum. I also saw the up starting signal hanging off before the collision occurred. There were no fogmen on the line, and no detonators were

exploded. I therefore thought that the position of the signals showed safety and that I was justified in considering them at safety. I was on the right side of the cab as we ran, and my fireman on the left. I told the fireman to watch the road going down for flagmen or fog-signals. I was using the Westinghouse brake, with the intention of stopping the train at the Easthaven end of Elliot Station when the collision occurred. I saw nothing of the train standing in front of me, at the platform—owing firstly to the blizzard, and secondly to the coal piled up on the tender. I closed the regulator some distance before reaching the station. I may have knocked the regulator as I was thrown down by the collision; or when the engine turned over, owing to the water surging into the dome, the steam valve might have been put off the face sufficiently to allow steam to enter into the steam pipe and cause the wheels to revolve, which I saw they did after the collision. A very small quantity of steam will be sufficient to accomplish this with the wheels in the air. The small or starting throttle is very easily opened by the least movement of the regulator. I did not call the attention of anyone to the necessity for turning the engine at Arbroath, as I knew it was not possible to get to the turn-table, owing to the number of trains blocking the lines, and only the cross-over roads were being worked. Between about 12.30 and 3 p.m. my engine was standing on the up platform line at Arbroath Station, and in addition to doing cleaning work on the engine, I got on the platform and spoke to one of the passengers of the train who addressed me. I spoke to several other people, who were standing or walking on the platform. I can only remember McLellan, guard Kinnear and Leslie as people I spoke to. I got off the engine after the collision after I was released, without help—I had a very great shock. Shortly after getting on to the platform I got a good drink from someone, I can't remember who it was. It was before the police constable spoke to me that I had this drink.

William Paton Reed, locomotive superintendent, North British Railway, states: I have examined the record-book for the last 16 years, when Gourlay was re-engaged after the strike. As far as I can remember, there are only five instances where his name appears in the discipline-book during this period. On each occasion, I may say, the circumstances were those usually incidental to locomotive working, such as breaking a coupling, dropping a lead plug, &c. None of the entries are of a serious nature. He bears an excellent character, especially as regards the care he shows for his engine. He is very attentive to his duty and to the work executed. He has on two occasions been selected to drive members of the Royal Family during the last four or five years. I have no cause to complain of want of caution or care by Gourlay during his service in the working of passenger trains.

Mr. Granville R. McAlpine states: I am a railway contractor. I saw driver Gourlay at Dundee (Tay Bridge) Station about 7 p.m. I spoke to him for about a quarter of an hour. I gathered from the way he spoke that he was suffering from the effects of shock. He did not show any signs, in my opinion, of being the worse for drink. He spoke at times quite clearly and at other times said nothing. I think, from my experience, that if the man had been intoxicated at 3.30 in the day I should have noticed signs of it when I spoke to him about 7 p.m. I have seen men who have been in railway accidents and other accidents of the same sort, and have noticed similar effects in them as I saw in Gourlay on that occasion. I have had experience of 12 railway accidents, where 30 men in all were killed. I travelled in the local train from Arbroath to Elliot Junction on the day in question. At the time of the accident there was snow falling and there was a gale of wind blowing, which was drifting the snow. I was about 100 yards south of the station buildings on the platform at the time the actual collision occurred. I cannot say how the up line signals were standing at the time of the accident. I did not notice Gourlay on the platform at Elliot Station after the collision, nor did I speak to him there. When I saw Gourlay at Dundee (Tay Bridge) he did not smell of drink in the way that a man who had been intoxicated shortly before would have smelt. At the time the collision occurred I do not think you could see more than 20 or 30 yards distant.

Mr. George Harcourt, artist, Hospitalfield, Arbroath, states: I was crossing the fields from Hospitalfield on the 28th December towards the Dundee Road, and was about 200 yards from the railway line when I saw a train pass me going in the direction of Elliot. I was at a distance of about half-a-mile from Elliot Station. The train appeared to me to be going faster than other trains which I had seen travelling during the storm, but about the pace of ordinary trains that stop at Elliot Station in usual conditions. At that time I thought the train was running at a high speed, because I had noticed that other trains during the snow were running at a much slower speed. I walked along about 50 yards in the direction of Arbroath, and then I looked round and noticed a man whom I thought was a railway porter running along the road in the direction of Arbroath. I asked him what was the matter, and he said there was a big smash at Elliot Junction. I did not hear any sound of the collision. I then turned back and went as fast as I could towards Elliot Station. It may have been about a quarter of an hour after the collision when I arrived there. I cannot be accurate as to the time. As I approached the station I saw a number of people going away from the station as fast as they could. Some of them made general remarks to me. I was helping as far as I could in a general way, and it may have been a quarter of an hour, at all events, it was comparatively soon, after my arrival at the station when I saw a man, who, I understand, was the driver of the colliding train, standing in the four-foot way not far from the tender. My attention was directed to him by his striking personality. I saw he was injured about the head. He seemed to me to be suffering from the effects of a severe blow on the head, for he was moving about in a dazed manner, but walking steadily. Shortly after that I saw the same man on the platform. I saw that the top of his ear was split, and when he was in front of me at a distance of about 5 feet a man approached from behind me, and poured from a quart bottle what I believe was brandy. He half filled the tumbler with the liquid, and made some remark to the driver, which I did not hear, as his back was turned to me. The driver said, "I'll just take a wee sip." He pronounced his words very clearly, and he swallowed the contents of the glass. The fact of his drinking all the contents of the glass after saying that he would "just take a wee sip" confirmed, in my opinion, that he was acting as a man who was suffering from a severe blow, or possibly from the effects of concussion. I did not again see this man whom I took to be the driver. The man I speak of was dressed like an engine-driver. The man was wearing a beard, which appeared to be of a dark grey colour. He

was a man with fine presence, tall, big and broad in the shoulders. I did not at all gather the impression, from what I first saw of this man, that he was suffering from the effects of drink, and in thinking over the circumstances I have come to the conclusion that he certainly was not in that condition when I saw him. I daresay it was half-an-hour after the collision, or something more, when I saw this man drink the liquor. I did not see the police constable, whom I saw on the platform, speak to this man either before or after drinking the brandy. It was some time after the incident that I speak of when I saw Dr. Duncan, whom I knew. He must only have very shortly before arrived at the station, for I directed him to the carriages where the wounded were lying. After I had shown Dr. Duncan where the wounded were lying I left the station. I saw a carriage draw up close to the level crossing over the railway on the Arbroath side of the station. I opened the carriage door and found Dr. Gilruth inside, so that he had only just arrived at the place. I think that everything possible was done by the railway companies and their staff to help and assist the sufferers in this accident. I have not heard of any shortcomings or failure on the part of the railway employés, so far as was in their power to deal with the emergency. I cannot say anything as to the position of the signals. I did not notice them. I did not notice whether the engine sounded a whistle as the train approached the station. The snow was falling heavily. There was a very strong wind blowing. I think the general direction of the wind would be at right angles to the railway. I estimate that the fall of snow on the level might have attained a depth of about 18 inches. I should not be able to identify the man who gave the liquor to the driver. I do not think he was a railway man. The road between Arbroath Station and Elliot Junction, although difficult to traverse, was not impassable at any time during the storm. Standing as I was with my back to the storm when I first saw the train approaching Elliot Station, I think the train itself was quite visible, although it was somewhat obscured by the snow. I think also that I could have seen the telegraph posts at the same time. Whilst I was walking along the road towards Elliot Station, the snow was not sufficient to obscure my view at the pace I travelled.

James Strachan, signalman, Easthaven, states: I have about 30 years' service. I have been a signalman at Easthaven for eight years. I came on duty on the 28th December at 5 a.m., and came off at 2.30 p.m. I came off duty the day before at 2.30 p.m. My box is switched out from 12 midnight till 5 a.m. Block working was broken down when I arrived at 5 a.m. that morning. When I found that block working had broken down I put all the signals to "Danger," and kept them in that position. The waymen had kept the semaphore arms clear of snow by shaking them, I suppose, during Thursday. On Friday morning they were clear of snow, and they were standing in the correct horizontal position. After that I never again used the signals during the snow. I did not use the signals when block working was broken down as I thought it was a good precaution to keep them in that position. The traffic was worked by hand flag from my box. I also verbally instructed the drivers. I told them what the last train was that passed. I let no train pass without 10 minutes interval between them. I told them to run with every precaution. After 8.10 a.m. when the last up train passed my box a goods train parted on the up road between Easthaven and Elliot Junction, and the line was blocked. When part of the train arrived at Easthaven with two engines in front we uncoupled the leading engine and endeavoured to shunt the engine on to the down line in order to send it on the down road to Elliot Junction to see where the tail end of the goods train was, but we failed to get the engine over the cross-over. So both engines and the waggons attached were sent on to Carnoustie with information that the remainder of the waggons were stuck in the snow between Elliot and Easthaven. The leading engine of the two came back from Carnoustie. I stopped it on the down road, and told the driver to go and look for his train. I told the driver to push the waggons if possible on to Easthaven, and I would keep the line clear for him. I did not take instructions from the station master as to how to deal with the case of the goods train that had parted, but thought it was the safest plan to send the engine in the proper direction, and try to push the waggons on the up road into Easthaven. Inspector Souter made the arrangements for single line working. He left with the goods engine for Elliot Junction at 1.40 p.m. I had signed the single line working forms. The first train brought by inspector Souter from Elliot Junction arrived at Easthaven at 2.30 p.m. No other train left Easthaven for Elliot until 4.8 p.m. No other train arrived from Elliot Junction till 5.58. There was no engine at Easthaven which would have been available to act as pilot engine for inspector Souter. The distant signals were tied up so that they could not move. The starting signals in both directions were also not working properly, and these were tied up. One permanent way man was appointed as hand signalman at the down distant signal at Easthaven. He was appointed by the station master. That was when single line working was started. There were four other permanent way men, I think, employed near Easthaven. They were employed keeping the points clean. They occasionally came to the box, and asked what was wanted. The semaphore arms of the up and down home signals which were workable were not being kept out of the horizontal position by the weight of snow on them. There is no list of fogmen in the signal-box. None were employed during the snow storm.

Oliver Guild, signalman at Elliot Junction, states: I have three years' service as signalman, nearly all the time at Elliot Junction. I came on duty on the 28th at 5 a.m., and went off duty at 2.30 p.m. I had the same hours the day before. When I arrived on that morning block working had broken down. The up and down home signals were worked in the morning. The distant signals were not worked. There was snow sticking to the semaphore arms. There was a wee droop on the signal arms. None of the signals were hanging in the same way that they would do in ordinary circumstances, because of the snow. I tried to shake the signal arms free of snow by working the levers several times, but did not succeed in getting the signals to stand properly. There was no one about at that time that I could get to clear them. There were some permanent way men working at the cross-over road about 250 yards away keeping the points clear. None of the permanent way men came up into my box whilst I was on duty. I sounded a whistle to draw some one's attention to the condition of the signals, but no one came. I did not go out of my box to call any one at the station to attend to the signals, nor did I take any action to tie them in the "Danger" position. There were

no fogmen, and I never asked for any. I know the rule that says they should be employed. These men have never been employed at Elliot Station. I do not think that these signals, though they were drooping, would have been taken as anything but danger signals. After 2.30 p.m. I was waiting at Elliot Station for a train to take me home. I was waiting in the porters' room in the station when the collision took place. I went to the accident, and was afterwards sent to Arbroath to fetch the doctors. I was going out by the wicket gates towards Arbroath when the other signalman came towards the signal, and he said to me, "The signal will have to be tied up if they are going to come through it." So I went and tied it up. The goods train that arrived with inspector Souter arrived at 1.58 p.m., and the single line working on the down line was opened with an up passenger train at 2.19 p.m. There was no other down train passed Elliot Junction until 4.13 p.m. I did not send information by the goods train which arrived at 1.58 p.m. to Arbroath Station that single line working had opened south of Elliot Junction. I did not see inspector Souter with the single line working forms until the goods train which brought him to Elliot Junction had left.

Alexander Hackney, joint line inspector of permanent way, states: I am in charge of the permanent way between Dundee and Arbroath. I have 80 men altogether employed on the line, a length of 17 miles. Ganger George Kydd is in charge of the section which includes Elliot Junction, and which extends for a mile on each side of that Junction. He has four men. In addition to the ordinary gangs I have an extra squad of 16 men. Two of these extra men were employed at Dundee, two at Broughty Ferry, two at Carnoustie, and the remainder at Arbroath. These men's duties during the storm consisted of keeping the points clear and the signals working. The men, of course, would obey instructions received from station masters, or signalmen, as to cleaning specific points or signals. If they were not more urgently employed it would fall within their duty to clean a turntable, and if instructed by the station master to do so, they would have to do this work if there was nothing more pressing. These men were not sufficient in number to deal with all the snow-drift there was. I wired on the 26th and 27th to Mr. Bell and Mr. Hamilton for a snowplough and assistance. I did not receive any answer. My men were also sometimes employed in digging out trains that were stuck. I travelled in the local train that left Arbroath about 3.10. The starting signal at Arbroath South was white with snow, but it was standing in the "danger" position. Both home and distant signals on the up line at Elliot Junction were also standing at "danger." They were white with snow. I noticed there was a very slight droop on the distant signal. The home signal was standing in a perfectly horizontal position. The driver of the local train almost stopped at this up home signal, when seeing that the platform was clear I told him to go on past the signal into the platform. I do not expect we could have seen a hand signal waved from the signal-box. I got off the footplate of the engine on to the platform when we were stopped at the station. I wanted to get to Broughty Ferry. The engine of the train I was on was travelling with the chimney in front. I travelled on the engine to see how the snow was drifting. We could see through the left hand window from where the driver would be standing. It would have been very much worse for the driver if the engine had been running tender in front. I think I would not have travelled on the engine under these conditions. I was standing on the platform at the Easthaven end of the buildings when the collision occurred. I heard nothing but the crash of the collision and did not see the train approaching. I do not think that the position of the signals would have altered much between the time I passed them and the arrival of the following train. This, I think, was less than 15 minutes. I know driver Gourlay. I saw him when the engine was standing at the up platform at Arbroath. I did not speak to him. He was then on the footplate. I did not see him after the collision at Elliot Junction. I was informed by the driver of a down goods train in Arbroath that he had brought up the pilotman to Elliot, who was going to open single line working between Elliot and Easthaven. I told the driver of the local train with which I travelled of this circumstance. In telegraphing to Mr. Bell, of Edinburgh, I asked for a snow plough, and not for assistance in the shape of men. This was late at night on Thursday, 27th December, and was in the form of a message put into the van of a train going south. I did not apply to Mr. Hamilton for assistance. One of the telegrams I sent to Mr. Bell and Mr. Hamilton asked for a snow plough. I never asked for assistance actually in the form of men either from Mr. Bell or Mr. Hamilton. I arrived at Arbroath about 9 a.m. on the 28th December, and I saw on my way down that a goods train had stuck on the line between Elliot Junction and Easthaven. I got an engine from Arbroath to try and pull out the goods train that had stuck in the snow, and at Elliot Junction, where I arrived between 9 and 10, I got a second engine and went on the up road as far as where the waggons were left. I took a number of men with me, and after clearing the snow away from the engine and tender, I found that the wheels of the tender were off the road. The waggons were not derailed when I passed the spot in the morning between 8 and 9. I then after having found that it was useless to try to clear the road returned with the engine to Arbroath, where we arrived about 11 o'clock. I saw a train shortly after leaving Arbroath, and had the train stopped at the signal-box, because of the block on the up line south of Elliot. There was also a passenger train standing at the up platform road at Elliot. I do not remember having spoken to the station master at Arbroath after 12 o'clock. The last occasion was, I think, when I explained to him why I stopped the 11.15 a.m. train. On Thursday night the points leading to the turntable at Arbroath were choked up. The turntable was not available at that time. I had men working at this point on Thursday, and as fast as the points were cleared they got choked up again. I had four men trying to keep the facing points at St. Vigeans Junction clear. The turntable points are close adjoining, and we could not keep the points clear, owing to the drifting snow.

William Garvie, inspector of telegraphs for the Joint Line, states: The first break of the telegraph wires was at 7 p.m. on Wednesday, 26th, up till about 9 a.m. on Thursday, 27th December, between Arbroath and Elliot Junction. There were four poles down on this occasion, and I had the fault repaired by 9 a.m. on the 27th December. The storm re-commenced on Thursday afternoon and evening, and I got a message about 11.30 p.m. to the effect that the blocks were broken down between Barry and Panmure. I heard of this by telephone about 5 a.m. the next morning. I

was at Dundee and heard by telephone from Carnoustie that the block had broken down between Elliot and Arbroath. I was informed that the block telegraph, telephone instruments, and wires, were all gone. I then went on to Barry, and wired to Glasgow for a gang of men whom I had warned the day previously to come and assist me to re-erect the poles and wires between Barry and Panmure. I then went to Carnoustie, but could get no further. No trains were running, so I came back to Dundee to meet the gang of men I had ordered the day previous from Glasgow for the work at Barry. Owing to a block on the line at Glencarse they did not arrive at Dundee till between 1 and 2 p.m.. I went down by the 3.15 p.m. from Dundee to Barry, and cleared all the wires along eight pole lengths. The men at 5.30 p.m. went away to Carnoustie to get lodgings on the 28th December. The Caledonian Railway Company have charge of the telegraph arrangements on the Joint Line, and it was for this reason that the gang I telegraphed for had to come from Glasgow Caledonian Works. I had no means of dealing with the breakdown on the road between Elliot Junction and Arbroath before Saturday morning, the 29th December.

Evidence taken in Dundee on the 4th January, 1907.

James Hotchkiss Jameson, W.S., 16 Coates Crescent, Edinburgh, states: I travelled on Friday, 28th December, to fulfil a business engagement in Aberdeen, by the 11 a.m. North British corridor train from Waverley Station. About 1.30 p.m. we were stopped outside Arbroath Station, and after waiting some considerable time the guard of the train came round, and said that we could not get any further. I said I should like to go forward to the station. I went forward, and found the whole of the station blocked with trains. The 9.35 a.m. train from Waverley was standing at the down platform in front of us. I noticed that the local train was standing opposite this last train on the up line at the south end of the station platform. When I got to the platform I asked if there was any chance of getting to Aberdeen, and they said that both lines were blocked, but that the train which was standing at the platform was going to try and get forward, and I might travel in it if I so desired. I crossed to the up platform, and went to the station master's office. There was no one there, and I addressed the first official on the platform that I saw, and asked if there was any chance of getting back to Edinburgh. I did not know who the official was, but he replied that he did not think so, as the up line was blocked. I noticed the North British train was standing at the up platform with passengers in it. It had an engine attached to the north end of it, and there was another engine facing that engine. This train was standing along the platform—the engine at the north end of the platform. After that I returned to the down platform, and asked if the station master was there. The official whom I addressed said he did not know where he was, but thought that he was out at the block at the north end of the station. It began to snow about 2.15 p.m., then got very dark, and a very high wind was blowing. So I returned to the up platform, and there saw the guard of the North British train. I asked him if it was not possible to get back to Edinburgh. He said his train would be going very shortly, and I had better get into it, which I did. I got into a first-class compartment of a composite carriage in the middle of that train, along with another gentleman. We sat there I should think for about 20 minutes, and then I got out to see if the train was not going to start. When I got on to the platform, I saw an official at the front part of the train asking the people to alight. I went forward, and they were getting out of the carriages. I went forward to him, and I asked what the meaning of this was. He said that that train was not going south, but that he was making up a relief train for Dundee. I did not return to the carriage, but very shortly after that the North British train was drawn away to the north of the station, and the local train which was standing to the south of the bridge was backed up to the platform, and all the persons on the platform that were travelling took seats in it. I looked about for a first-class carriage, and I found that those at the south end of the train were full. I think the engine was well under the bridge, and perhaps one or two of the front carriages were about there, too. The central carriages, to my recollection, were third-class carriages, so I went down the train towards the guard's van, and I got into a compartment of a first-class carriage, which, I understand, was the fourth vehicle from the end of the train. As far as I can recollect I was in the second last compartment of that carriage. I took a seat with my back to the engine, in the left-hand corner. There was a gentleman opposite me, and a gentleman on my right hand, and there were two gentlemen in the two other corner seats. I noticed when I sat down I was just opposite a clock. I noticed that it was standing at seven minutes past three. At that time the 9.35 a.m. train was still on the down line at the station, but within two or three minutes it moved away, and just as we were starting south the train that I had travelled in came up to that platform. The local train proceeded very slowly towards Elliot Junction. I do not recollect whether we were stopped just outside the station, but we proceeded very slowly till past Arbroath, and then at a slightly greater speed till the train drew up at Elliot Junction platform. The weather was then at its very worst. The carriage windows were pretty well covered with snow. I looked out and I saw that at a very short distance there was a footbridge further up the train than I was, and the platform in front of the carriage window was quite clear. What I mean is that there was nothing on the platform between me and the opposite rails. The snow was swirling, and the wind was blowing very violently, and I noticed that the snow was drifting along the ground, as well as falling and coming up in clouds. One of the gentlemen who occupied the other corner seat—not opposite me, but at the other corner—got out to go to the engine, and see whether we were going on. We would be waiting then about ten minutes. He came back, and I think he got back into the compartment, but on that point I am not certain. At any rate, he said, either as he got in, or through the window, that apparently we could not get forward at present as the line was blocked. Within, I should think, two minutes of that moment—the window in the meantime having been drawn up—the carriage seemed to rise and plunge forward with a grinding sound that made me think it was off the rails, which it was not. No official came to our carriage at all whilst we stood at the station. About five minutes after we stopped I thought I saw a person who looked like the guard—he may

have been the station master—pass up the train, but he did not come back again, and I never heard any direction to the passengers to get out of the carriages. The carriage plunged forward with this grinding motion and vibration, and then suddenly stopped; and at the same moment the doors flew open. We were thrown out of our seats, and my left arm caught the opposite jamb of the door, which prevented me falling out of the carriage. Immediately afterwards I got out of the carriage, and ran back and saw that there had been a catastrophe. I then ran forward and laid my things down at the opposite end of the station and went back past the footbridge and found that the roof of what I took to be the guard's van was lying strewn about. There was an unfortunate man under it, and some of the porters or others were endeavouring to get him out. I assisted at that, and after we got him out, we carried him round the back of the station into one of the rooms in the station buildings facing the down line. After that I went back, and looked for a moment at the engine which had been making a great noise. It was lying on its side, and the piston rod was working to and fro. I rather think that one of the wheels was revolving, and steam was escaping with a loud roar, and there was a brilliant glare from the engine fire. I noticed that behind the engine another vehicle was mounted up at what appeared to me to be an angle, and was tilted over and was much damaged. I also noticed, but I am not quite certain, that it was at that particular moment that the home signal, as I believe it is called, which is some little way to the north of the platform, was at right angles to the post, and was blocked with snow. There was a great deal of snow all about it. The signal was drooping a little. I took it to be a "danger" signal. When I noticed this signal it may have been 10 or 15 minutes after the collision occurred. We were some time in getting the first man out. After that I went forward to the third class carriage which was behind mine. I noticed that there was a gap immediately behind my carriage, and the couplings were unfastened. The forward end of the third class carriage behind mine appeared to be in its natural position. The sides and the roof were more or less smashed, and a lot of the ironwork and woodwork had been thrust over, and was projecting towards the lattice of the footbridge at the steps leading down to the platform. There was a difficulty in getting out persons in that end compartment, who were seated with their backs to the engine. They were all apparently fixed by their knees, but the upper part of their bodies seemed to be moving, and they had considerable difficulty in keeping steady. There was a difficulty in getting at them, because the crushed roof, as I have described, was pressing down, and there was very little free space between the side of the footbridge and the carriage. Some of the station men were working at a part of the top of the roof which was pressing down, and ultimately they got it fixed up between the lattice of the bridge, and that enabled them to get at some of the injured from that side. I returned from that point, and as I passed the gap, I heard a voice calling out "Come here, some one, and lend us a hand to keep up this compartment!" I at once jumped down off the platform on to the permanent way, and went through the gap between the two carriages, or behind the fourth vehicle from the end. I found some persons working at the passengers who were in among the wreckage. I am still referring to the first carriage behind the one I travelled in. The whole side of that carriage was smashed, and one of the compartments was tilted over, and was pressing down upon a heap of wreckage right in the middle of which there were embedded passengers. I noticed in particular the newspaper boy (McCarron I think his name was) lying upon his face, and groaning that his legs were hurt. There was a man holding up, or attempting to hold up, this partition, and I went to his assistance, and we held it up from pressing down upon the lad for some considerable time; while those that were working at the wreckage were trying to get out the passengers. There were people working at the other side of the carriage at the same time. After some time the boy was drawn up by a gentleman. He was got up on to the level of the floor of the carriage, and I then let go the other end of the partition, and we got hold of the boy, and carried him round between the two carriages to the platform where others received him and took him into the station buildings. They had got a good deal of the wreckage out of that carriage, so that it was not necessary to return to that particular compartment. I got up on to the platform again, and went forward. I heard a voice saying "Get out cushions from the carriages to lay the injured on." I went into several carriages, and got hold of some first class carriage cushions, and brought them back to the station where those that were in the rooms took them in. I then went back to the same smashed carriage, and by that time most of the injured had been got out. They were just taking out the lady, Miss Porter I think her name was, and I assisted to carry her into the station master's room or the booking office, where there was a fire, and we put her down there. At that time the whole of the station accommodation was crowded by the injured, and the persons attending to them, and it was now practically dark, or very nearly dark. I then went forward, and rolled up some bandages for the nurses, and while I was doing that a train with two engines came in from the south. As we knew that there was some wreckage over the down line, a number of people, myself included, rushed along the platform to signal this train to stop, and it drew up to the south of the station buildings on the down line. Ultimately it got clear of the wreckage and drew forward, and a number of the injured were put into that train. After that, as I saw that I would only be in the way, I went into that train intending to return to Arbroath, but as I was anxious to get home to Edinburgh if possible, I left that train and went back into the part of the local train that was undamaged, and I noticed that it proceeded on its journey at a quarter past five. Two of the gentlemen who were in the same carriage, when we were thrown out of our seats also travelled in that train, and in the same compartment. We had some conversation about the matter, and all expressed amazement that the train which ran into our train had left Arbroath under the existing conditions so soon after the one that we were travelling in. I should like to say that all the officials of the railway seemed to me most active and industrious in their attention to the injured, and throughout the day, notwithstanding the unprecedented condition of the weather and blocking of the traffic, I did not from beginning to end receive anything but the most courteous attention from every official whom I met. Immediately after the accident of course all were at sixes and sevens and nobody knew what anybody else was doing, but I understand that two or three young gentlemen at once started for Arbroath by road. The road, I understand, was very much blocked with snow. There was no fire in the wreckage that I noticed, further than

the glare of the engine fire. I should have seen if there had been any conflagration. The weather was not so bad when I noticed the position of the up home signal as at the time of the collision. Of course, when I got out of the carriage and could look about me, my view was interfered with by the footbridge. I noticed no failure of any sort in the action of the railway officials at Elliot Junction after the collision occurred. Of course, I could not distinguish the officials. I saw the driver of the North British train after the boy had been removed, and I had got up on to the platform again. He was then being helped over the wreckage that was lying at the side of the line, and appeared to be a good deal shaken and cut about the head. He seemed to be very shaky, and I attributed that to the result of the collision. I think that the blizzard was actually at its worst at the moment the collision occurred. It began to abate about a quarter of an hour afterwards or thereabouts. I did not see or hear the approach of the train that ran into us. I think that my carriage was moved forward by the result of the blow about 20 yards. My impression is that the colliding train was not running at a high speed. My impression is that if it had been running at a high speed we would have been all killed in our compartment; and further, I think the condition of the line as I found it when I jumped down and went round would certainly be against a train travelling under such conditions at high speed. So far as I can judge (my opinion, of course, is worth nothing), I should say my impression is that this train would not be going at the most over 25 miles an hour; I think decidedly less. I cannot say whether I noticed that the couplings were broken, or whether they were merely disengaged. I think when I crossed from the down to the up line on the first occasion at Arbroath the time was about 2.15 p.m. It may have been later. I cannot say if anything was done to the up home signal between the moment the collision occurred and the time I noticed it about a quarter of an hour subsequently.

James Boyd, driver, North British Railway, states: I have about 35 years' service. I have been a driver 25 years, and have been goods driving all that time. I came on duty on the 27th December at 11.50 a.m. Ordinarily my tour of duty terminates at 10.45 p.m. at Dundee. On this particular occasion I was not off duty again until Saturday morning, 29th December. I left Dundee at 12.35 p.m. on the 27th with the goods train for Aberdeen. I got into Aberdeen about 4.50 p.m. I turned my engine and started away with about 35 goods waggons at 7 p.m. We got into Arbroath about 7 a.m. on the morning of the 28th December. There were two engines on the train, mine was leading. My engine, No. 851, is a six-wheels-coupled goods engine, six-wheeled tender, and fitted with the Westinghouse brake. I left Arbroath at 7.30 a.m. The yard at Arbroath was then all clear. We got to Elliot Junction about 7.40 a.m. No difficulty was experienced as far as that. We were stopped at Arbroath south box and Elliot Junction, and told that the block was broken down, and warned to go cautiously. We got as far as Dowrie siding about a mile and a quarter south of Elliot. We here ran into a heavy wreath of snow. Either the coupling, or draw-hook, behind the twelfth vehicle from the engine broke at this point, leaving 28 or 29 waggons on the line. We had picked up some waggons at Arbroath and Montrose. I was told by the guard at this point that there were 28 waggons left behind. I knew that we had broken away here in passing through the snow wreath, as the train was too light behind me. We did not stop when the couplings broke, but went on to Easthaven with the twelve waggons behind the engine. When we got to Easthaven the signalman knew we had broken away, because there was no van at the end of the train. I spoke to the signalman, and said we wanted to get the leading engine over the cross-over so as to allow it to get back to Elliot Junction, to get behind the waggons that were left behind. I then found that there was no way of getting back on the facing road to get the waggons away, and there was nothing left but to try and push them out. The signalman at Easthaven agreed to this. We could not get the engine over the cross-over, as the points were stuck with snow. So the two engines and the waggons behind them went on to Carnoustie. We stopped clear of the crossing, uncoupled the leading engine, took her over the crossing, and I went right back with the engine to Elliot Junction. The signalman at Easthaven said he would keep the line clear for us to propel the waggons over. When I got to Elliot Junction I found the cross-over points unworkable, and had to go on to Arbroath. I think I got to Arbroath about 9 o'clock. I told the signalman at Arbroath south that the line was blocked south of Elliot Junction. I saw the station master at Elliot Junction as I passed through, but did not see the station master at Arbroath. At Arbroath south box we went over the cross-over, and got on to the up line. We then started back for Elliot Junction on the up road. The station master at Elliot when we arrived there told me he would send word by one of the down trains when the up line to Easthaven had been cleared. I went on to where the waggons were standing on the up line. Snow had been drifting heavily all this time. I found the guard of my train out protecting the rear of it. He had detonators down. The guard asked me what we were going to do, and I told him we were going to propel the waggons to Carnoustie. There was one waggon standing away by itself about 100 yards in front of the rest of them. The waggons were standing clear of the snow wreath, in which the coupling had parted. We pushed the train about 100 or 150 yards until we came to another snow wreath. The guard at this time was with the front waggon trying to get hold of the waggon that was away by itself. Whilst we were pushing the waggons some of them went off the road. It was about the seventh of the waggons behind this single waggon which was pushed off the rails. The guard then said, "I'll go to Elliot, and get a ticket to let me back on the facing road to Elliot Junction." My fireman and I were trying to re-rail the waggons that had got off the road whilst he was away. He came back and said we were to pull back the waggons that were on the road to Elliot, and leave those that were derailed as they stood. There were three waggons left altogether: two derailed, and the third was the waggon that was standing on the rails by itself. As we were coming back, and I was running at the wreath where the first parting of the train occurred, the two leading wheels of the tender got derailed. The engine was then in a hopeless condition, and the water in the boiler was getting low. The guard of the train then went back to Elliot Junction, and told them what had happened, and that we were left out there. Some little time afterwards inspector Hackney arrived with two engines, but seeing they had no lifting gear they could do nothing. I think inspector Souter came with the engines that Hackney came with. When he saw that the tender was derailed, and the

waggons derailed further back, he decided to walk to Easthaven and open single line working. It was not until we had nearly run to Easthaven that I noticed that the train had parted, and for this reason I did not get into communication with the guard of the train. I thought it was best to carry out the ordinary rule of working back on the proper road, and pushing the waggons out *from the rear*. I was *on the footplate, or in* the van of the train, from 11.50 a.m. on Thursday, 27th, until the afternoon of Friday, 28th December. I managed to get some food. I did not get into Dundee until early on Saturday morning. There was no means of communication owing to the telegraph wires breaking down, otherwise we should have been relieved earlier. The guard was in front of the waggons that we tried to push, and we succeeded in pushing them 150 yards towards the point where the waggon was standing by itself before they got derailed. The guard at this time was walking along the six-feet space beside the leading waggon of the 27. It was possible for me to send my fireman back from Easthaven, or wherever I discovered the train to have *parted, to have obtained*, if I thought it was more advisable, permission from the guard to work the engine back on the facing road to the derailed waggons. I think it would have taken two hours for the fireman to have done this, and the plan that I arranged with the signalman was therefore carried out, as I thought it was the quickest way of getting the road clear. The name of the driver of the second engine was David Gilland. I instructed him at Easthaven to take the waggons, if it was found possible, into the siding and wait there for me, whilst I went back and tried to push the waggons out.

John Morris, goods guard, North British Railway, states: I have 32 years' service with the North British Railway. I have been guard about 30 years. I came on duty on Thursday, 27th December, at 12.5 p.m. I was with driver Boyd. I was relieved at Elliot Junction at 2.10 p.m. on the 28th December. There was no means of getting relief earlier, owing to the breakdown of the telegraph wires, &c. We left Aberdeen at 7.21 p.m. for Dundee, with 12 loaded and 16 empty four-wheeled waggons and vans, and a brake-van in the rear, with one engine. At Montrose there were 17 loaded and two empty waggons *added* and seven *taken off*, leaving 23 loaded, 16 empties, and a van. We therefore had 40 altogether behind the engines. We got to Arbroath at 7 a.m. The main roads through the station were at that time clear. We lifted one more waggon at Arbroath, making 41 altogether. We had a second engine on from Montrose. We left Arbroath at 7.30 a.m., with two engines in front, and 41 four-wheeled vehicles. The block had been working from Aberdeen to Stonehaven, but south of Stonehaven we were stopped at all boxes. We were warned at all the boxes that block working had broken down. This was also the case at Arbroath south box and Elliot Junction. About a mile south of Elliot Junction the train went into a snow wreath. The train *became divided in two places*. It was divided between the 10th and 11th and 11th and 12th vehicles from the engine. The train ran for about a quarter of a mile after passing through the wreath. The train then began to run slowly, and I jumped out of the van to put some detonators on the road. I did this, not because I knew that the train had parted at that moment, but because I knew that the block was not working, and I thought there might be something coming up behind. I put two detonators about 100 yards apart behind the train, and I then went forward and found the train had broken as stated. I could not see the front part of the train, and went back three-quarters of a mile and laid detonators to protect the train. I thought an engine whistled after that, and I went back to the train, thinking that the engine-man had observed the break in the train and had come back. When I found it was *not* my engine that had whistled, I went back again towards Elliot Junction. Before I got to Elliot Junction, the engine passed me on the down road to get round about its train. Driver Boyd then came on the up road with his engine, and was trying to propel the waggons behind to catch the single waggon in front, when the two front waggons of the rear portion went off the rails. I went forward before he began pushing the waggons to see if they were all right. When the waggons got derailed I went back to Elliot Junction to get authority from the station master to pull the remaining waggons on the facing road to Elliot Station. I got permission, and as we were drawing the waggons away the tender of the engine got derailed. I asked the driver when he first arrived what his instructions were, and he said, "To push the waggons to Easthaven, and go about them there." I did not think there was much risk of getting the waggons derailed by pushing them. I could get about the permanent way, but it was difficult to walk. In places the snow was from 12 to 14 inches deep, and in other places more.

John Ogilvie, engine driver, N.B. Railway, states:—I am 34 years old. I have 17 or 18 years' service. *I have been driving three years.* I am stationed at Dundee (East). I came on duty on the 27th December at 6 a.m. I came off duty that day at 6 p.m. at Dundee (East). These are my regular hours. I came on duty on the 28th at 6 a.m. I work the goods pilot at Dundee (East). I was ordered to go with the 8.35 a.m. passenger train from Dundee (East) to Arbroath. My engine was No. 198. It is a six-wheels-coupled goods engine with a four-wheeled tender, fitted with the Westinghouse brake working blocks on all wheels. It was in good working order. We arrived at Elliot Junction about 10.1 a.m. There was no communication at Barry, and the train was worked under the "Caution" arrangement from Barry northwards. I was cautioned at Barry and Panmure. At Carnoustie west the distant and home signals for Carnoustie station were clear for us. The signals at Easthaven and Elliot were at "Danger." The signalman at Elliot was down on the ground when we got there. He had detonators down. He stopped us and told us the last train had gone 45 minutes ahead of us. All the signals at Elliot were at "Danger," and we were flagged past the home signal into the station. The signalman here also told us there was no communication to Arbroath. The signals at Arbroath south were *all at "Danger."* We arrived at Arbroath Station about 10.15 a.m. We were stopped at the home signal and waved past it. The signalman told us to draw gently into the station. There was a train at the down platform with an engine in rear of it at that time. We got about half-way along the platform at Arbroath. The train in front of us drew ahead. We followed it, and I watered the engine at the down platform. They tried to get the train ahead of us over the cross-over at the north end of the station, but could not get the points clear; so they pushed it further north and eventually got it over the cross-over at Wellgate. We then drew forward to the Arbroath Junction box between the two cross-overs. We then coupled

off the engine, backed over the cross-over in front of us, and the 9.10 Caledonian train pushed our train clear of the cross-over at Wellgate. The 9.10 train then backed and let my engine on to the west end of the train. We then pulled over the cross-over on to the up road into the station. This would be about 11 a.m. My train then became the 11.15 a.m. up train from Arbroath. We started from the platform and were almost a train length south of Arbroath south box when inspector Hackney arrived on a down special train. He came in with a workmen's special from Ladybank. He said it was no use going down to Elliot as the line was blocked, and he was bringing back passengers that went from Arbroath with the train before us. We then backed into the platform again. The passengers were taken out of the train, and the train drew forward to go into the goods yard. It drew ahead and backed into the goods yard on the down side of the station. We then coupled off the brake van which was next the engine, and inspector Hackney collected his squad of men, put them into the brake van, and we went out to Elliot. When we got to Elliot there was an engine at the station with inspector Souter on it. This engine coupled on in front of us, and we both went out to Dowrie Siding. Inspectors Souter and Hackney were on the front engine. We dug out the tender of the goods engine, and found that it was derailed, and as we had nothing to re-rail it with, we came away back to Elliot. We were backed then off the down road on to the up road to allow the 12.25 p.m. train from Tay Bridge to Aberdeen to pass. This was about 1.30 p.m. We coupled off the goods engine that was in front of us, and my engine with the van went on to Arbroath. Inspector Souter was left with the goods train at Elliot. Inspector Hackney came on to Arbroath with me. We stopped for about an hour and a half just inside the distant signal waiting for the 12.25 p.m. to clear in front of us. In the meantime the goods pilot engine at Arbroath had taken our train out of the goods yard and put it on the up main line between the Arbroath south box and the platform. As soon as the passenger train in front had cleared the cross-over we ran over the cross-over from the down to the up road, and backed on to the standing carriages of my train. This was about 3 o'clock. At this moment there were no passengers in the train. Inspector Hackney was on the ground, and he said we were wanted back at the platform as far as we could get, to load up with passengers. We managed to get three carriages alongside the platform, and five or six coaches were standing clear of the platform west of the bridge. I could not see either the guard or the passengers owing to the bridge. Inspector Hackney was standing on the road halfway along the train, and he got the signal from the guard to start. On receiving these instructions I started the train. We stopped at the south box. The signalman told us he had no telegraph communication, and to proceed with caution. All the signals at Arbroath were at "Danger." We were running chimney first. We ran from Dundee tender first. The wind was blowing violently, snow falling and also drifting along the ground with the wind. We never exceeded a speed of about 20 miles an hour on our way to Elliot. I saw the distant signal for Elliot Junction. The signal-arm was at "Danger." It was not, in my opinion, drooping. It was showing a clear danger signal. It was daylight, and I should not have noticed a light if it had been burning in the signal lamp. Inspector Hackney was on the footplate with me. I saw the up home signal at Elliot Junction when I was about 50 yards from it. The arm was slightly drooping. I took it, notwithstanding, as a "Danger" signal. I did not stop at the signal, as inspector Hackney told me to draw cautiously into the station. There was no fog signalman or flagman at this post, nor at the distant post. No detonators were on the road. We stopped at the platform. We were standing for about 10 minutes before the collision occurred. The snow was driving heavily, and my fireman and I stepped off the footplate to take shelter under the station buildings roof. The hand-brake of the tender was slightly applied at the time. The continuous brakes were all released. The engine, I think, was standing about a carriage-length west of the station buildings. I did not see or hear the N.B. train approaching us. I cannot speak as to its speed. I heard the noise of the collision. My engine as it stood was in a snowdrift. It was driven forward by the force of the collision about an engine-length. I think the snowdrift in front prevented it going further, and the continuous brake, of course, was applied, as the train parted in two places. I do not know of any reason why a train should not have been sent off 5 or 10 minutes after we left. If a train had so left, running tender first with the load of coals on it that I saw when that engine reached Arbroath, I do not think he could have seen over the top of the coal, especially as a driver in such a position would be on the side away from the signals and could not see unless he looked out beyond the fireman. I do not think that, under these circumstances, the driver could have seen the signals from where he stood unless he was at the fireman's side, but if he had seen the signal I think it would have been taken as a "Danger" signal rather than a "Clear" signal. It was not drooping sufficiently to make it a "Clear" signal when I saw it. Driver Gourlay's engine was at the north end of the down platform at Arbroath just as we were pulling over the cross-over on to the up platform. Gourlay was not on the engine at that time. The fireman was on the footplate. I suppose Gourlay was standing at the head of his engine probably on the ballast, but I did not see him. I have a good acquaintance with driver Gourlay. I think Gourlay was one of the most cautious drivers on the road. I know him well. My usual hours are 12. I have no time booked off for meals. One shunter relieves the other for his meals. After the collision I went along the platform and found guard Leslie lying there *in extremis*. I and another man carried him into the waiting room. I then got on to the van behind the North British engine, and climbed along the side of the van, then along the engine which was turned on its side, and I in through the window of the cab. I noticed that the wheels of the engine were revolving. Steam was blowing very bad. The blow-off cock seemed to have been knocked off, and the steam was blowing downwards. I closed the regulator. It was very nearly full open at the time. Driver Gourlay was lying on the side of the cab with his hand out. He was under the seat of the cab, and his head was in among the coals. He could speak then, but it was half an hour before I could get his hand released. I had to dig out the frozen ground and clear away the coals before I could get him clear. The brake handle was in the release position. It might have been knocked into that position if Gourlay had had his hand on it. The only way I think it could have been put into the release position was by Gourlay falling against it. The brake must I think, have been in the release position when the collision occurred. I wanted him to stay in the cab as he was soaking with steam. The steam

was blowing all round the engine. The fire-box door was open, and I saw a big fire burning. None of the fire was thrown out. The first thing I asked him when he was relieved was where his mate was. Gourlay did not seem to understand what had happened. By this time most of the steam had blown off the boiler. Gourlay was not unconscious during this half-hour, but he was groaning and wishing he could get his hand out. After I asked him where his mate was, I heard a voice from underneath where I was working saying "I am here." I climbed out of the cab window again, and went toward the siding road south of the engine. I looked underneath the boiler, and saw the fireman. Gourlay in the meantime crawled out over the coals on to the south side of the engine, and the next time I saw him he was on the platform. This would be about a quarter of an hour afterwards. I met inspector McLellan almost at the same moment. He asked me to try and get Gourlay into shelter somewhere. I wanted him to go up to the signal-box, but he would not go; so I put him into a compartment of the local train, but he got out again. I saw we could do nothing for him. I then went to look after the fireman and get him some brandy. I saw Gourlay again several times on the platform. He was then pretty excited. He was dazed and seemed altogether unconscious of what had happened. He did not seem to understand what had actually caused the accident. I did not notice any signs of drink about driver Gourlay either when he was in the cab, or when I saw him afterwards on the platform. I saw him again in Dundee after our train got there, when he was walking with two gentlemen. When I saw him walking on the platform at Elliot he appeared to be walking quite steadily and firmly. All that I could see that was different about him was that he did not seem to understand what had happened. I think I should have smelt drink when I was with him in the cab for half-an-hour trying to release him, if there had been signs of it. I spoke to the fireman on more than one occasion, but nothing was said about the accident. Gourlay might have had his hand on the Westinghouse brake handle, but I do not think from the position I found him in, that he could have knocked the regulator into the open position. I am not, however, prepared to say it was impossible. It took us about eight minutes to run from Arbroath to Elliot. There were no wreaths of snow, or none to speak of, between Arbroath and Elliot. I cannot say whether inspector Souter returned with the two engines to Elliot Junction, when we came back from Dowrie siding—I know that he did not return with us to Arbroath.

Harry Henson, fireman, North British Railway, states: I have five years' service last July. I have been fireman two years. I had the same hours as driver Ogilvie on the 27th and 28th December. I saw all the signals on the journey we made from Arbroath to Elliot after 3 o'clock. The wind was blowing terrific, and snow was falling and drifting. It was worse when we came out of the cutting south of Arbroath. There was not much to speak of in the way of snow wreaths between these places. I do not think we could see the distant signal for Elliot until we were within 20 yards of it, and about the same at the up home signal. The up distant signal was at "danger" when we passed it. There was a slight droop on this signal, but it was not a doubtful signal. The up home signal was also at "danger." I did not notice any droop on the up home signal. It was still daylight. Inspector Hackney told us to pass this signal cautiously. I did not see or hear the North British train approach. I cannot speak as to the speed. After the collision I went back to our own engine. It was moved forward about an engine length by the force of the collision. Our train parted in two places, I think as the result of the collision. After seeing that everything was right on the engine I went back, and did all that I could to help. I saw Gourlay climb out of the cab. This would be at least three quarters of an hour after the collision. I did not help him on to the platform, but I saw another fireman who was travelling as a passenger in our train trying to help him up, but Gourlay said he would get up himself. It was a little after this that I saw Gourlay again. He was walking on the platform. He seemed to be in a dazed condition from the result of the accident. I did not notice anything peculiar in his walk. I did not speak to him. He was not staggering. I only saw him once after that. A driver on a big tender would have a difficulty in seeing past the tender. He would certainly not be in as good a position as we were to see the signals. We coupled on to a second engine at Elliot Station before proceeding to Dowrie siding. We left this engine at Elliot Station when we went to Arbroath with the van only. I don't know what happened to this engine. I cannot say what the exact time of the collision was. The great height of these signals would not prevent one seeing them when running tender first at as close a range as 20 yards, but the violence of the storm would not give a good chance of observing them.

James Anderson, passenger guard, states:—I have about thirty years' service with the Caledonian Railway. I have been 11 years a passenger guard. I came on duty on the 27th December at 8.10 a.m. I was due off duty at Dundee (East) at 7.35 p.m. I work between Dundee and Arbroath sometimes twice, sometimes three times a day. I work two or three trains a day. I started duty on the 28th December at the same time, viz., 8.10 a.m. I worked the 8.35 a.m. down train to Arbroath. It was made up of nine vehicles as follows:—four-wheeled brake third, six-wheeled third-class, six-wheeled third-class, six-wheeled first-class, six-wheeled first-class, six-wheeled third-class, six-wheeled third-class, first-class eight-wheeled bogie and six-wheeled brake van in rear. All wheels of the coaching stock, except the middle wheels of the six-wheeled vehicles, were braked with blocks actuated by the Westinghouse brake. The brake was in good working order. At Barry we heard the block was broken down. We were stopped at Panmure, and told that there was no block working, and we were sent on under "caution." We received the same caution at all the signal boxes up to Arbroath. Some of the signals were working, and some were not. I did not see any fog signalmen on the line. I arrived at Arbroath about 10.20 a.m. We stopped first just outside Arbroath Station, then drew into the platform, and after the passengers were out of the train we drew ahead again, and I am told the engine was uncoupled. A carriage shunter was then in charge of the train. I joined the train again at 11.15 a.m. standing at Arbroath Station up platform. All the coaches were standing alongside the platform. We were stopped at the south box, and told it was no use going further. The train was put back to the station, and the passengers turned out. The train was then put in charge of a shunter, and went into the goods yard. I remained in the station a short time, and then

went away to get some dinner. I understood that my engine had been taken away to try to clear the road to Elliot; so I thought I was safe in going away. I went up with another guard stationed at Arbroath to his house and had dinner. This would be about 11.45 a.m., and I got back about 12.40 p.m. I waited on at the station for my train to get ahead. I then heard that my engine had got back from Elliot Junction. The carriages of my train before this had been taken out of the goods yard, and left on the up line outside the station, and I saw the engine put the carriages back into the station. There would be about five on the north side of the bridge. About four of the carriages in front—the engine being now at the other end of the train—were outside the platform and could not be approached except by stepping from the ballast. I did not see any people going through the bridge on to the front part of the train. A rough estimate of the number of people in the train would be from 40 to 50 altogether. I think all these people were in the last four carriages. The foreman porter, Alexander Thom, gave me the signal to go. I do not remember speaking to the station master after 11.15 a.m., the first time when we left the station, and I cannot remember whether he was on the platform at the time we left. The train left at 3.14 p.m. by my time. The train was stopped at the south box, and I saw the signalman with a red flag in his hand. I was riding in the last vehicle. I saw the up distant signal and up home signal when we were close to them. Both of these signals were at "Danger" when I passed them. We arrived at Elliot about 3.19. I think, as nearly as I can calculate, the actual time occupied was about 5½ minutes. The first thing I saw when I stepped out on to the platform was the home signal. It was at "Danger." There was a very slight droop on the arm. In my opinion it was a good enough "Danger" signal. I was trying to put up the windows of the carriages when the accident occurred, and was between the third and fourth vehicles from the front when the accident took place. I did not see or hear the train approach. Some of the passengers might have got out of the train behind me, but I did not see them. Before the collision I spoke to the station master, and asked what we were to do. He said "We must just wait until the Red Cap comes." The next thing he said to me was "We will get the train forward a bit, and perhaps get it into the siding." "We may have a time to wait," he said "before the pilotman comes." As he said this I was hurrying to the windows in front, as I have explained. I am aware that if the up home signal had been unworkable we should have been flagged past it, but I don't know whether the signal was lowered to safety and again put to "Danger." I do not think it was necessary to protect the rear of my train as both the distant and home signals were behind it, and both of them were at "Danger." It never occurred to me to do anything of this sort, although there was a heavy blizzard blowing, and I had seen no fog signalmen out; nor did I suggest it to the station master. I did not see driver Gourlay until after 5 p.m., just before we were going away. I did not speak to him. He was walking on the platform with a gentleman when I saw him. He appeared to be in an excited condition. I heard detonators exploded at Panmure and Easthaven just in front of the signal-boxes, but there were no fog signalmen. These detonators must have been put down by the signalmen. I understood the object of these particular detonators were to stop the driver, so that he could be cautioned and warned of the condition of affairs. A North British guard got into the brake compartment just shortly before we started. I don't know who the guard was. His name, I understand, was Leslie, and he was killed. In the excitement of the moment I forgot to take out my watch. I therefore cannot give the exact time of the collision. I was also within "Station limits," and in accordance with Rules 90 and 168, the main responsibility rests with the station master.

James Kinnear, passenger guard, North British Railway, states: I have 29 years' service, and about 24 years as a passenger guard. I came on duty on the 27th December at 7 a.m., and my tour of ordinary duty finishes at 5.45 p.m. at Edinburgh. On the 28th December I came on duty at 7 a.m. I had charge of the 7.35 a.m. train from Edinburgh to Aberdeen. The train consisted of five vehicles, viz., corridor eight-wheeled third class coach, North British six-wheeled composite, eight-wheeled North British third class corridor, six-wheeled lavatory composite, and six-wheeled brake van. The train was fitted with the Westinghouse brake. All the wheels of the train were braked, with the exception of the centre wheels of the three six-wheeled vehicles. We were stopped by signals at Easthaven on the way down from 10.19 to 10.22 a.m. I did not get any information from this box, or from other boxes, that the block was broken down. We were stopped again at Elliot Junction by signals from 10.29 to 10.33 a.m. Signals were lowered for us to go on. We stopped at Arbroath south box from 10.37 to 10.39. On our journey down to this point there were a few showers of snow. A moderate wind was blowing. We arrived at Arbroath platform at 10.41 a.m. After a little time the Caledonian train in front of us moved on, and we drew up at Arbroath Junction cabin. We were told again to draw up to Wellgate to get through the road. There we backed over on to the up main road. We came to rest just north of the platform about 11.22. We stood about 8 minutes at Arbroath Junction box. We stood there in this position until we got orders to get the engine round. The orders were received from the station master at Arbroath to get the engine round. When we came to a stand on the up road all the five vehicles, as well as the engine, were alongside the platform. I saw the driver once during the time he was standing at the up platform. When I saw him, inspector McLellan was talking to him. This was about 1.30 p.m. I did not speak to the driver, and I noticed nothing remarkable about his manner or behaviour. I think it was after the local train left that they backed us down to the platform past the south box to get the engine round. I was in the van when the carriages came back. When the engine backed up to the carriages there was no jar or jolt. The station master then spoke to me. He said "All right! I have told the driver to stop at all stations to Dundee with the exception of Stannergate." He said nothing more. I was not informed by anybody that block working was out of use, and thought the traffic was still worked on it. I then went forward to the engine driver and gave him instructions to stop at all stations with the exception of Stannergate. That was all I said to him, and he replied "All right! Jimmie." Before I started I told the driver to keep a look-out, because a while before the snow had commenced falling heavily, and the wind got stronger. I warned him to go carefully because of the snow. The train was stopped dead at the box. The signalman came out of his box

down the steps on to the first landing. He said something to the driver. I did not hear what it was. It was blowing a blinding drift after we got out of the cutting. I lowered the window on the left hand side to see if I could see anything, but the drift was so heavy that I could not distinguish anything at all. As far as I can remember we ran slowly after leaving Arbroath south box where the gradient rises a little. The speed at the latter part of the journey was greater than at the beginning of it. I do not think that the maximum speed at any moment during this journey would be more than from 16 to 20 miles an hour. Shortly after leaving Arbroath, when I could see very little on the left-hand side, I looked out on the right-hand side. I did not, therefore, see the distant and home signals at Elliot Junction. I did not think we had arrived at the station when the crash occurred. We left Arbroath platform at 3.26 p.m. We went very slowly to the box at Arbroath south, and were stopped there from 3.28 to 3.29. When I looked at my watch after the collision it was 3.35 p.m. I was thrown over the sleeper fence at the side of the railway, and after picking myself up I climbed over the fence. I got up at once from the ground, climbed over the sleeper fence, and then looked at my watch. I do not think that any more than a minute or a minute and a half would be required for this. I did not notice what the position of the up home signal was when I recovered myself on the platform. I was in a dazed condition for about 15 minutes. I had a good number of parcels in my van received at Arbroath. I had my book and waybills in my hand when the actual collision occurred. Assistant guard Hardie was in the van with me doing duty. The weather was very bad, and the snow very thick indeed. There were no fog signals on the line, and I saw no fog signalmen. I saw the driver about an hour after the accident occurred, but I did not speak to him. I saw him walking up and down the platform several times, but I noticed nothing more from his behaviour than if he had been suffering from a severe shock. I have known him for over 20 years. I should describe him as a very sober, conscientious, and cautious man, from my knowledge. I tested the Westinghouse brake from the front van and at the rear of the train before leaving Arbroath. It was all right. The gauge showed a pressure of 58 lbs. when leaving Arbroath. The only thing that I can remember with regard to the application of the brake was that I heard a jarring sound just immediately before we struck. If it had been applied when the engine passed the home signal I should have noticed it. The whistle was not sounded approaching Elliot Station. It is usual to sound the whistle on entering a station. I consider that in all the circumstances of the storm, and the difficulty of knowing where one was, that I was justified in attending to parcels at that time, instead of being on the look-out to find my whereabouts, as I thought that the speed of the train was not dangerous. I am quite satisfied in my mind that driver Gourlay knew he was to stop at Elliot Station. The station master at Arbroath told me that he had told the driver, and I told the driver myself.

James Hardie, assistant passenger guard, North British Railway, states: I have 36 years' service, 34 as guard. I came on duty on the 27th December at 6.35 a.m., and we were due in Glasgow on return at 6.27 p.m. I join the Edinburgh portion at Dalmeny. I came off duty at 1.10 p.m. on the 27th December. I left Glasgow on the morning of the 28th at 6.35 a.m. I heard at Dundee that block working had broken down, but I was not informed officially. I cannot say whether the signals between Dundee and Arbroath were in use or not on our journey down. I left Arbroath at 3.26 p.m. on our return. It was about two minutes after, I should think, that we left the south signal-box. I do not think the speed ever exceeded from 20 to 25 miles an hour on the journey. I think it was quite as high as that when the collision occurred. I was arranging the mails. There were seven bags of mails, six for Edinburgh and one for Dundee. I was doing parcel mail work. Kinnear was working with the bills. Kinnear looked out after leaving Arbroath, but could see nothing. He said he could see nothing. I did not think we were so near the junction when the collision occurred. I did not see any of the signals on the way. I did not see driver Gourlay at Arbroath before we started back. I saw the driver about an hour and a half after the accident at Elliot Junction. He was standing when I saw him. He looked dazed and excited, but I think any peculiarity about him was accounted for by the shock he had had in the accident. I got fog signals at once and went back and protected the rear of my train. I started away about three minutes after the collision. I could then see the home signal very clearly from the rear of the train. It was drooping a little, but it would be taken for a "Danger" signal, I think. The home signal was drooping when I saw it at an angle of about 10 degrees. About six or seven minutes afterwards, when I passed the signal, I turned half round to have another look at it from the direction we approached it, and just at that moment I noticed the semaphore arm lift into the full horizontal position. Mr. Mackay, relief clerk, Dundee and Arbroath Joint Line, was going back with me to get medical assistance at Arbroath. I drew his attention to the signal after we had passed it that it was in the horizontal position. I said: "There's that signal full on now." I did not look out for signals during our journey from Arbroath to Dundee. I think the weather was bad enough for fogmen to be called out. There were no fogmen at the distant signal as I went back to protect the train. I am aware it is the duty of guards to keep a good look-out. I did not do so on this occasion, though there were two of us in the van, because it is a custom amongst us for the head guard to do this work.

William Greenhorn, partner of the firm of Wilson, Kerr & Co., Edinburgh, states: I was asked by Mr. Gram to go with the first local train, but not having my bag, I had to wait for the North British train. I got into a first class carriage about the middle of the train. My attention was not in any way drawn to the speed of the train. I was just going into the lavatory at the time of the collision. I was knocked down and injured. For a few moments I lost consciousness. My friend who was in the carriage was gone when I recovered myself. Guard Kinnear asked me "Mr. Greenhorn, are you hurt?" I said, "I don't think so." He said, "Give me your bag." I said, "Wait a minute," and sat down. Kinnear then came forward from the sea side to the carriage, and remarked "This is a terrible affair!" I pulled myself together, handed out my bag, and he assisted me out of the carriage. I looked along and saw the scene of the collision, and assisted the unfortunate people who were in need of it. I forgot at the time my own injuries. I saw Gourlay in the waiting room some time after the collision. He was then answering questions addressed to him by two pressmen. I maintain

at that time, judging from his appearance and behaviour, that he was perfectly sober. I travelled with Gourlay afterwards in the same compartment of the train that took him to Dundee (East) Station. The compartment was unlighted. I had considerable conversation with him during the journey. He was speaking about his service with the railway company, and also about having driven members of the Royal Family. He also was anxious to know what his family would think of his unfortunate position. I am quite satisfied that throughout this journey his speech and behaviour were those of a perfectly sober man. I offered my services at Dundee (East) to take Gourlay to a doctor, or to the infirmary. Kinnear, the guard, came up at that moment and said he was going to take Gourlay. I met the two men again after I had had some food at Tay Bridge Station. I could see that I could do nothing more for Gourlay, and left him in charge of guard Kinnear and the assistant station master, and then said "good night" to him. There was a strong wind blowing on the journey between Arbroath and Elliot, and the drift of the snow caused by this wind must have made it very difficult for a driver to see anything. I think that the available railway staff at Elliot Station did everything in their power to extricate and assist the injured people. If there had been more staff immediately available no doubt the work would have proceeded more rapidly, but I think that all present did their utmost to cope with the emergency. He (Gourlay) specially mentioned in his conversation with me between Elliot and Dundee that the signals approaching Elliot Station were in the "*Clear*" position when he passed them.

Evidence taken at Arbroath on the 5th January, 1907.

Alfred Kitson Bird, states: I am employed with my father, who is a draper in Arbroath. I was at Arbroath Station at 10 a.m. on the 28th December until about 12.20 p.m. I was there again about 3.30. After walking about the station for about half-an-hour, between 11.30 and 12, I was standing with my brother looking at an engine at the north end of the up platform. After a bit the engine driver came out of the cab on to the platform, and began looking round the engine. He then went back into his cab. The stoker was oiling the brasses and handles with an oily rag. My brother said "Isn't that a typical engine driver?" We were both admiring him, and the stoker. We saw a gentleman whom we thought was a passenger coming along the platform. He got on to the cab of the engine, and then the three of them stood talking for a few minutes. While standing with their backs towards us inside the cab of the engine I saw the gentleman produce what appeared to be a bottle from his pocket. I saw both the driver and fireman take a drink out of the bottle. I cannot say whether the gentleman drank out of the bottle before the driver and fireman. I remember very clearly how the stoker drank, for he was holding a rag in his hand and cleaned his hands with it before catching hold of the bottle. The driver when I saw him on the platform about that time was apparently quite sober. He was walking steadily on the platform. He had no appearance of being the worse for drink. Of course, I have no knowledge as to the amount that each of these men drank, or what the liquid was. We were still standing when the gentleman went away from the engine, and we saw a porter go on to the cab. He was talking to the engine driver when a second porter came along and said to the first porter "Come along to your dinner, it is after 12." I mention this to corroborate the time stated. That is all I can say as to the driver of the train. I judged it was the driver of the North British train that caused the collision for that same evening my brother came in and said to me "Who do you think is the man that was driving the train that caused the collision?" He said, "It was the same man that we saw getting the drink at the platform in Arbroath Station. At the time I saw the driver, and this incident occurred, I think he was quite capable of looking after his duties as a driver. I cannot speak as to the size of the bottle. My brother said to me at the time "That man could be fined heavily for giving drink to the driver." My impression is that the three men were trying to conceal from others the fact that they were drinking. If need be, my brother Walter is prepared to confirm this statement in all material particulars. My brother recognised the driver and the stoker because he was at the scene of the accident half-an-hour after the collision and saw the men there. My brother, I recollect, in the evening of that day, when he returned from Elliot, said that he thought the driver when he saw him at Elliot Junction after the collision was under the influence of drink. As far as I remember I think my brother saw police sergeant Alexander after the accident at Elliot Station. Of course, I have no knowledge as to whether the contents of the bottle were alcohol, tea, or coffee.

Charles Smith Crockett, Arbroath, states: I am employed in a public-house called the Victoria Bar, occupied by my mother. It is situated close to the side entrance on the south side of the station. I remember a railway man coming into the bar and speaking to me on the 28th. He said he did not think he would get away because of the weather. He was a big tall man with a grey beard. He came in with two other railway men. They were drivers or firemen, I think, not guards. The other men called for something to drink. One, I think, had some beer, and the other threepence worth of whiskey for the big tall man. He drank off the whiskey. I know that the tall man referred to who had the whiskey was driver Gourlay, as I have been in Dundee since and recognised the man. That was all I saw of the man, and at that moment as far as I can judge he was perfectly sober and not in any way the worse for drink. The other two men that were in the bar at the same time were both strangers to me, and I had never seen them before. I cannot say what their names were. They had on blue overalls, but no badges. I am not certain that these other two men were engine men. They may possibly have been permanent way men. Gourlay was a stranger to me also. There were many other strangers came into the bar that day, and I should not be able to recognise them all. I was able to recognise Gourlay at Dundee, as I was talking to him for some little time at the bar about the weather. My evidence was first of all taken by the police in this case. I am quite satisfied in my mind that it was between 12 and 12.30 p.m. on the 28th that this incident occurred.

David Morrison, porter, Arbroath Station, states: I have about three years' service at Arbroath. My hours of duty on the 28th December were from 9 a.m. to 9 p.m. I have often seen Gourlay before the 28th and know him well by sight. I saw him on the 28th between 11 and 12 o'clock. He was on his engine cab. His engine was then standing at the north end of the up platform. I spoke to him about the snow block and the journey through Fife. I saw him

again about 2 p.m. The engine was still standing in the same place. He was on the cab then. I had some conversation with him to the same effect at that time. I saw a passenger, Williams by name, speak to Gourlay about 1 o'clock. On the second occasion I saw Gourlay, he was eating his dinner sitting in the cab. From the way he answered some questions I thought he had been having a drink. I think notwithstanding that he was capable enough to do his work. I gathered he had been having a drink from the appearance of his face. It looked sickly. His face looked white. He appeared to me as if he was going to be sick. I did not see him on any occasion drinking. The fireman on these two occasions was cleaning his engine. On the second occasion I saw him, he was first standing on the platform. He then went into the cab and sat down and began to eat some food. I spoke to him when he was sitting down in the cab. I, myself, was in the cab. I did not smell drink about him. Between 11 and 12 he was in his usual condition and was right enough. It was after he had eaten something that I noticed he looked sickly. I was first called as a witness before the Procurator Fiscal.

James Briggs, passenger guard, North British Railway, states:—I have known Gourlay by sight for some time. I have not spoken to him previously to the 28th December. I spoke to him first about 2 p.m. He was on his engine which was standing at the north end of the up platform. He had apparently been taking some food. I got on to the footplate, turned my back to the firebox, and said, "It's a very cold day, George." He said something to me which I could not understand. I left the engine almost immediately. I formed the opinion that he had been drinking. I formed this opinion from the way he spoke. He mumbled. He was standing in the corner of the engine. I did not form the opinion that the man was incapable of doing his duty. I really did not think anything more about it at the time. It never occurred to me to think at the time whether he was fit for duty or not. I cannot, therefore, say whether he was fit to do his duty or not. I was about a minute on the footplate altogether and did not carry on any lengthy conversation with him. I made the one remark that it was very cold. I have not spoken to Gourlay previously, and, therefore have no knowledge of what his manner of speech is ordinarily. I did not smell any drink on him. There was nothing unusual in the appearance of his face. I did not see the fireman on the footplate at that time. I had seen the driver about an hour before this. At that time his cab was crowded with passengers. The fireman was there at that time. I stepped on to the footplate on this first occasion to hear what was being said. They were evidently telling stories to each other. I did not see Gourlay then as the cab was crowded with people, but he might have been out of sight. I did not see any bottles produced by the passengers on the first occasion I was on the engine. I was waiting for the 7.5 a.m. North British train from Arbroath to Dundee which was snowed up. I did not consider that I was responsible for reporting the condition of the driver when I saw him on the second occasion. Someone informed the police that I was seen on the engine, and I was then asked by the police to give evidence to the Procurator Fiscal. I did not again see the driver until the second occasion, after 2 p.m.

James Anderson, passenger guard, re-examined, states: There was one tail lamp on my train lit when we left Arbroath. The side lights were not lit when I left Arbroath, as it was good daylight. I did not light the red side lights. It was only when I got out of the cutting at Arbroath that I knew it was snowing heavily. I was not informed that there was a special train following us. I am aware of the fact that a special train following has to be shown on the preceding train by an additional tail light. If I had been aware that there was a special train following I should have attached this light, but I should have had to ask for another lamp, not having one in my own possession. I know there are spare lamps available at Arbroath if needed.

Charles William Smith Whitton, chief parcels clerk, Arbroath, states: I have seen driver Gourlay on several occasions during the last two or three years passing through Arbroath Station, but have never, previous to the 28th December had occasion to speak to him. About 2.40, I was on the platform in connection with parcels from Forfar. During that time it was very cold and I got on to engine No. 324 (Gourlay's) which was standing at the north end of the main up platform. I spoke to the fireman. I pointed to the corner of the cab and asked if that was the vacuum brake. The driver was standing there at the time in the corner. He had something in his hand working in the left hand corner. I asked the fireman to show me the working of the vacuum brake. He said the steam was off and I said "Don't bother, just show me how it is worked." He showed me the positions of the brake handle and then I turned round and asked him what some gear was in the corner. He said it was the steam reversing gear. He also showed me how this worked. I think I was on the engine about 10 minutes altogether. When the driver turned round he had his head out of the window. From his position I thought he was either vomiting, or attempting to vomit, but I heard no noise and cannot be certain whether this was the case. On one occasion he turned round and said something to the fireman, but I did not understand what it was, as it was spoken with a thick utterance. I did not address the driver. I gathered at the time that there was something wrong with the driver. I did not conclude that it was the result of drink. It may have been the result of illness or exposure, but I am satisfied there was something wrong with the man. I cannot say what tool he had in his hand. I think he laid the tool down, whatever it was, before he put his head out of the window. I did not say anything about the condition of the driver. It never entered into my head that the driver was suffering from the effects of drink, though I saw clearly that there was something wrong with him.

Francis Brown, bleachfield worker, Elliot, states: I live at Elliot. I saw Gourlay at Elliot Junction after the wreck. I think this was about half an hour after the collision. I took hold of him. He seemed to be very feeble and dazed looking. I asked him if he was bad, and he said he was. I asked him if a "half" of brandy would do him any good. He said he thought it would. I gave him between a half and three-quarters of a glass of brandy. I had a small tumbler and bottle of brandy with me. The tumbler would have held about two glasses, and as far as I can judge I gave him the tumbler not more than half full, and he drank it, and he said he was the better for it. From what I saw of him, and when I spoke to him, I had not the least idea that the man was the worse for drink.

There was no smell of drink about him. When I first saw him he seemed to be in a feeble condition. I attributed anything that appeared to be unusual in his appearance to the effects of the collision and the shock he had received, and certainly not to the effects of drink. I also gave the fireman some brandy. About 9.30 p.m. I took out the mail bags from the brake van and carried them into the station. There seemed to be one bag torn, and I could not get it out.

Alexander Thom, foreman porter at Arbroath Station, states: I have about 34 years' service. I came on duty at 6 a.m. on the 28th December, and went off between 9 and 10 p.m. I am ordinarily off duty at 6 p.m. I was in the station all the time between 12 and 3. I spoke to the driver of the North British train between 3 and 4 on the 28th December. I told him to call at all stations, and go with caution. The station master told me to give these orders. The engine was then underneath the bridge at the water column. The driver answered me. He said, "All right." He seemed to be working at something on his engine, and turned round his face when he spoke to me. I think I spoke to him when he was getting round the train. That was about 10 minutes before the train started. I also spoke to the driver when the engine got round its train. I noticed nothing peculiar in the way he spoke to me on these two occasions. I noticed no sign to show that he had been drinking.

George Edwards, porter, Elliot Junction, states: I have two months' service. One of my duties is to light the up distant and up home signals. The lamps on these signals were left burning all day. The last time I was at these signals was Thursday, 27th December. I took out the lamps on Saturday morning the 29th December, and brought them to the signal-box, and they were still burning. I cannot say in what condition the lamps were when I took them down. The lamps are wound up and down to their position on the signal post. My duties are to clean and oil the lamps.

James Mackay, relief clerk, states: I am employed on the Joint Line as relief clerk. I arrived at Elliot on the morning of the 28th about 10.30 a.m. on my way to Arbroath. As there were three clerks in the parcel office at Arbroath, and as there were very few trains going in and out of that station, I decided to stop at Elliot and assist them there. In the forenoon Mr. Carnegie asked for my assistance to clear the down refuge siding of snow, as it was intended to put the broken-down North British goods train into this siding when the waggons were drawn back to Elliot Station, but as the waggons did not arrive, and we heard that they had got into another wreath of snow, I said to the station-master that I would walk towards Dowrie siding and see whether I could assist them. I took a shovel with me. When I arrived there I found that they had stopped trying to get the waggons out. So I returned and remained in a surfaceman's hut about 100 yards on the north-east side of the derailed train. After waiting a considerable time two engines arrived with inspector Hackney on them to assist the broken-down train. I helped them to clear away the snow. We found that the tender was off the rails and gave it up. The two engines and van propelled back to Elliot Junction. I got out at Elliot Junction. The next thing I remember is the Joint train arriving at the station from Arbroath about 3.20. I went along to the west end of the building. I was standing there with inspector Hackney and guard Anderson. Mr. Carnegie then came forward and said he would get the passengers out of the train and put the train into the refuge siding. If that was not possible, he would draw the train well forward on the up line clear of the station. We then were going to commence to get the passengers out of the carriages, but just at that moment the crash came. I helped to carry away one of the injured who had been thrown out of the carriage on to the platform. As I was going away just after this, inspector Hackney met me and said "For God's sake go away to Arbroath and get as many doctors as you can to help us." I started away at once along the railway. After I had gone a little way two men overtook me—a porter and another man whom I thought was a permanent way man. I asked them where they were going, and they said they were ordered to Arbroath for doctors. I said there was no use of us all going, so I turned and on my way back to the station I met guard Hardie. I asked him what he was doing and he said he was going back to protect the train. He said his back was very sore, so I said I would assist him with the fog signals. I was putting on a fog signal when he made some remark about the signal drooping. He also said it was not a signal that a driver could take as a "clear" one. At this time we were between the up home and the distant signal. He turned and said "Oh! that signal is at danger now." I immediately looked up and found that it was so. It was standing perfectly horizontal. I had not looked at the signal previously. After putting fog signals on the road I said I would walk right back to Arbroath. I saw the distant signal then and it was in its proper danger position. It was 4 or after 4 p.m. when I got to Arbroath. I cannot say definitely what the time of the collision was. I was not in charge of Elliot Station, Mr. Carnegie was. I came back to Elliot with the second engine that left Arbroath after the accident. I think I must have got back to Elliot within an hour of the collision. I spoke to Police Sergeant Alexander there and he said that the doctors were examining Gourlay. Just after this I met Alexander again, and he said "Look at the driver." I looked at him several times and he seemed to me to have a dazed like appearance, but I did not conclude that he was suffering from the effects of drink. If there had not been an accident, I should have thought he was suffering from the effects of drink, but in view of the accident it was difficult to say whether his condition might not have been due to the accident. It never occurred to me, although I am fully aware of the duties of a station-master, to protect the rear of the local train as it stood at the station. Mr. Carnegie told me that the up distant signal had been tied up.

Peter Smart, signal inspector, North British Railway, states:—I have the supervision of the signalling arrangements on the Joint Line. Elliot Junction was re-signalled and a new frame fitted in the cabin about 18 months ago. It was inspected by the Board of Trade in January last. There were no requirements made. The distant signal wires in both directions are fitted with the ordinary regulator hands for compensating the wires. For the nearer signals, such as the home signals, there is an arrangement fitted with a lever by which a wire can be tautened or slackened by a hook and shackle. If the signals are not regulated by these appliances in very severe weather, a slight droop might result in the semaphore arms. I got to Elliot Junction on the morning of the 29th December, and asked the

signalman whether he had let out his distant signal wire. He said "Yes." I did not ask him about the up home signal. I then went out to the up home signal and found it at danger. There was no droop in the signal at that time and it could not be lifted. The balance weight arm could not be lifted as the whole end was frozen up. In my opinion it is the duty of lampmen to clean the spectacles. The signalman told me on that occasion when I saw him that for nearly two days the up and down home and down distant signals had not been worked. I did not ask him how he brought the trains past his signals. When I arrived at the box it would have been no use trying to regulate the wires, because of the snow on them, and because the pulleys in which the signal rodding wires worked were frozen up.

William Ferrier, signal fitter, North British Railway, states:—I am in charge of the signalling arrangements between Dundee East and St. Vigeans Junction. We clean the spectacles when we oil the lamps. I have two men. One of these men, John Philipps tells me he oiled the signals and cleaned the spectacles about a week previous to the accident. I was in Elliot Junction signal-box on the night of the 27th December. I was engaged there in clearing some points that had got jammed with snow. I asked the signalman then whether everything was working right. This was about 3 p.m. Everything was working right then. He said there was nothing wrong. On that day I went out to see the down starting signal and I remember turning right round and looking at the up home signal to see if it was showing a full light. The lampman was out and I saw him putting the lamps up at the time. I saw the full red light show in the danger position. Snow began to fall about a quarter of an hour before that. There was no snow at that time on the blades of the signals. I did not receive any message on the 28th about the signals or the wires not working. I was there again about 7.30 a.m. on the 29th. At that time they were so snowed up that we could not work or lower the semaphore arms until the snow was removed from the balance weight arm. At that time both the up distant and the up home signals were tied in the "danger" position. I was at Broughty Ferry and Monifieth on the 28th December. There we had to cut the signal wires to prevent the signals being pulled out of the "danger" position by the weight of snow on the wires. When I arrived on the morning of the 29th at Elliot Junction, there was snow upon the signal wires also, but not so much as on the up distant signal wire at Monifieth. The only wire we had to cut at Monifieth was the up distant signal. On the 29th, the down home signal, the down inner home, the down starter, and the up inner home at Elliot Junction, all had a droop; the latter signal went to "danger" when I took the snow off the balance arm. There was a droop on five of the signals, but the worst droop was on the up starting signal where it amounted to six inches. The up distant was in the proper "danger" position. The up outer home had a slight droop in it. I would have taken the position of this signal as a "danger" signal. The other signals I would have taken as doubtful signals. I do not think that at night any of them would have shown anything but a red light. When I was in the signal-box at 8.30 on the morning of the 29th December the signalman told me that he could see his signals. The droop of the signal-arms was due partly to the snow on the blades, and partly to the snow on the wires. The six inches mentioned in my statement was the result of a guess made by me of the droop of the signal. I did not measure it. When I saw the signals by daylight they were drooping in the manner I have described.

James Bell, C.E., engineer-in-chief, North British Railway, states: I hand in two plans, one showing the line from St. Vigeans Junction to Easthaven on a scale of 25 inches to the mile. This plan shows all signal-boxes, signals, connections, stations, &c., and the point of collision at Elliot Junction. It also contains a section showing the gradient. The second is a large plan of Elliot Junction drawn to a scale of 33 feet to the inch, showing the position of the trains after the collision, and all the signals. Damage to permanent way after the collision at Elliot Station was, eight chairs broken, four rails bent, and ten sleepers damaged. Inspector Hackney would have been perfectly justified in employing extra hands for any purpose that was necessary in the case of an emergency or snow storm, and I may mention that the permanent way inspector a few miles north of Arbroath engaged about 30 additional men in connection with the snow storm. This was done without my authority having been previously obtained for it, and I quite approve the man's action. There are 95 permanent way men altogether employed in ordinary circumstances on the joint line, and the branch to Carmyllie; the mileage being 17 miles double, and five miles single. This works out at four and a-half men per mile, and I would therefore describe the line as being well-manned from the point of maintenance of the permanent way. I have heard that there were no extra men employed during the storm. If it was not found possible to keep the signals in the proper position owing to the snow on the wires with the existing staff, further staff should have been engaged for the purpose.

Charles J. Brown, assistant engineer, North British Railway, states: I received one telegram from inspector Hackney asking for snow ploughs. I received this telegram on the 27th December about 11.30 p.m. In this telegram I was asked for two ploughs owing to the necessity for keeping the joint line clear, and the branch to Carmyllie. I went down to the Waverley Station. I got there after midnight. I went to Mr. Denchars' office and found that advice had been received that the snow ploughs were being ordered out from Dundee; consequently I took no further action in the matter. I did not advise Hackney, as before he could have got a reply to his telegram, the snow plough must have been on the line. Under the Regulations of the joint line inspector Hackney should have applied for the snow plough direct to the manager. I understand he also did apply to the manager.

William Buchanan Cape, District Traffic Superintendent, North British Railway, Dundee, states: The first intimation received at my office from Mr. Hamilton, Joint Line Manager, anent the snow block was a telegram taken off at 10.21 a.m. on the morning of the 28th December, intimating there were no trains through from beyond Carnoustie that morning, and telegraphic communication only as far as Monifieth. This was followed by another wire from Mr. Hamilton, received at 10.17 a.m., which ran as follows:—"Owing to snow storm, 4.10 a.m. goods train ex Tay Bridge is still at Broughty Ferry, but we expect to get it through shortly." Another telegram followed from Mr. Hamilton, received at 11.1 a.m. on the 28th, intimating that the 4.40 a.m.

goods, ex Tay Bridge, left Broughty Junction at 10.3 a.m. The information given in the first wire, received at 10.21 a.m., as to no trains having passed through from beyond Carnoustie that morning was inaccurate. As a matter of fact the 11.30 p.m. goods, ex Aberdeen, on the 27th, arrived at Tay Bridge Station off the Joint Line at 6.51 a.m on the 28th; also the 10.10 p.m. Montrose and Berwick train on the 27th arrived at Tay Bridge Station off the Joint Line at 9.30 a.m. on the 28th; and the 8.2 p.m. goods, Aberdeen to Glasgow, on the 27th, arrived at Tay Bridge Station off the Joint Line at 9.10 a.m. on the 28th, the three trains referred to having been run over the Caledonian line to Arbroath, thence per Joint Line to Dundee (Tay Bridge). We wired Mr. Hamilton at 12 noon on the 28th, asking if he had any passenger or goods trains on his line from Aberdeen. He replied at 12.40 p.m., intimating only two goods trains had come up that morning, *viz.*, 8.2 p.m., ex Aberdeen, and 10.10 p.m., ex Montrose, and indicating that as he had no communication beyond Monifieth, he could not say what was beyond that. At 12.55 p.m. we again wired Mr. Hamilton, asking how our down trains were working over the Joint Line, and by what route beyond Arbroath, as we had up till that time no intimation of a block on the Joint Line, and were not aware that the lines over the Caledonian line north of Arbroath were blocked. Mr. Hamilton wired in reply at 2.31 p.m. on the 28th, intimating that the down line was clear to Arbroath, and that our trains were getting through to that point, and, he thought, were being run over the Caledonian Line from there, but he had no communication at all with Arbroath, and so far there had been no up trains beyond Carnoustie since soon after midnight, and intimating that he was short of engine power and carriages, and requesting us to see if we could help him. We replied by wire at 3.20 p.m., regretting being unable to help in regard to carriages, and intimating that we purposed running the 1.50 p.m. ex Edinburgh to Broughty Ferry only, and turning there, thence to Edinburgh with the 5.28 p.m. connection. At 3.13 p.m. a wire was received from Mr. Hamilton intimating as follows:—"Snow Block. Wires exchanged. Single line working now in operation between Elliot Junction and Carnoustie, and first train through from Arbroath at 3.20 p.m." We wired Mr. Hamilton at 9.10 p.m., intimating that the steam crane ex St. Margaret's was passing all speed for Elliot, and to give clear road. Mr. Hamilton's first official notification to my office of the collision at Elliot was received by telegram at 10.31 p.m. on the 28th. As snow was falling and drifting about midday on Thursday, 27th December, I personally instructed the guards of north-going trains to remind station masters on their north journey that information should be sent to the district office, all speed, in the event of any difficulty being experienced in the working of the trains to and from the north. At the same time I conferred with the locomotive foreman at Dundee, and, as a precautionary measure, requested him to have the snow ploughs fitted and ready in case they should be required. The engineer's inspector reported the roads heavy, and the snow plough was sent north at 2.9 p.m. on Thursday, 27th December passing over the Joint Line, Arbroath and Montrose Section, and Bervie Branch, returning from Bervie at 5 p.m. same night. On arrival back at Arbroath, it was found that the points into the turntable there were snowed up, and the snow plough had in consequence to go right over the Joint Line to Dundee, to turn. It returned from Dundee at 11.35 p.m. over the Joint Line and on to Inverkeilor, where it got snowed up along with three passenger trains on our Arbroath and Montrose Section. All telegraphic communication to the north being cut off, it was only on arrival of the 7.45 p.m. passenger train from Aberdeen, which had been sent round via Guthrie (Caledonian Line) to Arbroath, thence via the Joint Line to Dundee, arriving at Tay Bridge Station after midnight—that we were able to get definite information re the position of matters in the north. I personally accompanied the second snow plough from Dundee at 1.18 a.m. on the morning of the 28th over the Joint Line, which was not then blocked, either on the up or down lines. On reaching Arbroath the snow plough could not get forward to St. Vigeans, three North British goods and mineral trains being ahead on the main line. I walked down the line to St. Vigeans Junction, where I met Mr. Grant, the Joint Line station master at the signal-box. I gathered from him that three North British passenger trains were blocked on the Arbroath and Montrose Section, but that the Caledonian Line to the north was still clear. The Joint station master had requested the Caledonian Company to supply conductors for the North British goods trains going north, and on the opening of the Friockheim Fork about 3 a.m. on the morning of the 28th three North British goods trains were accepted by the Caledonian Company, and passed north from St. Vigeans, clearing the Joint Lines up to that point. No. 2 snow plough returned over the Joint Line about 4 a.m. on the morning of the 28th and carried despatches from me to headquarters intimating the position of affairs. I then left St. Vigeans with the engineer's representative to force a passage through the Arbroath and Montrose Section with a view to relieve the passengers who had been snowed up in the trains, and succeeded in this, bringing back the passengers, live stock, mails, and parcels off two of the trains which were snowed up, to Arbroath on the morning of the 28th. On arrival at Arbroath we found the first portion of the 4.10 a.m. passenger train from Edinburgh had come through the Joint Line and was ready to go north. A carriage with the belated passengers, and two luggage vans, were hooked on to the rear of that train, and a second engine attached, and it was taken on by the Caledonian Company from Arbroath, no intimation having then reached that point as to a block on the Caledonian Line. The snow plough was again returned from Dundee over the Joint Line at 8.2 a.m. on the 28th, and coupled on to the breakdown van at Arbroath and proceeded over the Arbroath and Montrose Section with a view to relieve the passengers in the dining car train which was buried on the up line to the south of Cauldcots, and to re-rail the passenger train vehicles which had got off the road beyond Lunan Bay. Immediately it was known that the Caledonian Line north of Arbroath was blocked, it was decided to stop all North British north going trains until clearance was effected.

Charles Souter, traffic inspector, re-examined, states: On my arrival at Elliot Junction, about 2 p.m. on the 28th December, there was an up passenger train waiting, also a light engine. This engine was the engine of a goods train shunted at Carnoustie, which took me up to Elliot Junction on my first visit on the 28th. I made a mistake in the evidence that I gave on the 1st January. I sent the passenger train away and followed it about five minutes afterwards

with the engine. The reason I did not keep this engine to work as pilot when I got to Easthaven was that the men said their day was up. The men on this engine told me, I think, that they had come on duty that morning at 1 o'clock. This was between 2 and 3. It was a North British engine. I think it was the engine of the Leith Walk to Aberdeen through goods train. I was in Arbroath after the accident about 6.17 p.m. when single line working was opened between Elliot and Arbroath.

Alexander Hackney, permanent way inspector, re-examined, states: On the 28th December a foreman and four surfacemen were at Elliot Junction. I was at Elliot Junction at 2 a.m. on the morning of the 29th, and the signals were not drooping seriously. It was drifting so badly on the 28th December that I do not think that any large number of men would have been able to have kept the signal wires and points clear.

A. McIntosh, chief inspector, traffic department, North British Railway, states: I was at Elliot Junction at 2 a.m. on the morning of the 29th December, and looked at the down line signals. There was a slight droop on the down outer home, but I did not notice a droop on any of the other signals. I did not look at the up starting signal. The up home signal was then in a proper "danger" position.

John Carnegie, station master at Elliot Junction, re-examined, states:—I sent porter Lowson immediately the accident occurred to Arbroath to get all the doctors he could. I can't say when the doctors arrived. I am aware of the rule that says the signalman should lay down detonators behind a train when the fog signalmen are not out during fogs and snow storms, but I did not consider it necessary. I am aware of Rule 115, but because there was no alteration in the method of working, I did not think it was necessary to advise the stations on each side. The signalman's time in his train book for the collision is 3.30 p.m. I did not instruct the guard of the train which left Elliot Junction after the collision about 5.19 to give information of the accident down the line, and to the manager. I instructed the lampman to leave the lamps on the posts on the 28th lest the slides should get frozen up.

John Grant, station master, Arbroath, re-examined, states:—I did not think of sending news down to Dundee by one of the up trains to stop goods and passenger trains from being sent on to Arbroath. I was always hoping that the Caledonian Line *viâ* Guthrie would get clear. For the greater part of the day I think it would have been impossible for any number of men to keep the points clear at St. Vigeans. I am quite satisfied with the way in which the staff at the station have behaved lately. I cannot say what lights the local train carried behind it. I was working all the night of 27th December.

George G. Hamilton, manager, Dundee and Arbroath Joint Line, states:—I enquired on morning of 28th December on my arrival at Broughty Ferry Station as to the position of matters on the line. I live in Broughty Ferry. This was between 8 and 9 a.m. I was told by the stationmaster there that nothing had come through from Arbroath. I also learned that the Caledonian Forfar direct Line was blocked. The Forfar direct Line is from Forfar joining the Joint Line at Broughty Junction. I learned afterwards that two goods trains leaving Aberdeen at 8.2 p.m. and Montrose at 10 p.m. had come over the Joint Line prior to the up line becoming blocked at Corsiehill. That is between Elliot Junction and Easthaven a little to the south of Dowrie Siding. I then left Broughty Ferry for Dundee and found there a message intimating the Forfar direct Line had been blocked the previous night by a goods train. Thereafter, to find out for myself what was the actual position of affairs on the Joint Line, I joined a train at Dundee (East) intending to go as far as I could along the line, in the absence of communication from Carnoustie or beyond. I left Dundee (East) at 10.37 a.m. and arrived at Carnoustie at 11.20 a.m. I there learnt the position as regards the North British goods train, that it blocked the up line between Elliot Junction and Easthaven. I enquired what was being done to keep matters going. The stationmaster at Carnoustie informed me inspector Hackney was at the place. Also that the road must be heavy as there were two or three trains ahead, and that the train I had come on with from Dundee was not likely to get through beyond Carnoustie for an hour. Block-working between Carnoustie and Easthaven was not out of order at this time. Telegraphic or telephonic communication was, however, broken down. The Block was out of order to the south of Carnoustie and we could not get anything by the wires from north of Monifieth. The telephone and speaking instruments were in contact and signals could not be read in consequence. I found inspector Souter at Carnoustie and asked him what he was doing to find out the position of things north of Carnoustie. He told me of the goods train having divided at Corsiehill, and I instructed him to find some means of pushing through, and if it was possible to get Single Line Working established as quickly as he could. I also told him to make safe working his first consideration. I further suggested he should endeavour to get the engine of a goods train which I saw at Panmure when coming down the line, to take him to Easthaven and Elliot Junction. The Carnoustie station master enquired what he should do with the train I came down by, and I said he had better return it to Dundee seeing several trains were already beyond Carnoustie on the down road. I went back with it to Dundee, and Souter also came back from Carnoustie to get the engine already mentioned. On my return to Dundee I naturally expected to get some news as to when single line was to be started. The first intimation I had was at 3.20 p.m. when the first train came in. After a conversation with the guard of that train I returned with this train from Dundee intending to go to Arbroath. It left Dundee (East) at 3.28 p.m. I wanted to see for myself how matters were progressing. We reached Carnoustie in due course, and then got forward to Easthaven. It was then 4.16 p.m. We stood there for a long time wondering what had become of the pilotman, and why no news was being sent through. We expected him back long before the time he arrived to take us on. I had, however, heard that the previous train going down had some difficulty in getting through owing to the drifting snow. I first heard of the collision about 6 p.m. I heard about it from some gentlemen whom I believe to have been passengers by one or other of the colliding trains. Easthaven is three miles from Elliot, and Carnoustie about two miles further south. The gentlemen mentioned the accident to the Easthaven station-master, and he at once sent a porter to the down train where I was. I immediately

interviewed them, and got particulars. Several of these men had walked from Elliot Junction so that it was not, at that time at least, impossible for intimation to have been sent us. I got information from these gentlemen that some had been killed and injured, and what was being done. The pilotman brought up a train from Elliot Junction reaching Easthaven about 6.20 p.m. I went back to Elliot Junction at once with the pilotman and the down train from Dundee. I left the train there, saw Mr. Carnegie the station-master, and got information from him as to what was being done in connection with the dead and injured passengers, &c. I also found on arrival at Elliot Junction the injured had been taken away to Arbroath. I also learned at Elliot Junction that the Arbroath mortuary could only accommodate three bodies. I then proceeded to Arbroath to see what I could do about the injured and killed. Fortunately when I reached Arbroath I met two of the Arbroath magistrates, Bailies Duncan and Robertson, who said they were going to see Mr. Grant about the disposal of the bodies, and I arranged with them for provision being made for the dead to be received at the drill hall which was deemed to be most suitable and convenient. I should have approved of any action that any of my staff might have taken to get extra men if necessary, owing to the severe snow-storm.

Conclusion.

It is necessary to deal with this case at some length; the circumstances were very exceptional, and many questions of railway working are involved.

January 1st is perhaps the most important general holiday in Scotland. At this time of the year railway traffic is abnormally increased. This occasions longer hours of duty, with increased strain and anxiety, especially during bad weather, for all classes of railway servants.

Snow commenced to fall on the 26th December, accompanied by violent wind. It is said that the storm has had no parallel, on the coast of Forfarshire, since the winter of 1894–95. By night-fall of the 27th December, twelve to eighteen inches of snow had fallen on the level, heavy drifting had taken place, and a hard frost prevailed. Telegraph and telephone wires were borne down by heavy wreaths of frozen snow. About 7 p.m. many of the poles fell between Arbroath and Elliot Junction Stations, and block telegraph and single needle instruments, signalling bells and telephones, were all rendered useless. Later in the same night, similar breaks took place between Elliot and Easthaven Stations. Thus not only were the ordinary means of communication between signal-boxes and stations swept away by the storm, but the mechanism devised for the safe working of the traffic became inoperative. During the night of the 27th December, three passenger trains were snowed up on the North British Line between Arbroath and Montrose, and, soon after daybreak on the 28th, the Caledonian Line north of Arbroath was also blocked by snow drifts. On the Joint Line between Dundee and Arbroath there were drifts to the depth of three feet in some of the cuttings, especially between Elliot and Easthaven.

The general situation about 7.30 a.m. on the 28th December was as follows. The Caledonian and North British Lines north of St. Viggeans Junction, Arbroath, were blocked, and Arbroath had become a cul-de-sac. Both up and down roads between Dundee and Arbroath were with difficulty passable for traffic. Block working had ceased between Easthaven and Arbroath. Traffic was being worked between these stations on the "Time Interval and Caution" system. Telegraphic and telephonic communication was broken down between all stations north of Monifieth. At Dundee it was known soon after midnight (Mr. Cape's evidence), on the arrival of passenger trains, which had travelled from Aberdeen over the Caledonian Railway (via Guthrie and Arbroath), that the North British Line north of Arbroath was blocked. Down goods and passenger trains were being despatched from Dundee, to Arbroath and Aberdeen, in the hope apparently that the Caledonian Line was still open, and that trains would be able to force their way northward by this route. During the morning and afternoon of the 28th, the actual fall of snow abated. It fell however intermittently throughout the day, accompanied by violent squalls of winds, which drove the fine frozen snow along the surface of the ground. The points of cross-over roads and connections at many places became clogged with snow, and many difficulties arose owing to the weight of snow on the semaphore arms and signal wires.

Between 7 and 8 a.m., a North British goods train, composed of 41 four-wheeled vehicles, drawn by two engines, was making its way southward (on the up line) between Elliot and Easthaven Stations. This train had left Aberdeen at 7.21 p.m. on the 27th, and had reached Arbroath (via the Caledonian Railway) at 7 a.m. on the 28th. In forcing a snow drift near Dowrie siding, a mile south of Elliot, the couplings between the 10th and 11th, and between the 11th and 12th, vehicles broke, and the train was divided into three portions. The front portion made some progress southward before the break was discovered. Driver Boyd on the leading engine then determined to go on to Easthaven. On arrival, about 7.54 a.m., it was decided (by Boyd and signalman Strachan) that the leading engine should return to Elliot Junction by the down road, cross over to

the up line, and propel the vehicles which had been left behind into Easthaven. It was not found possible to work the points of either of the cross-over roads at Easthaven, so the train proceeded to Carnoustie Station. The leading engine was then uncoupled, crossed on to the down line, and travelled back to Elliot Junction. Here also the cross-over roads were unworkable, so that Boyd had to proceed to Arbroath in order to get access to the up line, and return to the waggons which he had left behind him. Boyd's engine is booked as leaving Arbroath South at 8.45 a.m., and arriving at Elliot Junction at 8.49 a.m. On reaching the scene of the break-away, Boyd attempted to propel the waggons through the snow, and, as might have been expected, some of them were very shortly derailed. Guard Morris then walked back to Elliot Junction, and obtained permission to draw the waggons which were standing on the rails, in the facing direction, back to Elliot. To do this the engine had to run tender first, and in charging the snow wreath where the couplings had first broken, the leading wheels of the tender were derailed. Further movement became impossible, and the up line was thus blocked. This appears to have been after 10 a.m.

Relief clerk Mackay describes how he walked from Elliot Station to the scene of the derailment, and waited there until two engines and a guard's van, with ramps, arrived on the scene with the object of clearing the block. It was, according to information I have received, about 12.20 when the engines arrived. Inspector Hackney (permanent way department) brought one of these engines from Arbroath, whilst the other—a goods engine—had been brought by inspector Souter (traffic department) from Carnoustie. When, however, it was found that the tender of the goods engine was so badly derailed that nothing could be done without lifting gear, it was decided to open single line working on the down line between Elliot Junction and Easthaven. Inspector Souter therefore walked from Dowrie siding to Easthaven, whilst Hackney returned with the two engines to Elliot Junction. One of these engines (Souter's) was left at Elliot, whilst Hackney returned with Ogilvie's engine and the van to Arbroath. Inspector Souter arrived at Easthaven about 1.30 p.m. He appointed himself "pilotman" for single line working, got the necessary forms signed by the signalman at Easthaven, and left Easthaven with a goods train at 1.40 p.m. He arrived at Elliot Junction at 1.58 p.m., where the forms for single line working were completed. Here an up passenger train, despatched from Arbroath at 10.48 a.m., had been waiting three hours for the block on the up line to be cleared. There was also standing in the station the light engine by which Souter had travelled from Carnoustie to Elliot two or three hours previously. Souter despatched the passenger train by the down road to Easthaven at 2.19 p.m. and himself, five minutes later, followed on the light engine. He arrived at Easthaven about 2.35 p.m. A long delay in Single Line Working then took place. The next down train, I am informed, arrived at Easthaven down distant signal at 3.1 p.m., where it got stuck in a snow wreath. Souter had allowed his light engine to return to Dundee, as the enginemen had been on duty from 4 a.m., and an engine had to be sent for from Carnoustie to assist the passenger train forward. The train eventually reached Easthaven at 4.8 p.m., and Souter piloted it to Elliot Junction.

In the meantime, driver Ogilvie with inspector Hackney arrived at Arbroath soon after 1.45 p.m. An hour and a half appears to have elapsed before it was found possible to move the trains standing on the down line at Arbroath sufficiently forward to allow of Ogilvie's engine being crossed over to the up line at Arbroath south signal-box. This was effected about 3 p.m., and Ogilvie describes how he propelled the carriages of his train back alongside the up platform, as far as it was possible to do so.

The position of affairs at Arbroath about 3 p.m. was then as follows. The Local, or Joint Line train, with driver Ogilvie and guard Anderson in charge, was standing on the up line. The rear five vehicles were alongside the platform, one at least of the coaches being under Keptie Street Bridge, where the platform is only two or three feet in width. The engine and four leading vehicles were standing altogether clear of the platform, on the south-west side of Keptie Street Bridge. North of this Local train, also alongside the up platform, was standing a North British train, with the engine at its north end. Driver Gourlay, fireman Irvine, and guards Kinnear and Hardie, were in charge of this train. They had left Edinburgh on the morning of the 28th about 7.35 a.m., and, in accordance with evidence given by Gourlay at the public inquiry, were stopped at every signal-box between Broughty Ferry and Arbroath, where the train arrived at 10.11 a.m. It was worked forward gradually on the down line past Arbroath Junction signal-box as far as Wellgate signal-box. About 11.22 a.m. the train was backed through the cross-over road at Wellgate on to the up line into the station, and stood, as has been described, alongside the up platform from about 11.30 a.m. until 3.15 p.m. The up line, north of Arbroath

Station to St. Vigeans Junction, at this time appears to have been clear of trains. On the down lines north of St. Vigeans Junction stood three passenger trains (1 to on the Caledonian and one on the North British roads). On the down line, south of the Junction, there appears to have been (at 3 p.m.) a North British passenger train (11.35 a.m. express) standing at Wellgate, another express at Arbroath Junction, and a goods (Caledonian) train at Arbroath south. There was also a break-down van train standing at St. Vigeans.

About fifty passengers entered the Local train; of these the large majority occupied seats in the four last vehicles, as there was difficulty in obtaining access to the carriages in front. The Joint Local train eventually left Arbroath Station at 3.13 p.m. The train was stopped by signalman Beattie at Arbroath South signal-box, and driver Ogilvie was warned to proceed with caution, as there was no block communication. Ogilvie states that the wind was blowing violently, and snow was falling as well as drifting over the line. Both Ogilvie on his engine, running chimney first, and Anderson, who rode in the brake van at the end of the train, saw the up distant and home signals for Elliot Junction, and recognized their "danger" position. The up home signal was visible at a distance of 50 yards. Inspector Hackney, who rode on the engine, ordered Ogilvie to pass the signal at danger, and draw cautiously into the station. The train stopped at Elliot Station up platform at 3.19 p.m. Anderson's estimate of the time occupied on the journey from Arbroath is five and a half minutes. Signalman Haggart (Elliot Junction) states that he had no warning (by whistle) of the approach of the local train; that he could not see it before it arrived at the platform, and could not see the up home signal at the time the train arrived. There was no flagman at the signal-post, and no fog-signalmen were out on the line. Inspector Souter being at Easthaven, the Local train waited at the platform for his return to be conducted over the down line to Easthaven. After about ten minutes, Carnegie, the stationmaster at Elliot, determined to take the passengers out of the train, and draw the train clear of the platform road, so that there might be accommodation at the platform for any other train which might be following. Instructions to this effect had just been given, but, very unfortunately, there was not time to carry them out before the collision occurred.

Stationmaster Grant, in his evidence, states that he had determined, before the departure of the Local train from Arbroath, to send the North British train back to Dundee, but had not fixed the time for its despatch. Apparently, however, immediately after the local train left, action was taken to prepare the North British train for its departure southward. It was backed on the up road beyond Arbroath South signal-box, the engine was uncoupled and crossed over to the down line, the coaches were moved back by gravity into the station, and the engine, returning over the cross-over, backed on to its train, which stood at the up platform. The tender was in front of the engine, and the guard's van next to the engine, instead of at the rear of the train. About 3.27 p.m. the North British train was started, and brought to a stand at Arbroath South signal-box. It is booked as having left Arbroath South at 3.28 p.m., fifteen minutes after the Local train.

11. Driver Gourlay was instructed by stationmaster Grant to travel to Dundee (Tay Bridge Station) and stop at all stations. Grant gave the same orders to guard Kinnear, who repeated them to Gourlay, and told him to go cautiously. Assistant guard Hardie and several passengers heard these instructions given to Gourlay. Inspector McLellan, who travelled on the North British train, twice warned Gourlay to be careful, and to keep a good look-out for the train in front of him. He gave Kinnear the same instructions, because he thought that, owing to the position of Kinnear's brake van, it would be possible for him to have a good view. Gourlay was also warned at Arbroath South signal-box by signalman Beattie, that block working had broken down, that he must look out for himself, and that the previous train had left ten minutes earlier. Gourlay was not warned by Beattie in accordance with general Rule 227 (d) that there was Single Line Working in operation between Elliot Junction and Easthaven. Beattie states that he was unaware at the time that this method of working had commenced, otherwise he would have told Gourlay in accordance with the rule. This was a serious omission, but, even without this additional warning, it must be admitted that Gourlay's instructions were sufficiently explicit on the necessity for careful and cautious driving.*

When, owing to the failure of Block Working, traffic is being worked under Regulation 25 for train signalling by block telegraph on double lines (vide Appendix II.), safety is dependent upon two precautions:—firstly, the preservation of an interval of time between the despatch of following trains, and, secondly, caution on the part of engine drivers.

* Moreover, from his own statement, Gourlay appears to have been aware that Single Line Working was in operation.

Signalmen are entirely responsible for the first of these precautions, and partially also for the second, in that they are bound to stop all trains, and verbally instruct the drivers and guards that block working has failed. To comply with the warning so received, it is obvious that the speed of trains must at all times be such that a driver can stop short of any obstruction that may be in front of him. A driver must, in such circumstances, therefore, travel at such a pace as will render it possible for him to stop within the range of his vision. In clear weather, when it is possible to see a long distance, a comparatively high speed would be legitimate. In adverse circumstances of fog or snow or darkness, the Rule calls for a very low rate of speed. All drivers must be aware of the meaning of this Rule, for it may easily be imagined that a train despatched under this method of working might overtake a train in front. In such an event, if the previous train is moving, there will be no protection behind it in the form of detonators, and the driver of the following train will only have the length of his vision in which to stop.

The weather at this time appears to have been much the same as—possibly even worse than—when the Local train made its journey to Elliot fifteen minutes earlier, though it was still daylight. Gourlay describes it as a perfect blizzard of falling and driving snow. The big load of coal on his tender much obstructed his view to the front. From his account both the up distant and home signals for Elliot Junction were "hanging off" when he passed them. He saw no fog-signalmen and exploded no detonators, and therefore considered that he was justified in assuming that the position of the signals indicated "safety." He closed the steam regulator some distance before entering Elliot Station, and was using the Westinghouse continuous brake, with the intention of stopping his train at the south-west end of the station platform, when the collision occurred. He saw nothing of the Local train in front of him. He estimated that the maximum speed of his train between Arbroath and Elliot was between 12 and 14 miles an hour. This statement differs in some particulars from the evidence given by him at the public inquiry. On the last occasion he said, first, that he was not able to see any signals, but afterwards that he saw the home signal at a few yards' distance, when it appeared to be in his favour. He told me that he merely slowed his engine by Arbroath South signal-box, and did not hear what the signalman said to him. In public he corrected this statement, and admitted that he was stopped and cautioned by Beattie.

Gourlay had been in the employment of the North British Railway for 46 years, with two short intervals. He was appointed driver in 1866, and passenger driver in 1884. Subsequent to his re-engagement, after the strike in 1891, there have been only six entries, all of a minor nature, against his name in the Discipline Book. He bears a good character, as evidenced by Mr. Reed, Locomotive Superintendent, for carefulness and sobriety, and has been selected on two occasions for special service.

Fireman Irvine was engaged in January, 1899, and was registered as fireman in September, 1899. He bore an excellent character.

Guard Kinnear states that, on the journey between Arbroath and Elliot, the drift of snow was so great that he could see nothing at all out of his window in the van next the engine. He does not, however, appear to have spent much time in endeavouring to see the signals, and both he and assistant guard Hardie were engaged with parcel and mail work when the collision took place. Kinnear's estimate of the maximum speed attained on the journey is from 16 to 20, whilst Hardie sets it at 20 to 25, miles an hour. Kinnear tested the continuous brake in his van, and also at the rear end of the train, before leaving Arbroath, and satisfied himself that it was in working order. He thought there was a slight jarring sound immediately before the collision, which might have been caused by an application of the brake. It is possible, I think, that the sound he heard was due to the train passing over the crossing at the north end of Elliot Station. No whistle was sounded on approaching the station. Hardie admits that he made no endeavour to see the outdoor signals, as he considered that was the duty of the head guard. At the public inquiry, he said that the continuous brake was not applied before the collision.

Inspector McLellan, who travelled as a passenger on the North British train, could see none of the signals, although he was looking out for them. The speed over the first half of the journey was, he thought, moderate; over the latter part, too high for safety under the conditions which prevailed. He felt no application of the continuous brake, and considers that the speed at the moment of the collision, judging from the destructive results, could not have been less than 30 miles an hour.

Mr. Harcourt is the only witness who saw the North British train travelling towards Elliot Station. He says that he was about half a mile from the station on the north side of the railway, and about 200 yards distant from the line, when the train passed. He thought it was travelling faster than other trains he had seen during the storm, but not faster than trains which stop at Elliot Station travel in ordinary conditions of weather.

According to signalman Haggart (Elliot Junction) the collision took place at 3.30 p.m. The clocks in the Joint Line signal-boxes were regulated two days before the collision. I have endeavoured, by having observations taken of the clocks in the signal-boxes at Elliot and Arbroath South, to arrive at some conclusion as to the probable difference of time between them on the 28th December, but have not succeeded in obtaining information reliable enough to determine the point. Guard Anderson booked the time of arrival at Elliot of the Local train as 3.19 p.m.; this coincides with signalman Haggart's entry. At the public inquiry, Anderson stated that 3.13½ was a more accurate estimate of the time his train left Arbroath South. Comparing this with signalman Beattie's booked time—3.14 p.m.—it can be argued that Haggart's clock was half a minute in advance of Beattie's clock. It follows on this that the North British train made the journey from Arbroath South to the scene of the collision in one and a half minutes only. The distance is 1 mile 520 yards. Having regard to the rising gradient for the first 500 or 600 yards, and to the fact that the North British engine was running tender first, and also started from rest, it is quite improbable that the train could travel this distance in so short a time. Investigation on these lines, therefore, is of little value in determining the actual time occupied by the North British train on its journey. Guard Kinnear's times, in the circumstances narrated, are also of no value for this purpose.

There is one other means of gauging the speed of the North British train, and that is by a comparison with the booked timings of other trains on the same day between these two signal-boxes. From the return which has been prepared, the average time occupied by nine passenger trains on the downward journey was five and seven-ninths minutes. Gourlay's time for the down journey was seven minutes. The average for six passenger trains on the up journey was four and five-sixths minutes, whilst Gourlay's time, as booked, was two minutes. These figures, if they do nothing else, show that, when running engine first, Gourlay occupied more time between Elliot and Arbroath than the average taken by other similar trains, and that when running tender first from Arbroath to Elliot, he occupied less than half the average time.

The semaphore arms of the up distant and home signals for Elliot Junction are carried on iron lattice-work posts at an elevation of from 35 to 40 feet above rail level. The background to the arms, as viewed from the footplate of an approaching engine, is the sky, and an excellent view is therefore obtainable under ordinary circumstances. As regards the actual position of these signals at the time of the collision, there is the evidence of signalmen Haggart and Guild, who state that the up distant signal had never been used since the night of the 27th. Therefore at 3 p.m. on the 28th it probably could not have been worked by the signalmen. These men state that they were using the up home signal to authorise trains to enter the station, but it is proved that the signal was not lowered at 3.19 p.m. for the Local train. Haggart received no warning by signal or whistle of the approach of the North British train, and therefore he had no occasion to lower the up home signal. The evidence shows that partly on account of the frozen snow sticking to the semaphore arms, and partly owing to the weight of snow lying on the signal wires, nearly all the outdoor signals were drooping to a greater or less extent. This was the case with the up home signal. It is proved by the action of Guild, who at the request of Haggart, lashed the arm into a proper horizontal position, after the collision. But although the position of these signal arms was out of the horizontal, they were not at any time prior to the collision taken for anything but danger signals. Driver Ogilvie, fireman Henson, and inspector Hackney, on the engine of the Local train, as well as guard Anderson of the same train, were able to see these signals, and recognised their "danger" position. Three minutes after the collision, Hardie in his evidence states that the up home signal was visible from the rear of the North British train, and that though it was drooping at an angle of 10 degrees, it was clearly a "danger" signal. Other evidence to the same effect was led at the public inquiry. I have formed the opinion, from all the evidence adduced, that neither the up distant nor up home signals for Elliot were lowered by the signalman when the North British train passed; and, that though there was some droop in the position of the arms, the incorrectness of position was not sufficient to mislead a driver to conclude that "safety" was intended. Moreover, it has to be borne in mind that in accordance with General Rule 74 the absence of a signal, or a signal imperfectly displayed, has to be considered a "danger" signal.

The local train was driven forward about 20 yards by the force of the collision. This is less than might have been expected, but the existence of a snow wreath immediately in front of the engine, and the severance, in two places, of the brake couplings account for the comparatively slight movement. After the collision, it was found that the three rear vehicles of the Local train (Nos. 313, 350, and 125) were totally destroyed.

In the North British train, the engine and tender overturned owing to the right-hand wheels mounting on the wreckage, the brake van (No. 279) behind the engine was wrecked, and had partly mounted over the engine, and the leading end of the second vehicle (No. 109) was smashed in. The driving wheels of the engine were revolving. About 10 minutes after the collision, in accordance with Ogilvie's evidence at the public inquiry, he closed the regulator, and stopped the revolution of the wheels. Ogilvie states that the regulator was very nearly full open at the time he got into the cab, and also that the Westinghouse continuous brake handle was in the "release" position, *i.e.*, the brake was *not applied*. Driver Gourlay in his statement suggests that he may have been thrown by the collision against the regulator, and thus have knocked it from the closed into the open position; or that the surge of water into the dome, when the engine turned over, may have turned the steam valve sufficiently to allow steam to enter the steam pipe and cause the wheels to revolve. Either of these theories is possible, but as regards the first, it has to be remembered that the force of the collision would throw everything forward, and away from the controlling gear, and as regards the second, the fact is proved that the regulator was nearly full open. The brake handle, if it was being applied at the moment the collision took place, might have been pulled into the release position involuntarily. But on the other hand a driver would not be applying the continuous brake with the regulator open.

III. Various explanations have been offered to account for the collision.

It has been suggested that, owing to the violence of the storm and the changed aspect of the country, Gourlay may have lost his way or misjudged his position on this occasion. The whole distance between Arbroath South signal-box and the up home signal at Elliot Junction is about 2,150 yards. Leaving Arbroath, the line runs through a deep cutting for a distance of about 600 yards, on a steep rising gradient. On this length there are three road bridges over the railway, spaced at nearly equal intervals. At the last of these bridges, the line emerges from the cutting on to embankment. This spot was spoken of at the enquiry as "the mouth of the gullet," and here the full force of the storm would be first felt. From this point the line falls steeply towards Elliot. About 700 yards from the mouth of the gullet on the left-hand side of the line stands the up distant signal for Elliot Junction. There are two bridges in this length, which carry the railway over public roads. At 800 yards in advance of the up distant is the up home signal. Immediately in front of the up home signal there is a cross-over road, with the usual single crossing, and trailing points. It is unlikely that an experienced driver would lose his way on a journey of such a length, marked by so many features. Further the statement made by Gourlay himself, and the evidence he gave at the public inquiry, disposes, in my opinion, of the suggestion that, if he had been alert, he could have failed to recognise his position, before arriving at Elliot Junction.

Another explanation put forward is the position of tender in front. Tender engines are constructed for running engine first, and are not designed for running tender first. Enginemen in the latter position are therefore under serious disadvantage. There is no protection from the weather: the view to the front is much obstructed by the load of coal on the tender; the driver is on the opposite side of the footplate to that to which he is accustomed; dust from the permanent way, as well as from the coal, prevents so good a look-out being maintained, and other difficulties arise. I do not think however that the view obtainable of semaphore signals, which are generally raised to a considerable altitude, is much obstructed by the tender being in front of an engine. But it does interfere very considerably with the visibility of ground signals, of men working on the line, such as fog-signalmen or platelayers, and also of vehicles standing in front of the approaching train, especially on a straight road. It is obvious therefore that, in the interests of all, tender first running is generally objectionable. But it would be useless to lay down an absolute rule forbidding the practice, as there are many occasions when it cannot be dispensed with. For long distance journeys, for high speed travelling, and during bad weather, the practice is indefensible. On the other hand during shunting operations, for short journeys with frequent stops, when breakdowns occur, and when special trains have to be worked, the position of tender first is often necessary. The occasions when the disadvantages of running tender first have to be faced are not so infrequent that enginemen are unprepared for, or unaccustomed to, them. In this particular instance, the difficulties of the position of tender first were intensified by the falling and drifting snow, and it is right to remember this in favour of Gourlay. From my own observation, the practice is resorted to far more frequently on the Joint Line than appears to be actually necessary, and I desire to call the attention of the Joint Companies to the desirability of discouraging the practice.

The Board of Trade have dealt with the general case of tender-first running by requiring turntables to be provided on new railways, where necessary for traffic purposes, unless tank engines, equipped for running in both directions are used. In the locomotive yard at Arbroath, close to St. Vigeans Junction, there is a fifty-foot turntable, large enough for turning Gourlay's engine.

Two questions now arise:—first, was it possible to use the table on the 28th December, and, secondly, with whom did the responsibility lie for urging the necessity of having Gourlay's engine turned. On the first point, nearly the whole of the evidence is negative. Mr. Cape states that, on the evening of the 27th December, the points leading to the engine shed and turntable were blocked with snow, and that the North British snow plough could not on that account be turned. Stationmaster Grant says the table was unworkable, by reason of the snow which had drifted into it. Inspector Hackney declares that on the 27th he had men working on the points on the main line leading to the locomotive yard, and that as fast as these points were cleared they got choked up again. Gourlay says that he did not ask to have his engine turned, because he knew that it was impossible, on account of the number of trains standing on the down main line, to get an engine into the loco. yard, and that the points were not being worked. But from a return which has been prepared, showing the arrivals of trains at the various signal-boxes in the vicinity of Arbroath, it appears that about 3 p.m. there was nothing to prevent an engine being taken over the up line, in the facing direction, from Arbroath Station to Wellgate, and thence crossed to the down line. Further evidence given by shunter Ward at the public inquiry confirms this view. I believe also that it would have been found possible to use the turntable, and there was confirmatory evidence (given also at the public inquiry) by Rowlandson, engine shed caretaker, who stated that he had cleared the snow off the rails of the turntable during the morning of the 28th December, and was prepared to turn an engine at any time between 11.30 a.m. and 3 p.m. The down main line points leading to the engine shed are not in so exposed a position as the junction points at St. Vigeans; it should therefore have been possible to keep them in working order, had it been thought necessary. My opinion, therefore, is that, if an attempt had been made to get Gourlay's engine turned, the operation could have been carried out.

There are no general rules or regulations regarding the necessity or advisability of turning engines. The question is one, I think, which concerns both Traffic and Locomotive Departments. It was quite within the power of stationmaster Grant either to have ordered Gourlay to get his engine turned, or to have consulted him on the necessity for such action, when he gave him his orders to return to Dundee. It was also open to Gourlay, after receiving his instructions, to ask for his engine to be turned. The final responsibility for pointing out the necessity for such action would, I think, be with the enginemen.

The evidence shows that on the 28th several engines travelled tender first between Elliot Junction and Arbroath. For example, driver Ogilvie was in this position when he travelled with the 8.35 a.m. Joint train from Dundee East to Arbroath. He also returned from Elliot Junction with Inspector Hackney with his tender in front, about 1 p.m., after endeavouring to free the block on the down line, caused by the goods train. Driver Boyd, of the North British goods train, was in the same position when he ran light from Carnoustie to Arbroath South in the early morning. These drivers, in similar difficult circumstances, were able to work their engines with safety, and duly observe the signals.

A third possibility has now to be considered—the condition of driver Gourlay at the time he made the journey from Arbroath to Elliot. After the collision he was found, by driver Ogilvie, lying under the seat of the engine cab, with his head amongst the coal thrown off the tender, and his hand wedged under the side of the cab. Half-an-hour elapsed before Gourlay was released from this position, and made his way on to the platform. He was then given (as a restorative) about three-quarters of a glass of neat brandy (evidence of Francis Brown). Shortly afterwards the attention of Police Sergeant Alexander was drawn by a passenger to Gourlay's condition. About three-quarters of an hour after the collision, at the instance of Alexander, Gourlay was examined successively by Doctors Kelly, Duncan and Gilruth. Each of these medical men formed the opinion that he was then under the influence of alcohol, and that his condition was not due to shock or injuries received in the accident. I understand from their evidence that the quantity of brandy given to Gourlay by Brown after the collision was not, in their opinion, sufficient to fully account for the alcoholism observed. On the other hand driver Ogilvie, as well as others who saw Gourlay soon after the collision, are emphatic that Gourlay's condition was not due to drink, but to the severe shock which he had received.

The statements made by passengers and railway men, who saw Gourlay prior to his leaving Arbroath, have now to be dealt with. He was seen by Mr. Hird to drink out of a bottle or flask given to him by one of the general public on the cab of his engine about 12 o'clock. Between 12 and 12.30 p.m., he was served with threepence worth of whisky at the Victoria Bar (Crockett's evidence). About 1.20 p.m. he was again treated to the same quantity by Mr. Fairley (evidence at public inquiry). Gourlay admitted in public that he was treated on these two last occasions, but denied having drunk any further liquor. A passenger (Mr. Robert Reid) stated in public that he and several others were on Gourlay's cab from 12 until 2 p.m., and that Gourlay was not during this period away from his engine on more than three occasions, or for more than ten minutes at a time. The statements made by porter Morrison, guard Briggs and parcel clerk Whitton, are to the effect that there was clearly something wrong with Gourlay, when they saw him on his engine between 2 and 3 p.m. The two first-named men recognised that he had been drinking, but thought he was capable of doing his work. Morrison and Whitton thought he had been or was going to be sick. Whitton attributed this condition to illness or exposure. The strongest evidence in favour of Gourlay's sobriety after 3 p.m. is given by inspector McLellan, who had several opportunities of speaking to him, and who testifies to the steadiness with which the shunting of Gourlay's engine was performed just previous to the departure of the North British train from Arbroath.

In the face of so much conflicting evidence it is a difficult and invidious task to offer an opinion whether Gourlay's condition on the journey from Arbroath to Elliot was such as to account partly, or wholly, for the very evident neglect of orders, and want of caution, which he displayed. His previous record and character, as well as his behaviour on the downward journey, prove that he was normally a careful driver. There must be some reason to account for the unusual carelessness shown on the upward journey. If it is true that he took no more than two half glasses of whisky, whilst waiting at Arbroath, it is evident that this amount of alcohol could not have caused the effects noticed by Morrison, Briggs and Whitton. There is nothing to show that he was out of health, or suffering from any illness, which would account for the strangeness in his appearance and conduct which they observed. He was accustomed to work his train from Arbroath to Dundee as an express, without stopping at any intermediate stations. It is possible that he did not fully understand the special instructions given to him on this occasion. Confusion of ideas or deadening of faculties may account for his conduct. The evidence suggests no cause for such confusion, or lack of alertness, other than the bemusing effects of either extreme cold, or of alcohol. The cold, admittedly severe, more especially in the unprotected position of tender first, could hardly, in so short a time as two or three minutes, have alone produced such a serious effect on a robust constitution. I have therefore, most reluctantly, been forced to accept the alternative, and give it as my opinion that the lack of intelligence, or of caution and alertness, displayed by driver Gourlay on this occasion were in part at all events induced by drink, the effects of which may possibly have been accentuated, after he left Arbroath, by exposure to weather.

IV. Certain precautionary measures, which might have been adopted, in accordance with the General Rules, have now to be considered.

When block working has broken down, and all communication between stations is interrupted, hand signalling in my opinion should be resorted to, with the "Interval and Caution" system of working, and all semaphore signals should be kept at danger. There is no absolute rule to this effect, and on the Joint Line during this breakdown different methods were adopted. Some of the signalmen, *e.g.*, at Easthaven and Arbroath South, kept all their signals at danger. Others, as at Elliot Junction, made use of the home signals. But, apart from the general question, there can be no doubt that the semaphore signals should not have been used at Elliot Junction during this snow storm. The evidence proves that all the arms were, to a greater or less extent, in an imperfect position; and that, though action was taken in accordance with Rule 86, the signalmen found it impossible to keep the semaphore arms in their correct horizontal position. Their duty in these circumstances therefore was to have fastened all signals in the proper danger position, and to have resorted to hand signalling in accordance with General Rule No. 73. Where, owing to the distance at which a signal was situated from the signal-box, it was impossible or difficult for a driver, on reaching the signal, to see a flag or light waved from the signal-box, a flagman should have been appointed. Signalmen Haggart and Guild say that they could not, during the falling snow, see the up home signal at Elliot Junction; that they could not see a train approaching the signal; and that it was impossible for a driver at this signal-post, distant 273 yards from the box, to see a hand signal. Clearly then a competent person should have been placed at that signal with hand signals and detonators.

General Rules No. 78, *et seq.*, lay down that it is the duty of stationmasters to take care that fog-signalmen are employed at all places where their services are required, and to arrange beforehand, with the inspector of permanent way, who are to act as fog-signalmen at the various posts. A list of the names and addresses of the men appointed, showing the posts to which they are assigned, has to be kept in the stationmaster's office and signal-box. Detonators, hand lamps, and flags, have also to be stored. On the Joint Line these rules have never been given effect to, except as regards the storing of detonators, &c. Stationmaster Carnegie states that he has never had cause to call for the services of fogmen, and stationmaster Grant states that fogs, on the east coast of Forfarshire, are of rare occurrence, but he adds that four months ago he had occasion to appoint a fogman at a particular post. The evidence of the various signalmen is to the effect that the custom on the Joint Line has always been to do without fogmen, and that none have ever been appointed. These rules are intended as an additional safeguard for the working of traffic, and for the assistance of enginemen under trying conditions of atmosphere or weather, and it is much to be regretted that they have been entirely neglected on the Joint Line.

The signals which it is most important should be protected by fogmen in bad weather are the distant signals. If a fogman had been appointed for the up distant signal at Elliot Junction, the explosion of a detonator would have served to warn Gourlay of his position, and in all probability would have prevented the collision. It is true that, even after arrangements have been made in accordance with the Rules, the responsibility for calling out fogmen is laid upon the stationmaster or signalman, and it is just possible that the traffic staff at Elliot Junction would not have considered that the conditions of the weather necessitated the employment of fogmen. But if, as stated by signalman Haggart, it was possible to see neither the approaching train, nor the up home signal, and, as stated by others, the signals were only visible at a distance of from 20 to 100 yards during the snow storm, there can be no doubt that, in accordance with the usual practice on railways, fog-signalmen ought to have been employed during this snow-storm.

Many Railway Companies, in the instructions contained in the Appendix to their Working Time Tables, have laid down, for the guidance of their stationmasters, definite rules as to when fogmen are to be called out. In the case of more than one Company, the rule is that the men are to be called out when signals are not visible for a distance of 200 yards. The men employed for fog signalling are mainly platelayers or surfacemen, employed ordinarily by the engineering department. The use of fogmen would no doubt have necessitated the employment of additional men for clearing points, signal-wires, &c., for it appears that all the surfacemen were engaged in this work.

Driver Gourlay states that the absence of detonators justified him in assuming that the signals were not in the danger position, but it must be remembered that, in accordance with Rule 76 (*c*) and (*d*), a driver has to satisfy himself, before coming to this conclusion, that the signal is under the protection of a fogman, either by hearing the man's voice, or seeing him wave a green hand signal. Also, by Rule 143, when from any cause, such as fog or falling snow, fixed signals are not visible as soon as usual, drivers are instructed that speed must be reduced, and every possible precaution used, especially in approaching stations, so that they may be able to stop a train short of any obstruction, if the signals are against them.

It has been stated that, in accordance with Rule 217 (*a*), guard Anderson should have protected the local train by laying detonators behind it. I do not hold this opinion. The rule states that it is the duty of a guard to so protect his train "unless it has arrived at or passed the home signal." The local train was standing alongside the station platform, and had passed the home signal. It was protected, as any train standing in similar circumstances is protected, by the home and distant signals. The rule is applicable to a train broken down or stopped between signal-boxes, and not to a train standing in a station under the protection of signals controlled from a signal-box. I do not therefore think that there was any reasonable ground for the observation of this rule by Anderson.

V. There are now several matters of less importance, to which it is necessary to refer.

It is remarkable that when block working had broken down, and all telegraphic and telephonic communication was interrupted, none of the Joint Line traffic staff appear to have recognised the necessity for keeping in touch with each other, and with head quarters, whenever possible, by some extemporised method. No notice was sent from Elliot to Arbroath by messenger or train, that the up line between Elliot and Easthaven was blocked. No notice was sent that single line working had commenced. It was not until late in the evening that signalman Beattie became aware of this fact, and for this reason Gourlay was

not warned, in accordance with Rule 227 (*d*). No message was sent by stationmaster Grant to Mr. Hamilton during the day, regarding the condition of affairs north of Arbroath. An up passenger train was despatched from Arbroath at 10.45 a.m., although the up line had been blocked from 8 a.m., and Single Line Working on the down line was not commenced until after 2 p.m. Goods trains were allowed to leave Dundee for Montrose and Aberdeen when there was no chance of their getting further north than Arbroath. After the collision, though everything possible was done to procure without delay medical aid for the unfortunate sufferers, no action was taken by Carnegie to inform Mr. Hamilton, in accordance with Rule 115, and the instruction contained in the Appendix to the Working Time Table, of the serious nature of the collision. The result was that, though Mr. Hamilton arrived at Easthaven Station (three miles south of Elliot) about 4.15 p.m., he did not receive any information of what had occurred until about 6 p.m. Even then the information was brought by passengers who appear to have walked from Elliot to Easthaven. I am informed that the North British Railway Company in Edinburgh did not receive the news of the accident until after 11 p.m., although the local train, despatched from Elliot after the accident at 5.19 p.m., arrived at Dundee at 6.7 p.m. In consequence of this, the steam crane train from St. Margarets, Edinburgh, did not reach the scene of the accident until 2 a.m. on the 29th. Having regard to the fact that the whole length of the Joint Line between Dundee and Arbroath is only about 17 miles, the general want of information on the line is an extraordinary feature.

Under ordinary conditions, the Joint Railway is well manned as regards maintenance of permanent way. There are about 95 men employed on a length of 17 miles of double line and five miles of single line. The evidence shows that the snow storm was the most severe known during the last 15 years. Heavy drifting took place; switches were clogged; semaphores, signal wires, and arms were brought out of position by snow; yet in these very adverse circumstances not a single extra man was employed, and no assistance was asked for from the engineering department of the North British Railway. The result was as might have been expected. Cross-over roads remained unworkable; signals hung out of position; the turntable at Arbroath was unapproachable. It was certainly a time of great difficulty for all concerned, but the permanent staff was obviously inadequate to cope with all the difficulties, and it ought to have been temporarily increased to meet the emergency.

The necessity for keeping points leading to an engine shed and turntable in working order was not recognised by the traffic and permanent way staff. The turntable was required not only for traffic purposes, but also for the efficient use of the single snow ploughs which were used for clearing the Joint Line. Inspector Hackney applied for snow ploughs on the Joint Line on the 26th December. Four journeys were made over the down road on the night of the 27th and the morning of the 28th by two North British snow ploughs. Both these single ploughs made one journey, the last between 4 and 5 a.m., to Dundee over the up line with the plough trailing, because the turntable at Arbroath was not approachable. It is difficult to understand how inspector Hackney could recognise the necessity for snow ploughs, and fail to arrange for the ploughs to be turned. The responsibility for keeping the points, leading to the engine shed and turntable, in a workable condition rested with him, and if he had not enough men to do the work, he should have arranged to obtain others, or applied for assistance. It is possible, that if the ploughs had been turned before making the journeys over the up line, the snow drifts between Elliot and Easthaven would have offered less resistance to the North British goods train, the couplings might not then have failed, and the whole course of events would have been different. It is not clear from the evidence that the difficulty of keeping these engine shed points in a workable condition was insuperable. At 8.30 a.m., none of the four cross-over roads at Easthaven and Elliot could be worked, but as soon as single line working opened, the cross-overs became necessary at these stations, the points were cleared, and were afterwards kept in a workable condition. I do not think it would have been impossible to have done the same with the engine shed points at Arbroath.

As regards the block on the up line there are one or two points which call for notice. Information reached Easthaven and Carnoustie Stations about 8 a.m. of the goods train having divided. No attempt was made to send information to head quarters by these stationmasters, and Mr Hamilton and traffic inspector Souter did not hear of the occurrence until they arrived at Carnoustie about 11.20 a.m. No instructions appear to have been given to Boyd by the traffic staff to obtain the assistance of surfacemen in his attempt to extricate the waggons left behind, and it does not seem to have occurred to him to ask for assistance. The plan pursued by driver Boyd to extricate his waggons

does not in the circumstances of heavy snow on the line appear to have had much chance of success. The method was in accordance with General Rule 221 (*a*), but it was I think courting failure to attempt, with no other assistance than that of his fireman and guard, to propel 30 waggons through snow drifts a distance of two miles. A wiser plan, and one more likely to succeed, would have been for Boyd to have obtained permission from his guard to act in accordance with Rule 221 (*f*) and drawn the waggons to Easthaven.

The delay in single line working, which took place after 2.30 p.m., and which caused the local train to be kept standing at Elliot Junction Station, would not have arisen, if a pilot engine had been made available for inspector Souter. I attribute this firstly to the working arrangements on the Joint Line, and secondly to the want of initiative shown by the traffic staff of the Joint Line.

The Dundee and Arbroath Joint Railway is owned by the Caledonian and North British Railway Companies. The general and traffic management of the Joint Line is vested in a manager, who is responsible to the Board of Directors appointed by the owning companies. The manager is of course the official superior of the whole of the Joint Line staff, traffic, permanent way, telegraph, &c. But, whereas the inspectors in charge of permanent way and telegraphs on the Joint Line are responsible departmentally to the Chief Engineer and Telegraph Superintendent of one or other of the owning companies, the traffic staff is not supervised or controlled by either of the owning companies.

The Joint Line possesses no rolling stock of its own. The Caledonian and North British Railway Companies each provide their share of the carriage &c. and engine stock required for working the traffic between Dundee East and Arbroath. The two companies also supply the enginemen and guards necessary to work these local trains.

This system of control and working does not appear to be working satisfactorily. The traffic representatives of the two owning companies are not responsible for the working arrangements, for the due observance of safety precautions in working, or for the discipline maintained on the line. No lifting gear, even in the shape of jacks, is at the disposal of the Joint Line staff. Application has to be made to either the North British or Caledonian locomotive foremen at Dundee for such gear as is required. The natural result is delay, as evidenced by the difficulty experienced in releasing fireman Irvine after the collision, and by the fact that it was not until 8.30 p.m. that a break-down van left Dundee to re-rail the North British goods engine between Elliot and Easthaven. In the same way, if snow ploughs are required, application has to be made to the owning companies. The result in this case was not very satisfactory. One Caledonian snow plough made one trip over the Joint Line on the night of the 26th December, and two North British ploughs made four journeys altogether on the down line and two (with the plough trailing) on the up line between 3 p.m. on the 27th and 4 a.m. on the 28th. One plough should have been detailed for continuous work on the Joint Line whilst the snow was falling and drifting as described, but neither of the two companies took the responsibility of keeping the lines clear, and there was no one with sufficient authority apparently to order the ploughs to continue working.*

I have also to draw attention to the fact that, at the time this very serious collision occurred, no steam crane or heavy break-down gear was stationed nearer than Edinburgh (North British Railway) and Glasgow (Caledonian Railway).

The lack of discipline which prevailed at Arbroath Station on the 28th December is a matter calling for action by the Joint Companies. The evidence, I think, shows that unauthorized persons frequent the station. Nothing was done to prevent a number of people from occupying the footplate of Gourlay's engine. It is evident that this state of affairs is subversive of discipline, and must result in temptation being placed in the way of railway men, especially during a period of general festivity. In this connection I have to point out that the proximity of the Victoria Bar to the up platform is a very undesirable feature in the surroundings of the station. The substitution of a coffee shop and refreshment room would be greatly in the general interests of the staff.

VI. My conclusions on the whole case are as follows :—

1. Driver Gourlay received repeated and very explicit instructions at Arbroath to travel with caution, and stop at all stations. He passed the distant and home signals for

* Also, since it was clearly desirable that there should be no risk of trains being brought to a standstill at places where drifting was taking place, and of blocks thereby occurring, it would have been advisable to reduce the length of goods trains, and possibly also of passenger trains, whilst the storm lasted.

Elliot Junction without any authorization, and without having the continuous brake applied. His engine had travelled a distance of 130 yards beyond the home signal, and about 35 yards alongside the platform, when the collision took place. The proper place for his engine to have come to a stand was about 100 yards, or a train's length, beyond the actual site of the collision. At the moment the collision occurred, the speed at which his train was moving, as evidenced by the destructive effects of the collision, and the position in which both brake and regulator handles were found to be in, negative the idea that he was prepared to stop, or could have stopped, at the proper place in the station, in accordance with his orders.

I consider that the tender with its load of coal in front was likely to considerably obstruct his view of the train standing at the platform, but that this would not in itself have prevented his seeing the distant and home signals, which were well elevated, if he had been alert and running with proper caution, and that the position of both these signals was such as to indicate danger, when he passed them.

I hold therefore that he is primarily responsible for the collision.

The evidence proves that he left his engine, on several occasions between 12 and 3 o'clock, and all of these could not have been necessary occasions as set forth in Rule 135. It is shown that he permitted unauthorized persons to congregate on his engine at Arbroath, which was contrary to the circular notice R 105/04 issued by the Locomotive Superintendent on the 7th November, 1904. This laxness in the sense of discipline, combined with all the evidence I have heard at the two inquiries, have forced me to conclude, most unwillingly, that his conduct was to some extent due to the effects of alcohol.

He commenced work on the 28th December, after 12 hours rest, at 6.35 a.m., and had therefore been on duty for about nine hours when the collision occurred.

2. Certain precautions should have been taken, by the traffic staff of the Joint Line, by which the collision might have been averted :—(*a*) The atmospheric condition, owing to falling and drifting snow was such as to call for the employment of a fogman at Elliot Junction up distant signal, in accordance with General Rules 78 to 85. The explosion of a detonator at this signal would, I believe, have reminded Gourlay of his position and caused him to apply his continuous brake. (*b*) Having regard to the complete break-down of block working, and of all ordinary means of communication, and to the inaccuracy in position of the out-door semaphore signals from snow and frost, the home signal at Elliot Junction should have been fastened in the proper danger position. The signal being out of sight of the signal-box during the snow storm, a man with hand signals and detonators should have been appointed to act at this signal, in compliance with Rule No. 73.

The responsibility for the non-observance of the Rules regarding signalling during failing snow rests in my opinion upon the superior traffic staff of the Joint Line. Stationmaster Carnegie and signalmen Guild and Haggart are responsible for not having recognised the necessity for complying with Rule 73.

3. Contributory causes to the collision were as follows :—(*a*) The general lack of initiative and intelligence displayed by the traffic staff of the Joint Line in dealing with exceptional circumstances, as shown by their failure to recognise the necessity for keeping in touch whenever possible with each other, for providing assistance for driver Boyd to extricate his waggons, for keeping a snow plough at work on the line, and in several other directions. (*b*) The action of stationmaster Grant in allowing the North British train to leave Arbroath so soon after the local train. He ought to have known that, with single line working between Elliot and Easthaven, it would be necessary to allow for an interval of at least half an hour between following trains, and that to despatch trains, at any shorter intervals, without due notice, would merely cause a block at Elliot Station. His action was not contrary to any rules, but was a grave error of judgment as the result shows. (*c*) The failure to increase temporarily the permanent way staff to cope effectually with the many difficulties brought about by the snow storm. Inspector Hackney is responsible for this, as he neither engaged extra men, nor applied for assistance to his departmental superior, Mr. Bell. (*d*) The delay in single line working, due to no pilot engine being available for the pilotman, and the want of lifting gear, jacks, &c., for re-railing the tender of the North British goods engine between Elliot and Easthaven. The owning Companies, by the arrangements they have made for the working of the Joint Line, are responsible in my opinion for these delays, and lack of appliances. (*e*) The well-meant but ill-advised action of the general public in

treating railway men with intoxicants. The evidence, I think, proves this to have been the case, and the very sad results of this collision will, I hope, emphasize the necessity for refraining from putting temptation in the way of men employed on such very responsible duties.

VII. Several proposals have been made for the prevention of accidents of this nature in the future. I propose now to deal with these.

1. *Speed Indicators.* There are several directions in which speed indicators on locomotives, especially when combined with automatic speed recorders, will obviously prove useful. In addition to recording on a dial the speed at which an engine is moving at any moment on its journey, a diagram on a continuous paper band, is preserved of the speeds throughout the whole journey, together with a record of the time occupied. It is therefore possible, with a reliable instrument of this description, to determine the position of a train on the line at any moment of a journey, the time at which it reaches any given point, the length of stoppages, the rate of acceleration and retardation, whether enginemen are fairly conforming to speed restrictions, where slipping of wheels occur, and many other important points. Such instruments are largely used on Continental Railways, and their adoption has been rendered obligatory in several foreign countries. Very great improvements have been made in late years in these instruments, and their reliability for the objects in view has been practically established. Some of the instruments have an accessory in the shape of a bell, which can be arranged to ring whenever the maximum speed permissible is attained or exceeded.

But although there are many obvious advantages to be gained by the use of these instruments, I cannot agree that in this particular case such an instrument would have prevented the collision. There is nothing in connection with the permanent way, or alignment of the Joint Railway, to call for a permanent restriction of speed between Arbroath and Elliot. I have endeavoured to show, when the "Interval and Caution" method of working has been adopted in substitution for Block Working, that the speed permissible must be variable, and dependent upon the condition of the atmosphere, and that it is really for a driver himself to prescribe the speed which the particular circumstances call for. It would be useless to attempt to lay down absolute rules on this subject. Again, on a long journey, if the instrument shows on the dial a record of the total number of miles run, it would doubtless give a driver rough information as to his position if he could not otherwise determine it. But it is difficult to believe that a driver would consult this record within the first two or three minutes of the commencement of his journey, even in exceptional conditions of weather. I do not hold therefore that the equipment of locomotives with speed indicators, although these instruments will serve many useful purposes, is likely to prevent the occurrence of collisions of this description.

2. Another suggestion made is to increase the number of men on the engine footplate to three. The third man would presumably be primarily responsible for the observance of speed restrictions, and for obedience to signals, and possibly would belong to the traffic department. Such an addition to the staff of a train would entirely relieve guards of the responsibility now laid upon them by the Rules, and would leave the engine driver and fireman free to devote themselves to the working of the engine. A third man—assistant fireman—is employed on the largest type of locomotives in America, where the manual labour entailed by firing such huge machines is more than one man can accomplish. For disciplinary and other purposes, a travelling inspector is often detailed to accompany enginemen, and a pilotman, whenever the engineman does not know the road, is also appointed. But these are circumstances which call for special treatment. The adoption of the general principle appears to me to be likely to prove of advantage in one direction. At present the engine driver firstly, and the guard secondly, is held responsible for the safety of a train. The position of the guard at the rear of a train is a bad one for the observation of obstructions and even of signals. With a third man on the footplate, if responsibility in a secondary degree is still placed on the engine driver, there will be two men in the best position available for observation purposes. But I foresee many difficulties in the way of the adoption of this suggestion. There is firstly expense, which will prove a very serious obstacle. There is not much available space on the footplate for the permanent addition of a third man. Unless the complete control of the steam and brake gear is placed in the hands of the third man, it will be difficult to hold him primarily responsible for safety. Again, if such control is put into his hands, he will be in exactly the same position as a driver is at present, and the office of driver will practically become a sinecure. I am not therefore prepared to support this suggestion.

3. I believe that the provision of mechanical or other automatic devices, to which the attention of many railway men is now being directed, is likely to afford a larger increase of safety than adding to the personnel on the footplate of an engine. On underground railways and tube lines in London, devices of this description for automatically controlling trains are fitted at all running signals. Whenever a train passes one of these signals in the danger position, the continuous brake is automatically applied, and the train is brought to a stand. This arrangement has been found to be reliable on such roads at speeds as high as 30 to 35 miles an hour. No doubt modifications of this device would be necessary on lines where express speeds are common. Other mechanical methods, calling the attention of a driver to the fact that he is passing a signal, are being tried by railway companies. For example, fogging machines, which place detonators on the rails when the signal is at danger, and are operated by the same lever which works the signal. These however do not duplicate the "safety" position of a signal, and therefore do not give a driver all the information desirable. Another arrangement causes a bell to ring on the locomotive when the signal is at "safety" and sounds a whistle when it is at "danger"; and thus provides the dual communication necessary. But in no case have such arrangements stood the test of time sufficiently long to be at present accepted as wholly reliable.

4. Various proposals have been made to prevent the possibility of a similar total breakdown of block working and means of communication. It is said that larger and stronger poles are required for carrying the wires. But larger poles will present a greater surface for wind pressure to act upon, and will not prevent the possibility of a breakdown. In this case, from what I saw, the breakdown was as much due to failure of the wires to stand the heavy load of frozen snow with which they were swathed, as to the failure of the poles. An increase in the number of poles, and a consequent shortening of the wire spans, would appear, therefore, to be a better remedy for air lines in exposed situations. Complete immunity from the possible effects of a blizzard will, however, only be obtained by placing the wires under cover or underground. There are, however, obvious disadvantages to this system, unless it is combined with cabling. Faults, short-circuiting, &c., will be of more frequent occurrence, and these defects will be far more difficult to locate and deal with than in the case of air lines. Such defects too are elements of danger in the case of railway wires. It is only, I think, in exceptional circumstances that the expense of cabling such wires will be justified.

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

Assistant Secretary,
Railway Department, Board of Trade.

APPENDIX I.

PARTICULARS OF DAMAGE TO PLANT.

North British Railway.

Engine No. 324.—Engine cab.—Plates and angle iron require re-straightening. Other damages are as follows:—Platform framing and driving splasher on one side damaged, smoke-box front plate, brake-gearing, footsteps (both sides) damaged, sand pipes and connections torn off, tallow cock (one side), hand rails (one side), reversing shaft and motion, ash pan, bogie frame, and Westinghouse brake cylinder (one side), damaged. Westinghouse pipes torn off.

Tender No. 324.—Frames, tank (one side and end), four axle-boxes and horn blocks damaged, brake-gearing, brake shaft and brackets destroyed, footsteps (both sides) damaged, both buffers destroyed, Westinghouse brake cylinder and pipes and vacuum pipe destroyed.

North British composite carriage No. 109.—One end and one end quarter destroyed, one headstock destroyed, one quarter damaged, one step-board destroyed, two step-boards damaged, two step-hangers damaged, one embossed glass and four body glasses broken, one axle-box broken (oil).

North British van No. 279.—Total wreck.

North British composite carriage No. 142.—Two buffer rods bent, headstock damaged, and buffer casting broken.

Caledonian Railway.

No. 343, brake third.—Completely destroyed.

No. 350, third class carriage.—Completely destroyed.

No. 125, third class carriage.—Completely destroyed.

APPENDIX II.

DUNDEE AND ARBROATH JOINT RAILWAY.

EXTRACTS FROM RULES AND REGULATIONS, 1906.

General.

Public safety of first importance.

6—The safety of the public must, under all circumstances, be the chief care of the servants of the Company.

Misconduct punishable.

12—(*a*) The Company may at any time, without notice, dismiss or suspend from duty any servant of the Company for intoxication, disobedience of orders, negligence, or misconduct, or for being absent from duty without leave, and no wages shall be payable by the Company to any servan *after his dismissal, or during the period of his suspension from duty,* or during his absence from duty from any cause.

Regulations, Notices, and Working Time-table—to whom supplied.

17—(*a*) Every Station-master, Inspector, Engine-driver, Fireman, Guard, Signalman, Policeman, Ganger, Foreman, Shunter, Yardsman, and Gate-keeper; every Clerk, Porter and other servaut connected with the working of the Railway; and also every man engaged on the Permanent-way or Works affecting the Running Lines, must be supplied with, and have with him when on duty, and produce when required, a copy of these Rules and Regulations.

(*b*) Except as shown below, every person above referred to must also be supplied with, and have with him when on duty, a copy of the current Working Time-table book, or section of the book, the Appendix thereto, where issued, and any Signalling, Permanent-way, or Special Train Notices; a copy of each must also be kept in the Stationmaster's Office.

Servants to assist in carrying out Regulations.

19—Every servant must assist in carrying out the Rules and Regulations, and immediately report to his superior officer any infringement thereof, or any occurrence which may come under his notice affecting the safe and proper working of the traffic.

Signals.

Observance of *Distant* Signal

36—When an Engine-driver finds a Distant Signal at Danger he must reduce speed and proceed cautiously towards the Home Signal, being prepared to stop if necessary.

Home Signal not to be passed at Danger, except where otherwise provided.

39—(*a*) No train must pass a Home Signal at Danger, or foul the Crossings or Points to which it applies, except as prescribed in Rules 73 and 232, or where a Calling-on Arm is in use.

Engine-drivers to clearly understand verbal communication.

41—(*e*) Engine-drivers must not go forward until they clearly understand the verbal communication which the Signalman has made to them as to the state of the Line ahead, and then only with their engines under the needful control to ensure safety.

Working of Points and Signals.

Points, Signals, Interlocking and other apparatus to be examined.

56—The Signalman on duty must see that the Points, Signals, Interlocking, Electric, and other Apparatus are kept in perfect working order; and he must immediately report to the Stationmaster...

Wires to be regulated.

58 (last para.)—He must take care that the Signal wires are kept properly adjusted by means of the regulating screws or links, so as to compensate for the expansion and contraction caused by variations of temperature.

Lighting Signal Lamps.

67—(*a*) The Signal Lamps must be lighted as soon as it commences to be dusk, and in foggy weather or during falling snow.

Defective Signals, Points, &c.

Defective Home, Starting, Advanced Starting, or Siding Signal.

73—(*a*) When a Home, Starting, or Advanced Starting Signal, or Siding Signal applicable to a Siding not protected by Safety Points, becomes defective, or is not working efficiently, a competent person must be placed at such Signal with Hand Signals and Detonators, and act under the instructions of the Signalman. The Distant Signals applicable to the Lines affected must be kept at Danger by being disconnected from the levers by which they are worked, and must remain in that position until the defect has been made good, and all is again in working order. If the defective Signal can be placed at Danger, it must be kept at Danger until again in working order.

(*e*) The Hand-signalman must, when signalling a train forward, stand near to the Signal for which he is acting, in order that his signal may not be mistaken by an Engine-driver on any other Line, and should it be necessary to stop, or reduce the speed of, an approaching train, the Hand-signalman must exhibit a Red Hand Signal to the Engine-driver until the train has been stopped or the speed sufficiently reduced, and then, if permission can be given for the train to proceed, he must exhibit a Green All Right Signal held steadily in the hand.

(*n*) If before the Hand-signalman takes up his duties, it should be necessary for a train to be brought past any Signal, other than a Distant Signal, whilst it is at Danger, the Signalman must, where circumstances permit, proceed to the defective Signal and explain to the Driver why it cannot be lowered. If, however, the Signalman is unable to leave the Signal-box, he must, after the train has come to a stand, and there is no risk of another Engine-driver mistaking a Hand-signal, exhibit to the Driver a Green Hand-signal, held steadily in the hand, which must be regarded by the Engine-driver as an instruction to pass the Signal at Danger and proceed as far as the Signal-box to receive any instructions which may be necessary.

Signal not shown or imperfectly shown.

74—The absence of a Signal at a place where a Signal is ordinarily shown, or a Signal imperfectly exhibited, or the exhibition of a White Light at a place where a Red or a Green Light ought to be seen must be considered a Danger Signal, and treated accordingly, and the fact reported to the Signalman or Stationmaster.

Signalling in Foggy Weather or during Falling Snow.

Station-masters responsible for employing Fog-signalmen.

78—(*a*) In foggy weather or during falling snow it is the duty of the Stationmaster or other appointed person to take care that Fog-signalmen are employed at all the places where their services are required; and, where Platelayers are employed for the purpose, to arrange beforehand with the Inspector of Permanent-way, the Platelayers who are to act as Fog-signalmen at the various posts.

Addresses and Posts of Fog-signalmen.

(*b*) A list of the names and addresses of the Fog-signalmen, showing the post to which each man is appointed, must be kept exhibited in a conspicuous position in the Stationmaster's Office and Signal-box.

Relief-men.

83—(*a*) Station-masters (when the Traffic Staff is employed), or Inspectors of Permanent-way or Gangers (when Platelayers are employed), must arrange for Relief-men should the fog or snow storm continue.

Fog-signalling at Signal-boxes in absence of Fog-signalmen.

85—At all Signalboxes (whether intermediate or otherwise) where no Fog-signalmen are appointed, or where such men are appointed but have not arrived, the Signalman, when he requires to stop an approaching train, in addition to keeping his Signals at Danger, must, when practicable, place two Detonators on the Line to which the Signals apply, sufficiently apart to give two distinct and separate reports.

Signals to be frequently worked and Apparatus examined in severe frost or falls of snow.

86—During the prevalence of severe frost or falls of snow, the Signals and Points must be frequently worked by the Signalmen when the Sections are clear, and no train has been signalled, in order to prevent the frost or snow impeding their free working. Fog-signalmen also must see that nothing interferes with the true working of the Arms or Discs and Lamps of the Signals for which they are fog-signalling; that the Signal Arms, Lamp glasses, and Spectacles are kept clear from snow; and that the wires work freely over the pulleys. The Fog-signalmen must at once report to the Signalman any defect in the Signals or impediment to their proper working. If no Fog-signalman is employed, the Ganger of the Permanent-way must provide for this duty being performed while the snow or frost, or its effect, continues.

Control and Working of Stations.

Responsibility of Station-master or person in charge of Station.

90—(*a*) Every Stationmaster or person in charge of a Station is answerable for the security and protection of the office and buildings, and of the Company's property there. He is responsible for the faithful and efficient discharge of the duties devolving upon all the Company's servants, either permanently or temporarily employed at the Station, or within its limits, and such servants are subject to his authority and directions in the working of the Line. He is also responsible for the general working of the Station being carried out in strict accordance with the Company's Regulations, and must . . . .

Supervision of Signalmen.

96—The Stationmaster must make himself thoroughly acquainted with the duties of the Signalmen at his Station or under his control, and satisfy himself that they perform them in a proper manner, by night as well as by day; and, in order to maintain a proper supervision over the men in this respect, he must frequently visit the Signal-boxes.

Accidents to be immediately reported.

115—When an accident, or obstruction of any kind, occurs on any part of the Line, it must be immediately reported by telegraph, or by the most expeditious means, to the next Station or Signal-box on each side of the place where the accident or obstruction has occurred, so that notice may be given to the Engine-drivers and Guards of approaching trains; to the Manager of the Joint Line and other Heads of Departments connected with the working of the Line; to the Locomotive Station where the Breakdown Vans for the district are kept; to the Engineer and District Engineer; to the Traffic Inspector; to the Inspector of Permanent-way; and, where necessary, to the Inspectors of the Signal and Telegraph Departments, and likewise the District Superintendents of the two Companies. It must also be reported by telegraph to those Stations where the starting of other trains is liable to be affected by the delay caused by the obstruction.

Train Signals.

Tail Lamp to indicate last vehicle.

126—Every train travelling on the Line must have a Tail Lamp, properly cleaned and trimmed, attached to the last vehicle, by day as well as by night. The Lamp need not be lighted in the daytime, except in foggy weather or during falling snow, or where otherwise provided, but its presence in the rear of each passing train will furnish evidence to the Signalman that no portion of the train has become detached.

Tail, Side and Head Lights after sunset, and in foggy weather or falling snow.

127—(*a*) After sunset, and in foggy weather or during falling snow, every engine must carry the necessary Head Lights, and, when running alone, a Red Tail Light also; and, except as shown in the following paragraph, or where instructions are issued to the contrary, every train while on any Running Line must carry a Red Tail Light on the last vehicle and two Red Side Lights.

Guard to see that Tail and Side Lamps are burning.

(*c*) The Guard, if there be only one, or the rear Guard, if there be more than one, must see that the Tail and Side Lamps are kept properly burning when necessary.

Special Passenger train following.

130—(*a*) An additional Tail Lamp, or a Red Flag by day, carried on the last vehicle of a train indicates that a special train is following, but the additional Tail Lamp need not be carried by preceding trains for special trains, of which printed or written notice has been given.

(*c*) The Stationmaster or person in charge at the starting point of a Special Passenger train, of the running of which no previous printed or written notice has been given, must, when practicable, take care that the additional Tail Signal is affixed on the last vehicle of the preceding train, and he must inform the Guard in charge of it of the description and destination of the Special train. The Guard of the train preceding the Special train must inform the person in charge of each Station at

which he stops, of the description and destination of the train that is following, and take care that the additional Tail Signal is removed from his own train when no longer wanted.

(*d*) Relief trains, if run without previous printed or written notice, must be considered and treated as Special trains. Relief trains.

Working of Trains.

Driver and Fireman not to leave engine.

135—The Driver and Fireman, when on duty, must not leave their engine unless it is absolutely necessary for them to do so, nor, except as directed in the Rules, without a man being left in charge of it, or the engine is in a Siding and out of gear, with the Hand-brake hard on.

In foggy weather or during falling snow speed to be reduced if Fixed Signals are not visible.

143—The Engine-driver and Fireman must carefully observe all Signals, and when, from fog or falling snow, or from any other cause, the Fixed Signals are not visible as soon as usual, the speed must be reduced, and every possible precaution used, especially in approaching Stations and Junctions, so that they may be able to stop the train short of any obstruction, should the Signals be against them.

Driver to travel cautiously, and to stop if fixed or Hand Signals cannot be seen.

144—In foggy weather or during falling snow, the Engine-driver must travel cautiously, keeping a sharp look-out for the Fog-signalmen, who will, if the Signals are off, show him a Green Hand Signal held steadily in the hand. When the fog is so dense that the Fixed Signals cannot be seen by the Engine-driver on approaching or passing them, he must, unless he see the Fog-signalman's Green Hand Signal, assume that the Fixed Signal is at Danger, and act in accordance with Rule 74.

Goods Trains coupled together.

149A—(*k*) In foggy weather or during falling snow trains must not be coupled together, but must be worked separately.

To be careful in approaching Stations, and not to stop short of, or overrun, platform.

152—(*a*) The Engine-driver must carefully approach all Stations at which his train is required to stop, and must not stop short of, or overrun, the platform; he must also exercise care in passing Stations where he is not required to stop.

Guards under orders of Stationmaster.

168—When trains are within Station limits, the Guards are under the orders of the Station-master or person in charge.

Guards to keep a good look-out.

170—(*a*) Guards of Passenger trains must, as far as practicable, keep a good look-out ahead and be prepared to take any action that may be necessary.

Luggage, parcels, &c.

They must also give prompt attention to the luggage, parcels, despatches, and other packages entrusted to them. Parcels which have to be put out must be given by the Guard to the Porter appointed to receive them, who must sign in the Guard's book for the value parcels delivered to him. The Guard must, in like manner, sign in the Porter's book for the value parcels transferred to his care.

Information as to running of trains.

175—(*a*) Stationmasters and Signalmen must, when necessary, ascertain how the Ordinary and Special trains in their respective districts are running.

Guard to ride in brake-van.

177—(*a*) The Guard must ride in his brake-van, and not in any other part of the train or upon the engine, except when required to do so in the execution of his duty.

To keep a good look-out.

(*b*) He must keep a good Look-out, and should he see any reason to apprehend danger, he must use his best endeavours to give notice thereof to the Engine-driver. If the train is fitted with the Continuous Brake, he must, in case of emergency, apply it in order to stop the train. If the train is not fitted with the Continuous Brake, he must apply his Hand-brake sharply, and release it suddenly. This operation repeated several times is almost certain, from the check it occasions, to attract the notice of the Engine-driver, to whom the necessary Danger Signal must be exhibited.

Means to be adopted by Guard to attract Engine-driver's attention.

Engine not to push train.

179—Except as shown below, no engine must push a train upon any Running Line, but must draw it.

(*c*) When a train or a portion of a train is left upon any Running Line, and the engine returns for it upon the proper Line, and crosses behind it, as shown in Rule 221.

Trains Stopped by Accident, Failure, or Obstruction.

Protection of train.

217—(*a*) When a train is stopped by an accident or from any cause (unless it has arrived at or passed the Home Signal), the Guard, if there be only one, or the Rear Guard, if there be more than one, must immediately go back at least three-quarters of a mile, unless he arrive at a Signal-box within that distance, plainly exhibiting his Hand Danger Signal, to stop any following train, and, in addition to his Hand Signals, he must take Detonators (to be used by day as well as by night), which must be placed upon the Line on which the stoppage has happened, as follows, viz. :—

1 Detonator a quarter of a mile from his train;
1 Detonator half a mile from his train, and
3 Detonators, ten yards apart, not less than three-quarters of a mile from his train:

and must also continue to exhibit his Hand Danger Signal to stop any coming train.

Train or portion of train left on Running Line from accident or failure of engine.

221—(*a*) When a train or a portion of a train is left on any Running Line from accident or inability of the engine to take the whole forward, or from any other cause, the Engine-driver must not return for it on the same Line, except as ordered in clauses (*f*) and (*g*) of this Rule, but must cross on to, and travel along, the proper Line, and must re-cross at the nearest point behind the part left, which he must push before him until convenient to go in front again with the engine. If there be a Crossover road immediately in front of the train, and the operation can be performed within sight of the Signalman, the Driver may use such Crossover road for the purpose of attaching his engine in front of the train.

(*f*) *Without a Crossover road.*

When engine has to return on wrong Line to rear portion.

If it be found necessary to return to the train or rear portion of the train on the wrong Line, the Engine-driver must, before starting with the front portion, send his Fireman to the Guard to obtain his written authority to the Signalman at the nearest Signal-box in advance where the front portion of the train can be put away, authorising him to allow the engine to return from that point on the wrong Line (see Form A at end of Rule), and without this authority the Signalman must not allow the engine to return on the wrong Line to its train.

Train, or portion of train, passing for short distance on wrong Line in case of accident.

222—If, in case of accident, it is necessary for a train, or portion of a train, to return on the wrong Line to the Signal-box in the rear, the Guard or Fireman must first go or send some other competent person to the Signalman there, and obtain his permission in writing for the train, or portion of train, to run on the wrong Line to his box; but the Engine-driver must not move in the wrong direction until he has received such written permission (see Form C on next page). This "Wrong Line Order" must be collected by the Signalman, and sent to the Stationmaster with his report.

Working Traffic of a Double Line over a Single Line of Rails, during Repairs or Obstruction.

When any obstruction.

Appointment of Pilotman. Pilotman's Badge.

Pilotman to be present.

227—(*a*) When it is necessary, during repairs or owing to an obstruction of any kind, to work the traffic in both directions over a Single Line, the following precautions must be adopted:—

(i.) A competent person must be appointed as Pilotman, who must wear, round his left arm above the elbow, a distinctive Badge (see end of Rule). Until the regular Badge can be obtained the Pilotman must wear a Red Flag tied round his left arm. No engine must enter upon any portion of the Single Line without the Pilotman being PRESENT and riding upon the said engine, unless two or more trains are required to follow in the same direction, in which case the Pilotman must order all trains to proceed except the last, upon the engine of which he must ride. In the case of an engine assisting in the rear of the last train, the Pilotman must ride on the assisting engine. If a special engine is supplied for the use of the Pilotman he must, after personally starting the whole of the trains, follow or accompany the last train. When it is necessary for the Pilotman's engine to accompany the last train, it must be attached to the front of that train, but the Pilotman must ride on the train-engine.

(*d*) Before Single Line Working is put in operation, the Signalman at each end of the Single Line must, when practicable, advise the Signalman at the Box in the rear, and the latter must stop each train proceeding in the direction of the Single Line Working, inform the Engine-driver of the circumstances, and instruct him to proceed cautiously, the trains being accepted by the Signalmen at each end of the Single Line in accordance with clause 5 of the Block Telegraph Regulations.

Suspension of Block Telegraph Working.

In foggy weather or during falling snow, or where Tunnel intervenes, or gradients heavy, Block Telegraph Working to be maintained.

230—(*a*) When Single Line has to be worked, and it is necessary to suspend Block Telegraph Working, this must be done only by the person who arranges the Single Line Working, by an order in writing on the Single Line Working Form, but in foggy weather or during falling snow, or when a Tunnel intervenes, or the gradients are heavy on the Section of the Line where the traffic has to be worked on a Single Line, Block Telegraph Working must be maintained on such Section, the Up trains being signalled on the Up Line Block Telegraph Circuit, and the Down trains on the Down Line Block Telegraph Circuit, or the Pilotman must accompany every train passing over the Single Line.

Permanent-way and Works.

Accident to train, or failure of Works to be reported.

258—(*a*) Any accident to a train, or failure of any part of the Works affecting the safety of the Line, must be reported as soon as possible to the nearest Inspector of Permanent-way and to the Stationmasters on both sides of the point at which the accident or failure has occurred; and, in the event of a Signal-box intervening between the point of accident or failure and the nearest Station in either direction, the occurrence must also be reported to the Signalman on duty.

Summoning assistance.

(*b*) To convey intelligence of, or to summon assistance to, any accident or failure, a Platelayer must be sent, as quickly as possible, to the next Gang in each direction, from which a Platelayer must, in like manner, be sent to the next more distant Gang, until information of the accident has, by this means, reached the nearest Station in each direction and the necessary assistance has been obtained; the Platelayers of each Gang proceeding without loss of time to the place at which their services are required.

Extract from Working Time Tables.

October to December, 1906.

General Instructions.

Arbroath Station—Working of Passenger Trains at.—Down Trains—Enginemen, Guards and all others concerned are reminded that it is important that, as far as possible, none of the Passenger Carriages on **Down Trains** should be stopped under Keptie Street Bridge, but be taken forward quite clear thereof, so that all Passengers who require to leave the Trains at Arbroath may alight **at the Platform North of the Bridge only.**

Up Trains.—In the case of **Up Trains,** no portion of any Carriage carrying Passengers must be taken under Keptie Street Bridge until the Passengers coming off at Arbroath have had an opportunity to alight at the Platform, and Passengers going on have been taken up.

Extracts from Appendix to the Working Time Tables.

Regulations for Train Signalling by Block Telegraph on Double Lines of Railway.

16. When Block Telegraph may be suspended for Single Line Working.—Should any obstruction occur necessitating the working of Single Line, and it is necessary to suspend Block Telegraph Working, this must be done only by an order in writing from the person in charge who arranges the Single Line Working (see Single Line Working Form); but during foggy weather or falling snow, or when a Tunnel intervenes, or the gradients are heavy on the Section of the Line where the traffic has to be worked on a Single Line, Block Telegraph Working must be maintained; the Up Trains being signalled on the Up Line Block Telegraph Circuit, and the Down Trains on the Down Line Block Telegraph Circuit, or the Pilotman must accompany every Train passing over the

Single Line. On the working of the Double Line being resumed, any order suspending the working of the Line by Block Telegraph will be cancelled by the withdrawal of the Forms for Single Line Working.

25. Failure of Instruments or Bells.—(*a*) In the event of any failure of the Instruments or Bells, so that the necessary Signals cannot be forwarded and received, no Train must be allowed to pass a Signal Box into that Section of the Line where the failure exists without having been previously brought *to a stand*, and the Engine Driver and Guard or Guards advised of the circumstances. The Engine Driver must then be instructed to proceed cautiously, in order to stop short of any obstruction there may be on the Line. When the Telephone or Needle Instruments have failed, the Engine Driver of the first Train thus warned must be instructed to stop at the Signal Box in advance, and inform the Signalman there that the Bells or Instruments have failed at the Signal Box in the rear.

(*b*) No Train may be allowed to follow another Train until the time usually taken by the preceding Train to clear the Section has elapsed (in no case with a less interval than *three* minutes). When a Tunnel intervenes in a Block Section, an interval of not less than *ten* minutes must be allowed between two Trains, unless the Signalman can satisfy himself that the Tunnel is clear: in every case the Engine Driver must be stopped and cautioned as above directed. Steps must be immediately taken to have the Telegraphic Apparatus put into working order, and when the failure has been remedied, and the Instruments are again in working order, the Engine Driver of the last Train allowed to proceed, in either direction, through the Section cautiously must be supplied with a written notice to that effect, and instructed to stop at the next Signal Box then open and hand the notice to the Signalman. (See Specimen Form at end of these Regulations.) The Signalman receiving this notice must give the "Train out of Section" Signal to the Signal Box in the rear, and the signalling must then be recommenced in accordance with these Regulations.

(*c*) In cases where Trains on one line have to be worked on the "Time Interval" System, all Trains on the next adjoining Line must be stopped, and the Drivers instructed to proceed cautiously.

(*d*) In foggy weather, or during falling snow, if the failure of the Block Instruments does not affect the speaking communication, no Train must be allowed to follow another (even after the above-named intervals have elapsed) unless the Signalman has ascertained, by means of the Telephone or Needle Instrument, that the previous Train has cleared the Section. The Train must, in every case, be brought to a stand, and the Driver and Guards advised of the circumstances as above directed.

Whistles for Engines.

Elliot Junction ..... Main Line, Up and Down ..... 1 Whistle.

BREAK-DOWN VANS.

In cases of Accident, when Break-Down Vans are required, immediate application by Telegraph, or by Special Engine, if more convenient and near to the Locomotive Station, must be made to one of the undermentioned Locomotive Stations, according to the Company by whose Engine the disabled Train is being worked. When by Telegraph, the information to be concise and full as to the nature of the accident, where it has taken place, and what Main Lines, if any, are blocked; but in no case must application be made for more than one Set of Vans. If further assistance is required, the Foreman in charge of the Break-Down Vans of the District in which the Accident occurs is the proper person to apply for it. A telegram giving full but concise particulars of each accident, and what has been done in connection with it, must be sent with all speed to the Manager and the Traffic Inspector, and, when necessary, the Inspector of Permanent Way and Assistant Inspector of Way must also be telegraphed to for assistance.

DISTRICTS—

DUNDEE WEST—MR. POOL (for Cal. Co.), - - -
DUNDEE TAY BRIDGE—Loco. Foreman (For N.B. Co.),
} *From Dundee (East) to Arbroath (St. Vigeans Junction) including Carmyllie Branch.*

SNOW PLOUGHS.

Caledonian Snow Ploughs are kept at Dundee West and Forfar.
North British " " Dundee Tay Bridge.

SNOW STORMS.—Instructions to Station Masters, Signalmen, and Platelayers.

(a) When the state of the weather gives indications of a snow-storm, Station Masters and Signalmen must telegraph particulars to the Manager.

(b) When the snow-storm takes place to such an extent as to be likely to cause delay or stoppage to the traffic, they must at once again telegraph to the Manager for a Plough or Ploughs to be sent to their Station or Cabin; and they must, at the same time, telegraph to the Traffic and Permanent Way Inspectors and Loco. Foreman of the District that a snow-storm has taken place.

(c) It will be the duty of the FOREMAN OR ASSISTANT PLATELAYER OR GANGER ON EACH LENGTH to keep the Station Master informed of the state of the Line BETWEEN THE STATIONS during a snow-storm, in order that the Station Master may fully comply with these instructions.

NUMBER OF VEHICLES AND POSITION OF BRAKES ON PASSENGER TRAINS.

It is desirable to restrict the weight of each Train on the Joint Line to a maximum of ten Vehicles. In the event of that number being likely to be exceeded by more than one or two Carriages, arrangements ought to be made to run the Train in two portions in the most suitable way to meet the requirements of the traffic.

Guards.—When there are two or more Guards with a Train, the Guard who rides in the rear Brake is held to be the Guard in charge. When an Assistant Guard, who is not a regularly appointed Guard, is sent with a train, the Ordinary Guard must take charge and ride in the rear Brake.

Position of Brake Vehicles.—When one Brake only is required, it must be placed at the rear of the Train. When more than one is required, one must be placed at the rear, the second in front, and the third as near the centre of the Train as circumstances will admit.

REPORTING OF ACCIDENTS AFFECTING THE WORKING.

When telegraphing advice of accidents affecting the working of the traffic to the Heads of Departments in accordance with **Rule No. 115,** which must be strictly carried out, the following particulars must be given, viz. :—

The nature, and when practicable, the cause of the accident briefly described.

Whether any persons are injured.

Whether one or both Lines are blocked, and how long the block is likely to continue, and in those cases where one line only is blocked, whether arrangements have been made for working Single Line, and between what points.

If all these particulars cannot be given in the first message, a second message must be sent as soon as practicable.

In all cases of accident, a person must remain in attendance upon the Telegraph Instrument at the nearest Station from which Telegraphic information can be sent to forward and receive messages without delay, so long as may be necessary.

ACCIDENTS AND OBSTRUCTIONS ON THE LINE.

When an Accident or Obstruction occurs on the Line, the Stationmaster who deals with the matter must, where necessary, telegraph all Stations and Junctions where connections are formed, giving, as accurately as possible, the probable extent of the delay to any Train which may be detained, so that the best arrangements may be made for the working of the Branch or other connecting Trains. See Rule No. 115.

ACCIDENTS OR OBSTRUCTIONS ON CALEDONIAN OR NORTH BRITISH LINES NORTH OF ARBROATH.

If at any time an Accident or Obstruction occurs on the Caledonian Line, or the North British Line, North of Arbroath, which is likely to interfere with the regularity of the Service given by the Caledonian or North British Through Passenger Trains locally on the Joint Line, **the Station Master at Arbroath,** so soon as he has learned of such accident or obstruction, must at once telegraph particulars to the Joint Manager and also to the Station Masters at Dundee (East) and Broughty Ferry, in order that other provision may, if necessary, be made for accommodating the Traffic.

(*April*, 1902.)

Printed copies of the above Report were sent to the Caledonian, North British and Dundee and Arbroath Joint Companies on the 19th April, 1907.

GREAT CENTRAL RAILWAY.

Board of Trade, Railway Department,
8, Richmond Terrace,
Whitehall, London, S.W.,
14th January, 1907.

SIR,

I HAVE the honour to report, for the information of the Board of Trade, in compliance with the Order of the 29th December last, the result of my inquiry into the circumstances under which a collision occurred at about 8.57 a.m. on the 26th December between a train of empty coaches and a passenger train, near Dinting, on the Great Central Railway.

In this case, while the 7.15 a.m. passenger train from Manchester to Hadfield, via Glossop, consisting of an engine and six vehicles, was standing at Dinting South Junction, it was run into from the rear by the 8.40 a.m. empty passenger train from Glossop to Dinting, consisting of an engine, tender, and six vehicles.

The speed of the empty passenger train at the time of the collision was not very great, but upwards of 20 passengers in the Hadfield train were injured, and in two cases the injuries were of a severe nature. The driver and fireman of the Hadfield train and the guard of the empty passenger train were also slightly injured. Considerable damage was done to the rolling stock, particulars of which are given in the Appendix ; the damage to the permanent way was practically nil.

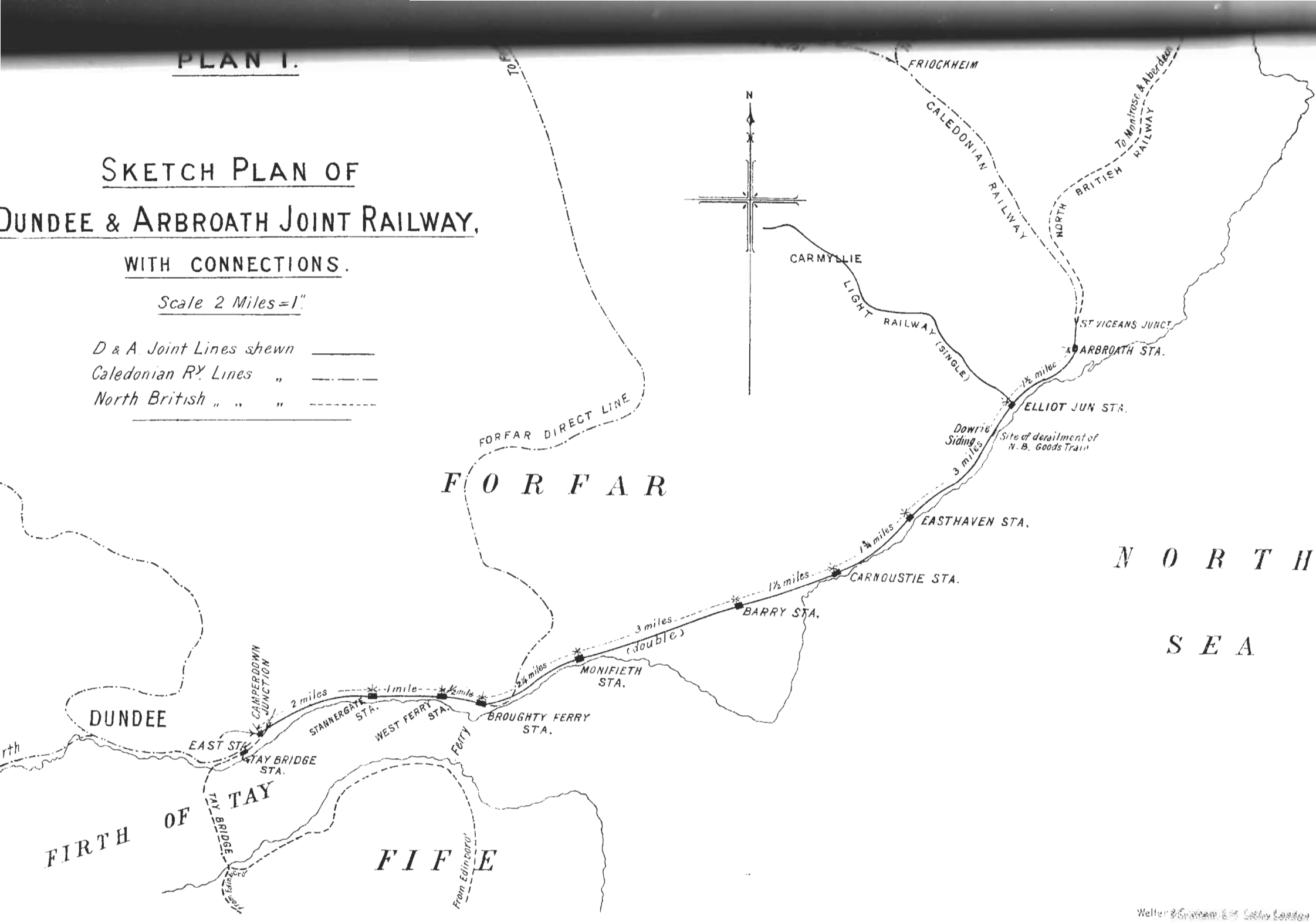
The engine of the Hadfield train was a four-wheels-coupled tank engine, running chimney first at the time of the accident ; it was fitted with the automatic vacuum brake,

PLAN 1.

SKETCH PLAN OF
DUNDEE & ARBROATH JOINT RAILWAY,
WITH CONNECTIONS.

Scale 2 Miles = 1"

D & A Joint Lines shewn ———
Caledonian Ry. Lines „ — · — · —
North British „ „ „ - - - - - -



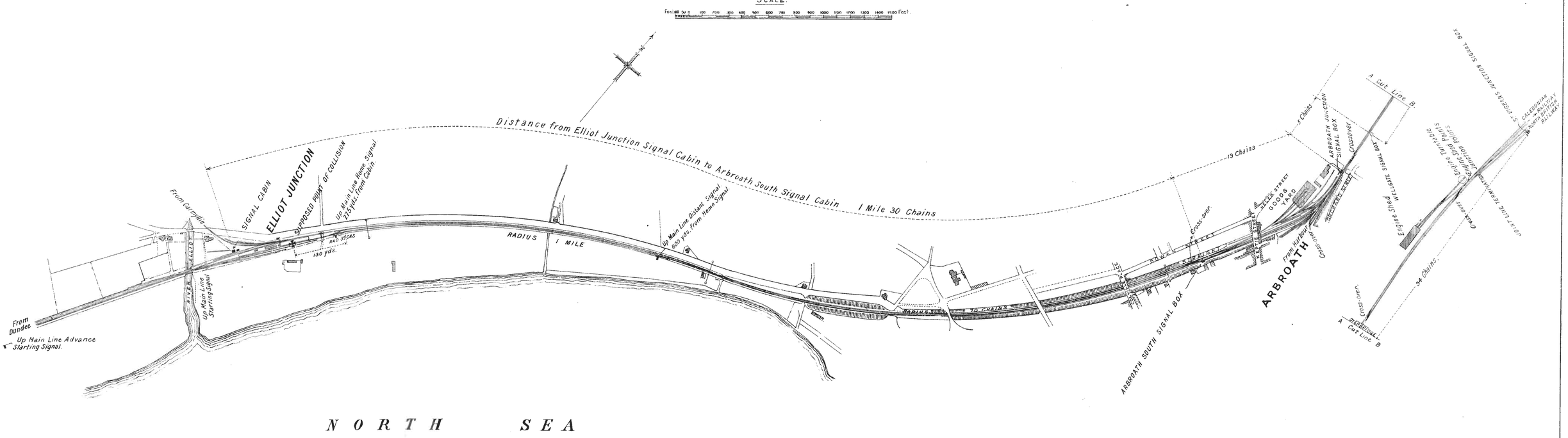
Walter & Graham Ltd. London

PLAN II.

DUNDEE AND ARBROATH JOINT RAILWAY.

ACCIDENT AT ELLIOT JUNCTION ON 28TH DECEMBER 1906.

PLAN OF LINE BETWEEN ELLIOT JUNCTION AND ARBROATH.



PLAN III.

DUNDEE AND ARBROATH JOINT RAILWAY.

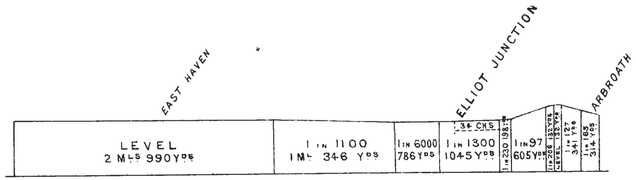
PLAN SHOWING SITE OF ACCIDENT ON 28TH DECR 1906.

AT

ELLIOT JUNCTION.

SCALE.

Feet 100 50 0 100 200 300 Feet



GRADIENT DIAGRAM
MAIN LINE.