



MINISTRY OF TRANSPORT & CIVIL AVIATION

RAILWAY ACCIDENTS

REPORT ON THE COLLISION

which occurred on

22nd December 1955

at

HELLIFIELD STATION

in the

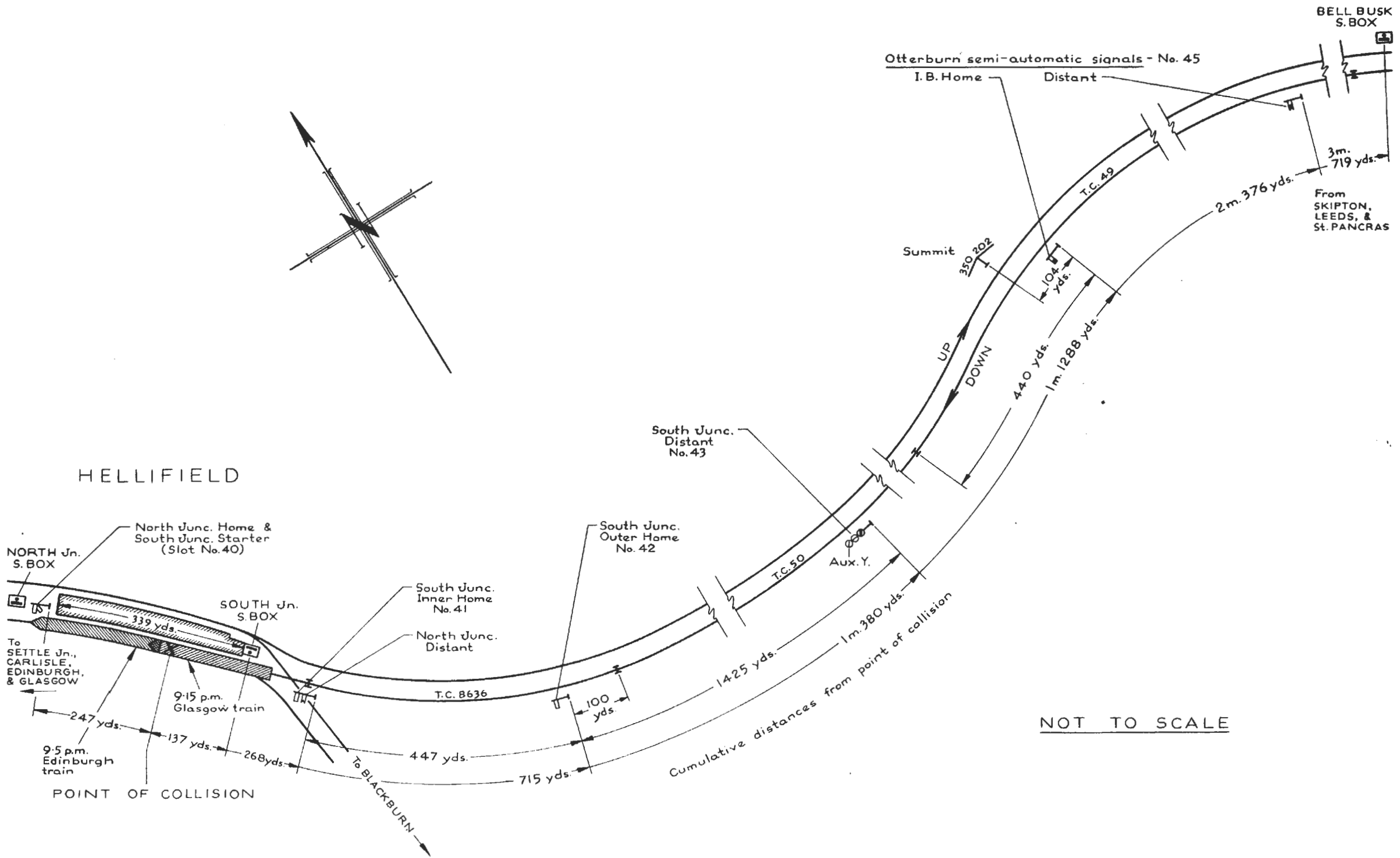
LONDON MIDLAND REGION

BRITISH RAILWAYS

LONDON: HER MAJESTY'S STATIONERY OFFICE

1956

NINEPENCE NET



19th March, 1956.

SIR,

I have the honour to report for the information of the Minister of Transport and Civil Aviation, in accordance with the Order dated Thursday, 22nd December, 1955, the result of my Inquiry into the collision which occurred at about 4.43 a.m. on that day at Hellifield Station, between Leeds and Carlisle, on the former Midland Railway main line of the London Midland Region, British Railways.

The 9.5 p.m. express passenger train from St. Pancras to Edinburgh was booked to stop at Hellifield. As it was standing at the Down platform it was struck heavily at the rear by the 9.15 p.m. express passenger train from St. Pancras to Glasgow which was booked to run through the station. The latter train had been travelling at 50-55 m.p.h. but the brakes had been applied and had reduced the speed to 25-30 m.p.h. when the collision occurred. Irregular working by a signalman had allowed it to enter the occupied platform.

Fortunately, the brakes of the Edinburgh train were off and the force of the impact was largely absorbed by the destruction of the two bogie brake vans at the rear, and by the forward movement which was imparted to the train. Consequently, the casualties were confined to two passengers in the Edinburgh train who proceeded on their journey after treatment, and three railway servants in the same train, only one of whom was detained in hospital. Immediate calls were made for assistance, and doctors, an ambulance, the Police and the Fire Service were quickly on the scene. A lady doctor in the Edinburgh train rendered first aid.

The blockage of the Down line caused considerable disruption of train services. Breakdown cranes and vans were ordered and arrived without delay, and normal working was restored at 9.15 p.m. on the same day after the wreckage had been removed. In the meantime single line working had been introduced on the Up line. A relief train left at 6.24 a.m. for Edinburgh with all the passengers from the 9.5 p.m. train and some passengers from the 9.15 p.m. train which went forward at 8.48 a.m. with the remainder of the passengers.

The night was cold and clear.

DESCRIPTION

The trains

1. The 9.5 p.m. train was formed of seven vans and five passenger coaches, including two sleeping cars which were marshalled immediately in front of the rear two brake vans. It was drawn by two engines, and its total weight was 546 tons and its length was 257 yards. All except three vans at the front end of the train had long stroke shock absorbing buffers.

In addition to the two rear brake vans which were wrecked, the sleeping car marshalled next to them was derailed and its trailing end was partly telescoped. Its solebars and headstocks and also those of the sleeping car next ahead were bent and buckled. The third and fourth vehicles from the front, a bogie brake van and a six-wheeled parcel van, were derailed and damaged, and some fittings in the remaining three passenger coaches were displaced.

2. The 9.15 p.m. train comprised ten bogie vehicles, of which four were ordinary passenger coaches and three were sleeping cars. It was drawn by an engine of the 7P Class with 4-6-0 wheel arrangement driven from the left hand side. The brake power available was 374 tons, or 77 per cent of the total weight of the train which was 489 tons. It was 241 yards long. Some of the vehicles were fitted with shock absorbing buffers and others had Buckeye couplings. The engine was derailed and heavily damaged, but the vehicles remained on the rails and were more or less intact.

The line

3. With reference to the sketch opposite, the former Midland Railway main line runs through Leicester, Leeds, Skipton, Hellifield and Settle to Carlisle and between Skipton and Hellifield it is double. In the Down direction from Skipton to Hellifield, a distance of 10 miles, the line runs roughly south-east to north-west. There are intermediate signal boxes at Delaney's Sidings, Gargrave and Bell Busk, which are respectively $7\frac{1}{2}$, $6\frac{1}{4}$ and $3\frac{1}{2}$ miles from Hellifield. The Down line rises 1 in 131 to 1 in 380 to a summit almost half-way between Bell Busk and Hellifield, and then falls at 1 in 121 to 1 in 350 through Hellifield to Settle Junction. Near the summit there is a curve to the left followed almost immediately by a long gentle curve to the right which extends almost continuously to the south end of Hellifield station. The station has an island platform with the Down main line on the west and the Up main line on the east side. There is a speed limit of 60 m.p.h. through the station.

The signalling

4. There are two signal boxes at Hellifield called South Junction situated at the Skipton end of the platform, and North Junction which is some 65 yards beyond the Carlisle end. The signalling arrangements on the Down line from Bell Busk are shown in the sketch. The line is track circuited continuously from that box up to and through Hellifield Station, and the track circuits numbered in the sketch are indicated on the diagram in the South Junction box. Track circuit No. 49 is also indicated in Bell Busk

box. There are intermediate semaphore signals (an "intermediate block home" with a distant signal) about half way between Bell Busk and Hellfield and they are known as the Otterburn signals. They are semi-automatics and are controlled electrically by one lever (No. 45) in the South Junction box, and also by the track circuits; they are repeated in the box. The South Junction box also has a colour light distant signal (No. 43) and a semaphore outer home (No. 42), both of which are repeated, and an inner home (No. 41) all of which are situated on the left hand side of the track. The "sighting distances" of these signals from the footplate are as follows:—

	<i>Right hand (Fireman's side)</i>	<i>Left hand (Driver's side)</i>
Distant signal—No. 43	372 yards	125 yards
Outer home signal—No. 42	430 yards	190 yards
Inner home signal—No. 41	502 yards	224 yards

The sighting distance of the tail lamp of the Edinburgh train as it stood at the platform was 330 yards from the driver's side of the footplate of the Glasgow train.

5. The signal at the Carlisle end of the platform is the North Junction home signal which is also slotted as the South Junction starting signal by lever No. 40. The North Junction box has a semaphore distant situated under and slotted by the arm of the South Junction inner home. In view of the short distance between the North Junction box distant and home signals, there is a mechanical "underbolt" which prevents the clearing of the South Junction colour light distant (No. 43) before the North Junction distant, and there is an indicator in the South Junction box showing when the North Junction lever has been pulled. The replacing of the North Junction distant to Caution does not in itself change the aspect of distant signal No. 43 from Green to Yellow, nor is the latter controlled by track circuits. There is sequential locking between the South Junction levers Nos. 40 and 41 (electrical), and between Nos. 41 and 42, and Nos. 42 and 45 (mechanical).

6. Before the accident the Otterburn signals could be made to work entirely automatically by leaving lever No. 45 in the reversed position in the frame. They were then placed and maintained at Danger and Caution by the occupation of track circuits Nos. 50 and 8636 and they again returned to Clear as soon as the train had passed beyond these track circuits. Track circuit No. 8636 acts as the berth track circuit for the outer home signal No. 42 and as the overlap track circuit beyond it.

7. This section of the line is worked under the former London Midland and Scottish Railway's "Regulations for automatic train signalling . . . between Hellfield . . . and Gargrave . . .". Instead of block instruments there are "track indicators" and trains are signalled by block bells. The South Junction signalman is permitted to "accept" a second train from Bell Busk as soon as the preceding train has cleared track circuit No. 49 which extends as an overlap for 440 yards beyond the Otterburn home signal No. 45. He is however, required to maintain the Otterburn signals normally at Danger and Caution and the relevant part of the Regulations reads as follows:—

"The automatic distant and home signals must always be kept exhibiting the Danger signal by means of the levers in the signal-box in advance which control them, except when required to be taken off for a train to pass."

The signalman is therefore required to work lever No. 45 for every train.

8. It will be noted therefore, that if lever No. 45 had been returned to normal after the passage of a train in accordance with the above Regulation, the sequential locking would have prevented it from being pulled again to enable the Otterburn signals to become clear until levers Nos. 43 and 42 had been replaced in the frame.

If, on the other hand, lever No. 45 had not been replaced to normal the Otterburn signals, having been put "on" by the passage of the train over the track circuits, would automatically have become clear again when the train passed beyond the outer home overlap track circuit No. 8636. Also, if levers Nos. 43, 42 and 41 had not been returned to normal after the arrival of a train, the aspect of signal No. 43 and the arms of signals Nos. 42 and 41 would have remained at clear. A following train would, therefore, have had clear signals right into the occupied platform line, except for the North Junction distant if the signalman in that box had replaced the lever.

9. When track circuit No. 8636 becomes occupied by a train with signal No. 42 at Danger, an annunciator sounds in South Junction box. It is set to ring for 10 seconds but when tested, the period was found to be about 7 seconds. If signal No. 42 is clear when the track circuit becomes occupied but is quickly placed to Danger, the annunciator will still ring, but for a shorter period.

10. The main signalling installation dates from 1910. The colour light distant signal was, however, installed in 1938, but at that time it was not the practice of the London Midland and Scottish Railway to control the aspects of such signals by track circuits. A scheme had, however, been prepared before this accident took place to control distant signal No. 43 by track circuit No. 8636 and also to provide a stick relay control on the Otterburn signals to prevent the arms clearing again until lever No. 45 is put to normal and re-pulled. These, and some other "proving" controls, were installed immediately after the accident.

REPORT

11. The 9.5 p.m. Edinburgh train left Skipton 45 minutes late and it was detained further at Delaney's Sidings on account of a binding brake on a sleeping car. The adjustment could not be made there and so the train proceeded slowly to Hellifield where it arrived at 4.39 a.m., 1 hour 18 minutes late. The Carriage and Wagon staff had been advised of the defect and were attending to it when they heard the Glasgow train approaching; fortunately, they were able to get out from under the coach before the collision occurred.

12. The 9.15 p.m. Glasgow train was following closely behind the 9.5 p.m. train and it also was running late. It was held at Skipton North Junction waiting for the Edinburgh train to clear Delaney's Sidings, but after that it had a clear run. It passed Bell Busk at 4.38 or 4.39 a.m. and collided with the Edinburgh train at about 4.43 a.m. As has been mentioned, the brakes of the latter train were "off" when the collision occurred and it was pushed forward about 25 yards.

13. Driver C. H. Blakemore came on duty at 12.50 a.m. at Holbeck Motive Power Depot, Leeds, and took over the 9.15 p.m. St. Pancras to Glasgow train. He has been a driver for 15 years and is thoroughly acquainted with the Leeds—Carlisle line.

14. He said that up to Skipton there was a considerable amount of fog, and then it became patchy and did not interfere with his view of the signals. The engine was working well, but there was a blow of steam from the front end. After starting from Delaney's Sidings he had a clear run and had reached the normal express speed of 55-60 m.p.h. at Bell Busk. The Otterburn signals were clear and after passing them he almost shut the regulator to allow the train to coast on the falling gradient through Hellifield.

15. Blakemore said that he saw a clear green aspect at the South Junction colour light distant. He missed the outer home signal on account of the smoke and steam blowing down on his side, although he saw the signal post. He told his fireman who did not hear at first but who then said "one off", meaning that the inner home was clear and the North Junction distant under it was at Caution, so Blakemore immediately applied the brakes. He then looked out and saw the tail lamp of the Edinburgh train, and put the brakes on fully and opened the sanders. As the engine passed under the inner home signal, he saw it was at Danger. He did not see any red light being waved on the platform.

16. Blakemore could not estimate the position of the engine between the outer and inner home signals, when the fireman said "one off". He thought that the speed at the time of the collision was 20-30 m.p.h. and added "I think I would have stopped at the North Junction home with the speed I was going and the way I was braking". He stated that when the South Junction distant is clear it means that the train should have an unchecked run through the station, but he said that he always kept a lookout for the other signals. He had never before seen the North Junction distant at Caution after a green aspect at the South Junction distant.

17. Fireman D. W. Cooper, who had worked regularly with Blakemore for nearly two years was firing almost continuously until the train passed the summit between Bell Busk and Hellifield. He then swept the footplate and attended to the dampers, and he did not see the South Junction distant or outer home signal. He heard the driver shout but he did not hear what he said and looked out; he saw the inner home "off" with the distant under it at Caution and informed the driver who started to apply the brakes. Almost immediately he heard the driver say "hold tight, there is a red one in front" and looked out and saw the tail lamp. He thought the engine was then near the inner home signal.

18. Guard W. C. Bird, who was in charge of the Glasgow train, confirmed that the South Junction distant was at Clear when the brake van passed it and he commented to the assistant guard, W. S. Steel, "we are getting a clear run at last". He then felt a gradual application of the brakes and started to go to the window, and as he was lowering it the collision occurred. Just before that the brakes had gone hard on and the valve in the van lifted. He estimated the speed at 50 m.p.h. at the distant signal and 30-35 m.p.h. at the time of the collision.

Guard W. S. Steel did not see the distant signal. He confirmed that Bird had made the above mentioned comment or something like it, and presumed that the distant was at Clear. He also did not think that the train had reached the normal express speed.

19. Station Inspector C. J. Spragg was on the Down platform when the Edinburgh train arrived. He had received information that the brakes on one vehicle needed attention and had arranged for the Carriage and Wagon staff to be present. He did not, however, tell the signalmen. He was near the front end of the train and happened to glance up and saw the headlights of the Glasgow train, and he ran towards it showing a red light and shouting. He did not think the train had passed the inner home signal when he first saw it and he estimated its speed was then 30-35 m.p.h., and 20-25 m.p.h. when it struck the stationary train. Mr. Spragg did not notice whether the inner home signal was "on" or "off" when the train passed it, but he did see that the signal at the north end of the platform was clear.

20. Guard S. Allan of the Edinburgh train was on the platform and heard the inspector's shouts, and saw the Glasgow train when the engine had reached the platform. There were sparks coming from the engine wheels indicating heavy braking but he realised at once that it could not stop in time to prevent a collision.

21. The signalmen concerned were: —

Bell Busk	J. K. Turner
Hellifield South Junction	T. B. Robinson
Hellifield North Junction	T. Dixon

Junior Porter T. Donoghue was working as booking boy to Signalman Robinson. All the men had been on the night turn of duty, from 10 p.m. to 6.0 a.m., since the beginning of the week.

22. The following are the relevant entries in the train registers of Bell Busk, South Junction and North Junction boxes for the two trains: —

Train	Accepted	Rear Section		T.O.S. sent	Accepted	Forward Section	
		T.E.S. Received	Arrived			T.E.S. sent	T.O.S. Received
Bell Busk							
9.5 p.m.	—	—	—	—	4.24	4.31	4.39
9.15 p.m.	4.31	4.34	—	4.38	4.35	4.38	—
6 bells from South Junction box at 4.43 a.m.							
Hellifield South Junction							
9.5 p.m.	4.25	4.31	4.39	4.39	4.31	4.38	—
9.15 p.m.	4.33	4.39	4.43	—	—	—	—
6 bells sent to Bell Busk at 4.43 a.m.							
Hellifield North Junction							
9.5 p.m.	4.30	4.38	4.39				
9.15 p.m. ran into 9.5 p.m. at 4.44 a.m.							

23. Signalman Turner said that the Edinburgh train was travelling slowly and after passing Bell Busk at 4.31 a.m. it took 4 minutes to clear the Otterburn home signal overlap track circuit and he did not offer the Glasgow train to South Junction until 4.35 a.m., when it was accepted. The latter train passed at 4.38 a.m. and was travelling at ordinary express speed.

24. Signalman Robinson said that after accepting the 9.5 p.m. Edinburgh train at 4.25 a.m. he cleared levers Nos. 45, 42, 41 and 40, and then No. 43 after the signalman at North Junction had lowered his distant. He did not know that the train was to receive attention from the Carriage and Wagon staff. He stated that when it had stopped at the platform at 4.39 a.m. he replaced levers Nos. 43, 42 and 41 to normal in the frame. *He did not, however, put lever No. 45 back to normal.* He said he heard the "lock go" when the North box distant was put back to Caution, at about the same time that he replaced lever No. 43.

25. In the meantime he was offered the 9.15 p.m. train at 4.33 a.m. and, having seen that track circuit No. 49 had been cleared by the Edinburgh train, he accepted the Glasgow train. He did not, however, look at the Otterburn signal repeaters. Nor did he look at the repeaters of signals Nos. 43 or 42 when he replaced the levers after the Edinburgh train had arrived. He sent Train out of Section for the Edinburgh train at 4.39 a.m. the same time that he received Train Entering Section for the Glasgow train; Turner recorded having sent the latter signal at 4.38 a.m. Robinson said "the next thing I heard was the outer home track (the annunciator) and when I looked he (the Glasgow train) was coming in". He had expected it to stop at the outer home signal, and he did not realise that it had not done so until it was past the inner home. He then picked up the hand signal lamp to show a red light to the driver, but found that it was out. He did not think of using the detonator placing lever, but in any case it would have been too late. After the collision, he sent the Obstruction Danger signal (6 bells) to Bell Busk but he did not send any signal to North Junction.

26. Robinson knew that lever No. 45 should have been replaced after the Edinburgh train and said that he had forgotten to do so. He admitted, however, that he had on previous occasions not replaced the lever and had allowed the Otterburn distant and home signals to work automatically. He knew that this was contrary to the Regulations. He could not say why he had not put back the distant signal lever No. 43 until after the train had stopped at the platform, except that he had been dealing with an Up freight train. That train had arrived at 4.31 a.m. and had been accepted by Bell Busk at 4.39 a.m. and Train Entering Section was entered in the Train Register at the same time. Robinson said that it had left before the arrival of the Glasgow train but it did not in fact leave until 4.44 a.m. He agreed that the driver of the Glasgow train might have seen the distant signal No. 43 at Clear. He stated that having replaced the lever of that signal he immediately replaced levers Nos. 42 and 41 and he thought that the former would have been at Danger before the train occupied the berth track circuits. He had not, however, been watching the progress of the train over the track circuits. He thought that the annunciator sounded for the normal period.

27. Robinson had worked in South Junction box for 11 years and said that it was "reasonably busy", but he had not experienced any difficulty in working it single handed. Nor had he had any trouble in working with the signalmen in the boxes at Bell Busk and North Junction. He said that on the night of the accident he was feeling quite well, but his wife was "very poorly" and this may have distracted his attention. He was last examined in the Rules and Regulations in May 1954.

28. Robinson said that when he was cooking or eating a meal he allowed the booking boy to work the box under his instructions and that on other occasions also the boy would operate levers when asked, and would sometimes put them back even when not asked to do so. The boy was definitely not operating any levers for either of the two express trains.

29. Porter Donoghue, aged 16, had joined the railway in August 1955, and had worked with Robinson for about six weeks. He first knew that something was wrong when the signalman went for the hand lamp, and at the same time the engine of the Glasgow train passed the box; he was talking to the Controller on the telephone at the time. He had heard the annunciator and thought that it sounded for the normal period. He had worked the box earlier that night when the signalman was having his meal, but he was definitely not operating the levers for the two expresses and he did not notice what lever movements the signalman had made.

30. Signalman Dixon said that he had cleared all the North Junction signals for the Edinburgh train and that he put the distant signal lever back to normal after the train had stopped in the platform.

Both he and Turner said that they had experienced no difficulty in working with Robinson and that there had been no misunderstandings between them.

31. Mr. A. Gee, Station Master, Hellifield, was busy on the platform after the accident and was unable to go to the South Junction box until 6.40 a.m., and then it was for introducing single line working. Robinson was still in the box with the morning duty signalman. Mr. Gee said he seemed quiet and distressed and he did not think it wise to question him, and Robinson volunteered no information. Mr. Gee said that he had no idea that there had been irregular practices in the South Junction box. He usually visited the boxes daily and the last occasion he had done so at night was at about 10.30 p.m. on 19th December. He spoke of Robinson as a good, reliable signalman.

32. Mr. A. J. Fletcher, District Signalman's and Traffic Inspector, said that Robinson's last examination in May, 1954, was very satisfactory. He made a point of asking about the Regulations and said that Robinson whom he considered to be a competent signalman, knew them well. He usually visited boxes like South Junction at least once a month, and he had last seen Robinson on the morning of 24th October; on that occasion he spent about an hour there and the working was satisfactory. Mr. Fletcher said that in the normal course he did not visit signal boxes at night.

CONCLUSIONS

33. I am satisfied that the South Junction distant signal was clear for the Glasgow train, and this accident was the direct result of irregular working by Signalman Robinson. The Regulations require the lever of the intermediate Otterburn signals to be replaced behind every train, and if he had complied with them after the Edinburgh train had passed the accident would not have occurred, because he could then not have cleared them again for the Glasgow train until the South Junction distant and outer home signals had been replaced to "on". I cannot accept his excuse that he had forgotten to replace the lever because, on his own admission, he had been in the habit of sometimes leaving lever No. 45 reversed thus allowing the signals to work completely automatically.

34. Apart from this irregularity, Robinson was very slow in replacing the other signals. He said that he put back the distant at 4.39 a.m. when the Edinburgh train stopped at the platform, although he should have done so when it struck track circuit No. 8636 at least a minute earlier. But even if he had replaced the distant lever at 4.39 a.m. the accident should not have occurred. The Glasgow train passed Bell Busk at 4.38 or 4.39 a.m. and, assuming it was travelling at 50-55 m.p.h. as the evidence and the running times suggest, the driver could not have seen the distant until 4.40½ or 4.41½ a.m., and the guard said that it was still clear when the brake van of the train passed it, some 15 seconds later. If the signal had been replaced immediately after the brake van had passed, the replacement would have been two or three minutes after the Edinburgh train had stopped and three or four minutes after it had occupied track circuit No. 8636. Robinson himself could not account for the time lag and said that the only other work in hand was the signalling of a freight train, and this could not have taken long.

Robinson is 55 years of age and had been a signalman for 34 years, with a good record.

35. If Robinson and Donoghue were correct when they said that the annunciator sounded for the normal time, it means that the outer home signal must have been at danger before the Glasgow train struck the 100 yards long berth track circuit. If, on the other hand, the annunciator sounded for a slightly shorter period than the seven seconds for which it was set, which neither of them may have noticed, the signal probably went back to danger as the engine was close to it or passing it. I think that the latter alternative is the more likely.

36. I think also that Fireman Cooper did see the inner home signal clear at some point after passing the outer home. If, however, Robinson replaced the levers of the distant, outer home and inner home signals one after the other, an operation taking only 4-5 seconds, then it indicates that he must have replaced the distant even later than the times given in paragraph 34 above.

37. I am unable to accept Driver Blakemore's statement that smoke and steam prevented him from seeing the outer home signal. I travelled on the same type of engine in somewhat similar circumstances and had no difficulty in seeing all the signals, the lights of which were good. I also do not appreciate why Blakemore did not see the inner home until he was passing underneath it and after he had seen the tail

lamp of the Edinburgh train. The sighting distances given in paragraph 4 show that the inner home signal could be seen from 224 yards and the tail lamp from 330 yards. The tail lamp was 268 yards beyond the signal and so could not have been seen until the engine was within 62 yards of the signal. Blakemore could however have seen the signal over a distance of 162 yards before sighting the tail lamp. I think therefore, that having seen the green aspect of the distant signal, he expected a clear run through the station and did not pay much attention to the other signals.

38. It is evident also that Cooper realised that the distant was clear although he did not see it, and that he did not therefore look out for the outer home signal which comes into view first of all from his side of the footplate.

REMARKS

39. The signalling arrangements were old fashioned but they gave complete security if the simple Regulations were observed, and this accident was the result of a surprising failure on the part of an experienced signalman. He not only disobeyed the Regulations by not putting back the lever working the intermediate signals, but he was also dilatory in replacing the distant and home signals behind the Edinburgh train. This was not one isolated instance of forgetfulness and it was disturbing to hear that he had been in the habit of disregarding the Regulations in this way; also that he was accustomed to allow, and apparently sometimes to expect, the booking boy to operate the levers, which is contrary to the Rules.

Laxity of this nature is bound to lead to an accident sooner or later. It indicates the importance of good supervision by day and by night, even though the great majority of signalmen are thoroughly reliable. It also emphasises the value of modern electrical and mechanical controls. I have already mentioned that plans had been prepared before the accident for additional controls which would have prevented it, and they were installed immediately afterwards. I am also glad to say that other signalling equipments of this type are receiving similar attention.

40. I have mentioned that the driver of the Glasgow train did not pay much attention to the home signals. A distant signal at Clear should mean that a train has been given an unchecked run through a station, but the unexpected may always happen and it is vital that drivers should invariably observe all signals which apply to them.

I have the honour to be,

Sir,

Your obedient Servant,

D. McMULLEN,

Colonel.

The Secretary,

Ministry of Transport and Civil Aviation.

Crown copyright reserved

Printed in Great Britain by Porterprint Ltd.

and published by

HER MAJESTY'S STATIONERY OFFICE