RAILWAY ACCIDENTS

REPORT ON THE COLLISION

which occurred on the
17th April, 1948, at
WINSFORD

in the
LONDON MIDLAND REGION
(BRITISH RAILWAYS)
Sir,

I have the honour to report for the information of the Minister of Transport, in accordance with the Order dated 17th April 1948, the result of my Inquiry into the collision which occurred at about 12.27 a.m. on that day at Winsford, about 8 miles north of Crewe on the Western Division double-track main line, in the London Midland Region of the British Railways.

The two trains concerned were the 5.40 p.m. Up Passenger Express from Glasgow to Euston, comprising ten bogie coaches, and the 6.25 p.m. Up Postal Express from Glasgow to Euston, composed of 13 bogie vans; both were hauled by Pacific type engines. The Passenger train had been standing for about 17 minutes in the 1\frac{1}{2} mile section between Winsford Junction and Winsford Station signal boxes after a passenger had pulled the communication chain (without good reason), but the collision resulted from the signalman at Winsford Station clearing the block instruments although he had not seen the train pass the box and subsequently accepting the Postal train.

The Postal train thus entered the occupied section under clear signals at Winsford Junction, but the driver braked when he saw a red light displayed by the guard of the Passenger train about 400 yards in rear of it; detonators were also exploded, and the speed had been reduced to 45-50 m.p.h. when the collision took place. Both lines were blocked by the wreckage, and a Down Postal express was fortunately stopped at Winsford Station box.

The impact demolished the rear coach of the Passenger train (whose brakes were off) and half of the coach next ahead, and there was severe telescoping between the second, third and fourth vans of the Postal train. There was a fairly full load of passengers in the former train and I regret to report that 16 were killed and eight subsequently died of their injuries in hospital; all were in the last two coaches. Fourteen passengers and four of the Post Office staff were detained in hospital, of whom eight were discharged within a week, and 12 passengers and the two guards were treated for minor injuries or shock. Serious damage to the engine of the Postal train was confined to the front end, and the driver and fireman were uninjured.

The collision occurred in mid section and the Winsford Junction signalman was informed of it when Guard T. Horne of the Postal train reached his box at 12.45 a.m.; he immediately notified the District Control at Crewe, who arranged with the Northwich Post Office telephone exchange to send out a general call for doctors and ambulances and to inform local hospitals. The first doctor arrived at the site at 1.15 a.m. and was quickly followed by others. Ambulances began to arrive at about the same time, and a strong detachment of the Cheshire County Police, who had been notified directly by the Control, were on the scene within an hour under the personal direction of the Chief Constable. The National Fire Service also turned out in strength with their equipment.

In addition to these organised forces, passengers and local residents gave assistance and it should be mentioned that Guard T. Horne persisted for a long time in first-aid to the injured, including the setting of a passenger's broken arm, before receiving attention to severe hospitals. The first casualties arrived at Winsford Memorial Hospital at 1.30 a.m. The last were cleared by 4.45 a.m. and credit is due to all concerned for the efficiency of the relief work. The leading five coaches of the passenger train, which were only slightly damaged, were worked forward to Crewe at 2.50 a.m. with uninjured and slightly injured passengers, and special arrangements were made for their reception there.

The blockage of this important main route had a serious effect on all traffic between Crewe and Liverpool and the North, but the Control organisation facilitated rapid decisions for diversion, and dislocation was reduced to a minimum. Plans were made on the assumption that at least 24 hours would elapse before normal working could be resumed, but the time was reduced to 20 hours by the work of the breakdown and track repair gangs, in spite of heavy rain from mid-day onwards. The cranes from Crewe and Edge Hill arrived at 2.20 a.m. and 4.29 a.m. respectively and concentrated on clearing the wrecked coaches before the Newton Heath crane arrived at 12 noon to assist in re-railing the engine. This was accomplished by 2.50 p.m., after which work could proceed on relaying the Up line, 90 yards of which had been destroyed. The Down line was reopened to traffic at 7.45 p.m. and the Up line at 8.20 p.m. under temporary speed restriction.

At the time of the accident the weather was fine and clear, and there was moonlight.

DESCRIPTION OF TRAINS AND EFFECTS OF COLLISION.

1. The 10 bogie vehicles of the Passenger train were marshalled with a brake van in front followed by four passenger coaches, two brake vans, and three coaches in rear; their total tare weight was 284 tons. The front van was constructed of steel throughout, and the remaining nine vehicles had steel underframes; their bodies were of timber or steel-panelled on timber framing. Except for one of the vans in the middle of the train the Region's standard long-stroke shock-absorbing buffers were fitted throughout. The engine was No. 6207 of the Class 7 4-6-2 type, driven from the left-hand side and weighing 159 tons in working order with tender. The steam brake was in operation on the coupled and tender wheels controlled by the vacuum working the brakes on all wheels of the train, and the combined brake power was approximately 72 per cent. of the total weight of 443 tons; five of the vehicles were fitted with direct-admission valves, which give a more rapid application of the brake by reducing the time needed to fill the cylinders with air. The total length of the train was 219 yards.
2. The train was equipped throughout with the usual communication apparatus. The familiar light chains are anchored at one end of the coach, and at the other end are attached to a transverse shaft outside the coach body at cornice level. When the chain is pulled down in a compartment or in the corridor, the shaft is turned through 90 degrees, so opening a small valve which admits air to the train pipe and applies the brake lightly. In accordance with the Instructions (see Appendix I), the driver, on observing that the brake is being applied must stop the train with as little delay as possible unless it is at an awkward place, e.g. in a tunnel or on a viaduct; in such case the driver should normally be able by use of the large ejector and regulator to keep the train in motion for as long as is necessary if the chain has been pulled in one coach.

At each end of the transverse shaft there is a red disc, normally horizontal, and when the disc is vertical it indicates that the chain has been pulled in the coach concerned. The compartment in which the chain has been pulled is shown by the loop of chain hanging down, unless the apparatus has been re-set in the meantime by turning the outside disc back to the horizontal position. The chain was pulled in the third coach, whose vacuum cylinders were fitted with direct admission valves.

3. The 13 bogie vehicles of the Postal train, weighing 371 tons, were marshalled with a Western Region milk van (Siphon G) in front followed by a newspaper van allocated to Messrs. Wyman's traffic; the third vehicle was a postal brake van, the next eight were postal sorting or stowage vans, and there were two brake vans in rear. All had steel underframes; seven, including the first three, had timber bodies, and those of the remaining six were steel panelled on timber framing. The fourth, fifth, seventh, eighth, ninth, tenth and eleventh had shock-absorbing buffers. The engine was No. 6251, also of the Class 7 4-6-2 type, but it was of later design than that of the Passenger train and weighed 161½ tons in working order with tender; it also was driven from the left-hand side. The total weight of the train was thus 532½ tons, and the brake power (steam on the coupled and tender wheels and vacuum on the train) was approximately 76 per cent. of that weight. Two of the 13 vehicles, including the Western Region van in front, were fitted with direct-admission valves. The total length of the train was 282 yards.

4. At the time of the collision the brakes of the Passenger train had been released, but they were reapplied when it became divided between the sixth and seventh coaches as the front coupling shackle of the latter broke, with the final result that the front portion was driven forward about 75 yards and the rear portion about 55 yards. This lessened the shock to some extent, but the rear (tenth) coach, an open third, was reduced to a mass of crumpled steelwork and timber debris, which was driven into the next coach ahead, a corridor composite, splitting the solebars apart for about half their length, with corresponding destruction of bodywork; in the front half of this coach, however, there was surprisingly little structural damage either to the steel-panelled bodywork or to the underframe, and much of the glass was intact. Nor was there any serious structural damage to the remaining eight coaches, except that the leading end of the seventh (where the division occurred) was crushed for about 4 feet. The engine was undamaged and, as has been mentioned, the leading five coaches were fit to be taken forward to Crewe with a load of passengers.

5. The engine and tender of the Postal train were derailed all wheels. Both the main frame plates of the engine, also the front buffer beam, were bent and the inside steam chest casting was broken; there was also damage to the bogie frame and to fittings and platework generally. The leading Western Region van was not derailed and its underframe and buffers were only slightly damaged; the body also was intact for the greater part of its length but it was crushed for about 6 feet at the trailing end as the newspaper van in rear was driven into it above headstock level. In contrast to the comparatively slight damage to the vehicle ahead, this newspaper van and the two postal vans in rear of it were all three telescoped together, and their superimposed underframes and the wreckage of their bodies occupied a length of only 75 feet. The next vehicle (fifth) was derailed, but it and the remaining eight, which remained on the rails, received only minor damage; the buffers of the sixth, seventh, eighth, ninth and tenth were fully compressed. Taking into consideration that the brakes of the Passenger train were off, the nature and extent of the damage as a whole suggested that the speed of the Postal train at the moment of the collision was not less than 45 m.p.h.

DESCRIPTION OF SITE AND SIGNALLING.

6. With reference to the attached plan, the general direction of the 1¾ mile double line section between Winsford Junction and Winsford Station signal boxes, which are open continuously, is South (Up) and North (Down). North of Winsford Junction there are Up and Down Goods loops on the outside of the formation, and at the junction itself (with a short single line branch), there is a small marshalling yard on the Down side. South of Winsford Station there are four tracks for the 7½ miles thence to Crewe via Minshull Vernon (2½ miles from Winsford Station) and Coppenhall Junction; their order from East to West is Up Slow, Up Fast, Down Main, and Down Goods. A relaying speed restriction of 15 m.p.h. was in force over 4 mile of the Up line between Acton Bridge and H Arthurford Junction, 4½ miles in rear of the point of collision, in which distance there are no appreciable gradients. The line carries heavy passenger and freight traffic, with a week-day average of 109 Up and 108 Down movements at Winsford Station during the month of April this year.

7. The plan shows the relevant Up line signals, track circuiting, etc. All the Winsford Junction Up line signals, including the starter No. 56, were "off" for the Postal train; the intermediate Winsford Goods Yard box, which controls the connections to the Bacon Factory sidings on the Up side, was switched out, and its Up home signal No. 14 was thus "off," also the corresponding inner and outer distants. The Winsford Station Up signals had been replaced.
The damage to the permanent way and the position of some of the debris suggested that the point of collision was approximately 125 yards in rear of the Winsford Station splitting distant signals, and this was confirmed by the evidence of a Locomotive Running Foreman, who said that the fourth coach, in which he was travelling, was standing just ahead of the distant signals before the collision. The Passenger train was thus standing with its engine 90-100 yards ahead of these signals, and not in rear of them as the driver and fireman stated. There was nothing to obstruct the view of its head-lights, which were alight, along the 1,150 yards straight length of track to Winsford Station, though they could not be seen from the signal box.

8. The short right-handed curve which commences near overbridge No. 21 restricts the view ahead from the left-hand side of the footplate. From a long-boilered engine of the same class as that of the Postal train the Winsford Station Up distant signals were first seen at a range of 450-500 yards, and the view of the tail lamp of the standing Passenger train would have been appreciably shorter. The guard of the Passenger train displayed a red light from the Up cess somewhere about the Goods Yard box Up Home signal No 14 on the outside of the curve itself, and the probable positions of the two detonators which this guard put down are shown on the plan, but their exploded cases could not be distinguished from others which had been placed after the accident and had been run over in the course of the breakdown train movements.

9. Winsford Junction signal box at the entrance of this section contains a frame of 58 working levers. It is on the Up side of the line and controls the points at the south end of the goods loops and the yard and junction connections. A good deal of reporting to the Crewe District Control is done there and the signalman has the assistance of a booking lad.

10. Winsford Station box, in which the signalman wrongly accepted the Postal train, needs more detailed description. It is on the Down side of the double line at the south end of the station; its face is 6 ft. 0 ins. from the Down cess rail, and the working floor is 8 ft. 0 ins. above rail level. It was renewed in 1927 with a 72 lever frame (to provide for future quadrupling northward) of which only 34 levers are in use, the remaining 38 representing spare levers and spaces. The signalman standing at the frame faces the traffic, and the booking desk, with the clock immediately over it, is at the back of the box, also the coal stove; lighting is by incandescent gas. The only two telephones in the box are just to the left of the desk; one of them is on the Crewe District Control code-ringing omnibus circuit (7 instruments) and the other is on the Crewe-Warrington general circuit (14 instruments). The box is not so busy as Winsford Junction, and there is no booking lad; reporting to the Control is normally confined to trains leaving the Down Goods line and there is very little shunting. The view from the windows of the line towards Winsford Junction is obscured by the overbridge No. 19 just north of the station and the necessary track circuiting is provided, with separate indicators; it is unobstructed southward towards Minshull Vernon.

11. With a few exceptions, the Region's Standard "Class C" block controls, with three-position combined instruments, are installed throughout the length of this main line from Euston to Carlisle, and the application of the controls to the Up line section concerned are shown in detail on the plan. Their effect, in brief, is that (with Winsford Goods Yard box switched out) the lever of Winsford Junction Up starting signal No. 56 requires a separate electrical release by "Line Clear" on the block from Winsford Station; each time it is pulled, and the signalman at Winsford Station is compelled to restore his signals behind an Up train before he can accept another from Winsford Junction.

Also, at Winsford Station, occupation of the "berth" track circuit No. 2520 in rear of signal No. 19, or of the next track circuit No. 2521, maintains the Up block needle at "Train on Line," and so prevents the acceptance of a following train; the separate indicators of these two track circuits are fixed to the side of the block instrument case. The controls, however, do not prevent irregular clearance of the block for a train which has not reached the berth track circuit, as on this occasion.

**Evidence of Trainmen.**

12. According to the booked timings the 6.25 Postal train should overtake the 5.40 p.m. Passenger train at Lancaster, and so precede it at Winsford Junction, but the former was running late on the night in question, and the order had been reversed; the Passenger train passed Winsford Junction at 12.9 a.m. and was followed 17 minutes later by the Postal train at 12.26 a.m., both having recovered speed after the 15 m.p.h. restriction at Hartford Junction, 44 miles back. Thus the Passenger train must have stopped in the section at about 12.10 a.m., and the collision must have occurred at about 12.27 a.m.

13. The communication chain in the Passenger train was pulled by a young soldier who got out unobserved directly the train stopped so that he could reach his home nearby, and according to Driver T. D. Jones, the brake went on just as he had passed Winsford Junction box at about 60 m.p.h. He saw from the gauge that the vacuum had fallen from the normal 21 ins. to 10 ins., and assumed that a chain might have been pulled, so he shut the regulator, and the train was brought to a stand automatically, with no brake application from the engine; he had tried at first to overcome the fall in vacuum with the large ejector, but had been unable to do so, and I refer to this point later. He stated that the engine stopped in rear of the distant signals but, as has been mentioned, this was not correct.

14. Driver Jones' account and that of Fireman J. E. Price were very similar with regard to their subsequent actions. Price got down "within a few seconds" and went back to meet the guard, but he appears to have spent some time in searching for a turned disc on the way. Jones at first remained on the engine, whence he saw Price meet the guard on the cess side about half-way down the train (both were carrying lamps); he then got down himself two or three minutes, as he said, after the train had stopped, leaving the small ejector on. He took detonators with him and on meeting Price returning to the engine told him to go back and protect the train. Price replied that the guard...
was already doing so, also that neither he nor the guard had found a turned disc (or other source of air leakage). Jones noticed about this time that the Up Main distant was still "off."

He then walked back with Price all the way to the rear of the train, and on returning together towards the front they found the disc turned on the third coach. Jones had a pocket torch and Price had a lamp but the latter stated that he had to climb a little way up the ends of the coaches before he could see the discs, nor had he been able to locate the coach by any hissing sound as there was a good deal of noise from steam escaping from the train heating system.

Directly Price found the turned disc, he reset it, and Jones heard the brake shoes drop from the wheels as the vacuum was restored by the small ejector. Price then got into the coach and questioned passengers, but he could not find out who had pulled the chain (it was ascertained later that it had been pulled in a lavatory compartment). Just as he got down from the coach Price heard one of the detonators exploded by the oncoming Postal train, and the collision occurred a few seconds later.

Driver Jones on the ground heard the explosion of two detonators, separated by 5 to 10 seconds, and thought that the interval between the second detonator and the collision was rather longer. He added that the time between the stoppage of his train and the collision did not seem to be as much as 17 minutes.

After that, Price went forward to Winsford Station signal box, protecting the Down line with detonators on the way. He told the signalman of the collision, but the latter seemed unable at first to grasp what had happened, and then remarked to Price that he thought he saw his train going past at the same time as a Down goods train. Soon after Price arrived at the box, the Down Postal train already mentioned was stopped at the home signal; the time of its arrival was recorded in the Winsford Station train register as 12.40 a.m.

Guard G. H. Iveson, who is 63 years of age, had travelled in the sixth vehicle from Carlisle, where he is stationed; he appeared to much affected by his experience and his account was confused. It was, however, to the effect that he felt the brake go on when the chain was pulled and noticed the vacuum drop to about 8 ins.

When the train stopped he looked out on the cess side and saw the fireman coming back, but he went at first to the rear of the train to see if the vacuum hose was in place on the stopper plug, and Price remembered Iveson telling him he had done so. He then went forward examining on his way the main and cylinder branch vacuum hoses; he also said that he climbed the ends of the coaches to look at the discs, but Price, who watched him coming forward with his lamp, did not see him leave the ground.

Iveson suggested that about four minutes had elapsed by the time he met Price at about the third or fourth coach, having so far failed to discover the cause of the stoppage. He felt that no further time should be lost in protecting the train under Rule 179 (a) and though he appreciated that it was the fireman's duty to do so under Rule 181 (f), he decided to go back himself as the more experienced man, and asked Price to continue investigating the cause of the stoppage (for extract from Rules, see Appendix II). He returned to his van for detonators, and after walking back for about a minute, he tripped over a sleeper and fell, and his lamp went out. He relit the lamp, put down a detonator and continued to walk back for about four minutes when he heard the Postal train approaching. He put down another detonator, and had got back another 30 yards, showing a red light all the time, when the train passed him at about 60 m.p.h. He heard the two detonators explode. He then continued back to Winsford Junction signal box, putting down more detonators on the way, and on arrival there was informed by the signalman that the Postal train had been accepted ahead and had been running under clear signals. On his way back he met Guard Horne of the Postal train who told him of the collision; he assisted for some time with the rescue work, in which he received a severe cut on the hand.

Iveson endeavoured to show me on the ground where he had placed the two detonators, but his recollection was not very clear, and he stated at first that he placed the second detonator north of overbridge No. 21; a little later he corrected himself and said that it was south of the overbridge, and this was confirmed by Driver J. Howie of the Postal train.

Driver Howie said that he passed Winsford Junction at 50 to 60 m.p.h., under clear signals with the regulator partly open and the reversing gear at about 30 per cent. cut off. Just after he got through overbridge No. 21, he saw Guard Iveson's red light in the Up cess "somewhere about the Bacon Factory Home signal." He immediately shut the regulator and applied the brake fully, and then heard two detonator explosions, which he estimated to have been nearer 10 and 5 seconds apart (after demonstration to him of these intervals at my Inquiry). He saw the tail lamp of the Passenger train after hearing the first detonator, by which time the brakes were hard on, and he thought that the collision took place at about 40 m.p.h. He tried to reverse the engine, but was unable to free the catch of the reversing gear before the collision.

Fireman W. Miller generally confirmed Howie's account; he did not see Iveson's red lamp from the right-hand side of the footplate, but he noticed that the Winsford Station Up distants were at Caution. By this time the Winsford Station signals, which had been lowered for the Passenger train, had been replaced.

Guard T. Horne, also of Carlisle, who was travelling in the last (13th) van, felt the brakes go on suddenly just before the collision. He was thrown forward and badly bruised but, after making sure that the Down line was being protected, he protected the Up line himself, continuing back to Winsford Junction signal box where he arrived at 12.45 a.m.; he informed the signalman of the collision and made sure that Up traffic was being stopped. He then returned and applied himself to first-aid and rescue work.
All had booked on duty at 10.0 p.m. and during the next two hours 10 Up and 8 Down trains had been signalled at Winsford Junction and Winsford Station, the last of which were an Up express from Windermere which passed Winsford Station at 12.3 a.m., and the Down "Winsford Goods" which passed Winsford Station at 12.6 a.m. and terminated at Winsford Junction at 12.10 a.m. The next Up train was the Passenger train concerned which passed Winsford Junction at 12.9 a.m.

Signalman Chamberlain is 66 years of age and has served at Winsford Junction for 33 years. He did not consider that there had been any undue pressure of traffic on the night in question, and he gave a clear account of his actions during the critical period. He accepted the Passenger train at 12.6 a.m. from Verdin's Siding Box, 4 mile in rear; it was accepted by Hulse at the same time, and Chamberlain sent "Train Entering Section" at 12.9 a.m. as the train passed at ordinary express speed. The normal section time to Winsford Station for an express is only one or two minutes, so after about five minutes (12.14 a.m.) he telephoned to Hulse to ask what had become of the train, as he had not had "Train Out of Section." He received a reply to the effect that Hulse had missed the tail lamp, as the passing Down Winsford Goods had blocked his view.

Chamberlain did not think this sounded very convincing as he felt that the Down Winsford Goods, which had already arrived, should have passed Winsford Station some time before the Passenger train, and he remarked as much to Sandbach as he came away from the telephone. He was, however, entirely satisfied when he received "Train Out of Section" three minutes later, at 12.17 a.m. He knew Hulse to be an experienced signalman, having worked with him for many years, and assumed that the latter had only missed the tail lamp, and had been "holding the block" until he received "Train Out of Section" from Minshull Vernon as required by Block Telegraph Regulation 19 in such circumstances—see Appendix III.

Chamberlain therefore thought no more about the matter, and five minutes later, at 12.22 a.m., he offered the Postal train to Hulse, who accepted it at once; he sent "Train Entering Section" at 12.26 a.m. as the train passed at about 55 m.p.h. He remembered hearing "a dull thud" a minute or so later, but he thought nothing of it at the time and did not realise that there was anything wrong until he saw Guard Iveson's red light a few minutes before the latter reached the box.

According to Chamberlain, Iveson arrived at the box at about 12.34 a.m., just as he had refused the offer of an Up express from Liverpool as a precautionary measure. He could make nothing of Iveson's confused account in Scottish dialect and it was not until Guard Horne of the Postal train arrived at the box at 12.45 a.m. that he was able to tell the Control exactly what had happened. In the meantime he had learnt from Iveson that the collision was some distance ahead, so he accepted the Liverpool express at 12.40 a.m. and stopped it at his Up Home signal.

21. The above mentioned block signal times, which were recorded in the Winsford Junction train register, are summarised in the table below, also those recorded for the two trains concerned at Winsford Station, Minshull Vernon and Coppenhall Junction:

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<th>Accepted from rear</th>
<th>TES received</th>
<th>Accepted in advance</th>
<th>Train passed</th>
<th>TOS received</th>
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<td><strong>Winsford Junction</strong> (Chamberlain)</td>
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<td>Passenger Train</td>
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<td>12.6</td>
<td>12.9</td>
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<td>Postal Train</td>
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<td>12.25</td>
<td>12.22</td>
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<td><strong>Winsford Station</strong> (Hulse)</td>
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<td>Passenger Train</td>
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<td>Postal Train</td>
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<td><strong>Minshull Vernon</strong> (Morris)</td>
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<td>Passenger Train</td>
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<td>Postal Train</td>
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<td><strong>Coppenhall Junction</strong> (Harding)</td>
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<td>Passenger Train</td>
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<td>Postal Train</td>
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*Note.*—The signalmen at these boxes are not required to record separately the times at which "Train Out of Section" is sent back and "Train Entering Section" sent forward, though there are columns so headed in the printed (L.M.S.) register books; these times are assumed to coincide with the "Train Passed" time (in the case of trains which pass without stopping) or respectively with the "Train arrived" and "Train departed" time, for which columns are also provided.
22. The registers for the previous two hours showed that the recorded times at Winsford Station were one minute earlier, fairly consistently, than those at Winsford Junction for the same block signals; similarly, the Minshull Vernon register times were regularly one or two minutes later than those at Winsford Station. The regularity of the differences suggests that, until the advent of the Passenger train, the booking in all three boxes was being done currently; it is therefore reasonable to assume that, if the Winsford Junction clock was correct, that at Minshull Vernon was also approximately correct, with the Winsford Station clock about one minute slow. Similarly, the clock at Coppenhall Junction appears to have been one or two minutes slow.

23. Attention is drawn to the recorded time—12.11—at Winsford Station for the passing of the Passenger train, though it had never come within sight of the box, and the Minshull Vernon register also records 12.11 as the time when “Train Entering Section” was received. It appeared, however, from the Winsford Station register book that this time had been entered originally as 12.10 a.m. and had been altered subsequently to 12.11. The time of 12.11 for “Train Entering Section received” at Minshull Vernon appeared to have been written or re-written in the register after the accident, and I refer to this later.

24. Hulse is 62 years of age and has worked in the present Winsford Station box for the last 21 years, and before that for 12 years in the old box. It appeared that traffic had been dealt with without incident since he had come on duty at 10.0 p.m. until 12.5 a.m. when he accepted the Passenger train directly it was offered to him by Chamberlain; he could not, however, get it accepted by Morris until 12.7 a.m. when the express from Windermere cleared the section to Minshull Vernon. He then lowered his Up line signals and received “Train Entering Section” a minute later at 12.8 a.m.

25. His account of his actions after that was confused and contradictory, and he recognised that his entry of 12.11 in the register for the passing time of the Passenger train could have had no substance in fact; nor was he able to deny that the figure had been altered in his own hand from 12.10, but he had no recollection of having done so, and was emphatic that there had been no collaboration to this effect with Morris after the accident. He explained that it was his usual practice to send “Train Entering Section” to Minshull Vernon for Up trains just as they came within sight through the overbridge, but on this occasion had sent signal forward before the train reached him, as the Control telephone was ringing and he was anxious to report the passage of the Down Winsford Goods (also of a previous Down goods train) before he started his meal, which he generally took about this time; he suggested that, if he had waited to answer the telephone before sending “Train Entering Section,” the Passenger train might have received a check at Minshull Vernon. He also mentioned that the kettle was boiling over at the time and he had to take it off the stove.

Hulse went on to say that he reported the two Goods trains to the Control and then concerned himself with warming his meal in the oven. He acknowledged that the Passenger train must have gone out of his mind until he received Chamberlain’s telephone enquiry mentioned in para. 19 above, notwithstanding that the Up line signal levers were still over in the frame; nor had the Up line track circuits been occupied and cleared, but he said that he was not always able to watch their indicators for every train. He agreed with Chamberlain’s statement that the telephone conversation took place somewhere about 12.14 a.m., also that he replied (as he did later to Fireman Price—see para. 15 above) that the Down Winsford Goods had blocked his view of the Passenger train.

Indeed, this impression appears to have persisted in his mind for he continued to refer to it at the Company’s Inquiry, suggesting that he had been “holding the block” deliberately, not having been certain of the tail lamp. At my Inquiry, however, he suggested that he had thought the Passenger train must have gone by while he was on the telephone to the Control, with his back turned to the line. At this point, however, it should be stated that all of the Control office staff who might have been concerned were questioned; all were sure that there was no communication with Winsford Station box after midnight, and there was no record on the Control Sheets that the two Goods trains were ever reported. No Down train passed the box between 12.6 a.m. (Winsford Goods) and 12.16 a.m. (11.45 p.m. express from Crewe); no Up train of course passed after the express from Windermere at 12.3 a.m.

26. After the brief telephone conversation with Chamberlain, Hulse continued to withhold the “Train Out of Section” signal, with his Up line signals still standing “off.” He dealt with the 11.45 p.m. Down express which passed at 12.16 a.m. (its block times were consistent at all three boxes) and he then had a telephone conversation with Morris, though he could not remember whether he or Morris had initiated it. He said that Morris had asked what had become of the Passenger train, as it had not reached him, and he had replied that so far as he knew it was on the way; he then went to the foot of the signal box steps and looked both ways, but he could not see any light in the direction of Winsford Junction, so he returned to the box, sent “Train Out of Section” to Winsford Junction (recorded there as 12.17 a.m.) and replaced his Up signals. His recollections, however, of the order in which these events took place was vague, and at one time he stated that he had also gone to the foot of the steps directly after the telephone conversation with Chamberlain and before speaking to Morris.

27. Having sent “Train Out of Section” to Winsford Junction, Hulse went to get his meal out of the oven and was so doing when the Postal train was offered to him by Chamberlain. He accepted it at once, receiving “Train Entering Section” three minutes later, but it should be noted that his booking for the signals, namely, 12.24 a.m. and 12.27 a.m. was late; they were recorded at Winsford Junction at 12.22 a.m. and 12.26 a.m. respectively, and the corresponding times at Winsford Station—see para. 22 above—should have been 12.21 and 12.25. It appears that a little after that some doubt was arising in Hulse’s mind as to the true situation, though too late, as he did not offer the
last two years that he received "Train Entering Section arrived at the box.

The usual section time for an express from Winsford Station is about 4 minutes, so after "6 or 7 minutes" he telephoned to Hulse to verify that the Passenger train had passed at 12.11 a.m. He thought that it might possibly have been checked at Winsford Station, and he asked whether the train had been "doing all right" when it passed, and Hulse replied "yes" (Hulse, however, had no recollection of this question). Morris thought that this telephone conversation took place just before he received "Train Out of Section" for the 11.45 p.m. Down express from Crewe, i.e., at about 12.16 a.m.

He then went down on to the track and looked towards Winsford Station, but could not see the train; he was not satisfied, so he stopped the Down Postal train at 12.31 a.m. and cautioned the driver, as required by the Block Telegraph Regulations when a train has been an unusually long time in the section.

After the accident Hulse told him on the telephone that a fireman had come to his box and had said that someone had pulled the communication chain; Hulse at that time had said nothing about an accident but a minute or so later Morris heard the accident mentioned on the omnibus circuit telephone, but he could not say by whom. Hulse telephoned later to say that the Up Postal train had run into the Passenger train somewhere about his Up distant signals but Morris said that they had no discussion as to the cause and he had refrained from asking any questions. Morris added that he was relieved to hear that the Down Postal train was not concerned.

After the accident Hulse told him on the telephone that a fireman had come to his box and had said that someone had pulled the communication chain; Hulse at that time had said nothing about an accident but a minute or so later Morris heard the accident mentioned on the omnibus circuit telephone, but he could not say by whom. Hulse telephoned later to say that the Up Postal train had run into the Passenger train somewhere about his Up distant signals but Morris said that they had no discussion as to the cause and he had refrained from asking any questions. Morris added that he was relieved to hear that the Down Postal train was not concerned.

31. Thus, in spite of reminders, one from Chamberlain in rear and one at least from Morris in advance, Hulse continued to assume that the Passenger train had passed his box in the ordinary course, and his statements in par. 25 and 26 above represented an attempt to account for this erroneous assumption which led him eventually to accept the Postal train. At no time, however, did he attempt to deny his responsibility for the accident, and he expressed his deep regret saying finally that he must have "forgotten all about" the Passenger train for some reason which he could not explain.

He said that he had always been his practice to pay strict attention to the passage of every train; and Signalman Chamberlain, who had known him well and worked with him for over 30 years, said that he had always found him prompt in attending to block bells and telephone calls, and had never before had to remind him to give the "Train Out of Section" signal or otherwise to question the reliability of his block working; he thought, however, that Hulse had never been quite the same in health since an operation for hernia about three years ago. District Signalmen's Inspector T. Dickenson referred to him as a "sound but not brilliant" signalman, and the Winsford Stationmaster, Mr. R. F. Heatley, who had known him on and off duty for eight years, had always found him level-headed and truthful and had never heard him complain in any way of ill-health; he was very surprised at his failure.

Hulse is a teetotaller and a moderate smoker. He denied any suggestion that he might have been feeling sleepy at the critical time, having slept well at home during the day after booking off at 6.0 a.m.; nor was he reading, though he sometimes did so in the box during intervals between trains. He mentioned, however, that he was feeling the after effects of a bad cold which had kept him in bed during the previous week-end, but he did not consider himself to have been unfit for duty. He also referred of his own accord to some anxiety that his wife was developing a serious illness; local enquiries suggested that this anxiety may have been genuine at the time, though I understand that it has since been dispelled. He was subjected to a thorough medical examination after the accident, which disclosed nothing to suggest that he was not fit for his responsibilities.
32. The chain of events which lead to this collision was initiated by the stoppage of the Passenger train in mid-section; such an unexpected stoppage may be brought about in a number of ways and on this occasion it was due to the irresponsible action of a passenger who pulled the communication chain without good cause. The standing train, however, should have been protected by the Block, and the irregular admission of the Postal train to the occupied section arose from a grave breach of the Regulations by Signalman W. B. Hulse, who gave "Train Out of Section" to Winsford Junction for the Passenger train, although it had not passed his box. Responsibility for the collision therefore rests with him.

33. There can be no suggestion that Hulse was over-pressed by traffic and his failure occurred comparatively early in his turn. While I do not overlook the possible effects of his recent cold, nor his domestic anxieties, he was a thoroughly experienced signalman and the safe working of traffic in this particular emergency required nothing more than ordinary attention to his task; with such attention, no reminders should have been necessary and furthermore it was to be expected that he himself could have initiated a call to the box in rear when the Passenger train did not appear after the usual section time had elapsed, as did Signalman Morris at Minshull Vernon.

Apart from the general unreliability of his evidence, his suggestion that he was baulked by the Down Winsford goods train or by a telephone conversation with the Control clearly had no foundation in fact, and I find it difficult to avoid the conclusion that he allowed himself to be distracted by the preparation of his meal at about the time the Passenger train was due to pass the box, which led him to transmit the "Train Entering Section" signal to Minshull Vernon after the usual two minute interval. In this connection his original record of 12.10 for this signal and 12.8 for the receipt of "Train Out of Section" from Winsford Junction should be noted, but I attach no particular significance to his subsequent alteration from 12.10 to 12.11, except possibly as a feeble attempt to cover his premature transmission of "Train Entering Section." I am satisfied that Morris' entry of 12.11 represented as nearly as possible the time by his clock at which he received this signal in spite of the manner in which it was written in his register.

34. The premature transmission of "Train Entering Section," which was recorded in the register under "Train Passed," in accordance with the recognised local practice, appears to have been the beginning of Hulse's breakdown, and the circumstances cannot help suggesting that despite his statement to the contrary, he had fallen into the habit of attending to block signals as a mere matter of routine, depending on every train passing normally without hitch, and was thus caught unawares by the stoppage of the Passenger train before it reached him. A state of mind in which he was paying so little regard to the integrity of his block working may also explain his subsequent confusion and lack of honesty with himself, as is illustrated by his readiness to assume, in spite of reminders from his colleagues on either side, that the train had passed in the ordinary course, and that he had neglected, for some reason or another, to clear the block to Winsford Junction and to restore his Up line signals to Danger. His failure in this manner after many years of satisfactory service is much to be regretted; his record, apart from one serious irregularity in block working five years ago, is consistent with the favourable opinions which were expressed by his superiors.

35. With regard to the other two signalmen concerned, Chamberlain at Winsford Junction was alert and telephoned ahead in good time when "Train Out of Section" was not received after the usual interval. His first suspicion of the truth of Hulse's reply was proved in the event to be justified, but it would not be fair to criticise him for taking no further action when he finally received this signal at 12.17 a.m., even though he had not received the "Train Passed Without Tail Lamp" signal in accordance with Block Telegraph Regulation 19. Morris also telephoned and acted correctly to the cause of the stoppage are clearly allocated to different members of the train crew, and so do not conflict. Thus it was Fireman Price's sole duty to meet the guard and then to lose no time in getting back with detonators as far as he was able, as Driver Jones seems to have appreciated.

36. The Rules for the protection of trains stopped from exceptional causes, extracts from which are given in Appendix II, are designed as a second line of defence in the event, for instance, of a breakdown in block working such as occurred in this case. Though the force of the collision was reduced to some extent as the result of the warning by Guard Iveson's red hand signal about 400 yards in rear, the question arises whether rear protection in accordance with Rule 179 (a) could have been afforded at an appreciably greater distance, considering that the Passenger train had been standing for 17 minutes.

Rule 181 (f), which refers specially to the case of a train stopped by the communication apparatus, is carefully drawn to ensure that the two important emergency duties of train protection and attention to the cause of the stoppage are clearly allocated to different members of the train crew, and so do not conflict. Thus it was Fireman Price's sole duty to meet the guard and then to lose no time in getting back with detonators as far as he was able, as Driver Jones seems to have appreciated.

It appeared, however, that Price lost some valuable time in searching for a turned disc, which was really Iveson's responsibility and the latter decided to go back himself, contrary to the Rule, after he also had spent an appreciable time in looking for the cause of the unexpected stop. While I do not question that both men were trying to do their best, and they were also handicapped by the absence of the passenger who had pulled the chain, time may pass with deceptive rapidity on such occasions, and if each had concentrated on his own task in accordance with the Rule it seems probable that Price would have had time to get back considerably further than did Iveson, perhaps even to Winsford Junction box. The collision might thus have been prevented, or its effects much reduced.
37. I am satisfied that Driver J. Howie of the Postal train was alert. With the right-handed curvature, it is doubtful whether he could have seen Guard Iveson's red light close to the track any earlier, and he braked promptly, but he was running late, and it seems possible that he may have been travelling appreciably faster than his estimate of 50-60 m.p.h., as he was entitled under clear signals.

38. Driver Jones, of the Passenger train, stated that he was unable to keep the brakes off with the large ejector, but the brake equipment was in order, and if he had persisted he should have had no difficulty in keeping the train in motion, as was confirmed by careful trials which were carried out after the accident with the same engine and a representative train, similarly equipped with direct admission valves on seven of the 10 coaches. Jones, however, acted in accordance with the Instructions in allowing the train to come to a stand as he did. He cannot therefore be criticised on this account though, as it happened, the accident would probably not have occurred if the train had travelled another 650 yards, and had so reached the berth track circuit in rear of the Winsford Station Up home signal No. 19. In that event, the Region's "Class C" block controls, described in para. 11 above, would have maintained the block needles at "Train on Line," and it would have been impossible to clear the Winsford Junction starting signal No. 56 and the corresponding distant, for the Postal train.

**Remarks and Recommendations.**

39. "Class C" block has been installed for practically the whole length of the two London Midland routes from Euston and St. Pancras to Carlisle, and a programme is continuing for its extension on other important lines. Other Regions are also extending the application of similar controls, though there are variations in detail and in the application of their programmes. Much has therefore been done, and is being done, to prevent the more likely errors to which signalmen may be liable but, as has been mentioned, such controls do not afford a safeguard against irregular clearance of the block if a train has not reached the track circuit in rear of the outermost stop signal of the box concerned. Owing to the conscientious observance of block discipline by the great majority of signalmen throughout the country, such cases are rare, but especially on routes where traffic is fast and frequent it is clearly desirable to assist them by the application of such preventive controls as may be practicable.

Continuous track circuiting, which alone can afford complete protection, can only be justified on routes of exceptional traffic density, but the former London & North Eastern Railway is already equipped fairly extensively with their special "Welwyn" block control, so called from its introduction after the collision at Welwyn Garden City in 1935; it is so arranged that once a train has been accepted, the berth track circuit has to be occupied and cleared before "Line Clear," can again be given to release the starting signal of the box in rear for a following train. A similar safeguard is afforded by the Rotary Block of the former Midland Railway, which is now combined with "Class C" Controls on the St. Pancras-Carlisle and other routes of the London Midland Region. The circumstances of this accident have again drawn attention to the desirability of such additional protection and the Railway Executive are considering the standardisation of the Welwyn type of control.

40. I therefore have no recommendation on the matter of preventive equipment generally, but as an important point of detail it should be mentioned that a block control of the Welwyn type has to be specially released in the event either of the cancellation of a train which has been offered and accepted or of a safety side failure of the berth track circuit. In the normal arrangement of this control, such release can be effected by the signalman in advance without co-operation with the box in rear, but its action has been made deliberate by the provision of a screw-operated switch which requires at least two minutes to move it into the releasing position.

Even a deliberate release has its risks in the hands of a man in Signalman Hulse's state of confusion unless there is some independent check, as is provided with the Welwyn Control in special cases, e.g., long tunnel sections, where the release requires the co-operation of the signalman at both ends of the section. I recommend that consideration should be given to the general standardisation of this co-operative feature, which may be a valuable safeguard if a signalman is mistakenly convinced that a train has passed through the section (as apparently was Signalman Hulse) and assumes failure of the track-circuit to release. If the Welwyn Control had been installed at Winsford Station, with a co-operative as opposed to an independent release, I think there is little doubt that this accident would not have occurred.

41. With regard to the block registers (see "Note" in para. 21 above) the specific recording of the times at which "Train Out of Section" and "Train Entering Section" are given is not strictly enforced in all signal boxes of the London Midland Region, though there are columns so headed in the standard London Midland & Scottish register books; this is a continuance of old practice.

While it is impossible to say whether the recording of "Train Entering Section" to Minshull Vernon for the Passenger train in the "Train Passed" column has any bearing on Signalman Hulse's failure, the recording of all block signals is desirable, and instructions are being issued that the times at which "Train Out of Section" and "Train Entering Section" are given as well as received should be specifically recorded in all signal boxes of the London Midland Region where registers are kept. This is the practice in other Regions, and I also recommend that it should be maintained when a train register book is standardised for British Railways, as I understand is the intention.

In this connection it is appropriate to mention that representations were made during the course of my Inquiry by other signalmen at Winsford Station that the work of this box justified the provision of a booking lad. The circumstances however of Signalman Hulse's failure do not suggest in any way that it might have been due to confusion arising from pressure of traffic or telephone calls.
42. The fact that the usual emergency arrangements for train protection by detonators and a red hand signal failed to prevent the collision, again suggested the possible use of flares or other devices for giving warning of an obstruction, not as a substitute for detonators placed at the appropriate distance from it but to supplement them if needed, e.g. when a train approaches before the regulation 3/4 mile has been covered. Exhaustive trials with flares were carried out by the Railway Companies after the accident at Dinwoodie in 1928, but their introduction was not considered to be justified at the time. The question again received prominence after the accident at Browney on the former London & North Eastern Railway in January, 1946, with special relation to obstruction of the opposing line where no protection is afforded by the block; further trials were carried out in 1947 and again this year, with the co-operation of the Ministry of Supply, to ascertain whether recent developments in pyrotechnic equipment should modify the former adverse decision, and the matter is still under consideration.

43. A number of suggestions have been received from the public in connection with this accident and some bore evidence of much thought; all have been carefully considered but none seemed to be sufficiently practical to warrant specific reference. I wish, however, to correct any impression which may have arisen that the power of stopping a train against the will of the driver is in the hands of a passenger who may pull the communication chain. It will be seen from paras. 2 and 38 above that the driver is able to keep the train in motion when a chain has been pulled should it be necessary in special circumstances, but it should again be stressed that the stoppage of a train in this way can only lead to a collision in the rare event of disregard of fundamental safety Rules and Regulations. The present standard form of communication apparatus has the advantage of great simplicity, and moreover makes use of the ordinary brake equipment whose working order is under constant test during the course of a journey.

I have the honour to be, Sir,

Your obedient Servant,

G. R. S. WILSON,
Lieut.-Colonel.

The Secretary,
Ministry of Transport.
APPENDIX I.

EXTRACT FROM
GENERAL APPENDIX TO THE WORKING TIME TABLES
WITH
SECTIONAL APPENDIX.

SECTION XI. OF THE RULE BOOK.

Regulations for Communication between Passenger, Guard and Driver
by means of the Automatic Brake.

1. Discs are provided on each side of passenger vehicles fitted with this communication, and, before the train commences its journey, the guard must satisfy himself that the discs are in their normal position.

2.—(a) A passenger requiring to communicate with the guard and driver will pull down the chain provided for the purpose. This will cause the partial application of the brake, which will be indicated by the gauges on the engine and in the guard’s van.

(b) A small red disc will be exhibited on each side of that carriage from which the communication has been used.

(c) The guard can ascertain from which compartment of the carriage the alarm has been given by the slackness of the chain.

(d) After the chain has been pulled the guard must take care that the red discs at the end of the carriage are replaced to their normal position before the train proceeds on its journey.

3.—(a) When the driver observes that the brake is being applied, he must infer that the communication has been used, and must stop his train with as little delay as possible, having due regard to Rule 187. He must, however, exercise discretion in stopping, it being undesirable to bring the train to a stand on a bridge, or a viaduct, on catch points, or in a tunnel, or other places of a similar character.

(b) If an unusual diminution of vacuum of air pressure occurs, the driver must infer that the communication has been used.

(c) If the guard should have reason to think the communication chain has been pulled, but not noticed by the driver, he must take steps to stop the train by the application of the brake from his van, bearing in mind the instructions laid down in clause (a).

4. When the train has been brought to a stand it must be protected as prescribed in Rule 181, clause (f).

5. The guard must take steps to ascertain why, and by whom, the communication has been used, and in the case of improper use of the communication, the names and addresses of all the passengers in the compartment must be taken, in order that the offending passenger, may be dealt with.

6. The guard must, in addition to the notes in his journal, specially report any use that may have been made of the communication on the journey, or any failure in its action.

APPENDIX II.

EXTRACT FROM RULES.

Trains Stopped by Accident, Failure, Obstruction or other Exceptional Cause.

179.—(a) Should the train not foul or not be dangerously near to any other line, the Guard if there be only one, or the rear Guard if there be more than one, must go back not less than $\frac{1}{2}$-mile, unless he arrive at a signal box within that distance, exhibiting a hand Danger signal to stop any train approaching on the obstructed line, and he must place detonators upon one rail of the obstructed line, as under, viz.:

1 Detonator $\frac{1}{2}$-mile from train.
1 Detonator $\frac{1}{2}$-mile from his train, and
3 Detonators, 10 yards apart, not less than $\frac{1}{2}$-mile from his train.

Should a train approach on the obstructed line before the detonators have been laid down as prescribed, the Guard must immediately place 3 detonators on the line affected, as far as possible from the obstruction, and exhibit a hand Danger signal.

181.—(f) In the case of a passenger train being stopped by the use of the communication between passenger, Guard and Driver, the Fireman must, if there be only one Guard, go back and protect the train whilst the Guard attends to the requirements of the passenger who used the communication. Should there be two Guards the rear Guard must go back and protect the train whilst the front Guard attends to the requirements of the passenger. Should there be no Guard, the Fireman must go back and protect the train whilst the Driver attends to the passenger.
19. **Train passed without tail lamp** (9 consecutively to box in advance, 4-5 to box in rear).—(a) Signalmen must carefully watch each train as it passes, and satisfy themselves that it is complete with tail lamp attached before sending the “Train Out of Section” signal.

(b) (i) Should a train pass without a tail lamp, or the Signalman be unable to satisfy himself whether or not the tail lamp is on the train, he must immediately place or maintain his signals at Danger to stop the first train proceeding on each line in the opposite direction, and except as provided in clause (d) inform the Driver what has occurred and instruct him to proceed cautiously so as to avoid danger in the event of any portion of the train having fouled the line on which his train is running. The signalman must also send the “Train passed without tail lamp” signal (9 consecutive beats) to the box in advance; he must not send the “Train Out of Section” signal to the box in rear, but must send the “Train passed without tail lamp” signal (4-5) and maintain the block indicator at “Train on Line.” Should he afterwards receive the “Train Out of Section” signal from the box in advance or be advised by the Signalman at that box that the train is complete, he must send the “Train Out of Section” signal to the box in rear, but should it be ascertained that the train is divided the provisions of Regulation 20 (so far as they apply) must be carried out.

The Signalman in rear receiving the “Train passed without tail lamp” signal (4-5) must immediately place or maintain his signals at Danger to stop the first train requiring to proceed on any other line towards the signal box from which the signal was sent, inform the Driver what has occurred and, except as provided in clause (d), instruct him to proceed cautiously.