

LONDON MIDLAND AND SCOTTISH RAILWAY.

8

Ministry of Transport,

4, Whitehall Gardens,

London, S.W.1.

23rd November, 1934.

SIR,

I have the honour to report, for the information of the Minister of Transport, in accordance with the Order of the 1st October, 1934, the result of my Inquiry into the circumstances attending the accident which occurred at about 9.10 p.m. on the 28th September, 1934, at Winwick Junction, near Warrington, on the Crewe-Preston main line of the London Midland and Scottish Railway.

The 5.20 p.m. down express, Euston to Blackpool, running under clear signals and at a normal speed of about 50 m.p.h., overtook and came into violent collision with the trailing end of the 8.55 p.m. local train, Warrington to Wigan, via Earlestown, which was moving forward at low speed.

I regret to state that five passengers and the guard of the local train and three passengers in the express were killed in the accident; in addition, two passengers died in hospital subsequently as a result of their injuries; 18 passengers were injured and taken to hospital while 55 other passengers and two of the company's staff suffered from minor injuries and shock. The driver and fireman of the express were fortunate enough to escape with comparatively minor injuries, but the driver of the local train was thrown down on his footplate and more seriously injured, so that I was unable to hear his evidence until 14th November.

The local train consisted of a set of 3 bogie coaches drawn by engine No. 6632, type 2—4—2 tank, running chimney leading; its total weight was about 132 tons and overall length 210 feet. All coaches were fitted with the vacuum brake and electrically lit.

The express consisted of 9 bogie coaches weighing about 277 tons, drawn by engine No. 25648, Prince of Wales class, type 4—6—0, with 6-wheeled tender. This engine and tender weighed about 105 tons, and the overall length of engine and train was about 609 feet. The coaches were fitted with the vacuum brake on all wheels, and the engine had the steam brake, controlled by the vacuum, on coupled and tender wheels. The percentage of brake power of train and engine was 71 per cent. All coaches were electrically lit and the 7 rear coaches were fitted with shock-absorbing buffers.

The local train was pushed forward about 170 yards and after the two trains came to a stand, there was a gap of about 50 yards between the trailing end of the second coach of the local train and the front of the engine of the express. The violence of the collision was fortunately reduced by the fact that the local train was already moving.

Particulars of the construction of and damage to the rolling stock are given in the Appendix, but in brief it may be said that the leading coach of the local train suffered a good deal of minor damage and the leading end of its underframe rode up and broke into the tank of the engine, while the second coach was seriously damaged and the third was completely demolished. The two leading coaches of the express were badly telescoped and totally wrecked, while the remaining seven coaches suffered only trifling damage, the third, fourth and fifth being derailed but remaining upright. The express engine had its front buffer beam broken and main frames bent at the leading end, and chimney broken off, with other damage, but it is worthy of note that after the clearance of the wreckage the engine was able to move under its own steam and to draw some of the damaged vehicles away.

The permanent way on the down fast line was badly damaged for a distance of about 240 yards in addition to damage to points and crossings opposite the signal box. The up fast line was also damaged to a lesser extent.

It was a fine night, quite dark, and the rail was dry. The afternoon had been hot, but there was not the abnormal and oppressive heat which prevailed in some parts of the country on that afternoon.

*Description.*

Winwick Junction, some  $3\frac{1}{2}$  miles north of Warrington, is the point at which the line leading north diverges into two directions, the double track main line to Golborne, Wigan and Carlisle to the right, and the double track branch line to Vulcan Bank and Earlestown to the left. At Earlestown this branch effects a junction in both directions with the East and West Manchester and Liverpool line, which, about  $1\frac{1}{2}$  miles to the east, has another junction with the north-bound main line at Golborne. The local train was running from Warrington via Winwick Junction and over the branch line to Earlestown, Golborne and Wigan, while the express was going by the direct main line from Warrington, via Winwick Junction, and Golborne, to Wigan.

From Warrington to Winwick Junction there are four tracks, in order from west to east, Down Slow, Down Fast, Up Fast and Up Slow. The slow lines are used for goods traffic only. Beyond Winwick Junction both main and branch lines are double track. The track lay-out at the junction is indicated in the diagram attached; the line is in low bank and the signal box is on the east side of the line. There is a permanent speed restriction of 50 m.p.h. through the junction.

Immediately south of the signal box is an occupation level crossing with a foot overbridge. The home signals, down fast to main, and down fast to branch, are on a bracketed post to the east of the four tracks. The corresponding signals, down slow to main, and down slow to branch, are on another bracketed post to the west of the line.

The view of trains standing at these home signals is somewhat obstructed by the east pier of the foot overbridge, so that they are not as conspicuous to a casual glance as if they were standing on an entirely open section of line, but a signalman has no difficulty in seeing either an engine by day, or its headlight by night, if he actually looks for it.

*Distances from Winwick Junction Signal Box.*

Warrington Station	...	...	...	...	About $3\frac{1}{2}$ miles South.
Dallam Signal Box	..	...	...	...	,, $2\frac{1}{4}$ ,, ,,
Winwick Quay Signal Box	...	...	...	...	,, $1\frac{1}{4}$ ,, ,,
Winwick Junction down distant signals	...	...	...	...	1,012 yards South.
Point of collision	...	...	...	...	212 ,, ,,
Winwick Junction down home signals	...	...	...	...	172 ,, ,,
Front of express engine after collision	...	...	...	...	70 ,, ,,
Foot overbridge	...	...	...	...	30 ,, ,,
Trailing end of second coach of local train after collision	...	...	...	...	20 ,, ,,
Front of engine of local train after collision	...	...	...	...	28 ,, North.
Diamond crossing of down main and up branch	...	...	...	...	72 ,, ,,
Down branch starting signal	...	...	...	...	429 ,, ,,
Down main starting signal	...	...	...	...	491 ,, ,,

Approaching Winwick Junction from the south the gradient is rising at 1 in 640 for about  $1\frac{1}{4}$  miles, and for the last half mile there is an easy right-handed curve averaging about 100 chains radius.

Winwick Junction signal box is on the inside of this curve and is an old box containing 33 working levers, with 4 detonator placing levers in a separate frame. The block instruments are of the 3-position type, and there is an indicator to show the direction of down trains to main line or Earlestown branch, which is operated from Winwick Quay. Owing to curvature, it is difficult to see a train standing at the down main line starting signal, and a track circuit is provided in rear of this signal, which is indicated in the box and locks the relevant home signals in rear.

The main line home signals are interlocked with the block instruments in such manner that "Line clear" cannot be given to the box in rear (Winwick Quay) unless the levers actuating these signals are in the normal (stop) position.

There is a fireman's call plunger adjacent to the down slow home signal which indicates in the signal box and holds the block instrument for the down slow line to "Train on line".

#### *Report.*

The circumstances leading up to this regrettable accident may be summarised as follows.

The local train from Warrington was offered by signalman Wheeler at Winwick Quay to signalman Bloor at Winwick Junction at 8.57. Bloor accepted the train and received "Train entering Section" about 9.3. At this moment his attention was occupied by movements of other trains, as explained below, and he did not, as he should have done, offer it forward to Vulcan Bank signal-box at once, and therefore did not pull off his home and starting signals for it. (Signalman Perkins at Vulcan Bank could have accepted it at once.)

Driver Hope of the local train had left Warrington about one minute late; he found all signals clear as far as the distant for Winwick Junction, which was on; he whistled twice, the code for a branch train, and approached the home signal very slowly, expecting to see it pulled off and thus to avoid stopping. He was confident that shortly before coming to a standstill he again whistled twice.

He stopped a short distance in rear of the home signal, about 9.6, as far as can be judged, and told fireman Hayes to go to the box to carry out Rule 55. Hayes took a lamp which was already lit and proceeded to the box, driver Hope calling to him to cross the two up roads and go along the cess. While Hayes was on the way, signalman Wheeler, in Winwick Quay box, had intimation that the express was approaching, and, as his block instrument to Winwick Junction still showed "Train on Line", called the attention of signalman Bloor at Winwick Junction, with a view to signalling "Shunt train for following train to pass". Under the Regulations he was not permitted to ask for "Line clear" until he had had "Train out of Section" for the preceding train. Bloor heard the "Call attention" bell, and looking at his block instrument saw that it was still at "Train on Line". Forgetting about the local train, he thought that he had omitted to give "Train out of Section" for the preceding train which had passed on to the branch some eight minutes earlier. He immediately gave "Train out of Section" to Winwick Quay, and was then offered and accepted the express, and having offered it forward to and obtained acceptance from Golborne, set the road and pulled off his signals for it.

Driver Hope estimated that he had been at a stand for about four minutes when the home signal was pulled off for the main line. He then gave two whistles, but as the signal was not altered, he decided to move on slowly to the box, thinking that his fireman would have reached the box by this time, and knowing that he could pull up to the box without locking the Junction points. He had a momentary difficulty in starting and had to reverse, but then moved ahead slowly. He had closed the regulator and was moving at about walking pace when the collision occurred.

After the accident prompt measures were taken by signalman Bloor to block all roads and to obtain medical and other assistance; doctors and nurses from Winwick Mental Hospital and the neighbourhood, to a total number of 21, were on the scene in a very short time, and ambulance men were dispatched by train from Warrington and Wigan. The trains involved in the accident had the standard ambulance box equipment.

#### *Conclusions.*

Responsibility for this accident must rest upon signalman Bloor of Winwick Junction box, and he frankly admitted this without attempt at evasion.

During the few minutes before the accident he had to deal with a number of trains as follows:—

(a) Crewe to St. Helens down goods via Earlestown, which approached on the down slow line, and was brought to a stand at the home signal about 8.53, waiting for the passage of

(b) North Wales to Manchester express via Earlestown, which approached on the down fast line, was accepted by Vulcan Bank, and passed about 8.56.

(c) St. Helens via Earlestown to Warrington up local passenger, which passed about 8.56 on to the up fast line.

(d) Up cattle empties train from Earlestown branch to Warrington, which, after telephone consultation with Warrington, Bloor accepted intending to send by the up fast line until he got news of

(e) Up Fleetwood to Crewe fish train from the up main line, which should have precedence over the cattle empties on the up fast line.

In view of his decision to give precedence to the fish train, Bloor had to keep his up branch home signal at danger, and wait till the cattle train had come to a stand at it, before he could set the junction for the up fish train. He also had to inform Warrington about the change in order. Further, this change of arrangements meant that the cattle train would now have to wait at the home signal until the Euston-Blackpool express had crossed the junction.

Signalman Bloor admitted that in the meantime (at 8.57 according to his block book) he must have accepted from Winwick Quay

(f) the down local Warrington-Earlestown-Wigan, but he stated that he had no recollection of this train; he did not offer it forward to Vulcan Bank as he would normally have done, and he suggested that the bell signals received from and given to Winwick Quay for this train may have taken place during intervals of his telephone calls to Warrington, with the result that the train passed out of his mind after he had put his block instrument to train on line for it.

Thereafter he was telephoning to Earlestown about the passage of

(g) an up goods from the Earlestown direction known as the "sugar" train and

(h) the 9.0 p.m. St. Helens, Earlestown, Warrington up motor train, both of these trains having to follow the cattle train.

He was thus dealing in rapid succession with eight trains, several of which involved conflicting movements at the junction, and several also involved telephonic arrangements with various other boxes.

The entries in the Block Book at Winwick Junction are kept by a signal-box lad, E. Derbyshire, who had been employed in this signal-box for 18 months. He had completed the entries for the North Wales to Manchester express and had entered the acceptance of the down local passenger from Winwick Quay, when he was called to the telephone to take particulars of certain alterations in excursion train running; having received this information he went to the other end of the signal-box to refer to the special weekly notice about these trains and to enter the alterations thereon; he estimated that this might have taken two or three minutes, and while he was doing this, signalman Bloor was standing at the door at the north end of the signal-box, no doubt watching the approach of the up cattle and fish trains.

As Derbyshire returned to his desk he heard Bloor remark "Goodness, I have not given 2-1 here yet" and he gave "Train out of Section" on the down fast instrument to Winwick Quay, and immediately afterwards was offered and accepted the express from Winwick Quay. As already noted Bloor had forgotten the local passenger train and thought that he had failed to give "Out of Section" for the preceding North Wales express.

On hearing this remark and bell signal Derbyshire assumed that the local passenger, for which he had booked only the one entry of "Line Clear" given to Winwick Quay, must have passed the box while he was speaking on the telephone, and he therefore entered in the book what he considered to be normal intermediate timings for the passing of the train and its acceptance ahead, etc., without questioning Bloor about this.

Bloor was under the impression that when he made his remark about not having given clearance he mentioned the North Wales express, but Derbyshire does not recollect this or at any rate did not hear it.

Signalman Bloor's failure to remember the local train can only be ascribed to mental lapse, and his action in sending "Train out of Section" without verification was a most serious breach of the basic principles of Block Working. He agreed, as is evidently the case, that he was much pressed at the time, but he did not suggest that the work in this box was unduly heavy. He said that generally speaking, the early evening hours were the busiest time of the twenty-four. He had been on duty since 2.0 p.m. on the day of the accident.

He is a man of 55 years of age, with 34 years service as signalman and 21 years at Winwick Junction. He has a good record, and, apart from his frank admission of responsibility, it should be noted that after the accident he kept his head and made all possible arrangements for obtaining prompt assistance.

If this had been a box in which the signalman had to make his own entries in the block book, I feel Bloor would hardly have failed to look at this book before he gave "Train out of section", or at any rate immediately after, and he would thus have been reminded of the local train. A booking lad has no responsibility in connection with train operation, and the very unfortunate coincidence at this moment of the telephonic communication and action thereon made matters more difficult for Derbyshire; but had he, on hearing "Train out of Section", reminded Bloor that the entries for the local train were incomplete, or asked him what time it had passed, or had been accepted ahead, it would probably have been in time for Bloor to take action to avert the accident, and it was very unfortunate that Derbyshire did not do so.

One of the objects served by a Block Register is to remind a signalman of the situation at any moment, but unless the booking is accurate, it is worthless and even misleading. I suggest, therefore, that it would be desirable for the Company to ensure that all booking lads should realise that if, owing to any interruption, they have to make entries other than from personal knowledge, they should make quite certain of their substantial accuracy by inquiry from the signalman.

Apart from the primary cause of the accident, which has been dealt with above, it is necessary to consider various other factors by which it might have been averted or minimised.

The question arises in the first place as to whether Driver Steele of the express should have become aware of the presence of the local train earlier and in time to make a more effective brake application. As to this, his engine had left-hand drive and his position was therefore on the outside of the curve. From trial with a similar engine, I am satisfied that, even with a goods train standing on the adjacent down slow line, it would hardly have been possible for him to see and identify the tail lamp of the local train until within a distance so short as to render it impossible to produce appreciable braking effect. He was running under clear signals and at normal speed; there is evidence that the brakes did take hold, but only immediately before the collision. I do not consider that any share of responsibility should be attributed to him.

Fireman Partridge would have been on the inside of the curve and would have had a much better chance of seeing the tail light or carriage lights of the local train if he had been looking out, but he had just been firing and was still on the main floor of the footplate. On this class of engine, it is hardly practicable to see through the spectacle except when standing on the raised platforms provided on each side. He could not recollect what he was actually doing at the time, possibly breaking coal, but he had the usual duties of the footplate, and having regard to the fact that the train was running under clear signals in clear weather on an open section of line, I do not see any justification for criticising him for not being on the look-out at the time.

A further question arises as to whether there was any unnecessary delay in the carrying out of Rule 55 by the enginemmen of the local train. Under this rule it was the duty of the fireman, when stopped at the home signal which after a whistle was not immediately lowered, to proceed "at once" to the signal-box to remind the signalman of the presence of his train, thereafter remaining in the box or returning to his train after being satisfied that any reminding apparatus provided (e.g., lever collar) had been put into use.

Driver Hope was emphatic that immediately he came to a standstill he told fireman Hayes to go to the box, and that the latter did so without delay. He said it was very unusual to be stopped at this signal, that Hayes got down at once, but before he was off the steps, he realised how dark it was, and came back for a lamp, and he then went off at once. Fireman Hayes confirmed this, and said that after crossing the two up tracks he walked along the cess looking back occasionally to see if the signal had been pulled off. He had just passed under the footbridge when he saw the back light of the main line signal disappear; he thought the signalman had made a mistake and went on to the box, going up the steps and calling out to the signalman immediately before the collision occurred.

As far as can be ascertained from the block registers at the two boxes in rear, there must have been an interval of about seven minutes between the passing times of the local and the express. Of this time almost three minutes would be accounted for by the local train slowing to a standstill while the express was running under clear signals; after stopping, Hayes had to walk about 180 yards to the box after obtaining his lamp from the footplate. Assuming two miles per hour walking in the dark, this would take him over three minutes, which thus accounts for the greater part of the difference in time between the two trains.

In the circumstances I see no reason to doubt that driver Hope and fireman Hayes took all proper steps to carry out promptly the provisions of Rule 55, and that no delay occurred such as might have been a contributory cause of this accident.

As regards the question of a whistle signal when coming to a standstill, driver Hope was confident that he did whistle, and said that one reason why he was certain of this was that he wanted to avoid having to send his fireman to the box, which he realised he would have to do at once if he was stopped. Signalman Bloor was of the opinion that he had heard no whistle, and this was supported by the driver and fireman of the goods train which was standing at the home signal on the adjacent down slow road. On the other hand, the latter two were not looking out for a whistle, Bloor was much occupied, and it is probable that the up fish train passed about the time the whistle would have been given. On the whole I am inclined to accept driver Hope's statement that he did whistle when coming to a stand at the home signal, as well as when passing the distant. He is a man of 57 years of age with 15 years' service as a driver, well acquainted with this line. He has a good record and is considered a very careful and reliable driver.

The accident would have been prevented by the provision of a track circuit in rear of the down fast home signal, which would have indicated to the signalman at Winwick Junction the presence of the local train, and, with suitable locking, this would have rendered it impossible for him to accept the express from Winwick Quay. The provision of track circuiting at points such as this is a common practice which is becoming more general every year.

I was informed by the Company's officers that a track circuit at this point had been included in an extensive list of such proposals some two years ago, but that they had naturally to place these proposals in order of urgency, having regard to all the factors concerned; this case was low on the order of urgency, in view of the proximity of the home signal to the box, the reasonably good view, and the fact that it was seldom necessary to hold trains at this signal; if a train had to be held at this box the usual practice would be to allow it up to the starting signal and thus clear the junction; a track circuit has been provided in rear of the down main starter to cover this contingency.

In the last few years the Company has made very rapid progress with the provision of track circuiting generally, but the circumstances of this accident do emphasise the safety value of such equipment and provide a cogent reason for the further extension of track circuiting in this and similar places, especially at junctions on four-track lines. I am not prepared to criticise the Company's decision as to the order of urgency of this particular track circuit, but I think that the proposed reconstruction of this box and modernisation of its equipment, referred to below, should not be long delayed.

It is probable also that a fireman's call-box at this signal (as is already provided at the adjacent down slow home where trains are frequently detained) would have averted the accident, but the same considerations apply generally, and in this case a track circuit would have been a more suitable form of protection.

I was informed that the reconstruction of Winwick Junction signal box was in a programme of works which had been submitted shortly before the accident and which is likely to be carried out in the near future; the scheme proposed includes the provision of track circuiting in rear of all the stop signals concerned, with suitable interlocking, in addition to the interlocking of the block instruments with the starting signals in rear, in accordance with the latest standard practice of this Company in main line boxes.

*Recommendations and Remarks.*

I have suggested earlier in this report that the Company should take steps to remind signal-box booking lads that they must satisfy themselves of the substantial accuracy of any entries which are not made from definite first-hand knowledge.

With the exception of this minor point, and on the assumption that the reconstruction of Winwick Junction box referred to above is likely to be included in next year's programme, I have no recommendation to make as the result of this accident.

The question of all-steel rolling stock has been under discussion in connection with this accident.

For many years past the standard practice of the Company (as also of the other Main Line Companies) has been to construct all new passenger stock on heavy steel underframes; of the L.M.S. stock approximately 80 per cent. is now of this type, and during the last six years the bodies on these underframes have had steel ends and steel panels on timber framing, approximately 2,300 vehicles, while since 1932 the roofs also have been of steel, approximately 1,200 vehicles, which are being added to at the rate of about 600 per annum. Of the total weight of the latest coaches of all four Main Line Companies about 75 per cent. is steel.

The merits of this type of construction, viz., heavy steel underframes and substantial timber, or steel and timber, bodies, as compared with heavier all-steel construction, have been considered by the Railway Companies as recently as February of this year, when, subsequent to the Lagny disaster, they confirmed their opinion that for British conditions the present method of building is generally the most satisfactory from the point of view of public safety.

It must be remembered that if a collision occurs at high speed the force of impact must be absorbed in some manner, and the inevitable result of an unyielding form of coach construction would be to throw the coaches bodily in all directions, probably in the usual star formation, with greater risk of injury to all the occupants.

The Inspecting Officers have considered the question on several occasions during the last few years and are in agreement with the opinion expressed by the Companies, always provided that progress is maintained in conversion to electric lighting, and that frames, buffers, couplings, vestibules, etc., are so constructed as to reduce the liability to telescoping to a minimum; the results of an accident at high speed are largely fortuitous, and it seems preferable to devote available resources to measures for the prevention of accidents rather than to minimising their results.

The last seven coaches of the express were all fitted with special shock-absorbing buffers in accordance with the standard practice of this Company, and I think that these must have been an important factor in the comparatively trifling nature of the damage to these coaches.

I have the honour to be,

Sir,

Your obedient Servant,

A. C. TRENCH,

*Colonel.*

The Secretary,  
Ministry of Transport.

## APPENDIX.

---

PARTICULARS OF ENGINES AND COACHES CONCERNED, WITH SUMMARY OF DAMAGE THERETO.

---

All coaches were fitted with electric light, and had the vacuum brake on all wheels.

---

*Local Train.**Engine No. 6632.*

Bunker tank driven in and holed by leading end of underframe of coach in rear; bunker buffers damaged.

*Bogie 3rd Brake No. 22436.*

Built 1907.

Timber body on steel underframe, ordinary spring buffers.

Leading bogie derailed.

Leading end panels broken.

Leading headstock and buffers bent.

One buffer casting broken.

Leading bogie forced back under the body of the coach and twisted into a crosswise position close to the rear bogie; the front portion of this coach was suspended on the rear of the tank engine.

Brakework and electrical gear torn away and underframe truss rods bent up to the solebars.

Right-hand buffer and casting of trailing end broken off.

All compartment doors strained and one quarter light broken.

Electric short circuiting occurred in the 3rd and 4th compartments but the fire was put out without much damage or difficulty.

*Bogie Composite No. 17224.*

Built 1924.

Timber body on steel underframe, shock-absorbing buffers.

Leading bogie derailed.

Body sides and end torn away from trailing compartment leaving floor intact and first partition undamaged.

Trailing bogie badly damaged.

Headstock of underframe bent at trailing end and buffers and castings broken off.

*Bogie 3rd Brake No. 22832.*

Built 1924.

Timber body on steel underframe, shock-absorbing buffers.

This coach, the rear coach of the suburban train, was completely demolished by the locomotive of the express and was carried about 140 yards beyond the point of collision before coming to rest. The underframe was twisted round to the front of the express engine and the remaining portions of the coach were thrown along the track from the point of collision.

*Express Train.**Engine No. 25648.*

Front buffer plank bent and buffers missing.

Main framings badly bent at leading end.

Chimney broken off; smoke box door damaged.

Left leading bogie axle box broken, and horn plate framing bent.

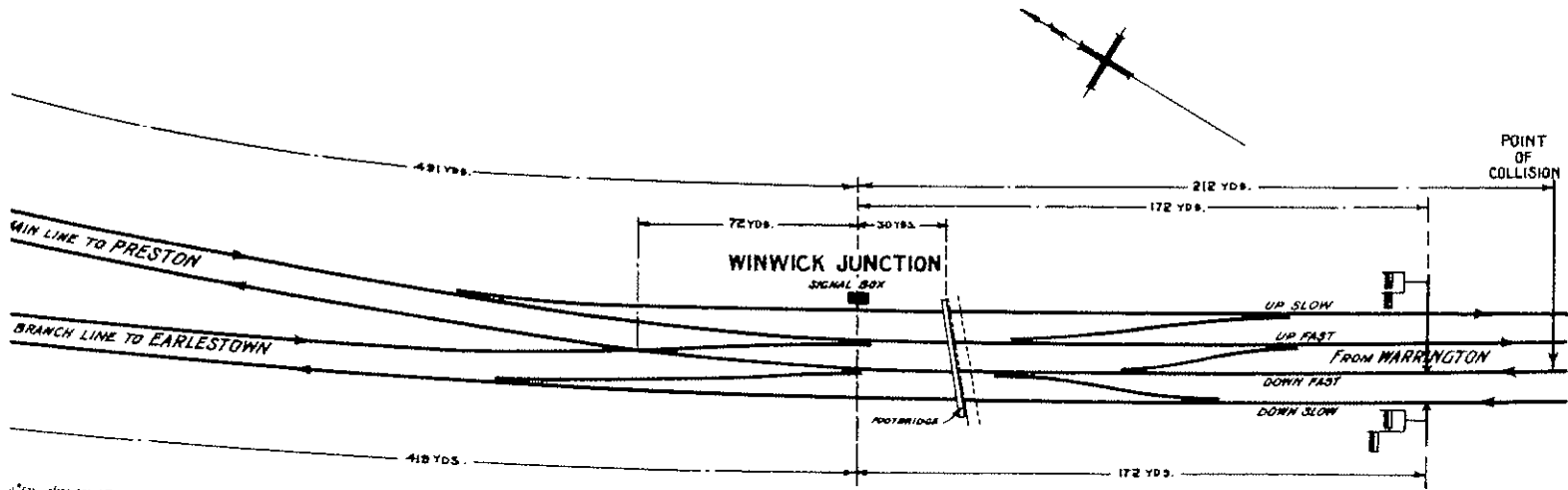
Bogie centre casting broken.

Cylinder casting broken right side.

Tender buffers damaged and water tank damaged in rear.

In addition there were a number of items of minor damage, but the engine was able to move away under its own steam.





1/100, 2/100, 3/100, 4/100

*Express Train—continued.**First coach, van No. 32601.*

Built 1908.

Timber body on steel underframe, with ordinary spring buffers.

This coach was derailed all wheels and telescoped into the coach in rear for a distance of 22 feet, the underframe of the brake van riding on top of the underframe of the second coach.

The leading portion of the van remained intact until removal; leading bogie badly damaged and moved forward 2 feet in front of the coach; trailing bogie was found under the coach next in rear.

Leading headstock was bent and all gear below the underframe was torn away, the trailing end of the body on the left-hand side was torn away for a distance of about 12 feet.

In spite of the extensive damage to this coach the floor remained attached to the underframe which in itself showed very little signs of distortion or material damage to its main members.

*Corridor Compo. No. 15842.*

Built 1907.

Timber body on steel underframe, with ordinary spring buffers, 6-wheel bogies.

Derailed all wheels.

The brake van ahead telescoped into this coach for a distance of three and a-half compartments, badly demolishing the interior and tearing away the left-hand side and damaging the roof.

Leading bogie badly damaged and displaced.

Trailing bogie practically undamaged.

Leading left-hand buffer bent, right-hand buffer bent and buffer casting broken; underframe bent, battery box damaged, and vacuum and steam pipes broken.

*Brake van, No. 30955.*

Built 1933.

Timber frame body with steel panels on steel underframe, shock absorbing buffers.

Derailed all wheels and buffer locked at both end, leading axle boxes on the right-hand side of each bogie were broken and various damage was caused to the equipment below the underframe, owing no doubt to its running over the debris after the collision.

As far as could be seen, the body was undamaged.

*Corridor Compo. Brake No. 7317.*

Built 1922.

Timber body on steel underframe, with shock-absorbing buffers.

Derailed all wheels and buffer locked at the leading end.

Coach was otherwise practically undamaged.

*3rd class vestibule No. 8275.*

Built 1928.

Timber body on steel underframe, shock-absorbing buffers.

Derailed all wheels but undamaged except for broken lavatory basin.

*Compo. Brake No. 6616.*

Built 1924.

Timber body on steel underframe, shock-absorbing buffers.

Leading bogie derailed, coach undamaged.

*Composite vestibule No. 9729.*

Built 1934.

Timber and steel body on steel underframe, with shock-absorbing buffers; coach undamaged.

*Dining Car No. 239.*

Built 1932.

Timber body with steel panels on steel underframe, shock-absorbing buffers, 6-wheel bogies.

One seat end broken but otherwise coach undamaged.

*Corridor 3rd No. 1794.*

Built 1934.

Timber body with steel panels on steel underframe, shock-absorbing buffers. This coach was undamaged.