MINISTRY OF TRANSPORT

RAILWAY ACCIDENTS

REPORT ON THE COLLISION which occurred on the 27th August 1950 at PENMAENMAWR in the LONDON MIDLAND REGION BRITISH RAILWAYS

LONDON : HIS MAJESTY'S STATIONERY OFFICE
1951

PRICE TWO SHILLINGS NET

LONDON MIDLAND REGION
BRITISH RAILWAYS

MINISTRY OF TRANSPORT,
Berkeley Square House,
London, W.1.
31st *January*, 1951.

SIR,

I have the honour to report for the information of the Minister of Transport, in accordance with the Order dated 28th August 1950, the result of my Inquiry into the collision which occurred at approximately 3.0 a.m. on Sunday 27th August 1950, at Penmaenmawr, between Bangor and Llandudno Junction on the North Wales main line in the London Midland Region. In compliance with the Order dated 4th September 1950, Brigadier C. A. Langley acted as Assessor to the Deputy Coroner for the North Caernarvonshire District at the resumed Inquest on 19th September 1950, and his consequent Report is attached as Appendix I.

The 1.45 a.m. Up Express Passenger train from Holyhead to Euston, the second portion of the "Irish Mail", was approaching Penmaenmawr station at 60-70 m.p.h. under a clear Distant signal, when the Home signal was put to danger just before the engine reached it. The driver shut off steam and applied the brake fully, but was unable to prevent a collision at 45-50 m.p.h. with a light engine which was just moving forward on the Up line, 547 yards beyond the Home signal. The acceptance of the Express by the Penmaenmawr signalman was in order, but he had lowered the signals for it before the light engine had moved clear of the running line during the course of a shunting movement.

There was severe damage to five of the 16 coaches of the Irish Mail, including the destruction of a sleeping car near the front of the train, and I regret to state that four passengers and a sleeping car attendant were killed outright and a fifth passenger died subsequently in hospital. Thirty-one passengers and four of the staff, including both the enginemen of the Irish Mail and the driver of the light engine, were injured and taken to hospital, or 35 persons in all, of whom 11 passengers and the mail driver were discharged on the same day. Other passengers suffering from shock and minor injury were treated on the spot and continued their journey.

Both the running lines were blocked and a second collision was prevented when a Down freight train was stopped just clear of the wreckage by the prompt action of the enginemen of the Irish Mail ; the driver knew the freight train was due and, on his instructions, the fireman went forward and protected the Down line with detonators in spite of painful injuries for which he was subsequently detained in hospital.

Calls for assistance were initiated by the wife of the Penmaenmawr stationmaster and by the signalman. Doctors, nurses, ambulances and the Police were quickly on the scene and the rescue and first aid work were carried through by all concerned, including uninjured passengers and local residents, with the efficiency and disregard of personal risk which has come to be expected in an emergency of this kind. There was no avoidable delay in conveying the injured to the various local hospitals which had prepared for their reception at very short notice.

Passenger and freight traffic was much dislocated, and eastward and westward trains were terminated at Bangor and Llandudno Junction respectively ; a 'bus service was arranged between the two stations, and the Irish Mail passengers were taken forward by 'bus to Llandudno Junction to join a special train, which left for Euston at 7.58 a.m.

The breakdown gangs arrived with heavy cranes from Chester and Crewe at 6.5 a.m. and 8.27 a.m. respectively. They worked through the daylight hours of Sunday 27th August, and for the whole of the night of the 27th/28th, during which the operations were much facilitated by flood lighting which was arranged by the Merseyside and North Wales Electricity Board. The Down line required comparatively little repair and it was opened for single line working at 12.51 a.m. on Monday 28th August ; it was, however, necessary to renew 223 yards of the Up line, which delayed the restoration of normal working until 8.15 a.m. on the same day, after an interruption of 29¼ hours.

The weather was fine and clear, but the night was fairly dark with a heavy layer of clouds obscuring the full moon. There was practically no wind.

DESCRIPTION OF TRAIN AND LIGHT ENGINE AND EFFECTS OF COLLISION

1. The Irish Mail was hauled by engine No. 46119, Class 6P (Royal Scot), with three cylinders and 4-6-0 wheel arrangement ; it was driven from the left hand side and weighed 137 tons 13 cwts. in working order with six-wheeled tender. The 16 bogie corridor vehicles weighed 495 tons 7 cwt, and were vacuum braked ; all except three were equipped with direct admission valves, and the brake power of the train as a whole, with the steam brake on the coupled wheels of the engine and on the tender, was 76½% of the total weight of 633 tons. The total length was 351 yards.

2. The train was marshalled as follows from front to rear :—

Description	*Year Built*	*Body Construction*	*Weight T.Cwt.*
1. Brake van—31207	1940	16 gauge Steel Panels and roof. Timber framing	26 0
2. 1st Class Sleeping Car—341 (6-wheeled bogies)	1928	All timber.	42 0
3. 3rd Class Sleeping Car—578 ..	1931	16 gauge Steel Panels and roof. Timber framing.	30 0
4. Corridor 1st Brake—5036 ..	1930	14 gauge Steel Panels and roof. Steel framing. Angle reinforced ends.	32 0
5. Corridor Composite—4837 ..	1947	16 gauge Steel Panels and roof. Timber framing.	31 0
6. Tea Car—2235	1946	—ditto—	31 0
7. Vestibule 3rd—9475	1938	—ditto—	29 0
8. Vestibule 3rd—9174	1934	—ditto—	30 1
9. Corridor 3rd—2099	1939	—ditto—	32 8
10. Corridor 3rd—1961	1936	—ditto—	31 0
11. Corridor Composite—3901 ..	1934	—ditto—	32 10
12. Corridor 3rd Brake—26785 ..	1949	—ditto—	31 0
13. Corridor 3rd—4330	1935	—ditto—	31 8
14. Corridor 3rd Brake—5563 ..	1934	—ditto—	30 0
15. Corridor Composite—3685 ..	1927	All timber.	29 0
16. Corridor 3rd Brake—5248 ..	1925	—ditto—	27 0
			495 7

Screw couplings and British Standard gangways were in use throughout, and all the vehicles except the 13th were fitted with long stroke shock absorbing buffers of former London Midland and Scottish Railway design. All had steel underframes.

3. The light engine was No. 42885, Class 5MT, with two outside cylinders and 2-6-0 wheel arrangement. It was driven from the left hand side, and weighed 108 tons 4 cwts. in working order with six-wheeled tender.

4. So far as could be determined, the collision took place just beyond the trailing crossover at the London end of the station, as shown by the attached general site Plan A. Plan B shows the positions of the two engines and the vehicles as they finally came to rest, and gives some indication of the nature and extent of the wreckage.

The front of the express engine drove nearly half-way into the tender tank of the light engine, but apart from the tender the light engine was comparatively little damaged, and the rearmost tender wheels only were derailed. It was propelled forward for approximately 240 yards, with some assistance from its own steam, the driver having released the brake and opened the regulator in a last minute attempt to get forward out of the way of the oncoming express. The express engine became locked with the tender and was thus held close to the track alignment though it was derailed all wheels as its bogie was torn off by the tender underframe and then flung aside with one of its wheels forced off the axle. The front buffer beam and the main frame were severely buckled and the inside cylinder and motion plate were swept away, leaving the connecting rod bent round the leading coupled (crank) axle ; both the outside cylinder castings were smashed. The boiler stood up well to the shock and was little damaged apart from the smoke box.

5. As will be seen from Plan B, the express engine became uncoupled from the train and came to rest with an interval of 67 yards between it and the wreckage of the leading bogie van. This van had evidently been subjected to a violent pitching motion as it ran on to the remains of the track which had been broken up by the derailed engine. Clear buffer marks and a crushed footstep on the back of the tender indicated that the front of the van had risen before it received a sudden check as it plunged downward into the ballast, detaching the tender coupling from the drawhook. As the rear of the underframe rose, the underframe of the following first class sleeping car was driven below it ; the resultant telescoping was almost complete and the destruction of the sleeping car body accounted for 5 of the 6 fatalities.

6. The telescoping of the first two vehicles absorbed a part of the shock, and the 3rd and 4th, which remained upright and in fair line, received no serious structural damage apart from bogies and undergear ; the all steel body of the 4th was scarcely affected. The 5th and 6th coaches, however, were thrown on their right hand sides across the track ; they became separated and lay parallel to each other, with their bogies piled between them. Both were considerably damaged at their ends, particularly the leading end of the 5th where a compartment was wrecked as the roof was forced sideways against the strongly reinforced trailing end of the all steel coach ahead. The 7th coach was also on its right hand side at about 45° to the track alignment, and the leading end was crushed for the length of one compartment as it and the 6th coach folded together. The 8th, 9th and 10th coaches were also derailed, but they remained upright and in line and were not seriously damaged. The last six coaches came to rest intact on the unbroken track.

Description of Site and Signalling

7. For the 15½ miles from Bangor to Llandudno Junction the North Wales main line is double. It follows the coast for the greater part of the distance and the general direction is East (Up) and West (Down). There are speed restrictions at Bangor and on the curves approaching Llandudno Junction, but otherwise the general limit of 75 m.p.h. applies ; the gradients are generally favourable to Up trains. This is the only main route to the cross channel port of Holyhead and to the Anglesey resorts and there is considerable traffic in the summer. During the 24 hours ending at 6.0 a.m. on the Sunday in question, the booked services comprised 46 movements in the Up direction and 50 in the Down, the great majority of which were passenger trains.

8. Penmaenmawr is a wayside station 10 miles from Bangor and 5½ from Llandudno Junction. It is situated at the foot of Penmaenmawr mountain, on the slopes of which there are extensive granite quarries, and a considerable proportion of their output is despatched by rail from the station sidings. The light engine concerned in the accident had arrived from Llandudno Junction Shed to work a train load of granite ballast in the Up direction to Manchester, which was due to leave at 3.0 a.m.

9. The layout of the station and the signalling are shown by Plan A. As much of the evidence relates to the movements of the light engine during the 8 or 9 minutes which elapsed between its arrival on the Down line at 2.52 a.m. and the collision at 3.0 or 3.1 a.m., the arrangement of the sidings on the Up side and their connections with the running lines should be specially noted.

The 3.0 a.m. Up freight train from Penmaenmawr is run when required by the traffic. On the night in question it comprised 29 four-wheeled wagons and van and was standing ready marshalled in one of the sidings, as shown on the plan. It will be seen that there are two ways by which an engine from the Down line can reach the head of a train so placed—either through crossover points 12 and slip points 13 and 15 reversed and then back through the sidings clear of the running lines, *or* by crossing from the Down to the Up line through crossover points 12 and 14 reversed and then back through 10 and 11 points reversed, as was the signalman's intention on this occasion. The first of the two alternatives, through slip points 13 and 15, has the advantage of clearing the two running lines in one movement, but it is not always possible, as one or both of the two Down refuge sidings are sometimes occupied by standing wagons.

During the 7 weeks before the accident, shunting operations between the running lines and the sidings were carried out 3 or 4 times daily, and on 32 occasions altogether during the hours of darkness ; a total of 3,064 wagons was attached. An Up freight train leaving Penmaenmawr at approximately 3.0 a.m. was run 15 times during this period, and on each occasion its engine arrived light from Llandudno Junction.

10. The signal box is on the Down side at the western end of the platform, 272 yards from the far end of the crossover. The view in the Up direction from the working floor and the platform at the top of the steps is not affected by the slight curvature through the station, but unless the signalman descends the steps his view towards the crossover and the trailing connection 10–11 is considerably obstructed by the close latticing of the footbridge girders. From an engine standing on the Up line in the neighbourhood of the crossover, a view towards the signal box is best obtained from the cess or left hand side, i.e. on the concave side of the curve, but again the footbridge girders are in the way of a hand signal displayed from the top of the steps.

The frame contains 20 working levers, interlocked as in the table on the plan. The separate working of the points will be noted and, as at many wayside stations, particularly on the former London and North Western Railway system, there are no ground signals leading over the crossover or into the sidings, and such movements are controlled by hand signals from the box. There are no track circuits. The block working is by three-position combined instruments, with no special controls on the Down line, but the Up Advanced starting signal is released by "Line Clear", and the Up block instrument is controlled by a "Home Normal" contact ; there is also mechanical sequential locking between the Up line signals. The nearest open block posts at the time of the accident were Aber station signal box 4¾ miles to the West, and Llandudno Junction No. 2 box, 5¼ miles to the East.

11. To give the signalman some control of shunting movements, an outdoor trembler bell is provided in the position shown on Plan A. There is return bell communication to the signal box and the relevant instructions, which are displayed in the box, are attached as Appendix II. I was informed that the primary object of the code signal "Clear Up line for train to pass" (2 rings) is to ask for the Up line to be cleared when it is being used for shunting in and out of the sidings, as is necessary when there are wagons standing in the Down refuge sidings.

12. Approaching the station in the Up direction from the west, as the Irish Mail was running, there is some reverse curvature in rock cutting, but the Distant and Home signals are well sited on tall posts and the view of them is good. It will be seen from the diagram on Plan A that the falling gradient of 1 in 132 is of no great length and is immediately preceded by a short rise at 1 in 127.

13. The following is a summary of the relevant approximate distances with reference to the point of collision (Penmaenmawr lever numbers are in brackets) :—

Holyhead station	35 miles	West
Bangor station	10 „	„
Aber signal box	4¾ „	„
Penmaenmawr :—		
Up Distant signal (A)	1,598 yards	„
Up Home signal (1)	547 „	„
Signal box	274 „	„
Station footbridge	259 „	„
Up starting signal (2)	73 „	„
West end of crossover (12)	49 „	„
Trailing points Up line to yard (11)	27 „	„
East end of crossover (14)	2 „	„
POINT OF COLLISION		
Down Home signal (19)	2 yards	East
Up advanced starting signal (3)	114 „	„
Irish Mail after collision :—		
Front end of leading van	150 „	„
Front end of engine	240 „	„
Llandudno Junction No. 2 signal box	5¼ miles	„

Rules and Regulations

14. As the Up Home signal is more than 440 yards from the Up starter which immediately protects the east end connections, Up trains may be accepted under Absolute Block Regulation 4, or at full "Line Clear" to the Home signal at Danger, while the connections are in use.

15. As elsewhere, the movement of points and the clearance of the running lines during shunting operations are governed by Rule 69, and there are no special local instructions apart from those for the use of the trembler bell mentioned above. Rule 69 reads as follows :—

During and after shunting operations.

69. During shunting operations Signalmen must not move points until they have obtained a signal from the Guard or Shunter, or from the Driver or Fireman in the case of a light engine, intimating that the last vehicle or the engine, as the case may be, is clear of the points. This intimation must be given by the following means :—

Vehicles.

By day.—All Right signal by Guard or Shunter.

By night or when necessary during fog or falling snow.—White light above the head moved quickly by a twisting movement of the wrist, by Guard or Shunter.

Light engines, unaccompanied by Guard or Shunter.

By day or by night.—One short whistle, except where otherwise specially provided for.

When a train has been set back into a refuge siding or through a crossover road, or in any other similar case where the engine is near the points the signal will be given by the Driver.

When the shunting operations are completed the Signalman must see, or have intimation from the Guard, Shunter or Driver, that the running lines are clear.

16. The action to be taken when trains or vehicles (including light engines) are detained on running lines, is governed by the well-known Rule 55, the relevant clauses of which are quoted below :—

Shunting movements.

(*b*) When a train or vehicle has passed a stop signal for the purpose of being crossed to another line, or to be let into a siding, or has been shunted on to the opposite running line, or placed on either a main or branch line at a junction, or when a train or vehicle has been shunted from a siding on to a running line for the purpose of being crossed to another line, the Guard, Shunter or Fireman must (except where printed instructions are given to the contrary), when the train or vehicle comes to a stand, and is detained, proceed immediately to the signal box and remind the Signalman of the position of the train or vehicle, and, except as provided in clause (f), remain in the box until the Signalman can give permission for it to proceed or to be shunted clear of the running lines.

(*c*) The duty of going to the signal box must (except in the case of rail motors, motor trains and electric trains be performed by the Guard, Shunter, or Fireman who is nearest to the signal box . . . . . .

(*d*) When a train or vehicle has been shunted from one running line to another, the Guard, Shunter or Fireman, as the case may be, must, before going to the signal box, satisfy himself that the line from which the train or vehicle has been shunted is clear.

. . . . . .

Reminder Appliances in signal boxes. (*f*) Where appliances which require to be operated by Signalmen are provided to serve as a reminder that certain signals must not be lowered, the Signalman must make immediate use of such appliances, and the man who has gone to the signal box must promptly obtain the Signalman's assurance that this has been done, and return to the train.

. . . . . .

17. Where shunting movements are made over points where there are no fixed signals, as at Penmaenmawr, Rules 111(*b*) and (*c*) require the Guard or Shunter, or the Driver of an unaccompanied engine, to receive an intimation verbally, or by hand signal, or other authorised means from the signalman that the movement may be made, and to see as far as practicable that the points are in their correct position before the movement is begun.

Evidence of Crews of Irish Mail and Down Freight Train

18. The Irish Mail was running 30 minutes late, owing to the late arrival of the steamer at Holyhead. The booked timing for the 15½ miles from Bangor to Llandudno Junction, pass to pass, is 17 minutes, (54·7 m.p.h.). According to the guard's journal on the night in question, 12 minutes were occupied in running the 10 miles from Bangor to Penmaenmawr, representing an average speed of 50 m.p.h.

19. The enginemen were Driver W. Williams and Fireman J. E. N. Williams, both of Holyhead shed. Driver Williams, who has long experience of express train working on this route, said that his engine was in very good order and was steaming well with the heavy load of 16 coaches. He estimated that the speed was about 60 m.p.h. as he passed the Penmaenmawr Up distant signal in the clear position. He noticed that it was showing a very good light, and a little later he saw the green light of the home signal, but it changed to red "just before" he passed it ; he could not be sure of his distance from it when it changed, but he thought that it must have been a good deal less than 200 yards. He shut the regulator and made an immediate and full application of the brake, and thought that the speed had been reduced to about 50 m.p.h. when he struck the light engine. He saw the red light of the starting signal at danger but nothing of the engine ahead.

The shock of the collision threw Driver Williams forward on to the boiler back plate, injuring his arm, and he recollected that as the two engines were going forward together Fireman Williams found time to remark that the distant signal had been "off." When the engines came to rest he realised that the 12.30 a.m. Down freight train from Mold Junction was due and told the fireman to go forward and protect the Down line. After that he went back towards the signal box and met Signalman Morgan on the platform. The latter told him that all the signals had been " off " for his train, and that he had reversed them as it approached.

Fireman Williams also observed the clear distant and saw the home signal light change from green to red, but he would not hazard a guess as to his distance from it except to say "we were no right underneath it". He described how he was thrown forward on his left shoulder into the right hand front corner of the cab, and was unable to run when he got down from the engine to protect the Down line. He managed, however, to get forward for about ¼-mile and put down a detonator ; he then saw the headlights of the approaching freight train and went on as far as he could and laid down some more.

The guard, A. Roberts, was travelling in the 5th vehicle from the rear. He saw none of the Penmaenmawr signals, but he described how the vacuum gauge in his van suddenly went to zero with the emergency brake application, and said that his van came to rest, after several lurches, well beyond the Down platform. On going back to protect the Up line he met Signalman Morgan who assured him that all traffic had been stopped. At about the same time he met Goods Guard Davies (*see later*), whom he asked to go forward and protect the Down line.

20. The 12.30 a.m. freight train from Mold Junction consisted of 58 wagons and a 20-ton van, hauled by a heavy freight engine, and the vacuum brake was in use on the two leading wagons. Passed Fireman H. M. Brown, who was driving, saw the Penmaenmawr Down Home Signal (No. 19) at danger just after he had passed the clear Distant. He shut off steam and applied the brake to stop at the Home and almost at once two groups of detonators were exploded in quick succession.

Brown then made a full brake application which eventually stopped the train just clear of the wrecked coaches and about 150 yards short of the Home signal ; his engine received some slight damage as it grazed the side of the derailed engine of the Irish Mail. He saw a red light being waved just as the second group of detonators were exploded, and afterwards found that it had been displayed by Goods Guard Davies, at a distance Brown thought, of about 150 yards from the wreckage.

Brown's statement was generally confirmed by his fireman, Passed Cleaner V. B. Williams. After the train stopped Williams was asked by the driver of the Irish Mail to look for his fireman, so he went back and when he had almost reached the brake van, he found the Irish Mail fireman J. E. N. Williams lying beside the line in a state of collapse with blood all over his face and shirt ; he also saw a detonator tin beside him. The guard noticed that the train stopped at 3.10 a.m. by his watch.

Evidence Regarding the Movements of the Light Engine

21. The last minute reversal of the Penmaenmawr Up signals gave no opportunity to the driver of the Irish Mail to avoid the collision, and the main question in this case is how they came to be cleared in the first instance while the Up line was still obstructed by the light engine. The following four men were directly concerned :—

Signalman G. Morgan ..	.. On duty in Penmaenmawr Box.
Driver E. G. Roberts ..	.. Crew of Light Engine. Stationed
Passed Cleaner M. T. Davies	.. at Llandudno Junction Shed.
Goods Guard W. H. Davies	.. Travelled to Penmaenmawr on Light Engine. Stationed at Llandudno Junction.

Signalman Morgan is 23 years of age and had served for 2½ years in Penmaenmawr box ; he had come on duty at 10.0 p.m. on the night in question after 16 hours rest. Driver Roberts and Guard Davies are men of considerable experience in their respective duties.

22. Comparison with the train registers at Aber and Llandudno Junction No. 2 signal boxes suggested that Morgan's recorded times of the block signals at Penmaenmawr were reasonably accurate. As has been mentioned, the Irish Mail was running 30 minutes late and Morgan accepted it at 2.50 a.m. The light engine arrived tender first and stopped at 2.52 a.m. at the Holyhead end of the Down platform, 15–20 yards from the box. Guard Davies got off the engine, learnt from Morgan that the 3.0 a.m. freight train was ready for him and went over the stile into the yard ; it appeared, however, that Morgan said nothing to Davies about the Irish Mail. Morgan then reversed crossover points 12 and 14 and the engine moved away through the crossover on a hand signal from Morgan from the top of the signal box steps.

When the engine had crossed to the Up line, Driver Roberts sounded a "pop" on the whistle which Morgan heard, to indicate that he was clear of the crossover points and ready to move back into the yard through points 11 and 10. Thus, at about 2.54 or 2.55 a.m. the light engine was standing on the Up line just ahead of the crossover with the driver and fireman on the footplate, and the guard was in the sidings. The Irish Mail had been accepted but had not yet entered the Aber–Penmaenmawr section.

23. Signalman Morgan's account of his subsequent actions hardly varied throughout. It was to the effect that, on hearing the "pop" whistle mentioned above, he restored levers 14 and 12 to normal and reversed levers numbers 11 and 10 all in one continuous movement. He then went out to the top of the steps and gave a signal by waving a white light once from side to side to call the light engine back into the yard. On returning inside, he gave two rings on the trembler bell in order to hurry the movement and avoid delaying the Irish Mail ; he then sent "Train Out of Section" to Llandudno Junction for the light engine on which he was offered, and accepted, the 12.30 a.m. Down freight train from Mold Junction. He recorded 2.55 a.m. as the time of these two consecutive block signals, with the word "inside" written in the register against "Train Out of Section" for the light engine.

At 2.56 a.m. so recorded, Morgan received "Train Entering Section" from Aber for the Irish Mail, and at the same time got it accepted ahead by Llandudno Junction No. 2, but he could not clear the signals for it with Nos. 10 and 11 points reversed. He also recorded 2.56 a.m. for the time of "Train Entering Section" from Llandudno Junction No. 2 for the Down freight train ; he said that he got it accepted by Aber at once, and pulled off all the Down line signals.

Morgan went on to say that about two minutes later (i.e. at about 2.58 a.m.) he heard a second single "pop" whistle from the light engine, in spite of strong denials by Driver Roberts that he had whistled at this stage. Although he had not seen or heard the engine moving back in response to his hand signal—indeed he said he had not at any time noticed a light on the tender—Morgan accepted this second whistle as an assurance that the engine was clear inside ; therefore, with the Irish Mail already in section, he lost no time in restoring points 10 and 11 to normal and pulling levers 1, 2, 3, A in that order to clear the Up line signals.

After closing 10 and 11 points and clearing the Up line signals at about 2.58 a.m. Morgan shut the door and sat down in the box. Knowing that the usual section time for an express train from Aber was 4 or 5 minutes, he got up from his chair at about 3.0 a.m. As he did so he was facing towards the East and caught sight of a red hand signal displayed as he said, from the far end of the Down platform. He realised at once that something was wrong, though he did not know what it was, and threw back the Up line signals A, 1, 2, 3, just as he saw the headlights of the approaching Irish Mail. According to the train register, Morgan's "Obstruction Danger" signal was received at Aber and Llandudno Junction No. 2 boxes at 3.0 a.m. Morgan himself recorded 3.2 a.m. and the guard of the Irish Mail noted 3.0 a.m. in his journal as the time of the accident.

24. Before going on to other relevant points in Morgan's evidence, I should turn to the movements of the light engine as described by the Driver, Fireman and Guard. Their statements were conflicting, and to some extent self-contradictory, but it should be mentioned that Driver Roberts sustained severe shock and extensive bruises to his back ; he was away from duty for nearly three months and I was unable to question him thoroughly until 23rd November, though he made a statement in hospital to the Regional officers a few days after the accident and on 5th September I had a short interview with him in bed at his home.

25. The light engine was booked to work the 3.0 a.m. train from Penmaenmawr on the night in question but, owing to holidays, the working was cancelled, and when Driver Roberts booked on duty at 1.20 a.m. at Llandudno Junction he was told by the Shed Foreman that he was to work light to Mold Junction (eastward) instead. A little later it was decided by the Control that the 3.0 a.m. train from Penmaenmawr should be run to fulfil a special order, and Driver Roberts was so informed by Guard Davies when he met him at the water column. As he was to run tender first to Penmaenmawr, Roberts told Passed Cleaner Davies to change over the lights to white on the tender and red on the buffer beam, and he stated that he made sure himself that they were burning properly. He said that he had worked the 3.0 a.m. train from Penmaenmawr several times before, but never with Guard Davies, though they had worked together on other duties.

26. As has been stated, the light engine arrived at Penmaenmawr at 2.52 a.m. and stopped at the platform short of the box. According to Roberts, Guard Davies got off on to the platform, walked to the box and spoke to the signalman from the ground, and then went across into the yard. Roberts then moved his engine along the Down line through the crossover in response to Morgan's hand signal and sounded a "pop" whistle directly he had cleared the crossover points on to the Up line, as already described.

After that he continued to look towards the box from his own (left hand) side of the footplate, expecting a hand signal from Morgan to set back into the yard. He never saw any signal from the box and after waiting for a time, which he estimated as 3 or 4 but hardly 5 minutes, he observed what he considered to be an unmistakable set back signal from Guard Davies who was coming towards the engine from the direction of the yard. He was sure that Davies was deliberately waving his lamp from side to side and it was not the ordinary swing of the lamp as he walked. In the meantime Roberts had noticed that the nearby Down Home signal (No. 19) was standing " off " and it occurred to him that he should change over the engine lamps again, so that a red light at the front of the engine should not confuse the driver of an approaching Down train.

Before, however, he could do this, he saw Guard Davies' hand signal so he acted on it and started back but he did not examine the positiou of No. 11 points. After travelling a short distance he found that he was going back over No. 11 points along the main line instead of into the yard, and he said that this was verified by the fireman whom he called over to his side. He therefore stopped the engine somewhere between the points and the platform ramp, and as he was putting the engine into forward gear again with the screw reverser, he looked forward and saw the light of the Up Advanced Starting signal (No. 3) change from red to green. Roberts, however, did not connect the clearance of this signal with the approach of an Up train. He said that he assumed that Guard Davies had found that there was no train for them at Penmaenmawr after all, and that the Advanced Starting signal had been cleared for them to go back light to Llandudno Junction, and thence to Mold Junction, as he had been told by the shed foreman when he booked on duty.

27. It appeared that by that time Guard Davies had come up to the engine, and Roberts said that he asked Davies in some surprise "what was happening", and that the latter told him in reply to get forward again ahead of 11 points and give a crow whistle ; he moved forward accordingly, and as soou as he stopped, he whistled and told Passed Cleaner M. T. Davies to get down and change over the lamps. While M. T. Davies was on the ground doing so, Roberts heard a shout from Guard Davies that the Irish Mail was coming, on which he released the brake and opened the regulator with the engine still in forward gear ; he thought it had just begun to move forward when the collision occurred. At another time, however, Roberts stated that he did not speak to the guard after he had come back along the main line, and that the latter's warning to get forward out of the way of the oncoming Irish Mail followed within a few seconds of his instruction to move forward again ahead of the points and give a crow whistle.

In view of Signalman Morgan's statement that he closed Nos. 10 and 11 points and pulled off for the Irish Mail on hearing a second single "pop" whistle, Roberts was questioned closely on this point. It was suggested to him that after waiting 3 or 4 minutes without seeing a hand signal from the box, he had become impatient and given a second "pop" whistle to remind the signalman that he was standing on the Up line ready to move back, but he denied strongly that he had done so, also that he might have sounded the whistle almost sub-consciously as he opened the regulator to move back in response to Guard Davies' hand signal. He maintained that he had sounded the whistle twice only, i.e. a single "pop" immediately after crossing to the Up line, and a "crow" on coming forward over 11 points again *after* he had made his false move back.

With regard to Rule 55, Roberts did not think that the 3 or 4 minutes for which he was standing on the Up line justified his sending his fireman to the box ; he said that there was no time to do so, but he admitted that he should have taken immediate steps to remind the signalman by a series of alarm "pop" whistles or otherwise, that he was still on the Up line, when he noticed that he was coming back in the wrong direction.

Speaking of previous occasions on which he had worked an early morning train from Penmaenmawr, Roberts said that he had always received a hand signal from the signalman to set back into the yard through No. 11 points, and he thought that the signal was usually given from about half-way down the signalbox steps ; having traversed 11 and 10 points, he would usually stop in the neck siding short of Bridge No. 127 and wait for the guard to signal him back on to the train. He also said that when he saw Guard Davies' hand signal to call him back on the night in question, he assumed that it was given with the signalman's authority and that the points were therefore properly set.

28. Passed Cleaner M. T. Davies was on the ground when the collision occurred. Davies confirmed Roberts' account of what had taken place at Llandudno Junction and said that he refilled and trimmed the lamps there and he was confident that they were burning well. Davies estimated that after Roberts had whistled on crossing to the Up line, there was a pause of 2 or 3 minutes before he moved back ; he did not think that Roberts had whistled a second time before he moved, but he could not be sure. From his position on the right hand side of the engine, he saw no call back signal either from the box or from Guard Davies in the yard, but he was positive that the engine went along the Up line at No. 11 points and not towards the yard, and he confirmed that Roberts had called him across to his side to verify that this was so. His evidence, however, did not suggest that the engine went so far back towards the platform ramp as Roberts stated, and he thought that it had stopped with the cab about level with the toe of the points.

After the engine had moved forward again, he got down as told by Roberts and changed over the red lamp slide from front to rear, and he was certain that the lamps were still burning properly, as he would have expected on a quiet night with little wind. Up to that time he had not seen anything of the guard since he had left the engine on its arrival at Penmaenmawr ; nor did he think that Roberts had spoken to the guard at all while he was in the neighbourhood of No. 11 points, but just after he had changed the lamps, he heard a shout and saw a red light from somewhere behind the engine. Looking forward, he saw the Advanced Starting signal "off" and then heard the sound of the approaching Irish Mail, on which he took cover in a ditch.

In one respect Passed Cleaner Davies' original statement differed materially from that of Driver Roberts, in that he referred to a second backward move of the engine over No. 11 points, while he was on the ground, and he said that it again took the main line direction. When, however, he was faced with Roberts' emphatic statements that he had made only one backward move, he became uncertain about the second movement.

29. Goods Guard W. H. Davies stated that he had worked on this duty twice before, when he had gone straight across into the yard on arrival, and had found the engine waiting for him "inside" between Bridge No. 127 and No. 10 points, after he had seen his train and verified the position of the siding hand points. On this occasion he learnt from Signalman Morgan on arrival at 2.52 a.m. that the train was ready for him in the Up Refuge siding, and he went over the stile and put down his bag by the leading wagon. After verifying the label for Oldham Road, Manchester, he walked forward with his hand lamp, checking the position of the yard points on his way. Just after he had passed the trembler bell, he heard it give two rings, from which he understood that the signalman wanted the Up line cleared, but he said that Morgan had not mentioned that the Irish Mail was "about". Guard Davies maintained that he had given no set back signal as Driver Roberts had stated ; he added that it was the signalman's business to bring the engine inside and that he was not becoming concerned at the delay. In a later statement, however, he said that he had wondered why the engine had not come back to the bridge and that he had gone to see what was the matter.

As he went forward, he heard the engine moving back, and on reaching No. 10 points found that they were in the normal position. He therefore showed a red light to stop the engine from bursting through the points but he said that Roberts seemed to stop on his own initiative. Davies then saw that the engine was still on the Up line, so he gave Roberts a white hand signal and told him to go forward again over No. 11 points ; he said, however, that Roberts made no remark of any kind. When Roberts stopped again, he told him to whistle, while he (Davies) showed a white light to the signalman to indicate that he required No. 11 points to be set for the yard. Immediately after that he heard the Irish Mail approaching, and looked forward and saw the Advanced Starting signal "off," on which he showed a red light towards the box and told Roberts to get ahead out of the way.

Davies said that he saw the Starting and Advanced Starting signals go to danger almost immediately after he had shown his red light to the box from, he said, somewhere about No. 11 points. He then went back, still waving his red light and he stated that he had reached the platform when the Irish Mail passed him with its brakes hard on, and he thought he had saved a collision. He said, however, that he spoke to the Irish Mail guard through the latter's van window (if this was so, Guard Davies must have still been on the ballast close to No. 11 points, where the guard's van (12th vehicle) of the Irish Mail finally came to rest). Shortly afterwards he met Signalman Morgan on the Up platform near the box, and told him that he had turned the engine on to the Up line, on which, Davies said, Morgan replied "Good God". He then asked Morgan whether there was anything coming on the Down line, and was told in reply that the signals were "off" for a Down freight train ; Morgan then went back into the box. After that, Davies went back and displayed a red light to the approaching Down freight train, as already described.

30. When questioned about the engine lights, Davies said that he had not noticed whether there was a light on the tender when the engine arrived at Penmaenmawr. He said, however, that he did see a white light on the tender shortly after he had heard the engine moving back over No. 11 points but that it then "flickered and went out" ; also that he remarked to Roberts that he had no light, but this statement seemed to be an afterthought on Davies' part, and it was not confirmed by the enginemen ; Davies also said that he never saw the fireman on the ground changing the lamps.

31. With regard to the engine whistles, Davies said that he heard a single "pop" while he was still at the leading wagon of the train in the yard and he assumed that it was given after the engine had passed through the crossover. At first, he was sure that no other whistle was sounded until the engine went forward again over No. 11 points on his instruction a minute or so before the collision, but in a later statement he referred vaguely to a second whistle following closely on the first at the same time as he saw a hand signal from the box ; he said that he was standing by the leading wagon at the time.

Further Evidence of Signalman Morgan.

32. The main feature of Signalman Morgan's statement to the Regional officers at 7.30 a.m. on the morning of the accident was that he had heard and acted on the second whistle, and he remained unshaken on it throughout. He said that the whistle was given at the time he would have expected it, i.e. 2 or 3 minutes after the first whistle, and that it was perfectly distinct without the possibility of confusion with any other sound on such a quiet night, especially as the signal box door was open. It conveyed to him that the engine was "inside No. 9 dummy" as usual, after which he would have expected the guard to call it back over the hand points on to the train. He had made no arrangement with the guard for the latter to call the engine back through No. 11 points, nor did he have any conversation with the enginemen on their arrival ; it was his practice to give the set back signal himself, and he mentioned that in the absence of a ground signal, it was the driver's duty to see that the points were in their proper position.

He saw nothing of the engine after it left the box to cross to the Up line, and he did not notice whether there was a light on the tender when it arrived, as he knew the driver would be changing his head-lights. He was, however, quite sure that he could see no light when the engine was standing on the Up line at the time when he gave his hand signal to call it back into the yard. He could not account for the engine failing to move back in response to this signal ; this had never occurred before and he had heard no complaints from enginemen that such signals were difficult to see on account of the footbridge ; he had, however, heard remarks that ground signals and/or track circuits would be desirable. The only suggestion he could make was that the engine might actually have gone a little way over No. 11 points towards the yard, and that the driver had mistakenly thought he was going back along the Up line and then come forward again and whistled.

When it was suggested to Morgan that it might have been better to put the engine into the sidings through 12, 13 and 15 points, and so clear the running lines in one movement, he said that his method had always been to cross engines to the Up line through Nos. 12 and 14 and then back them into the yard through Nos. 11 and 10 reversed, as there were often wagons standing in one or other of the Down Refuge sidings and he could never be certain of the lie of the hand points leading to them. He agreed that on this occasion a written slip had been left in the box to the effect that one of the Down Refuge sidings was clear, and that he could have put the light engine straight into the sidings from the Down line, but only if he had made certain of the hand points. He thought it better to work as he had done and he said that this movement was usual and was well understood by drivers. He strongly denied the possibility that he had originally intended to put the engine straight in from the Down line via Nos. 12, 13 and 15 and that he had never reversed Nos. 11 and 10 at all. He said that the word "inside" which he had written in the train register had no relation to the time of 2.55 opposite to it, and that it signified only that the engine was terminating at Penmaenmawr.

33. Morgan was certain that it was Guard Davies' red hand signal, and nothing else, which had led him to reverse the signals against the Irish Mail, and he denied that he was becoming anxious about the position of the light engine, not having seen it come back on to the head of its train, which was practically opposite to the box. He said that he was not looking forward in the Up direction from any sense of anxiety as the Irish Mail approached, and that he "happened" to be facing that way just as he was about to put back the Up Distant signal in the ordinary course. He was positive that the red light was given from the Up platform and not from the ground beyond it, and that he saw it underneath the footbridge. The red signal did not convey to him that the light engine was still on the Up line, and the first thing that came to his mind was that there was something wrong with No. 11 points as he had had previous trouble with stones becoming lodged in them. He saw no white light just before the red one, nor did he hear a crow whistle ; he mentioned that the door of the box had then been closed.

34. Morgan seemed to be under the impression that he had complied fully with Rule 69 and he maintained that, under the last paragraph of the Rule he had had the necessary "intimation" from the driver, i.e. one short whistle, that the running lines were clear ; in support of this contention he referred to the two preceding paragraphs, by which "intimation" that a light engine is clear of the points must be given by one short whistle, when it is unaccompanied by a guard or shunter. He said that it was his customary practice to accept a "pop" whistle as signifying that an engine was clear inside without any other confirmation, and he could not recollect having been told otherwise when he had been questioned on Rule 69 by Assistant District Signalmen's Inspector Nichol (*see later*) ; he had been perfectly satisfied in his mind that all was well on this occasion. He added, however, "if the guard goes up with the engine he usually gives a hand signal for 'inside clear' ", and he admitted at the Regional Inquiry that someone should have come to the box and told him.

Morgan confirmed that Guard Davies had reminded him about the Down line signals when he met him on the platform after the accident, but he could not remember any other conversation with him at the time. He went back at once into the box and reversed the signals against the Down freight train, after which he collected the keys to open the station gates, telephoned for a doctor from the kiosk on the platform, and notified the Control.

35. The other two signalmen at Penmaenmawr, A. E. Thomas and O. G. Williams, both said it was their practice to accept a "pop" whistle for "inside clear", but later qualified this by saying that if not perfectly satisfied, they would go down the steps or on to the Up platform to make sure. According to Thomas, drivers had sometimes failed to respond to his signal to set back over No. 11 points, and he had then gone down the steps to give a signal clear of the footbridge girders ; he had mentioned the difficulty of seeing signals through the girders to Inspector H. R. Powell and to Assistant Inspector J. H. Nichol, and he had also raised the question of track circuits.

36. Mr. O. R. Jones, as a relief Station Master, had examined Morgan in his duties on 9th March 1948, before he took charge of Penmaenmawr box ; he had found him keen and conscientious, and this was confirmed by Mr. J. H. Edwards, lately District Signalmen's Inspector at Bangor, who had examined him again in 1948 and in 1949. Morgan was last examined on 24th March 1950, by Mr. J. H. Nichol, the Assistant District Signalmen's Inspector, who said he had done very well and was intelligent and interested, and the present District Inspector at Bangor, Mr. H. R. Powell, referred to Morgan's regular attendance at the block signalling classes.

Mr. Powell said that he had gone into Rule 69 with the men at the classes. At first he seemed uncertain whether Morgan had complied with the Rule in accepting a whistle only as an assurance that the running line was clear, but he said finally that the Rule required verbal information from the driver, fireman or guard, and that failing that, it was the signalman's business to go down and see. Mr. Nichol, on the other hand, expressed a definite opinion that a whistle signal was not enough, as also did Mr. Edwards, though the latter felt that the Rule was ambiguous on this point.

Mr. R. G. Owen, who has been Stationmaster at Penmaenmawr for 7 years, also spoke well of Morgan's general character and of his work. On the question of shunting methods, he thought that on the whole it was better to put engines on to the Up line first and then back into the yard, as the movement was so well understood by the enginemen at Llandudno Junction.

CONCLUSION.

37. Signalman Morgan's evidence was simple and straightforward, and I have no difficulty in accepting his statement that it was always his intention to put the engine into the sidings via the Up line and not direct from the Down line via Nos. 13 and 15 slip points, and that he did in fact reverse Nos. 11 and 10 points as soon as Driver Roberts whistled on clearing the crossover. I also think it probable that he did hear a second whistle from the light engine at about 2.58 a.m. which led him to restore Nos. 10 and 11 points and clear the Up line signals for the Irish Mail, in spite of Driver Roberts' denial that he had whistled at that stage. Confusion with any other sound on such a quiet night, with the open signal box door, was unlikely, as Morgan suggested ; moreover, there was no other engine in the neighbourhood, the Down freight train having left Llandudno Junction only two minutes before. I have considered the possibility that he may have assumed that the engine had moved clear inside merely from the lapse of time after the first whistle and without hearing another, but the nature of his evidence and the views of his superiors on his work generally did not suggest that he would have acted so irresponsibly.

38. In contrast with Morgan's, the statements of the engine crew and of Guard Davies were confused and contradictory, and I regret that I am unable to reach a definite conclusion on the movements which were made by the light engine after it crossed to the Up line, nor on what passed between Driver Roberts and Guard Davies when the latter reached the engine in the neighbourhood of No. 11 points. I do not, however, disbelieve the statements of Roberts and Passed Cleaner Davies that the engine lights were burning properly on a windless night and so soon after leaving the shed ; Guard Davies' statements on this point were worthless, and it may have been that Morgan, who stated that he did not go down the steps at any time, did not see the light on the tender while the engine was standing on the Up line on account of the intervening footbridge girders, and he admitted that he did not take particular notice of them.

The footbridge may also have prevented Driver Roberts from seeing the set back signal which Morgan gave him at about 2.55 a.m., and I think that after standing on the Up line for about 3 minutes with nothing apparently happening, he may well have sounded the whistle again, possibly in some impatience, to remind Morgan that he was still waiting to set back, without realising its misleading implication. Having whistled, he may have started back, probably on the hand signal from Guard Davies in the yard of which he spoke, but in the meantime Morgan had reclosed Nos. 10 and 11 points, so directing him along the Up line. At about the same time Roberts saw the Up Advanced Starting signal change to clear, probably at about 2.58 a.m., 2 or 3 minutes before the collision. It was most unfortunate that he assumed that the signal had been cleared for him to go back to Llandudno Junction, and not for an approaching train, owing to an impression which seemed to have persisted in his mind that he had been sent to Penmaenmawr on a false errand. I refer later to his degree of responsibility for the accident.

Alternatively there is the possibility, suggested by Morgan (paragraph 32) that Roberts may have seen his hand signal and gone a short way back over No. 11 points towards the yard and mistakenly thought he was still on the Up line—or even stopped on account of his impression that there was no train for him at Penmaenmawr after all—and then come forward again and whistled, later going back again along the Up line on seeing a hand signal from Guard Davies after Morgan had closed the points. Passed Cleaner Davies referred to a second backward movement, made while he was on the ground, though he retracted this statement later or at any rate modified it, and he also said that Roberts went only a very little way over No. 11 points when he went back for the first time. While the evidence of the three men does not wholly support either alternative, and the actual movements made by the engine are thus to some extent conjectural, I think that Driver Roberts may well have sounded the whistle a second time while the engine was on the Up line, in spite of his denial. Apart from any other considerations, his recollection may have been affected by the severe shock which he had received.

39. I consider nevertheless that Morgan, by accepting a whistle signal without any other confirmation, took insufficient pains to satisfy himself that the Up line was clear before he lowered the signals for the Irish Mail to run through, and it seems surprising that he never troubled himself even to look for the engine light, as a much more positive indication of its movements. Nor did he make any proper attempt by going some way down the steps, either to give a clear hand signal to the light engine and watch for its response at about 2.55 a.m., or later at about 2.58 a.m., to see what was going on when he heard a second whistle. Undoubtedly he should have done so on both occasions, though he stated to me quite frankly that he had not, and he reiterated that he was perfectly satisfied ; he admitted, however, at the Regional Inquiry that someone should have told him that the Up line was clear, also that this was required by the local instructions after he had given two rings on the electric bell.

I do not, however, attach much importance to his incidental action in ringing the bell, except as an indication that he was particularly anxious to get the engine inside quickly and avoid delay to an important express which was already late. I think it is more than likely that this consideration was uppermost in his mind and that, with the Irish Mail already in section when he heard the second whistle, it led him to act without sufficient thought and probably against his own better judgment. In this connection, I do not believe that it can have been altogether fortuitous that he was looking towards the crossover after the Irish Mail had passed the Distant, and that he saw Guard Davies' red hand signal immediately it was displayed, and acted on it so promptly. If he had been perfectly satisfied in his own mind, as he stated, it would have been more natural for him to have been looking in the opposite direction for the Irish Mail, and I think it is probable that he was in fact becoming anxious whether the engine was really clear inside, particularly as it had not put in an appearance at the head of its train, which was practically opposite to the box. He said that he saw the red light *under* the footbridge, but this would have been impossible if he had been standing at the frame as he stated, even if the light had been displayed from the far end of the platform.

40. With regard to Rule 69, there appears to be little doubt that the intention of the final paragraph is that one short whistle alone should not be taken as an assurance that *the running line is clear*, as indeed I should hope, although under the preceding paragraphs a whistle signal is sufficient to show that an engine or vehicles are clear of points, and that they may then be shifted. It should be noted in this connection that Rule 69 of the London Midland and Scottish Railway at one time made no mention of whistles, even to indicate that engines or vehicles were clear of points, for which hand signals were required, but the final paragraph was the same as today ; the Rule was changed in 1943 to its present form, and so incorporated in the British Railways standard Rule Book.

Morgan may thus be said to have contravened the Rule as it is intended to be read, but especially with the repetition of the word "intimation" in the final paragraph, there is room for misinterpretation, and it would be unfair to place undue emphasis on the Rule in assessing his responsibility, unless the intention of the final paragraph had been thoroughly explained to him during his training and subsequent examinations, which I am not altogether satisfied was the case. On the other hand, I do not consider that ambiguity in the Rule should be held to have relieved him of his duty as a signalman to have taken more care than he did to satisfy himself that the engine had completed its intended movement, especially as there were no ground signals and the view between the box and the crossover was partially obstructed by the footbridge.

Morgan therefore must bear some responsibility for the accident. While he was in order under the Block Telegraph Regulations to make the movement after he had accepted the Irish Mail, it seems questionable whether he was wise to do so with the small margin of time available ; no doubt he was anxious to avoid delay to traffic, but it may well be that he was led in this way to act more hastily than he otherwise would have done. If he bad kept the light engine on the Down line until the Irish Mail had passed, there would have been no more than a few minutes' delay to a comparatively unimportant freight train. The events might also have been different if he had told Guard Davies on his arrival that he had already accepted the Irish Mail. Morgan's record has been clear since he joined the railway service as a junior porter 9 years ago, and his steady character and interest in his duties were emphasised by more than one member of the supervisory staff.

41. Morgan's responsibility, however, must be shared in considerable measure by Driver Roberts. His engine was detained on the Up line for the 5 or 6 minutes which preceded the collision, but he failed to send his fireman to the box as required by Rule 55(*b*), or at the very least to draw the signalman's attention to his position by a series of "pop" whistles. If his own statement is accepted, he had waited for 3 or 4 minutes on the Up line without seeing any hand signal from the box and, while I recognise that he was expecting to receive one at any moment, I doubt whether his responsibilities under Rule 55 ever entered his mind, even when he did move back eventually over No. 11 points and found himself still on the Up line.

At about the same time he received what should have been an unmistakable warning when he saw the Advanced Starting signal change to Clear, and his assumption that the signal had been cleared for him to go back light to Llandudno Junction was unwarranted, especially as Guard Davies had gone to his train in the yard after speaking to the signalman on arrival at Penmaenmawr, and had not come back to the engine. Furthermore, when Roberts stopped his backward movement along the Up line he made no attempt to find out the true position from Davies, who appears to have been close to the engine when the Up line signals were cleared at about 2.58 a.m. ; at that moment the Irish Mail was in mid section and there was still time to save the situation. Roberts is 51 years of age, with 29 years footplate experience and his record is good.

42. Guard W. H. Davies emerges with little credit. Unlike Driver Roberts, he was in no doubt at any time that the engine was to come into the yard, and he saw at once that it was making a wrong movement along the Up line when he was in the neighbourhood of No. 10 points. Instead of showing a red light to the box to stop all movement until he could find out from Morgan what was the matter, he was apparently content to do nothing until he was brought to his senses, much too late, by the noise of the approaching train. Davies is 50 years of age, with 25 years' experience as goods guard and shunter. He also has a good record.

43. On the other hand, Driver W. Williams of the Irish Mail was alert when the Up Home signal was put to danger closely in front of him. Assuming he was travelling at his estimated speed of 60 m.p.h. and was 100 yards from the signal when he made an emergency brake application, the speed should have been reduced to 35 m.p.h. at the moment of impact according to theoretical calculation ; the nature and extent of the wreckage suggested that the collision took place at a good deal higher speed, possibly 45–50 m.p.h., but it may well have been that Williams was travelling faster than he thought, perhaps as much as 70 m.p.h. as he was entitled, and that he was nearer to the signal when he applied the brake. No responsibility, therefore, rests with him, and his prompt appreciation of the need to protect the Down line, in spite of his injuries and shock, was creditable ; it should also be recorded that he refused medical attention until he was satisfied that injured passengers were being cared for. The unselfish action of Fireman J. E. N. Williams in going forward to stop the Down freight train, when his injuries gave him every excuse for not doing so, deserves high praise and there is no doubt that he thereby prevented a second collision.

Remarks and Recommendations.

44. This regrettable accident, like others in the past, was brought about by the simultaneous failure of men in independent positions to appreciate their responsibilities, and the second line of defence provided by Rule 55 proved ineffective. The Rule is designed intentionally as a safeguard against the consequences of possible errors by signalmen, and the importance of its scrupulous observance by trainmen should need no emphasis ; as a result, however, of this accident, and other cases of infringement which have come to particular notice in recent months, the London Midland Region have issued a special reminder to all their staff concerned. Action on these lines may also be desirable generally.

45. As I have said, I consider that Signalman Morgan was careless in assuming that the running line was clear upon the sole evidence of a whistle signal, but I have some doubt whether sufficient pains had been taken by the supervisory staff to explain clearly to a young and inexperienced man what were his responsibilities under an important safety rule, having regard especially to its ambiguous wording. The same may have applied to the other signalmen at Penmaenmawr with the result that a lax method of working had come to be accepted from which a dangerous mistake was likely to occur sooner or later. While rules must always leave some room for the exercise of intelligence and imagination, the importance of adequate training and supervision, especially of young men starting their career as signalmen, can hardly be overstressed, but the task is not simplified when the interpretation of a vital paragraph in a rule is a matter of opinion. I therefore recommend that Rule 69 should be revised to remove any possibility of misinterpretation, and to emphasise in simple words that one short whistle alone is not sufficient assurance that running lines are clear, as distinct from an indication that engines or vehicles are clear of points, where no serious consequences would be likely in the event of a misunderstanding.

46. At some places in the London Midland Region, and no doubt elsewhere, a specific code whistle is laid down to indicate to the signalmen that a shunting movement is "inside clear". Furthermore, the new British Railways General Appendix which will shortly be issued, will contain a standard code of engine whistles for communication between drivers and signalmen and other ground staff for a variety of operating purposes, and in this code, "1 short 1 crow" is laid down "to indicate whole of train is clear in siding". If it had been in force at the time, it is possible that the accident would not have occurred, but as a general safety principle, it does not seem right that a whistle signal, however precisely codified, should be held to relieve a signalman of his obligations under Rule 69.

Compliance with the Rule may often require some trouble to be taken, as in this case, and I do not overlook that at busy boxes where there are no track circuits or siding telephones, signalmen may find themselves in a difficult position if traffic is not to be delayed, though I have no doubt that in some circumstances, the likelihood of misunderstanding a coded whistle may be remote. The question of striking a proper balance between safety and expeditious traffic working in this matter is not a simple one, and I recommend that, in fairness to the staff, it should be made the subject of a careful review by the Railway Executive, with particular reference to Rule 69 in its relationship to the new standard code of whistles and to any other local signal box instructions which may be in force.

47. If there is a suitably placed track circuit, no difficulty arises, and in this particular case, a track circuit in rear of the Up Advanced Starting signal would have prevented the accident. While it cannot be said that Penmaenmawr is either a complicated or a very busy box, fast main line traffic is considerable, and there are frequent and regular shunting movements into and out of the Up sidings for the stone traffic, by day and night. The view from the box also leaves much to be desired, particularly towards the crossover and siding connections 250 yards away and, all things considered, there is a strong case for local track circuiting. As, however, the box is to be renewed very shortly in a much better position at the east

end of the station, practically opposite to the crossover, a track circuit in rear of the Up Advanced Starting signal will not be necessary, although other track circuits are proposed at Penmaenmawr as a part of the Regional programme for 1951 on important lines. When the box is renewed, ground signals will be provided to control movements over the crossover and siding connections, and I refer to this point later. Having regard to what is being done, which also meets the intention of the Jury's Rider at the Resumed Inquest, I have no recommendation for improvement of the signalling equipment at this place.

On the general question of equipment to improve safety in working, the Railway Executive had planned in 1948 to accelerate the former Companies' programmes for the provision of track circuits and modern block controls, but the subsequent restriction of capital expenditure has proved a severe handicap to costly measures of this kind. Thus, if times had been better, track circuits would have been installed at many places where they are still needed, but no one would deny that safety equipment deserves high priority, and the serious consequences of this accident have again emphasised the desirability of pressing forward with the work as rapidly as possible within the limits of resources in labour and materials.

48. The absence of ground signals at Penmaenmawr was also an important contributory factor and there are many other places, particularly on the former London and North Western Railway system, where shunting movements on running lines depend for their control on hand signals from the box. While there is no great objection to this practice where connections are close to the box or shunting movements are infrequent, ground signals, which also detect the points, are better in all respects, especially at night. I recommend that the position should be reviewed in all Regions and that where it is found that regular shunting movements are carried out at some distance from the box under hand signals, the provision of fixed signals on the ground should be considered on the merits of each case.

49. No practicable form of carriage construction can avoid severe damage to a heavy train in the event of a collision, even at moderately high speed, as the energy to be dissipated in a short time and space is so very great ; in this case it was of the order of three million foot-tons. A study of the wreckage, however, seems to confirm the wisdom of the recent decision of the Railway Executive to adopt couplings of the rigidly holding central Buckeye type in their new standard designs of main line coaching stock, though I have no doubt that the long stroke buffers on all except one of the coaches, played a useful part in reducing the shock. In particular, it would seem that a Buckeye coupling between the first class sleeping car and the leading van might have prevented the overriding of the underframes and the consequent annihilation of the sleeping car body, which was responsible for most of the fatalities.

It would be unfair to draw a comparison between the destruction of the timber bodied first class sleeping car and the almost complete absence of structural damage to the steel bodied fourth coach No. 5036, as the forces to which they were subjected were so different. It is, nevertheless, remarkable how well the crushing stresses were resisted by the reinforced ends of the latter coach and, as has already been announced in the Press, the new British Railways standard design provides for an all steel body shell in which full advantage has been taken of modern pressing and welding technique. The welded attachment of the bodies to the underframes has been designed to develop a combined resistance to longitudinal and vertical stresses and the body ends will be reinforced by steel sections as an adjunct to the Pullman type gangway which is to be adopted in connection with the Buckeye couplings. The underframes alone will be able to withstand an end thrust of 200 tons without permanent deformation, compared to a maximum of 120 tons in existing British stock, and this notable advance in strength to resist collision forces, which has been confirmed by workshop tests, has been achieved without increase in weight.

I have the honour to be,

Sir,

Your obedient Servant,

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

The Secretary,
Ministry of Transport.

APPENDIX I.

MINISTRY OF TRANSPORT,
Berkeley Square House,
London, W.1.
26th September, 1950.

SIR,

I have the honour to report for the information of the Minister of Transport that, in accordance with the Order dated 4th September 1950, I acted as Assessor to His Majesty's Deputy Coroner for North Caernarvonshire, Mr. J. Pritchard Jones, at the resumed inquest into the deaths of five passengers and one railway servant, travelling in the Irish Mail, which collided with a light engine at Penmaenmawr on 27th August 1950. The resumed inquest was held at Bangor on the 19th September 1950, and the Jury returned a verdict of "Misadventure" in all cases. They added the following Rider :—

> "No single person can be saddled with a guilty act, but that there was very serious lack of co-ordination regarding signalling in the dark which calls upon the railway authorities to make drastic reforms in the signal box system and to introduce a better method of co-operation between the signal box and the drivers of any engines in cross-over or shunting operations."

I have the honour to be,
Sir,
Your obedient Servant,
C. A. LANGLEY,
Brigadier.

The Secretary,
Ministry of Transport.

APPENDIX II.

BELL CODE FROM STATION BOX TO UP SIDINGS—PENMAENMAWR.

BRITISH RAILWAYS
(LONDON MIDLAND REGION)
PENMAENMAWR

BELL CODE FROM STATION BOX TO UP SIDINGS.

	No. of rings.
Clear Up Line for train to pass	2
After the Up line has been cleared the Signalman must be verbally informed accordingly.	
Stop shunting for train to enter or leave Up refuge siding or work in siding	4
Stop shunting for train to enter or leave Down refuge siding or work in siding	4–4
Shunting may be recommenced	5

Before any movement is made between the main lines and the refuge sidings, the Signalman will send the bell code applicable or verbally instruct the Shunter or Guard what is required. The Shunter or Guard must immediately cease shunting and afterwards acknowledge the signal either verbally or by repetition.

The Shunter or Guard must not recommence shunting until advised by the Signalman, either verbally or by bell code.

BY ORDER
of the
OPERATING SUPERINTENDENT.

Euston Station.
September, 1949.

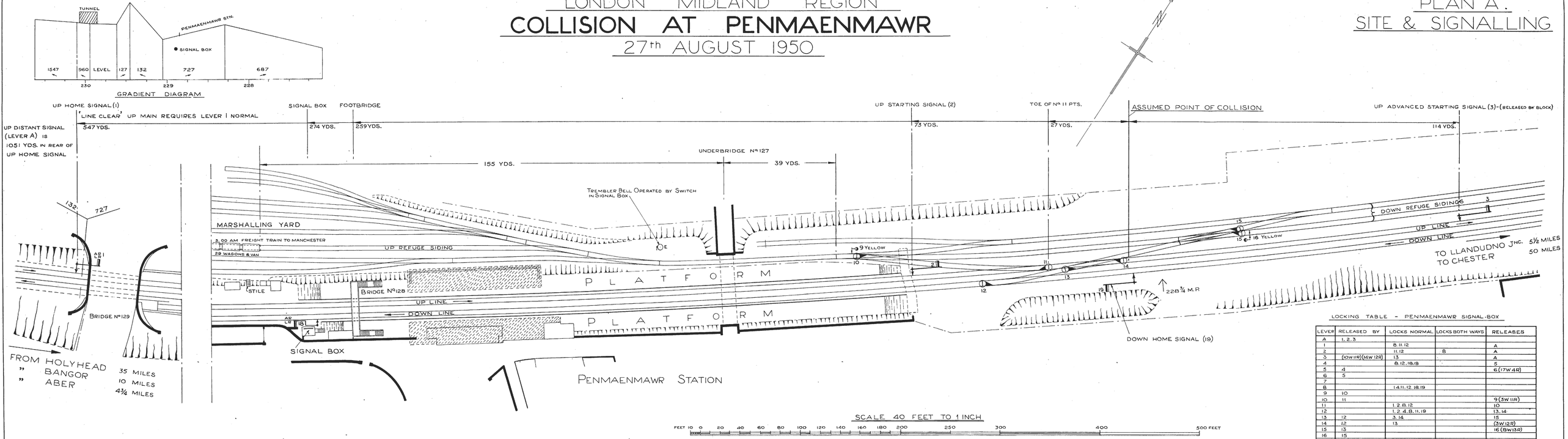
11894 Wt. 4352/2080 K.6 4/51

LONDON MIDLAND REGION

COLLISION AT PENMAENMAWR

27th AUGUST 1950

PLAN A. SITE & SIGNALLING

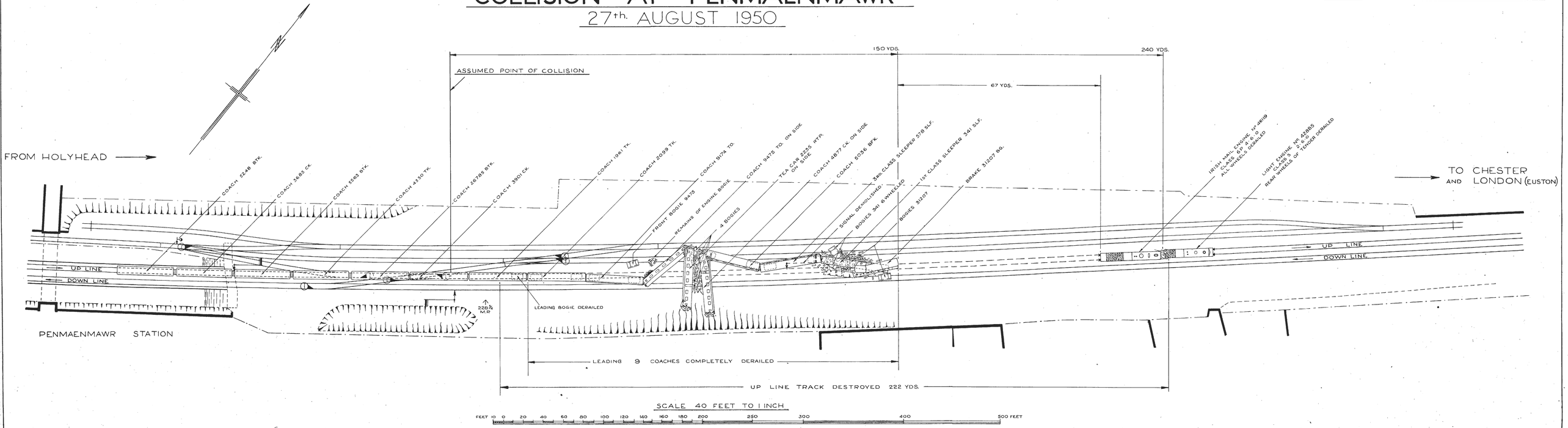


LOCKING TABLE - PENMAENMAWR SIGNAL-BOX

LEVER	RELEASED BY	LOCKS NORMAL	LOCKS BOTH WAYS	RELEASES
A	1, 2, 3			
1		8, 11, 12		A
2		11, 12	8	A
3	(10W 11R)(14W 12R)	13		A
4		8, 12, 18, 19		5
5	4			6 (17W 4R)
6	5			
7				
8		1, 4, 11, 12, 18, 19		
9	10			
10	11			9 (3W 11R)
11		1, 2, 8, 12		10
12		1, 2, 4, 8, 11, 19		13, 14
13	12	3, 14		15
14	12	13		(3W 12R)
15	13			16 (8W 13R)
16	15			
17	(5W 4R)		8	20
18	(15W 13R)	4, 8	12, 14	20
19		4, 8, 12		20
20	17, 18, 19			

LONDON MIDLAND REGION

COLLISION AT PENMAENMAWR

27th. AUGUST 1950

PLAN B
RESULTS OF COLLISION