

GREAT WESTERN RAILWAY.

MINISTRY OF TRANSPORT,
Metropole Buildings,
Northumberland Avenue,
London, W.C.2.
12th October, 1938.

SIR,

I have the honour to report for the information of the Minister of Transport, in accordance with the Order dated the 30th August, 1938, the result of my Inquiry into the accident which occurred about 12.10 a.m. on the 19th August, at Newport (Mon.) Station, on the Great Western Railway.

The 11.54 p.m. train, Newport to Bristol, on leaving the down platform line, was diverted along a spur line and struck the stop block at the end, adjacent to the parapet over the River Usk Bridge. The stop block was demolished and forced forward some 5 yards until the engine came to a stand after striking and distorting the lattice girder parapet; all wheels of the engine were derailed and its leading end, mainly the bogie and the buffer beam, was damaged. There was also some slight damage to buffers and headstocks of two of the passenger coaches, but the remainder of the train was undamaged and subsequently proceeded to Bristol.

Three passengers suffered minor injuries, owing to the sudden stoppage of the train.

The engine was No. 4925, type 4-6-0, with 6-wheeled tender, fitted with the vacuum brake on coupled and tender wheels. The train consisted of two 4-wheeled fish vans, one bogie van, five bogie coaches and one bogie van in rear, all vehicles being fitted with the vacuum brake on all wheels; the total weight of engine and train was 332 tons, and overall length 519 ft.

The night was clear and fine and the rail was dry.

The accident was primarily due to a signalman pulling off the wrong signal and to this signal being misread by a fireman.

Description.

The train in question is one which comes from Crewe via Hereford and works into the down (Westbound) platform line at Newport; here the train is divided and the leading portion goes forward (Westbound) to Cardiff, the rear portion reversing direction and proceeding (Eastbound) to Bristol.

Approaching Newport from the east, there is a junction between the lines from Hereford over which the train arrived, and the lines to the Severn Tunnel over which the rear half of the train was due to proceed.

Between this junction (Maindee Junction East) and Newport Station, there is a bridge over the River Usk, carrying four tracks, reading from south to north, down main, up main, down relief and up relief, with a ladder crossover extending over all four tracks. Through the station itself there are additional tracks, and they are, in order from south to north, down platform, down main, up main, up platform, and two relief lines alongside Platforms 6, 7 and 8, which are used and signalled for working in either direction. At the east end of the station there is, on the south side, a short spur line leading east from the down platform line and terminating at the stop block which was demolished; also two short fish jetty sidings leading west from this spur into a bay south of the down platform. The East signal box is opposite, on the north side of the running tracks.

The train had approached from the Hereford direction by the down relief line, passing by means of crossovers Nos. 9 and 10 on the bridge to the down main, and thence by crossover No. 12 into the down platform road. The engine which was to haul the Bristol portion was waiting in the spur line, and the rear half of the train should have proceeded in the reverse direction on to the up main by the same crossovers Nos. 12 and 10; thus it was starting wrong road from the down platform.

The signalling at Newport East and West boxes is on the Insell Ferreira Route Signalling System, with electric power operation of all points and signals; practically the whole layout is track circuited and indicated on an illuminated

diagram. In this system a signal, either semaphore or disc, is provided for every movement, and the signalman has only to operate one lever for any signal in order to (a) prove that the road is clear; (b) set all necessary points; and (c) pull off the signal. The miniature levers have four positions; movement from normal to the second, called the track position, effects any necessary mechanical locking on the levers of conflicting routes and detects whether all the relevant track circuits are clear. If they are clear, a white light appears behind the lever, which is then free to be pulled to the next position, called the route position. The points will then be operated and, as soon as they are all thrown and bolted, a yellow light appears behind the lever, and it can be moved to the final position, when the signal comes off and a green light appears behind the lever.

In restoring the lever to normal, similar controls are provided, so that on the first backward movement the lever puts the signal to danger and detects that the train has completed its movement over all the controlling track circuits; when this is so, the white light re-appears and the lever can be replaced to the next position, when any points which have a normal position will be returned to their normal position, after which the final lock is released and the lever can be fully restored to its normal position, thus releasing the mechanical locking on any conflicting route levers. A number of the points have no normal position, and are allowed to remain in the position in which they have last been placed until another movement is desired.

The signals concerned in this case are—

Disc signals Nos. 72 (above) and 73 (below) situated at the West end of No. 12 crossover, between the down platform line and the down main line; the leading end of the engine was standing about 5 yards in rear of these signals.

In accordance with the standard convention the upper disc, No. 72, applies to the left hand direction, i.e., over crossover No. 12, while the lower disc, No. 73, leads into the spur line.

At the East end of No. 12 crossover there are two more discs, Nos. 68 (above) and 69 (below), of which the former applies to the left hand route, over crossovers 10, 9 and 8 leading on to the up relief line, whereas No. 69, the lower disc, applies to the movement over No. 10 crossover on to the up main line.

The interlocking requires either No. 68 or 69 to precede No. 72, but there is no interlocking between No. 73 and Nos. 68 or 69 as they may cover two parallel movements which can be carried out simultaneously.

The up main starting signal No. 92 is about midway along crossover No. 10 and, in consequence, does not apply to the movement concerned in this case, and the first running signal is therefore No. 91 up main advanced starting signal 440 yards ahead of discs Nos. 72 and 73. Disc signal No. 54 authorises exit from the spur to the down platform line through points No. 11 reversed; these points are "restored" points and lie normally from the spur to the fish jetty sidings. Movements in and out of the fish jetty sidings are hand signalled.

Crossovers Nos. 12 and 10 are both "non-restored" and remain in the position last used until it is necessary to move them.

Distances from Nos. 72 and 73 Disc Signals.

Leading buffers of engine before starting	...	5 yards West.
End of platform	...	10 yards East.
No. 54 disc signal on spur at junction with fish jetty sidings	...	50 yards East.
East signal box	...	70 yards East.
Nos. 68 and 69 disc signals	...	80 yards East.
Stop block on spur	...	130 yards East.
No. 91 up main advanced starting signal	...	440 yards East.

Report.

The train arrived at Newport down platform at 11.59 p.m., thirteen minutes late: there was a fish van in rear to be detached at Newport, and to deal with this the station pilot engine was waiting in the spur line, together with Engine No. 4025, which was to work the Bristol portion, the latter engine being nearest to the stop block. The fish van was uncoupled and the station pilot engine drew it away along the spur and then propelled it into the fish jetty siding where both van and engine remained. The next work for the station pilot

engine would probably have been a similar detachment of vehicles from the rear of a parcels train from London due at the down platform at 12.18 a.m. and it would normally have waited in the spur for this.

Driver James, in charge of Engine No. 4925, had been in this link for about four years, during which time he had worked this train four nights in 12 weeks, in addition to another train through Newport three times in 12 weeks. Except for these trains most of his work was on the other side of the Severn Tunnel. Fireman Lansdown had been working with James for 14-15 months, except for two periods of illness totalling about five months.

After Engine No. 4925 had backed down on to the rear half of the train and had been coupled up by the shunter while Fireman Lansdown changed the lamps, the vacuum brake was tested in the ordinary way, Guard Goddard obtaining 25 inches on the gauge in the rear van. The train was booked to leave at 11.54 p.m. and was allowed 36 minutes for the 26 miles to Bristol, where a connection had to be made with a train from London.

The engine has a right hand drive so that the driver was next the platform, while the two disc signals concerned were, as noted above, between the tracks on the side away from the platform and only a few yards ahead of the front of the engine. Thus these disc signals could not be seen from the driver's side, but were easily visible to the fireman.

Platform work was completed within two or three minutes after coupling up, while an up goods train passed on the up main; a minute or so later Fireman Lansdown saw the advanced starting signal, No. 91, change from red to green and then the lower disc, No. 73, change to green and said to Driver James "Right the Dummy", who called out to Foreman Davey "All right here". The latter made a signal to the guard who then gave the Right Away signal to the driver; James saw that the disc signal next ahead, No. 69, and the advanced starting signal, No. 91, were both green, and started away. He had leant out of the cab on his own side and thought he saw a reflected green light from the disc just ahead, but could not see whether it was the upper or lower disc. It seems clear that both Foreman Davey and Guard Goddard were standing in positions where they could not have seen the two discs immediately in front of the engine. Nos. 72 and 73.

Driver James had only run a very short distance when Fireman Lansdown saw the red light on the stop block ahead, realised they were in the spur and shouted to James who made a full brake application, and closed the regulator; he felt the brakes take hold but had no time to put down sand before striking the buffer stop at about 5 miles per hour. The impact tore apart the fishing of the last rail joint and forced the buffer stop and its short length of rail forward until the train was brought to a stand just as the engine buffers struck the end parapet.

Signalman Griffiths was on duty in Newport East box with a booking lad. He had been working in this box for about three years and said that he was thoroughly familiar with it and had never found any difficulty in operation. He had not worked in any other power boxes.

He said that after Engine No. 4925 had backed down from the spur on to the train, under shunt signal No. 54, he had replaced No. 54, thus resetting points No. 11 to their normal position, and he then pulled lever No. 73 to the Route position, and placed a collar on the lever. The result of this lever movement was to set the road from the down platform into the spur, but not to pull off the disc signal, and Griffiths stated that he made the lever movement with a view to protecting the train while waiting at the platform, and that he used the collar to remind him not to pull the lever right over and thus lower the disc.

Thereafter he had to wait for "Train out of Section" for a goods train on the up main line, which cleared Maindee Junction East at 12.10 a.m.; while waiting for this "Train out of Section" signal he was preparing the road for the Bristol train by pulling disc signal No. 69 to the Route position and, at the same time, he removed the collar from lever No. 73.

At this moment he got "Train out of Section" and asked for, and obtained, "Line Clear" for the Bristol train and, while doing so, replaced the lever collar on its peg on the shelf. He then pulled lever No. 69 right over, thus pulling off the signal, pulled lever No. 73 right over and then pulled lever No. 91 advanced starting signal; he had forgotten about having placed a collar on No. 73 to

remind him not to pull it right over, although, as noted above, he had removed the collar only a moment before in readiness to replace No. 73 and pull No. 72, the correct signal. Griffiths stated that he was anxious to answer an enquiry on the telephone as quickly as possible.

Conclusion.

This accident, the results of which were fortunately trifling, was due to failure on the part of three men, Signalman Griffiths, who pulled the wrong lever, Fireman Lansdown, who did not realise that the signal given was a wrong one, and Driver James, who accepted his fireman's intimation that their signal had been pulled off. All three men frankly admitted the facts.

No criticism can be made of Signalman Griffiths in his very proper desire to protect the train against any inadvertent release of a conflicting movement. He stated that other down trains did normally approach about this time, although on the night in question none was actually approaching.

The method of protection which he adopted, viz., placing a collar on lever No. 73 drawn to the Route position, was effective, although not in accordance with the normal method of using a lever collar on the relevant signals in rear; I do not think that he can be blamed to any serious degree for adopting this method.

He suggested, at my Inquiry, that he was thinking that the Pilot engine might emerge from the fish jetty sidings on to the spur without authority, but, on being questioned, he admitted that he had no real ground for this supposition and, further, that his action would not have been any real protection against such a move. I am inclined to think that this argument was an afterthought on his part, and that his real motive was the straightforward one of protection against an approaching down train. In this connection, however, it should not be overlooked that the running signals concerned were already locked by the occupation of the track circuit, so that conflicting movements could only be made under one or other of the two down calling on signals, or a disc signal.

Griffiths' failure was due to the fact that on removing the lever collar he did not immediately act on the reminder he had intended it to convey, i.e., to replace lever No. 73 normal, and, in the course of the next few moments, his attention being occupied by the block signals, he put away the collar automatically and without thinking; having thus put away his reminder, he committed the very mistake which he had taken precautions to avoid.

The case is a plain example of failure of the human element, and I consider that the major share of responsibility for this accident lies with Signalman Griffiths. He has been in the Company's service for 44 years, and has been a signalman for 40 years. He has a clear record.

As regards the engine crew, I feel that they were to some extent the victims of unfortunate circumstances. Lansdown saw a disc come off which applied to his train, and it did not occur to him that the signalman had pulled off the wrong signal and set a wrong road. He said that he was familiar with all running signals at Newport, but would not claim that he knew all the shunt signals. It was suggested at my Inquiry that the two discs Nos. 72 and 73 might cover three directions, into the spur, on to the up main, and to the up relief, and that he may have assumed that the movement into the spur was unsignalled, in which case the lower disc, No. 73, would have led on to the up main; actually, however, there is another pair of discs ahead, Nos. 68 and 69, which precede No. 72 and separate the up main and up relief routes, and it should be remembered that he had seen No. 73 pulled off for the movement into the spur when their engine had gone in there earlier to wait for the train.

Lansdown had been 19 years in the Company's service, 14 years as fireman. He has a clear record.

Driver James could easily have moved across the footplate to verify the aspect of the disc signal; on the other hand, he had a fireman who had worked with him for some time and whom he considered reliable, it was quite clear to him that a signal had just been pulled off, he had to inform the platform staff on his own side and to get the Right Away signal from them and, before moving off, he himself saw that the two signals next ahead had been pulled off. Moreover, he was 16 minutes late and would be anxious to avoid delay as he could hardly hope to make up much time on the run to Bristol where he had a connection to make. But whatever may be the reasonable exercise of a driver's

discretion in taking the word of a reliable fireman about a signal, the ultimate responsibility for correct observance of signals must remain with the driver, and, for this reason, I consider that Driver James must bear his share of the responsibility for the accident.

As regards noticing that he was on the wrong road, the total distance run was only 140 yards and, starting away slowly, I can imagine he might not notice that he was not going through the crossover, but I was surprised that he did not notice the undue proximity of a low wall on his right immediately over which was a brilliantly lit area of roadway and castle walls. James stated that immediately after looking back along his train on starting, he entered up his time of starting in his book, and he suggested that his failure to notice the wrong road might have been due to this.

Driver James has been with the Company since 1904, except for four years' War service, and has been a driver for 19 years. He has a clear record.

Recommendations and Remarks.

A question which arises out of the circumstances of this accident is whether improvement is desirable in the location or type of the signal indication involved. This wrong road running movement takes place once daily for this particular train only, and at weekends, making a total of about 400 times per annum. Although the existing disc signal is immediately adjacent to the starting point, I think it would be preferable that a movement of this nature, if it is likely to continue in regular daily use, should be controlled by a running signal rather than by a disc, and I recommend that the Company should consider the desirability of providing such additional signal.

An alternative which was discussed was a change in location of these disc signals to the platform side; this would render them visible from the driver's side in this particular case, but would, owing to curvature and platform buildings, render them less visible to shunt movements as they approached and, of course, to a driver who was located on the opposite side of the track. In the circumstances I do not think that it would be desirable to depart from the normal (and existing) location immediately on the left of the track concerned.

I have given special consideration to the question whether there are any special features connected with this route signalling system which had any indirect bearing on the mistake committed by Signaller Griffiths, but I think it is clear that this was not the case. The principles and method of use of lever collars as reminders are the same on this frame as on an ordinary frame, and the accident was due mainly to a failure to act on the reminder immediately it was removed, coupled perhaps with the adoption of an unorthodox method of protection. Both Griffiths and two other signalmen expressed themselves as being entirely confident and satisfied with this type of frame which has now been in satisfactory use for about 10 years.

I have the honour to be,

Sir,

Your obedient Servant,

A. C. TRENCH,

Colonel.

The Secretary,
Ministry of Transport.