



MINISTRY OF TRANSPORT

## RAILWAY ACCIDENT

# REPORT ON THE COLLISION

which occurred on

**25th July 1960**

at

**NEWCASTLE CENTRAL STATION**

in the

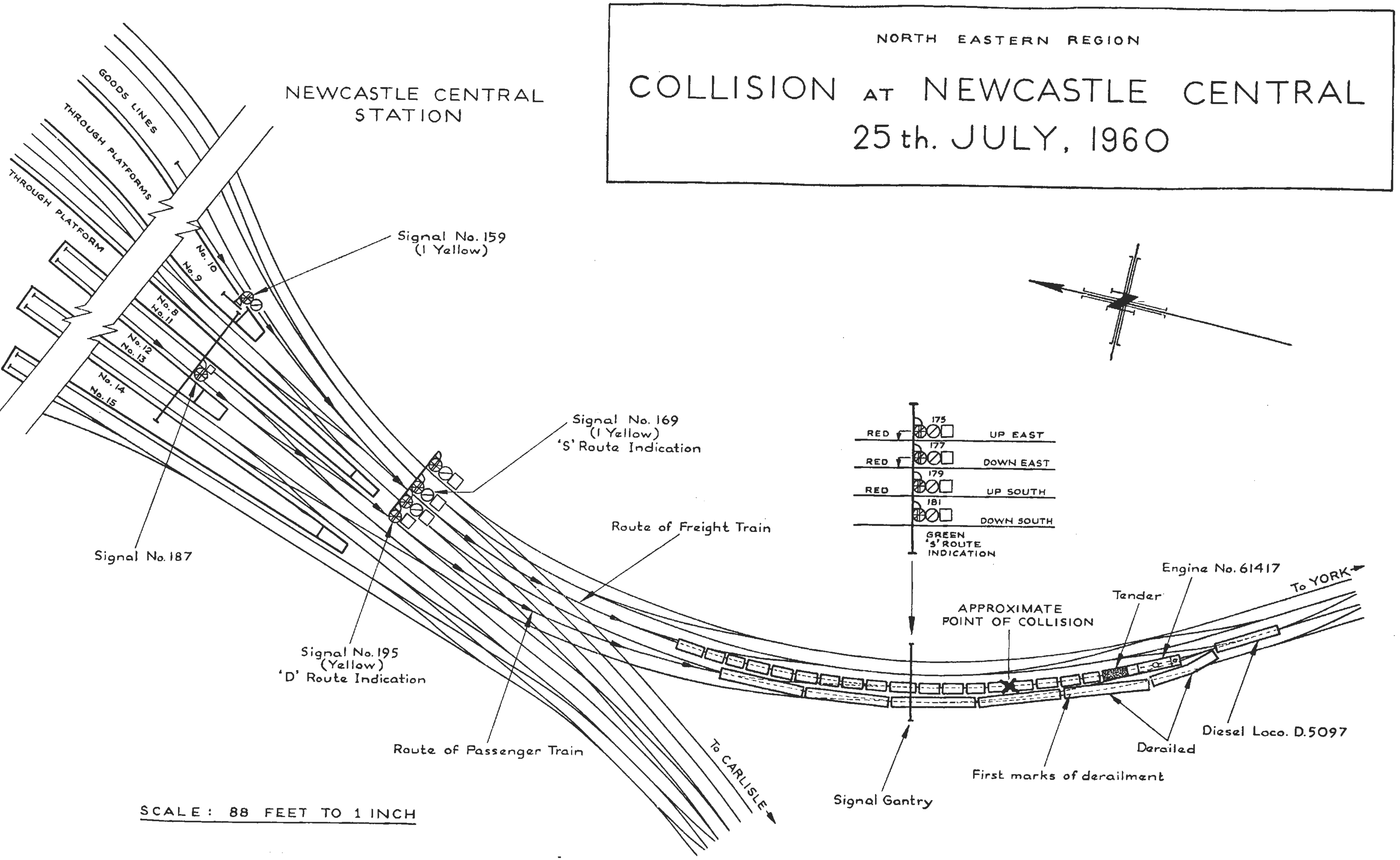
**NORTH EASTERN REGION**

**BRITISH RAILWAYS**

LONDON: HER MAJESTY'S STATIONERY OFFICE

1960

PRICE ONE SHILLING NET



# NORTH EASTERN REGION

## COLLISION AT NEWCASTLE CENTRAL

### 25th. JULY, 1960

29th September 1960

SIR,

I have the honour to report for the information of the Minister of Transport, in accordance with the Order dated 27th July 1960, the result of my Inquiry into the collision between a passenger train and a freight train that occurred at about 11.29 a.m. on 25th July 1960, at Newcastle Central station in the North Eastern Region, British Railways.

The 11.26 a.m. Newcastle to Leeds passenger train left No. 12 bay platform under clear signals towards the Up South line on the main line to York at the same time as the 10.35 a.m. unfitted freight train from Heaton to Sherwood was drawing slowly forward from No. 10 platform, also towards the Up South line. The freight train should have stopped at the colour light signal at danger protecting the convergence of the two routes, but the driver misread the adjacent signal on the gantry, which was at clear for the passenger train, as applying to him and did not stop his train which passed the signal and collided sidelong with the passenger train a short distance ahead. Speeds were low and the damage was not serious, though the first and second coaches of the Leeds train were derailed; three of the 200 passengers complained of shock but did not require medical treatment.

The passengers were conducted to the rear coaches which were drawn back to Newcastle Central station; a special replacement train was provided for them an hour later. The Up and Down South lines were blocked by the derailed coaches; they were restored to traffic at 9.0 p.m.

The day was fine but overcast.

#### DESCRIPTION

##### *The trains*

The freight train consisted of 13 empty oil tank wagons, with 2 runner wagons at either end and a brake-van in rear, drawn by a Class B-16 steam engine with 4-6-0 wheel arrangement. The weight of the wagons and van was 162½ tons, and of the engine, with its 6-wheeled tender, 117 tons. The driver's position was on the left. The engine brake power was 66% of its weight; the wagons were not fitted with vacuum brakes.

There was only minor damage to the right-hand side of the engine caused by the converging collision with the leading coach of the passenger train, but the tender tank was split. The wagons were not damaged.

The passenger train consisted of seven coaches weighing 202 tons, fitted with buckeye couplings, drawn by a type 2, Bo-Bo, diesel electric locomotive of 1160 h.p. weighing 73 tons. The length of the train over buffers was 148 yards and the brake power was 86% of the total weight. The leading coach was derailed at all wheels to the right of the track, and was canted to the right. The underframe was buckled and twisted and the wooden body was crushed on the near side. The second coach, which was of steel, was derailed at the leading bogie, and minor damage was caused to the bodywork. The other coaches were not damaged though the third one was in side contact with the leading tank wagon. All the couplings held throughout the train.

##### *The site*

The routes followed by the two trains, and the relevant signals, are shown on the diagram opposite which also indicates the complexity of the junction arrangements at the South-West end of Newcastle Central station, where the four track main line to York diverges in a sharp curve to the left from the four tracks leading to the double track main line to Carlisle. The junction at the North-East end of Newcastle Central station is of equal complexity where the main line to the North and the lines to Gateshead and to Pelaw diverge. The whole of this area is equipped with 3-aspect, searchlight type, colour light signals with an additional lamp for the double yellow aspect where appropriate, and electro-pneumatic point operating equipment, controlled from a central, route relay interlocking installation in a new signal box at the station which was brought into use in 1958.

The signals on the route followed by the freight train are No. 159, at the end of No. 10 platform, which is one of the three through platforms at this station, No. 169, 80 yards ahead, at the facing junction for the two diverging main lines, and No. 179, a further 140 yards ahead on the main line to York at the facing junction from the Up South to the Up East line. Those for the route followed by the passenger train are No. 187, at the end of No. 12 bay platform, No. 195, 60 yards ahead, at the facing junction for the two diverging main lines, and No. 181, a further 140 yards ahead, leading from the Down South line to the Up South line or to the Up East line on the route to York. This signal is on the same gantry at No. 179 and adjacent to it on the right. The gantry also carries two other outgoing signals, Nos. 175 and 177, above the "East" lines, to the left of the one on which the freight train was travelling.

Each of the four outgoing signals on the gantry has above it a large, theatre type, route indicator on which the letter 'S' is illuminated if the route has been set for the Up South line, and 'E' if the route has been set for the Up East line. The indicators are not illuminated when the signal aspects are at danger. The gantry also carries three signals, one for each line except the Up East, with a route indicator above each one, for incoming trains. These signals do not affect the viewing of outgoing signal aspects, but the silhouettes of the signal casings add to the number of such outlines on the gantry, and make it less easy to identify outgoing signals by their positions on the gantry when the signal lights are viewed from a point outside their beams and appear dim.

The gantry is on the curve, and the adjustment of the signals on it is therefore difficult. The comparatively narrow, intense, beam of each signal, which is provided by the normal focusing, had been adjusted to ensure that all the outgoing signals on the gantry would be in full view simultaneously from an outgoing train on any of the lines as the train came near to the gantry. In consequence, from the engine of a train leaving No. 10 platform the signal aspects appeared very dim until the engine was within 70 yards of them when they all came into full view and remained in view until the gantry was passed. On the other hand the indicators above each of the signals, when illuminated, appeared bright when seen from a distance.

The distance from signal 179 to the fouling point, when the points immediately ahead of signal 181 are set for the crossover route to the Up South line, as they were on this occasion, is only 20 yards. There is, however, a 15 m.p.h. speed restriction in the Newcastle area, and in view of the warning which is given by the yellow aspects of the approach signals, it is permitted to draw a train up to signal 179 when the crossover route ahead has been set with signal 181 cleared.

The gradient through Newcastle is negligible, though beyond the point of collision on the line to York it is falling at 1 in 111.

Damage to the track was confined to a short length of about 30 yards through the facing turnout ahead of signal No. 181. The point mechanism also was destroyed as was a ground subsidiary signal.

#### REPORT

The main facts leading up to this accident are not in dispute. The route was set and the signals were cleared for the Leeds train to leave No. 12 platform towards the Up South main line for York via the facing crossover immediately ahead of No. 181 signal. The route from No. 10 platform up to No. 179 signal was also set. The signal aspects on this latter route were yellow at No. 159 and No. 169, and red at No. 179. The indicator 'S' above signal No. 169 should also have been illuminated, though the driver of the freight train said that it was not. The aspects presented to the driver of the Leeds train should have been yellow or green with a route indication 'D' at No. 195 and yellow or green with indication 'S' at 181. At the starting signal for No. 12 platform, No. 187, only a subsidiary signal could be given as the diesel electric locomotive was standing ahead of the signal; stabled vans in the platform at the buffer stop had prevented the train being brought entirely within the signal. The train was, however, correctly authorised to leave by the platform inspector in accordance with the station instructions.

Signalman A. Anderson, who was responsible for signalling the trains, said that the simultaneous movement of trains, as on this occasion, was not infrequent. When asked why he had not held the freight train at No. 169 signal until the route ahead of No. 179 had become clear, he said that he had cleared the signal for the freight train to close up to No. 179 signal because he understood that the traffic regulator required No. 10 platform. He was told on the telephone by the fireman of the freight train that the collision had taken place and immediately informed the traffic regulator. The time then recorded was 11.28½ a.m.

Driver G. F. Dixon of the Leeds train said that he left about three minutes late. He saw No. 195 signal at yellow with the 'D' indication above and a few moments later No. 181 at green with the indicator above showing 'S', as the signal came into view beyond the slowly moving freight train on the inside of the curve. He said that he was momentarily concerned whether the freight train on the adjacent line would stop, though he estimated its speed to have been only 6 to 7 m.p.h., and he checked the acceleration of his train. As he was travelling over the crossover ahead of No. 181 signal he felt a heavy drag and immediately shut off power and applied the brake. Driver Dixon arranged for the protection of the train, and then helped to look after the passengers. His train travelled about 35 to 40 yards after the collision occurred.

Driver J. S. Laws of the freight train said that he had been stopped at No. 159 signal for about four minutes before being given a single yellow. He continued his evidence as follows:—

"After having started, the next signal (No. 169) showed a single yellow with no route indication. I then caught sight of a green with an 'S' route indication. I notched up, had a look at my watch, and I remember it was exactly 11.30 a.m. When I looked out again I was nearly on top of the next signal (No. 179). I saw it at red and I realised that I had misread the gantry. I immediately shut off steam and made a full brake application, but could not avoid a collision with the passenger train taking place".

Driver Laws was fully satisfied with the way in which the brake became applied but he said there was not time for speed to be checked before the collision. He estimated his speed to have been less than 10 m.p.h. After the collision his fireman telephoned to the signal box, and Laws secured his engine.

When questioned further about possible causes for misreading the signal Driver Laws did not put forward any excuses. He said that he had been stopped before at the signal and was not therefore expecting it, as of habit, to clear before him; he knew that the signals on the gantry were difficult to see at a distance because of the curved approach, but did not consider this to be an excuse. He reaffirmed when questioned that on this occasion his eye was attracted to the illuminated 'S' indication above No. 181 signal and that he wrongly assumed it to be the signal for his line. Driver Laws was aware that if he had continued to look out he would have seen the aspects of Nos. 175, 177 and 179 bright in focus when his engine had travelled a short distance beyond No. 169, but he admitted that he relaxed his vigilance while he adjusted the controls on his engine and looked at his watch.

Driver Laws was sure that there had been no route indication above signal No. 169, though there should have been the letter 'S'. His recollection of the signal aspects and route indications which he saw on the approach to Newcastle was also at variance in certain details with what should have been presented to his view as his train ran into No. 10 platform. Detailed tests of the signalling after the accident showed that it had been in perfect order in all respects and it is probable therefore that his recollection was at fault in these details. The variations which he thought he saw had no bearing on the accident. Laws did not criticise the signalling except to suggest, when asked, that No. 179 might be re-aimed so that it came into full view rather sooner.

Driver Laws is 59 years of age. He has had 44 years' service on the Railway, all spent in the Newcastle district. He said that he was in excellent health and that he had no troubles on his mind.

Fireman J. A. Gilchrist had nothing to add to his driver's evidence. He could not see the signals ahead of No. 159 from the right-hand side of the engine, where he was sitting, because of the curvature of the track, and he was not concerned to see the Leeds train moving alongside the freight train as it was not an unusual event. His account of the signal aspects which had been presented as the freight train ran into Newcastle was a repetition of the statement given by Driver Laws. The evidence of Goods Guard J. S. Purkis of the freight train confirmed that signal No. 179 was at Red as the engine of his train passed it. He did not have time to apply his handbrake before the collision took place.

Because of the short overrun beyond signal No. 179 to the fouling point I questioned Mr. Hick, Operating Officer, North Eastern Region, about the advisability of allowing trains to draw up to this signal when the route ahead is obstructed, and more especially when the trains are unfitted freight ones. This kind of movement is permitted at a number of converging junctions in the Newcastle area, and it had been questioned before by Colonel McMullen and myself when we inspected the new signalling in 1959. We were informed that because of the great frequency of train and engine movements and because of the constricted space between the junctions at either end of Newcastle Central, it was necessary for efficient operating to allow train movements up to such signals. It was accepted then that this was not unsafe in a colour light area and in view of the 15 m.p.h. speed restriction. Mr. Hick reaffirmed that the existing signalling facilities for outgoing trains to draw up at slow speed to junction signals were still necessary to avoid serious delays.

After this accident I asked for freight train brake tests to be made in order to ascertain what were the stopping distances. These showed that with a train of similar composition to the one involved in the collision it was possible to stop the train in 42 yards from a speed of 15 m.p.h., and with a full load of 45 vehicles plus a brake-van in 58 yards from that speed.

#### CONCLUSIONS AND REMARKS

I am satisfied that the trains were correctly signalled away from Newcastle Central station, and that signal No. 169 was properly at Yellow and No. 179 at Red while the freight train approached them.

Driver Dixon in charge of the Leeds passenger train left under clear signals and was evidently alert. His momentary doubt about whether the freight train would stop was not so strong that he felt it necessary to stop his own train and I do not hold him to blame in any way.

There is no doubt that the accident happened because Driver Laws misread the signals when he saw them from a point outside their beam. His attention was attracted to the illuminated indicator above the signal next to the one for his line and he carelessly assumed that that signal applied to him. He then ceased to pay attention to the signals as his train travelled to a part of the curve where he was in the direct beam of each of the four signals on the gantry, while he adjusted the controls on his engine. Had he continued to watch the signals, as he should have done, I am sure he would have realised his mistake in time to stop the train before reaching signal No. 179.

Driver Laws gave his evidence in a straightforward manner and refused to make any excuses for his serious mistake, which I believe he felt deeply. He has had a clear record in his long service.

If the four signals on the gantry ahead had been fully visible to Driver Laws when he was passing No. 169, I believe that he would not have been misled by the illumination of the indicator above No. 181. The adjustment of signals on curved track so as to provide the most satisfactory view from an approaching train is often difficult with the standard, narrow beam focusing which is the best method of providing maximum light penetration for the signal when the approach is more or less on straight track. The beam can be widened a little by varying the focusing; alternatively, spreadlight lenses can be provided. The range of view for these lenses is naturally limited, but the angle to either side of the axis from which a good view is obtained at medium and short range is very much greater. They are therefore suitable for use in some places where approaches are curved and speeds are not high. They have a disadvantage, of course, in that the spread beam, if applied to a number of signals in a congested area, can cause a confusion of lights.

After the accident a signal sighting committee was convened by the Railway to consider the application of spreadlight lenses to the four outgoing signals on this gantry, and to other signals in similar conditions at Newcastle. They found that such lenses would improve the visibility of the signals on this gantry so that they would all be seen from each of the approach routes from the signal in rear, and such lenses have accordingly been fitted to these signals. Three other signals at Newcastle have been fitted with similar lenses as a result of the Committee's examination, and the viewing of four other signals has been improved by minor adjustments to focusing.

Although the approach view of signal No. 179 was short, speeds are low here and no delicate judgment is involved in stopping freight trains before the signal is reached. The very short overrun at the signal cannot therefore be held to have been a contributory cause of the accident. Nevertheless, as a matter of principle, a movement up to a junction where the overrun beyond the protecting signal is short should not be signalled when a conflicting movement over the junction is taking place, unless it is really necessary. In this instance, if the route of the Leeds train to the Up South line had been arranged over the further crossover which lies about 80 yards ahead of the one immediately ahead of No. 181 signal, the overrun beyond No. 179 would have been satisfactory. This route could have been set and I suggest that consideration be given to instructing signalmen to use it in preference to the other one whenever the circumstances permit.

I have the honour to be,

Sir,

Your obedient Servant.

W. P. REED,

*Colonel*

The Secretary,

Ministry of Transport

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