

MINISTRY OF TRANSPORT

## RAILWAY ACCIDENTS

# REPORT ON THE COLLISION

which occurred on the 2nd January, 1947, at GIDEA PARK

on the London and North Eastern Railway

MINISTRY OF TRANSPORT,

Berkeley Square House,

W.1.

28th May, 1947.

SIR.

I have the honour to report for the information of the Minister of Transport, in accordance with the Order of 4th January, 1947, the result of my Inquiry into the accident which took place at about 11.17 p.m. on 2nd January at Gidea Park station, on the Liverpool Street—Colchester line of the London & North Eastern Railway (Southern Area).

As the 10.28 p.m. train from Liverpool Street to Southend was starting from the station a following train, the 10.25 p.m. from Liverpool Street to Peterborough, collided with it at a speed estimated at 30-35 m.p.h., wrecking the three rear coaches. I regret to report that five passengers were killed and that two succumbed to their injuries a few days later; 45 passengers received injuries necessitating detention in hospital, and a number of others were able to continue their journeys after treatment. All four tracks through the station were blocked; two were cleared for traffic within a couple of hours, and the remaining two about noon on 3rd January.

Ambulances and medical attention were promptly available, and several of the less seriously injured were despatched to hospital, on a passing bus, 13 minutes after the accident. Valuable assistance was given by the National Fire Service in releasing the injured, the last of whom left by ambulance at 1.40 a.m.

There was a dense fog and the night was cold.

### SITE AND SIGNALLING ARRANGEMENTS.

2. At Gidea Park, 131 miles from Liverpool Street, there are four tracks, running roughly east and west, namely the Down Local, Up Local, Down Through, and Up Through, in that order from north to south; the collision took place on the Down Through line. The line rises steadily, though not steeply, in the down direction; from Romford, a mile nearer London, the gradient varies between 1 in 264 and I in 367, and the line lies in cutting for the greater part of the distance.

The signalling arrangements on the Down Through line, with relevant distances, are shown on the accompanying diagram. Sykes lock and block is in use from Liverpool Street to Romford inclusive, with the usual controls to ensure that the signals are worked in proper sequence, and to prevent a second train being accepted unless they have been restored to Danger (or Caution) bebind the one preceding it. There is no manual block working between Romford and Gidea Park, as the line is continuously track circuited. The signals from Romford advanced starter onwards are controlled by track circuit, with apparatus to ensure that they are put to Danger behind each train. Train descriptions are passed forward from Romford on magazine train describers, having storage for three successive descriptions. If the Romford signalman omits to set up a description on the apparatus when a train passes his box an N.D. (i.e. not described) indication appears on the Gidea Park instrument as soon as the train passes Romford advanced starting signal (No. 18) and occupies track circuit N; the Gidea Park signalman's attention is drawn to the appearance of any fresh description on his instrument by the sounding of a buzzer. There is also a block bell circuit between the boxes for use if the describing apparatus fails, and for emergency bell signals.

The line between Romford and Gidea Park may thus be regarded as a transition section between semaphore signalling, with Sykes lock and block, in the London direction, and the more modern colour light installation, with automatic signals, on the country side of Gidea Park. This installation was brought into use in 1934 when the local lines were extended from Gidea Park to Shenfield.

### FOG SIGNALLING ARRANGEMENTS.

3. It is the Company's practice on the busy suburban lines in the Eastern Section of the Southern Area to allocate fog signalmen to most of the stop signals as well as to distant signals. There is consequently a fogman's post at each of the signals concerned in this accident, except at Crowlands home signal. The position of these fog posts relative to the Down Through line varies, as shown on the diagram; at each there are miniature semaphores, worked mechanically, repeating the signal indications. Where the fogman is stationed alongside the Down Local line, as at the Crowlands and

Romford distant signals, the Down Through line is equipped with a Clayton magazine fogging machine, with a lever at the fog post. The removable magazine holds 36 fog signals of a special type, which can be withdrawn from it and placed on the rail by working the lever, or removed from the rail when the distant signal is at Clear, for replacement later. Fog signals of the usual pattern, placed on the rail by hand and secured to it by a metal clip, are used on the lines immediately alongside the fog posts.

4. In the absence of manual block working between Romford and Gidea Park there is no offering or acceptance of trains by the signalmen in the two boxes. This necessitates a modification of the usual double section arrangement prescribed by the Company's Block Telegraph Regulations for adoption in fog, until fogmen reach their posts, under which a signalmen may not accept a train offered to him from the box in rear unless the preceding train has reached the box in advance of his own.

There is accordingly a local regulation regarding the acceptance of down trains at Romford, the material portion of which reads:—

In foggy weather or during falling snow, until the fogmen arrive at their posts at the Down Distant and Outer Home signals, down trains may be accepted when the line is clear to the Starting Signal . . . .

This provides an over-run of 1,115 yards beyond the outer home signal at such times.

There is a similar arrangement for increasing the over-run at the country end of the Romford-Gidea Park section in foggy weather, till fogmen are posted. Normally Romford advanced starting signal (No. 18) cannot be lowered unless track circuits N and N1, the latter of which extends 440 yards beyond Gidea Park outer home signal (No. 23) are clear and unless the last-named signal has been put back to danger behind the preceding train. The 440 yard over-run can however be increased to 1,660 yards until fogmen are on duty at the signals mentioned by operating a fog switch in Gidea Park box; this adds track circuits P, P1, Q, Q1 and Q2 to the control of Romford advanced starting signal (No. 18), thus extending it up to Gidea Park starting signals (Nos. 15 and 25).

### DESCRIPTION OF TRAINS AND DAMAGE.

- 5. The 10.28 p.m. Southend train consisted of 4-6-0 tender engine No. 1565 and of eight non-corridor bogic coaches, having wooden bodies on steel underframes, with screw couplings. Its total weight, including the engine and tender (108 tons) was about 330 tons. As stated, it was just on the move when the collision occurred, completely demolishing the last three coaches. The underframe of the eighth coach was carried forward, with three bogies, about 120 yards in front of the engine of the colliding train, and the sixth and seventh coaches were thrown bodily on to the adjacent Up local line and its platform. The trailing end of the fifth coach was smashed, its rear bogic being damaged and derailed. Ahead of this there was neither serious damage nor derailment, except at the leading end of the first coach which lifted, penetrating the back of the tender and smashing the end of the unoccupied front brake compartment.
- 6. The 10.25 p.m. Peterborough train was hauled by 4-6-0 tender engine No. 1602, and consisted of nine vehicles, namely four bogie coaches, two bogie mail vans, two bogie coaches, and a 3-bogie twin composite coach, in that order from front to rear. The leading four coaches and the last three were coupled with Buckeye couplings; screw couplings were in use at the rear of the tender, and at each end of both mail vans. All underframes were of steel except that of one mail van, which was of composite construction; the bodies of all vehicles were of wood. Its total weight, including the engine and tender (116 tons) was about 410 tons. The vacuum brake was in operation on all wheels of the train, working in conjunction with the Westinghouse brake on the engine and tender, all wheels of which were braked except those of the leading bogie.

There was no derailment in this train, which ran forward for about 120 yards beyond the point of impact. At the front of the engine the frames were damaged, the buffer beam broken, and the smokebox crushed; elsewhere on the engine and tender the damage was relatively slight. In the train the effects of the collision were chiefly felt by the two screw coupled mail vans; the leading one had its body demolished for about six feet at the trailing end, and the second one was correspondingly damaged at its leading end, the bogic bolsters being displaced in both cases. There was considerable superficial damage, with broken windows, on the left side of the bodies of the three leading coaches, through scraping contact with wreckage of the Southend train, fortunately unaccompanied by any serious penetration of the inside panelling; there was also considerable damage to gear below floor level.

Damage to the permanent way, and to the station structure, was trifling.

### NARRATIVE.

7. Owing to dislocation caused by the fog the Peterborough train left Liverpool Street 25 minutes late, at 10.50 p.m.; it thus followed the 10.28 p.m. Southend train, instead of preceding it. The latter train started punctually, but lost about 16 minutes on its way to Gidea Park on account of the

fog and of temporary speed restrictions near Stratford. It was not practicable to turn it from the Through to the Local line at Romford to get it out of the way of the Peterborough train, on account of other movements on the Local lines, so it was arranged that this diversion should take place at the double junction at the country end of the sidings at Gidea Park. The signals had been lowered for this and the train had just begun to move from the platform when it was overtaken.

The Peterborough train was nowhere seriously checked and did not exceed its normal running time to Gidea Park by more than about three minutes. Passing times are not booked at the signal boxes concerned, but it is estimated that the two trains were about four minutes apart at Romford.

Though it had been foggy for some time on the London side of Romford, visibility at Romford itself and at Gidea Park remained fairly good until 10.40 p.m., when the fogmen there were summoned; the Crowlands fogmen had been called out earlier, at about 8.50 p.m. There was a fogman at the down distant signals for that box from about 9.45 p.m. onwards, but the man allocated to the down starting signals (and to Romford distant signals below them) was away from home when summoned, and did not report until about 10.20 p.m. at Romford signal box, on his way to his post. There was some uncertainty as to the time at which he reached his post, and whether the Peterborough train exploded a detonator there or not, which is dealt with later. At Romford outer home signal and onwards to Gidea Park the fogmen had not reached their posts when the accident took place.

8. There was ample evidence about the density of the fog, and it seems to have heen thicker locally than nearer London. Driver G. W. Morris, of the 10.28 p.m. Southend train, found visibility worsening after he passed Chadwell Heath and was only just able to identify Crowlands signal box, as a blur of light on the opposite side of the Up Through line, when he passed it. He managed to pick out the Romford distant signal by crossing to the fireman's (left) side of the footplate, but the fireman, S. A. Wood, failed to see it, though he caught a glimpse of the back of the arm in the firebox glare; the distant was at Clear but Morris saw no green light from the ground and concluded that the fog post was not manned. Guard A. E. Bailes, of the same train, looked out of the van window for the signal; he failed to identify it but very shortly afterwards he saw someone carrying a lamp, whom he took to be the fogman on his way to his post, walking towards the signal along the far side of the Down Local line. Nearer Romford the fog was rather less dense. Morris was able to see the outer home signal and Wood the inner home signal. Morris could also see the starting signal faintly when he stopped at the platform but it then disappeared, and Porter A. W. Day had to go quite close to it, to see if it was at Clear, before giving Morris the signal to start.

After leaving Romford Morris could not see the advanced starting signal, or the Gidea Park distant below it, until he got a fleeting view of the back of the arms in the light from the firebox, after he had passed it. After that he was only able to locate the footbridge by the steam beating down from its smoke plate, but nearer Gidea Park there was some improvement, for both he and Wood were able to see the lower lights of the outer home signal and then the banner repeater of the inner home, at a distance of 10 or 15 yards; Guard Bailes was also able to see the former signal by leaning out of the van window.

The train was just moving from Gidea Park when the collision occurred, which reduced its violence to some extent. Though knocked down by a piece of wreckage and slightly injured, Guard Bailes had a narrow escape. He was about to grasp the handrail of his van, preparatory to entering it, when he heard the Peterborough train approaching and remained on the platform. Till the engine headlights emerged from the fog he thought it must be on the Down Local line, as the sound indicated that it was travelling fast; in fact he thought that the engine was under steam, though he could not be certain of this.

9. Signalman H. Looker, at Romford, had given "Train out of Section" to Crowlands box for the Southend train as soon as it left Romford Station. He then accepted the Peterborough train almost at once; the controls are such that this could not have been done unless he had previously replaced the outer and inner home signals behind the departing train and unless the distant had returned to Caution. Very shortly after giving this acceptance he received "Train entering Section" for the Peterborough train, but kept all his stop signals at Danger and the distant at Caution, as the Southend train had not cleared the controlling track circuits. When the Peterborough train actuated the rail contact 100 yards in rear of the outer home he at once lowered that signal only, in accordance with Rule 39(a). As it approached he noticed that it had not reduced speed, and was not stopping at the inner home signal, so he shouted and waved a lamp as the engine passed the box, but without effect.

Looker was positive that he did not lower either the inner home signal, or the starter, or the advanced starter—indeed the last-named was locked by the occupation of the track circuits alread of it. When he knew by its occupation of track circuit B1 that the train had passed the starter, he realised that it was not going to stop and telephoned to Gidea Park to tell Signalman Pilgrim there what had happened; it did not occur to him to use the block bell provided for emergency signals, a speedier means of communication.

There are no emergency detonator placers, worked from the locking frame, at Romford. Though Looker said he had no time to turn his hand lamp to red before the train passed the box, he thought that he would have been able to get a detonator on the rail under the train, though perhaps not in front of the engine, had such apparatus been available.

10. Signalman S. Pilgrim, at Gidea Park, had put back his Down Through outer home signal (23) to Danger as soon as he saw from the illuminated diagram that the Southend train had reached the platform; the inner home signal (24) and starting signal (15) ahead of the train were at Clear, also the banner signal repeating the former, but the inner and outer distants had not been lowered as the train was to be diverted to the Down Local line. When he heard from Looker, just after the arrival of the Southend train, that the Peterborough train had run past the signals at Romford, he could take no effective steps to avert the collision, as the signal box is nearly 400 yards away from the platform; he tried to telephone to the station, to get the Southend train started, but got no reply. At about the same time the buzzer sounded and the ND indication mentioned in paragraph 2 appeared on his train describer, showing that the Peterborough train had passed the Romford advanced starting signal.

As stated earlier, there were no fogmen at the Gidea Park down distant and outer home signals. They had been summoned by Pilgrim at 10.40 p.m., but none reported till about the time of the accident. There was some doubt whether he had used his fog switch when he sent for the fogmen, to lengthen the track circuit control of the Romford advanced starting signal; he maintained that he had, but he had not so notified Looker, as he should have done. But as Looker did not lower that signal this is a point of minor importance. Nevertheless Looker said that the indicator showing whether the advanced starting signal lever is locked by occupation of the track circuits ahead or not moved momentarily to "free." This suggests that the Gidea Park fog switch had not been operated, that this movement of the indicator occurred when Pilgrim put his outer home signal (23) to Danger, and that the Romford advanced starting signal lever became locked again immediately by the Peterborough train entering track circuit N.

11. The driver and fireman of the 10.25 p.m. Peterborough train, H. A. Baybut and P. C. Cole, came on duty at Ipswich at 4.20 p.m., after nearly 16 hours rest, and reached Liverpool Street about two hours before leaving again at 10.50 p.m. Although his engine had left hand drive, and all the signals from Crowlands onwards except the Romford outer home were on that side of the line, Baybut had more difficulty in locating and reading them than Morris had when he passed with the Southend train a few minutes earlier. He knew that some fogmen had been called out, for he received green hand signals from them at several points on his way to Crowlands, and had exploded a detonator on the London side of Stratford.

Crowlands distant signal (beneath Chadwell Heath Yard starter) was visible, at Clear, when Baybut passed it. Though he himself saw no signals thereafter, until the collision occurred at Gidea Park nearly 3 miles further on, Cole was able to pick out the Romford outer home signal, at Clear, from his side of the footplate at a range of about 10 yards, and so informed Baybut. Both men were positive that they heard no detonator just previously, when passing Crowlands starting signal with the Romford splitting distants below it. Although there was contradictory evidence on this point by the fogman, which is discussed later, it is significant that no explosion was heard by Inspector A. J. Ferguson, travelling near the front of the first coach, or by Guard G. Whitmore, who was sorting mail bags near an open window in his van, the fourth coach, or by Signalman S. A. Witherington, in Crowlands box, 219 yards away. Baybut further maintained that he saw a green light, low down and near the foot of Crowlands starting signal post, that is to say close to the line on which he was running. He took this to be a fogman's hand lamp, and was unaware that the fog post at this signal is on the far side of the Down Local line. He therefore assumed that the distant signal was at Clear and that he had a clear road through Romford, also mentioning this to Cole.

Baybut added that after passing the Romford outer home signal, and while looking for the inner home signals, he saw another green light at a low level, which he judged to be in the space between the Down Through and Up Local lines, where the fog post is situated, and near the foot of the signal post. Though he saw no fogman, he took this to indicate that the inner home signal was at Clear, as he expected it to be, due to his earlier assumption that the distant had been lowered for him. But no fogman was on duty there at the time and no explanation of this green light could be found; although there is a disc signal, for backing from the Up Local line into a siding or through a crossover, not far from the post carrying the inner home signals, it was ascertained that no such movement was in progress and that that signal was at Danger.

12. Though he saw nothing of the signal box, and did not hear Looker's shouts, Baybut identified Romford Station by its lights as he ran through, under steam. He estimated his speed there as 25-30 m.p.h., but Porter Day, at the opposite side of the island platform between the Up Local and Down Through lines, thought the train was travelling "at the usual speed for an express" and that, in so dense a fog "the driver must be running on his bangs."

Baybut admitted that he did not see any of the signals between Romford Station and Gidea Park, and that he got no hand signals from the ground to lead him to believe that they were at Clear; though he shut off steam after passing Romford he did not apply the brakes. He was rather vague as to the distance separating Romford starting and advanced starting signals, estimating it at from 100 to 130 yards, though the actual distance is 386 yards. He said that when the collision occurred he was still looking for the Romford advanced starting signal and the Gidea Park distant below, and that as he

thought he must be very close to it he was just about to brake. Unlike Driver Morris he had not noticed the footbridge 269 yards on the country side of that signal—possibly because he was running without steam—and in agreeing that he was momentarily lost he could only ascribe his misjudgment of his position to the density of the fog.

13. With regard to the fog signalling arrangements at the Romford down distant signals, Lengthman G. F. Verralls was allocated to the fog post there. He had been sent for at 8.50 p.m. by the signalman then on duty at Romford flater relieved by Looker) on receipt of a message from Crowlands box that the fog was thickening there, but he was not at home at the time. Looker sent for the rest of the Romford fogmen at 10.40 p.m., when he found he could no longer see the lights of the station some 300 yards away, but they did not arrive before the accident. Verralls reported at Romford box at 10.20 p.m., as recorded in the block register; he said that he left about five minutes later, after filling his lamp, which he had brought with him, and collecting some detonators—these were of the ordinary pattern, not suitable for use in the Clayton fogging machine. He said that he walked from the box to the distant signals, slightly over ‡ mile away, alongside the Down Local line and thought that it took him about half an hour to get there; although he had no tracks to cross and there are no unusual obstructions to be negotiated he described it as a difficult walk.

His further evidence was far from satisfactory, and conflicted in some respects with that of other witnesses. According to his statement he found a partly filled magazine for the Clayton fogging machine in the fog hut, and fitted it to the Down Through line machine as soon as he arrived. Not long afterwards two trains passed in fairly quick succession on the Down Through line, evidently those involved in the accident. The distant was lowered for the first of these, so he took the detonator off the rail by means of the machine, replacing it behind the train. He said that it was exploded by the second train and that he showed a yellow light to its driver, though he doubted whether it would be visible, as the fog was so thick. A little later he went to Crowlands signal box for a further supply of ordinary detonators and while he was there Signalman Witherington heard over the telephone that the accident had just happened.

Verralls added that he was unable to show a green light to the driver of the Southend train, as the green glass in his hand lamp had been broken for some days. He had not reported this, nor had he attempted to exchange the lamp, which he agreed he could have done without difficulty. He got a green flag later at Crowlands to put over the lamp when necessary, and he suggested that this was an effective substitute for the missing green glass; it had not occurred to him to bring a flag with him from Romford box, where he filled and trimmed the lamp.

- 14. Three points in the foregoing statement by Verralls were not borne out by other evidence, namely:—
  - (i) Guard Bailes saw a man, carrying a lamp, walking alongside the Down Local line towards the distant signal, from the Romford direction, after the Southend train had passed that signal (para. 8).
  - (ii) Sub-ganger W. J. Norton, the last fogman employed at this post before Verralls, assured me that when he went off duty at 6.45 p.m. on 1st January he returned the magazine of the Clayton machine to Crowlands signal box, where these magazines are always kept when not in use. He had obtained one magazine only from there, and was positive that he left none in the fog hut. Signalman Witherington agreed that the magazines are always kept at the signal box. He had not noticed how many were there when he came on duty, or whether Verralls collected one when he called at the box, soon after the Peterborough train passed; he remembered that Verralls was there when the news of the accident came.
  - (iii) No explosion of a detonator by the Peterborough train was heard by four men in the vicinity (para. 11).

With regard to the last of these points, a search on the Down Through line near the Clayton machine, made next morning, produced three exploded detonator cases. Two of these were decidedly rusty, and the third was quite clean, suggesting that it had not been there long. It was established that the breakdown train exploded a detonator at that point on its way to the accident, towards 2.0 a.m.; Verralls agreed that this was so, and could not remember using any detonators on the Down Through line subsequently. Thereafter, until the fog lifted at 5.30 a.m., only three trains passed along that line, for diversion to the Down Local at Romford. Though Signalman Looker could not remember whether he lowered the diverging distant (No. 13) for these trains, it seems probable that he did so as they were separated by intervals of from 40 minutes to an hour, and there were few movements on the Local lines likely to have conflicted with them. This supports Verralls' suggestion that no detonator was used on the Down Through line after the breakdown train passed.

### CONCLUSION.

15. Though incidents in the Crowlands-Romford section had some bearing on the accident, to which I refer later, its direct cause was clearly Driver Baybut's serious mistake in continuing to run at fairly high speed through the Romford-Gidea Park section, while uncertain of his location and in ignorance of the indications of signals which he was unable to see. Rule 127 (xxii) deals with such a situation in terms leaving no room for doubt, stating clearly that if a driver cannot see fixed signals in fog he is to assume that distant signals are at Caution and stop signals at Danger, and must regulate his speed or stop accordingly, unless he receives a fogman's hand signal indication that the signals are at Clear.

Baybut's statement that when he ran into the Southend train he was still looking for Gidea Park outer distant signal, beneath Romford advanced starter, is remarkable, since the signal in question is only 386 yards (estimated by bim as 100-150 yards) beyond the station, which he recognised by the platform lights, and is no less than 1,412 yards away from the point of collision. He adhered to this though closely questioned about it, but on reflection I feel that there is a possibility that he was confused at the Inquiry, and that he really meant that he was expecting to see Gidea Park outer home signal, with the inner distant below it, when the collision occurred about 560 yards beyond it. Indeed, once he had wrongly concluded that the Romford signals were at Clear for him, there was no reason why he should not run on, though cautiously, as far as the Gidea Park outer home; he may have formed this wrong impression either because he thought he saw a green hand signal at the Romford distant, or because the outer home signal there was already at Clear when first seen by his fireman. But in this connection it must be borne in mind that his assertion that a green light was shown to him at the distant, and another at the Romford inner home signal, was in no way supported by other evidence, and I feel that, in endeavouring after the accident to recall incidents leading up to it, he may have persuaded himself that fogmen's lamp signals seen earlier on the journey were given to him at these two signals.

Whether this is so or not, and whatever wrong impression he may have formed about the indication of the Romford signals, his own admissions and the effects of the collision lead me to the conclusion that after passing Romford he showed regrettable lack of caution by continuing to travel at a speed which was manifestly too high; indeed, having regard to the density of the fog and the absence of fogmen, a careful driver might have been expected to proceed at a crawl until certain of his location. This serious error of judgment on the part of Driver Baybut was the primary cause of the accident for which he must consequently be held responsible. He is 52 years of age, has 33 years' service with the Company, and has been a driver for 6 years; he was passed for express passenger work in June, 1946 and his record is good.

16. I feel, nevertheless, that if Baybut had had a definite warning when approaching Romford that the stop signals there might be against him, or in other words if he had exploded a detonator at the distant signal, there would have been far less likelihood of his subsequent mistake. To this extent therefore the conduct of Lengthman Verralls indirectly affected subsequent events, and calls for comment.

His account of his actions was not convincing and could not be reconciled with other evidence. I have no reason to doubt Sub-Ganger Norton's statement that the magazine of the Clayton fogging machine was left at Crowlands signal box as usual, not at the fog post, when he went off duty the previous evening. Only one recently used detonator from the Clayton machine, accounted for by the passage of the breakdown train, was found next morning. The Peterborough train had passed when Verralls arrived at Crowlands box and, despite his statement to the contrary, the inference is that he went there for the magazine almost as soon as he reached his post. If, as seems likely, he was the man seen by Guard Bailes going towards the fog post when the Southend train was nearer Romford, he could only have reached it a few minutes before the Peterborough train passed, though he gave no adequate reason for taking so long to get there. While there was nothing to prevent him leaving a detonator of the ordinary clip-on type on the Down Through line when he went to the box, none was found there afterwards and, as shown by his excuses about his defective hand lamp, he appears to have been carrying out his duties in a casual and unintelligent manner. It is difficult, therefore, to avoid the conclusion that his conduct indirectly contributed to the accident.

17. Another feature of the case which may possibly have given Baybut a false impression was the fact that the Romford outer home signal was at Clear when first seen by his fireman, for had he known that it had only just been lowered in accordance with Rule 39 (a) it would have suggested that the following signals were at Danger. Signalman Looker was permitted by that Rule to lower the signal when the train reached the rail contact 100 yards in rear of it, but I feel that when visibility was so bad he would have been more prudent to wait until he was certain that it had been seen at Danger.

### REMARKS AND RECOMMENDATIONS.

18. I have referred to the absence of an emergency detonator placer at Romford. Even with this equipment it is questionable whether Signalman Looker would have succeeded in putting a detonator on the line while the Peterborough train was actually passing, and it is still more unlikely

that he would have been able to do so before it reached the box; in the fog and darkness he cannot have realised immediately that it was not stopping at the inner home signals, 177 yards away, as he expected.

Nevertheless I consider that the accident might well have been averted if this apparatus had been available, and if it had been used in accordance with Rule 94, which reads:—

94. When the Signalman requires to stop an approaching train during fog or falling snow and a Fogsignalman is not on duty, he must keep his signals at Danger, and, when practicable, place one detonator on the rail of the line to which the signals apply.

At signal boxes where emergency detonator placers are provided, the provisions of this Rule must always be carried out during fog or falling snow whether a Fogsignalman is on duty or not.

The implication of the latter part of the Rule is that when visibility is bad the apparatus is invariably to be used to put a detonator on the rail as soon as the signalman knows that a train has entered the section approaching his box, if the section ahead of it is not clear, as in the present case. By this means Driver Baybut's attention would have been attracted, and any wrong impression he might have formed about the signal indications would have been corrected, as soon as he reached Romford signal box.

- 19. Attention was drawn to the value of detonator placers in the report by Sir Alan Mount and Lieut. Colonel Wilson on the collision which took place on the same line a few miles away, at Ilford, on 16th January, 1944. Their report mentioned the Company's practice, namely to instal this apparatus on important lines when renewal or extensive alteration of signal box equipment is undertaken, and recommended its provision when this section of line is resignalled in connection with the London—Shenfield electrification. As it has not yet been possible to undertake this resignalling programme, and as the detonator placing equipment is neither costly nor complicated, I recommend that the Company should consider its provision at signal boxes in this area still lacking it, in advance of the resignalling and preferably before next winter, having regard not only to the prevalence of fogs there, to the density of traffic, and to the delay which often occurs before fogmen reach their posts, but also to the difficulty of placing emergency detonators on the line by hand at a signal box controlling movement over four running lines.
- 20. I also think it probable that the accident would not have happened with colour-light signalling in place of oil-lit semaphores, or if automatic train control apparatus had been in use. The advantages of colour-light signals are well known and the assistance derived from them by drivers is particularly welcome when visibility is poor. Moreover, they enable drivers to run with greater confidence, in the knowledge that although in dense fog the lights may only become visible at short range the likelihood of one being passed unnoticed is fairly remote, especially at night.

It should be added in this connection that if the war had not interrupted the resignalling programme mentioned above, multi-aspect colour-light signals would have been in use before now between Liverpool Street and Gidea Park, in westward prolongation of the existing installation extending from Gidea Park to Chelmsford and to Southend.

21. Nevertheless experience shows that even colour-light signals are occasionally passed unseen by drivers in fog, as in the 1944 Ilford accident. The only absolute safeguard against such an occurrence is to supplement the information obtained visually from the lineside signals, whether semaphore or colour-light, by sound signals given in a more reliable and positive way than is possible with the conventional manual fog-signalling arrangements, and reinforced by a brake application if the driver fails to respond for any reason. As a short review of what has been done in this direction was given in the report on the Ilford accident it is unnecessary to do more here than to refer briefly to such developments as have taken place since then.

The two-indication magnetic "non-contact" apparatus installed before the war by the London Midland & Scottish Railway on the London—Southend line is giving results which are understood to be satisfactory on the whole, but an improved adaptation of it, employing the same magnetic operating principle, has been devised and is under trial. This later pattern does away with any possibility of confusion between the Caution and Clear audible indications received on the engine, such as might occur with the earlier pattern in situations where speeds vary widely. The "contact" type of apparatus which has been successfully used for many years with semaphore signalling by the Great Western Railway was also originally arranged to give two audible indications only, Caution and Clear, but its design has recently been modified to provide three indications on the engine for use with multi-aspect signalling.

Both the above forms of equipment are of the "intermittent" type, giving indications on the engine at pre-determined points only. The "continuous" type of apparatus, providing on the engine at all times an indication of the conditions ahead by means of a miniature colour-light signal having three (or four) aspects conforming with those of the lineside signals, with a bell which sounds when the aspect shown becomes more restrictive, has been installed experimentally by the London

and North Eastern Railway on a length of line between London and Hatfield; it is of the "non-contact" type, operated by coded pulsations of current in the rails, picked up inductively by the engine. Apparatus can be added to guard against lack of response by the driver to the indications received, but has not been incorporated in the experimental installation; both engine and track equipment are much more complicated and costly than in the two "intermittent" types mentioned.

In addition to the experiments with this "continuous" apparatus, the Company intend to equip some signals between Marylebone and Neasden with the L.M.S. "non-contact" two-indication apparatus, and also with the G.W.R. three-indication "contact" apparatus, but these small trial installations have not been completed yet.

22. It should be mentioned too that the advantages of automatic train control apparatus were stressed in the reports on the accidents at Ecclefechan and at Bourne End, on the London Midland & Scottish Railway, which took place in July and September, 1945 respectively. Arising from these accidents the question of the most suitable type for general adoption, and of any modifications which may be needed to fit it for use with multi-aspect as well as with semaphore signalling, has been under consideration, together with kindred matters, by a Committee of all the Companies; their recommendations are expected shortly. I trust that these, coupled with the results of the tests by the London and North Eastern Railway, will lead to the early provision of one or other system to assist drivers, at any rate on busy sections of line in areas where fogs are frequent, such as that on which this accident occurred.

I have the honour to be,

Sir,

Your obedient Servant,

E. WOODHOUSE,

Lieut. Col.

THE SECRETARY,
MINISTRY OF TRANSPORT.

# L. N. E. R. (SOUTHERN AREA) COLLISION AT GIDEA PARK 2ND JAN. 1947

CROWLANDS S.B. 11/4 MILES
ROMFORD S.B. 12/4 MILES
GIDEA PARK STATION 13/4 MILES
GIDEA PARK S.B. 133/4 MILES

Position of Fog Posts shown thus ..... F.P.

TRACK CIRCUITS SHOWN THUS .....





