



DEPARTMENT OF TRANSPORT

RAILWAY ACCIDENT

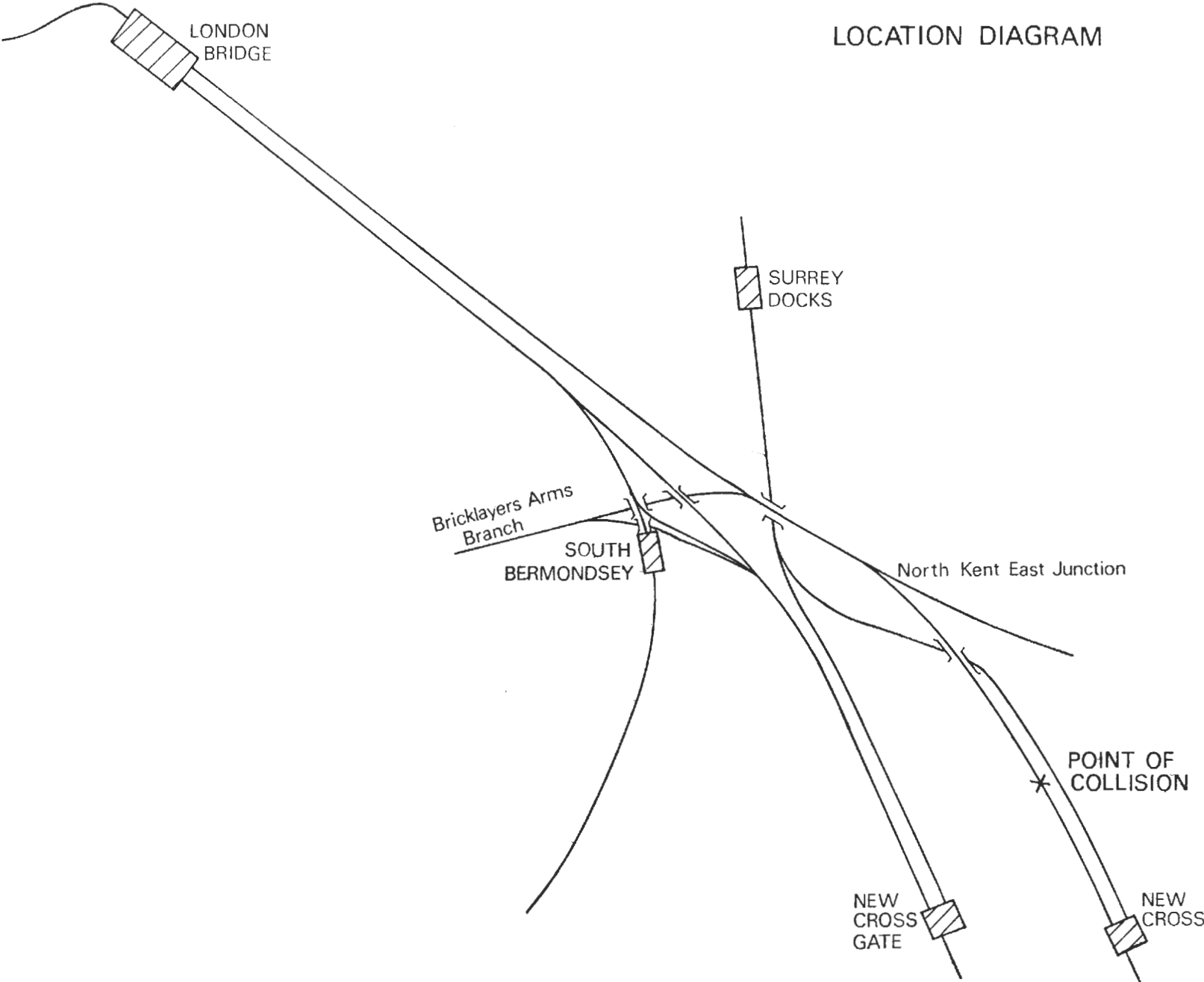
Report on the Collision
that occurred on 3rd August 1977
near New Cross

IN THE
SOUTHERN REGION
BRITISH RAILWAYS

LONDON: HER MAJESTY'S STATIONERY OFFICE

40p net

LOCATION DIAGRAM



RAILWAY INSPECTORATE,
DEPARTMENT OF TRANSPORT,
2 MARSHAM STREET,
London SW1.
2nd October 1978.

SIR,

I have the honour to report for the information of the Secretary of State, in accordance with the Order dated 3rd August 1977, the result of my Inquiry into the collision between two passenger trains that occurred at 09.14 on Wednesday, 3rd August 1977, near New Cross on the main lines of the South Eastern Division of the Southern Region of British Railways, some 2½ miles east of London Bridge Station.

The collision occurred at a connection where two Down lines converge into a single line. A train had been signalled to stop at the signal protecting the connection on one line but it was driven past this signal at Danger and, in spite of the driver making an emergency brake application when he realised that a train was passing him on the other line, the two trains came into side contact with sufficient force to derail the leading bogie of the train that was stopping. One bogie of the passing train also became derailed. Five passengers were conveyed to hospital but were released after being treated for minor cuts.

The signal in question had been passed at Danger on two previous occasions, on 8th September and 22nd September 1976. It was again passed on 17th August 1977 but on none of these occasions did any collision occur. I have taken all these incidents into account in conducting my Inquiry.

DESCRIPTION

The Site and Signalling

1. The South Eastern Division Main lines from London Bridge Station to New Cross consist, in most part, of six running lines numbered consecutively from their northern side as follows:

- No. 1 Down.
- No. 2 Reversible.
- No. 3 Up.
- No. 4 Down (Slow).
- No. 5 Down (Fast).
- No. 6 Up.

As illustrated in the diagrams at the front and back of the report, the Bricklayers Arms goods branch connects with the No. 4 Down line at North Kent East Junction, and some half a mile to the east Nos. 4 and 5 lines converge at No. 819 points which is where the collision occurred. It will be noted that New Cross Station now only serves Nos. 1, 2 and 3 lines. Line speeds are 60 mile/h.

2. The lines are operated under the Track-Circuit Block Regulations controlled from London Bridge Signal Box with four-aspect colour light signals carried on gantries over the lines. In addition to its signal number each signal has a plate indicating the number of the line to which it applies. The signal that was passed at Danger was L207 on the No. 4 Down line. The signals on the No. 4 Down line approaching the point of collision are spaced as shown in the following table. On the approach to most of the signals from London Bridge it is generally possible to see at least one signal ahead and the numbers of the signals that can be 'read through' in this manner are shown in brackets:

	L167	(L179)
630 yards to L179		(L189)
421 yards to L189		—
699 yards to L207		(L215 and L221).

3. The signal on the No. 5 Down line parallel to signal L207 was L209; the fouling point between these two lines where they converge at points No. 819 is only 50 yards beyond these signals. The previous signal L189 was therefore approach controlled when L207 was at Danger so that L189 displayed a red aspect until a train had occupied its berth track circuit NT for 16 seconds, when it displayed a yellow aspect permitting the driver to draw up to L207. A similar arrangement existed on the No. 5 Down line. On 25th May 1977, following the two incidents in September 1976, Signal L207 was raised on a bracket some 18 inches in an attempt to make it more easily recognisable. Its viewing distance was then some 180 yards.

The Trains and Accident Damage

4. The train which was driven past the signal at Danger was the 09.02 Charing Cross to Sevenoaks passenger train, consisting of an 8-car electric multiple-unit formed of two 4-car EPB units No. 5154 (leading) and No. 5306. It was 520 feet long overall and weighed 272 tons with a brake force of 76 per cent.

5. The train which it struck was the 09.03 Charing Cross to Ashford passenger train consisting of a 10-car electric multiple unit formed of three 2-car HAP units No. 6157 (leading), No. 6169 and No. 6127, and a 4-car EPB unit No. 5354. It was 659 feet long overall and weighed 358 tons with a brake force of 76 per cent.

6. The offside of the front of the leading car of the 09.02 train was badly damaged where it had struck the other train, and there was extensive damage to its running gear and to the offside of the car. Its leading bogie was derailed to the cess (near) side. There was also slight damage to the offside of the second car in this train.

7. The leading four cars of the 09.03 train were undamaged but the remaining six cars were damaged throughout their length as they scraped past the other train. Unit 6127 suffered the worst damage. The speedometer generator of its leading car was torn off and the leading bogie of the second car was derailed to its offside and its running gear and underframe were damaged.

8. Damage to the permanent way consisted of the displacement of 180 yards of conductor rail and to the chairs and blocks in points No. 819, where they had been 'run through'. Some cables were also damaged.

9. Immediately after the accident the signalling and controls were fully tested and found to be in order and working correctly. Nor were any faults found following the other incidents into which I enquired. I therefore concentrated my enquiries into the running of the trains.

EVIDENCE

Evidence concerning the Collision on 3rd August 1977

10. *Signalman M. E. Levington* took charge of panel No. 4 in London Bridge Signal Box at 06.30 on the morning of 3rd August: this panel controls the lines from North Kent East Junction to New Cross Station, and everything was working satisfactorily. He remembered signalling the 09.02 Charing Cross to Sevenoaks train from Signal L179 to L189 and thence to L207 on the No. 4 Down line. At that time the 09.03 Charing Cross to Ashford train was approaching London Bridge Station and he set the route for it from Signal L191 to L209 on the No. 5 Down line and thence to the automatic signal L215 on the Down Fast line; the 09.02 was then passing through London Bridge Station.

11. He told me that it was in order to signal trains thus and it was often done. He saw the 09.02 train approach Signal L189 and he saw the signal indication change to a proceed aspect as the approach locking cleared (he thought that the track circuit had to be occupied for about 30 seconds for the signal to clear). He also noted that Signals L189 and L191 were both indicated as having proceed aspects, and Points No. 819 were indicated as being Normal (for No. 5 Down line). At no time did he see Signal L207 indicate as showing a proceed aspect. He was busy setting other routes when he noticed a track circuit on No. 3 Up line showing occupied. Almost immediately a driver called him on the signal post telephone of Signal L206 to the effect that he, Levington, had "caused a pitch in".

12. He immediately operated the Over-riding Switch which replaced all signals on his panel to Danger. There were no trains on No. 3 Up line but a train on No. 6 Up line was stopped at New Cross Station. He told the Regulator immediately, and the Regulator called the emergency services and asked for the traction current to be switched off.

13. *Signalman Levington* told me that during the daytime, trains on No. 4 Down line were crossed to No. 1 Down line at a point just east of London Bridge Station so that they could call at New Cross Station. The section of No. 4 line where the collision occurred was therefore mainly used in the morning and evening peak hours, and was little used during the day. It was however sometimes used by freight trains from Bricklayers Arms Junction. Whilst giving his evidence the signalman asked if it would be possible for the facility, which permitted trains to approach Signals L207 and L209 while a through train was running on the other line, to be removed so that two signals on each line would protect their junction. He agreed however that, although it was common for a train on No. 4 Down line to be held awaiting the passage of a train on No. 5 Down line, the converse was much less common; No. 5 was the fast line and generally had preference.

14. The driver of the 09.03 Ashford train was *Driver G. D. Purnell* of Ramsgate. He had been driving for 20 years and had seen the new London Bridge signalling installed. He drove his train out of London Bridge No. 5 platform on time and was routed on the No. 5 Down line. All the signals were displaying green aspects until he saw L169 ahead displaying a double-yellow aspect. He shut off power and coasted his train

at about 45 to 50 mile/h until, as he was passing Signal L161 some 500 yards before L169, the latter changed to a green aspect. He was close to the site of the former North Kent East Signal Box and was overtaking a train on the No. 4 Down line. He remembered this because he sounded his horn to warn some platelayers standing between the two lines and he saw a group of them move onto the No. 4 line behind the other train. He was overtaking the other train quite quickly as he approached Signal L209 which was showing a green aspect, and he could clearly see his next two signals ahead, L215 and L221 somewhat to his right, at New Cross Station. He noticed Signal L207 displaying a Red aspect.

15. He felt a slight jolt and loss of power and there was then an uncontrolled application of the brake, so he applied the emergency brake and brought the train to a halt. His guard then came to his offside window and told him that he thought his train had become derailed. After telephoning from a signal post telephone his guard told him that the lines had been protected. The New Cross platform supervisor soon arrived and shortly afterwards the police and firemen.

16. He did not think that Signals L215 and L221 gave a much brighter signal than L209 and they certainly did not 'overpower' the latter. He had driven on No. 4 Down line occasionally but had never had to stop his train at Signal L207. He told me that, although his train had track-circuit operating clips in it, he had never applied one to the rails.

17. The driver of the 09.02 Charing Cross to Sevenoaks train was *Driver A. W. Newington* of Grove Park Depot. On the morning of 3rd August he rose at 04.10 and reported to Grove Park at 05.38 to prepare the 06.53 Orpington to Victoria train. The train left on time after a satisfactory brake test and he drove it back to Orpington at 07.42 and then on its return to Charing Cross where it was to form the 09.02. He was completely satisfied with its brakes and controls.

18. The train left Charing Cross on time and, after stopping at London Bridge, he drove under clear signals on the No. 4 Down line until reaching Signal L167 which was displaying a double Yellow aspect. Signal L179 displayed a single Yellow and L189 was at Red. He was about 15 yards from it and travelling at about 5 mile/h when it cleared to a single yellow. He was quite aware that this meant that the next signal which protected the converging junction of No. 4 and No. 5 Down lines would also be at Danger, and he drove accordingly. On coming round the curve where the signal first comes into view he immediately saw Signals L215 and L221 apparently on his route, displaying green aspects, and he accepted that he must have seen Signal L209 immediately ahead of him also at green. He accelerated his train until he suddenly realised that he was being overtaken by a train on the No. 5 Down line, whereupon he made an emergency brake application from a speed of about 20 mile/h. By then he was past Signal L207. He thought his train would stop in time but his cab was then struck by coaches at the rear of the other train and became derailed towards the No. 3 Up line.

19. Because the steps had been damaged he jumped down from the brake van and ran up the line to Signal L206 where he telephoned the signalman. His train was partly fouling the No. 3 Up line and he saw an electric flash occur on it and told the signalman so. He had never used a track-circuit operating clip nor seen one used and he did not think of applying the clip in his cab to the No. 3 line. He told me that, although he had read a description of how to use one, none of the drivers had received any instruction on their use.

20. Driver Newington was 55 years old and had been a railwayman since 1940 and a driver since 1956, having previously been a fireman. He told me that he had had toast and tea before leaving for work which was his usual breakfast; he was alone in the cab when the collision occurred. He was free from duty on the previous Sunday and I could find no factors that could have caused him to make the error. His eyesight and colour perception were normal and he was not taking any drugs. Nor was the bright sunlight causing him any inconvenience although he had used the sun visor for a short time on leaving London Bridge. He had never driven a train past a signal at Danger before. He told me that he accepted that he must have taken Signal L209 in error as his, after seeing the two signals ahead at green.

21. In a statement *Guard S. C. Holton*, who was the guard of the 09.02 train, could add nothing to his driver's statement. After the collision he secured a handbrake and went through the train to confirm that no passengers had been injured and that his driver was unhurt. He then went back and placed one detonator 100 yards to the rear of his train, one at $\frac{1}{4}$ mile, one at $\frac{1}{2}$ mile and three 1 mile in rear. He did not take track-circuit operating clips with him.

Evidence as to the Incident on 8th September 1976

22. *Driver K. A. J. Chapman* was the driver of the 14.41 Salfords to Cliffe freight train from Bricklayers Arms to Hither Green. Because it was only a short trip his guard travelled in the cab of the Class 33 locomotive with him. The train consisted of about nine 100-ton open bulk aggregate wagons all of which were fully fitted with air brakes.

23. The train was stopped at Signal L183 at the connection of the branch line with No. 4 Down line. The signal soon cleared to a single Yellow aspect and he drew the train forward to L189 which was also at

Red. He had stopped the train about a locomotive's length from this signal when it too cleared to a single yellow. He drove the train forward along the No. 4 Down line and sounded his horn to warn some men working on the track near the old North Kent East Signal Box. A passenger train then passed him in the other direction on the No. 1 Down line and some children in it waved to him, and he waved back. On looking ahead he thought he saw all signals showing green aspects. It was not until his guard remarked that a passenger train on the No. 5 Down line was close behind them when he was close to 819 points which were set for the No. 5 Down line, that he realised what he had done. His train ran through the points and he kept power applied and by keeping ahead of the other train, he avoided a collision.

24. Driver Chapman had driven the same train on the previous two days when he had received green aspects on Signals L207, L215 and L221, and the aspects he saw on the 8th September appeared to him to be exactly the same.

25. Driver Chapman was 48 years old and he too had previously served as a fireman. He had never driven a train past a signal at Danger before. When I questioned him as to why he passed Signal L207 at Danger he told me that under the London Bridge resignalling scheme the track layout had radically altered: the North Kent East Signal Box had just been demolished as had platforms at New Cross Station and the Down line his train was on had previously been an Up line. But more important to his mind was the fact that there was so much background, so many signals in view.

Evidence as to the Incident on 22nd September 1976

26. Driver C. Sullivan was the driver of the 08.29 Charing Cross to Bromley North train. He had got up at 02.15, had a cup of tea, and signed on duty at Addiscombe at 03.22. He arrived at Charing Cross, after driving various passenger trains at 07.35 where he had a break of 40 minutes during which time he ate his sandwiches and had another cup of tea. He then drove the 08.29 train leaving Charing Cross about 2 minutes late. He was stopped at Signal L189 which was at Danger. A train of empty coaching stock then passed him on the No. 5 Down line. After a few seconds the signal changed to a Yellow aspect and he accelerated his train until he thought he saw Green signals ahead. It was not until he arrived at Parks Bridge Junction that he was stopped and told that he had passed Signal L207 at Danger.

27. Driver Sullivan was 25 years old and had been a driver for only 4 months and had been driving on his own for only 8 days. He was quite certain that the reason he had missed Signal L207 was that Signals L215 and L221 come into view at the same time as L207 and L209 and he took L209 as his signal. He had gone to bed at 21.15 the previous evening and had slept well but after getting up at 02.15 he thought that he may have been rather tired.

Evidence as to the Incident on 17th August 1977

28. Driver B. A. J. Balcombe was the driver of the 16.54 Charing Cross to Bromley North train. As he drove his train on the No. 4 Down line he passed a diesel multiple-unit passenger train on the No. 2 Down line, sitting in which he saw Mr. Hamment-Arnold, the Divisional Movements Manager, reading a newspaper. His train was faster and he soon left it behind but it was stopped at Signal L189 which, he said, changed to a double yellow aspect. He checked that Signal L191 was still showing a Red aspect and on looking back he saw the diesel train coming down the No. 2 Down line. He then accelerated away and received green aspects thereafter until his train was stopped at Signal L233 which was displaying an incorrect junction indication for his train and which was replaced to Danger ahead of him. On telephoning the signalman, he was told that he had passed a signal at Danger.

29. Signalman Levington was on duty during this incident and told me that he had signalled a train on the No. 5 Down line and that Signal L207 was at Danger. The driver of this train telephoned him from Signal L209 and told him that L191 had shown a green aspect but that L209 had reverted to Danger as he approached it. He had managed to stop his train at it. The incorrect route at Signal L233 reported by Driver Balcombe had in fact been set for this train.

30. Driver Balcombe was 41 years old and had been driving since 1961, having previously served as a fireman. He had never passed a signal at Danger before. He had only been driving a short while at the time of the incident and was not tired. He had had a rest day the previous week and had been employed checking driving rosters the day before. He had no personal problems and was not taking any drugs. He remained convinced that he had seen Signal L189 display a double-yellow aspect and that Signal L207 could not therefore have been at Danger.

CONCLUSIONS

31. That the collision was caused by Driver Newington driving his train past Signal L207 at Danger, there can be no doubt; the question to be answered is why he and three other drivers did this.

32. The signalling in the London Bridge area is closely spaced so that drivers can often see at least two signals ahead of their trains. Because their task requires them to drive at a proper speed according to the signalling ahead they naturally search for the most advanced signal that comes into view.

33. Signal L207 is easily seen from a good distance although it is to the right of the line around a curve when it first comes into view. Signals L215 and L221 first appear to be to its left and are thus seen before L207 as the eyes search right-handed. Whereas L207 stands against the sky as a background, the other two have a hill behind them, a factor on a bright day.

34. I conclude therefore that the reason Driver Newington drove his train past Signal L207 at Danger was that he 'read through' and accepted the Green aspects in Signals L215 and L221 as applying to his train, and he took Signal L209 as his also. I believe that this also applied to the other drivers concerned in the incidents referred to in this report.

REMARKS AND RECOMMENDATIONS

35. Soon after the incident on 17th August 1977 British Railways removed the control which enabled trains to be driven up to Signal L207 when a train was signalled on the other line. This arrangement enhances safety, and the additional delay to trains running on the No. 4 Down line has been found to be acceptable. On 9th September the control which similarly permitted trains to approach Signal L209 on the No. 5 line was likewise removed. At the same time the backboard of Signal L207 was lengthened to the top of the gantry to make the signal more conspicuous, and the heads of Signals L215, L221 and L213 dipped slightly to reduce their approach view and the possibility of 'reading through'. I am told that it is not intended to re-introduce the controls on signals L207 and L209.

36. Driver Newington does not appear to have allowed his attention to be distracted, but this cannot be said of two of the other drivers. Driver Chapman admitted to having waved at some children in a train passing on another line and Driver Balcombe had noted the Divisional Movements Manager in another train and may not have been concentrating fully on the signals ahead. Driver Sullivan had only been driving on his own for eight days and thought that he was probably rather tired. But, this being said, I believe that the fact that Signals L215 and L221 come so strongly into view was the main cause of all the incidents.

37. I am informed that the standard BR Automatic Warning System (AWS) will be applied to all signals in the area of this collision early in 1979. When I questioned the drivers on whether they thought that an AWS warning would have caused them to stop their trains they thought that it would have, and I share their view.

38. The accident on 3rd August was yet another example on Southern Region of train crews failing to apply track-circuit operating clips on lines which have become obstructed; in this case the No. 3 Up line. I therefore recommend that all train crews should apply a pair of clips on an electrified siding so that their use will come automatically to mind in an emergency.

I have the honour to be,

Sir,

Your obedient Servant,

A. G. TOWNSEND-ROSE,
Lieutenant Colonel.

The Permanent Secretary,
Department of Transport.

NORTH KENT EAST JUNCTION

