MINISTRY OF TRANSPORT

RAILWAY ACCIDENT

Report on the Derailment that occurred on 15th July 1966 at Kingham

IN THE
WESTERN REGION
BRITISH RAILWAYS

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MINISTRY OF TRANSPORT,
ST. CHRISTOPHER HOUSE,
SOUTHWARK STREET,
LONDON, S.E.1.

7th March 1967

SIR,

I have the honour to report for the information of the Minister of Transport, in accordance with the Order dated 18th July, 1966, the result of my Inquiry into the derailment of an express passenger train at about 12.18 on Friday, 15th July, 1966 at Kingham in the Western Region, British Railways.

The train was the 10.25 Class 1 from Hereford to Paddington consisting of 8 coaches hauled by a diesel locomotive. It was running through Kingham under clear signals at a speed of about 75 m.p.h. when the last coach became derailed as it passed over a redundant facing connection. The derailment occurred because the open switch blade of the connection, which was being prepared for removal on the following Sunday, had been left unsecured and thus free to move under the vibration of the passing train. It was struck by a wheel-flange on the trailing bogie of the last coach of the train and forced against the stock rail causing the bogie to become derailed. The coach became detached from the train and came to rest some 200 yards further on blocking both Up and Down lines, having sustained severe damage to its underframe and running gear. Considerable damage was also done to the track in the Up line and to the coping and surface of the Up platform.

Of the passengers in the derailed coach 17 were injured or suffered from shock, 11 requiring hospital treatment. One member of the railway staff, a travelling ticket collector, sustained minor injuries.

Protection was carried out promptly and the emergency services were called out by a member of the public immediately the derailment occurred. The first ambulance reached the scene at 12.35 and three more, together with the police, 3 minutes later. The last injured passenger left the scene of the accident for hospital at 13.15, and the train, which had set back to pick up the uninjured passengers from the derailed vehicle, left for Oxford and Paddington at 13.13.

The coach was rerailed by the Old Oak Common and Worcester breakdown cranes by 19.25 and the Down line was cleared by 21.20. Repairs to the Up line were completed by 12.05 on the following day when it was re-opened to traffic subject to a temporary speed restriction.

The accident occurred in clear weather.

DESCRIPTION

The site and signalling

1. Kingham station lies 84¾ miles from Paddington on the double-tracked main line from Oxford to Worcester. It was formerly an important junction with branch lines to Cheltenham and Chipping Norton but these have been closed and lifted, and Kingham has been reduced in status to a wayside station. The signalbox which stands on the Up side of the line about 100 yards on the country side of the station was finally closed on 16th May 1966, when direct working on the Absolute Block system was introduced between Bruern Crossing (83 m.) and Moreton-in-Marsh (91¾ m.) The locking frame was left in situ with the running signals in the clear position pending the disconnection and removal of the redundant points and crossings from the main line.

2. The Up line from Moreton-in-Marsh to Oxford is on a generally falling gradient with a line speed limit for passenger trains of 90 m.p.h. Approaching Kingham and through the station, which has an island platform between the Up Main line and the former Chipping Norton branch, the line is straight and on a down grade of 1 in 402. It is laid in 95 lb BH material on timber sleepers with the chairs secured to the sleepers by means of fang bolts.

3. The facing connection at which the derailment took place lay in the Up Main line close to the signalbox; it was a left-hand turnout leading to the branch line side of the island platform, but the track beyond the crossing had already been removed. The left-hand switch blade had been clipped and padlocked on 4th May 1966 and the points disconnected from the signalbox on 19th June, but the facing points lock plunger was left in place with the bolt actually through the facing point lock stretcher. The two switches and stock rails and an adjacent trailing lead were due to be removed from the track and replaced by plain line on Sunday, 17th July, and preparatory work, including the oiling, loosening and retightening of bolts was carried out on 14th July and on the morning of 15th July, the day of the derailment.

The train

4. The 10.25 Hereford-Paddington train was formed of eight British Railways standard main line coaches with Pullman gangways and buckeye couplings, hauled by a Type 3 diesel-hydraulic locomotive. The weight of the train including the locomotive was 358 tons and its overall length was 582 feet. The last vehicle was a 2nd class corridor coach, SK(A) No. W 25950. It was mounted on Commonwealth cast steel bogies and was in good order prior to the derailment, having been released to traffic after heavy repairs on 21st May 1966. In addition to the locomotive crew, the train was staffed by a guard and a travelling ticket collector with a district traffic inspector and another guard travelling as passengers.

5. The train left Moreton-in-Marsh 8 minutes late at 12.08 and its next booked stop was at Charlbury where it was due at 12.18. Its normal speed passing through Kingham would be about 75 m.p.h.

The course of the derailment

6. The first sign on the track was a new bruise, which could have been caused by a wheelflange, on the tip of the right hand switchblade of the redundant facing lead outside the signalbox. The switchblade was not secured in any way, the nuts being missing from one end of each of the three stretcher bars, the right-hand nut from the facing point lock stretcher, the left-hand nut from the first point stretcher bar, and the right-hand nut from the second point stretcher bar. The three bolts concerned had been withdrawn from the holes in the stretcher bars by a movement of the open switchblade. Of the other three bolts, the two on the left were tight but the one on the left had been slackened off some 2 or 3 turns.

7. After the accident the right-hand switchblade stood about $1\frac{1}{2}$ inches open from the stock rail, as shown in the accompanying photograph, but the trailing bogie of the last coach of the train must have forced it against the stock rail, since both switchblades were buckled indicating that the bogie had run between them and had become derailed as they converged. It then came into contact with a redundant diamond crossing about 25 yards further on and was thrown violently to the left, swinging round and mounting the ramp at the country end of the island platform, along which it rode for some 30 yards. The buckeye coupling at the leading end of the coach parted in the closed position from the remainder of the train on account of the relative movement of the two coach ends and the detached vehicle continued to run derailed until it came to rest at the London end of the station leaning against the Down platform. The remainder of the train came to a stand near the Up Main Advanced Starting signal as a result of the severance of the vacuum train pipe, having travelled a distance of approximately 620 yards from the point of initial derailment.

Damage caused

8. Considering the high speed at which the derailment occurred the damage to the derailed vehicle was not extensive and almost entirely confined to the running gear and underframe. The damage to the body itself was mainly external and superficial, though one large sidelight and 3 compartments quarter-lights were broken and seats were displaced in some compartments. The condition of the buckeye couplings at the leading end of the derailed vehicle and at the trailing end of the seventh vehicle confirmed that the former had risen with respect to the latter until they had parted in the closed position, the gangway faceplate of the seventh vehicle being severely scored on the underside. The support, pivot and knuckle pins of both couplings were badly bent.

9. The damage to the track included the buckling of the switches at the point of derailment and of the redundant crossings between these and the platform end. The coping of the Up platform was damaged over a length of 66 feet and considerable damage done to the Up Main line between the platforms.

Rules and Regulations

10. The relevant instructions on the securing of new or redundant switches when not connected to the signalbox are published on page 137 of the Western Region Appendix to the Working Timetable and are reproduced below:—

Laying in new switches or removal of redundant switches

(i) When new switches are to be put in Main Passenger Lines the work must be done at the nearest convenient date to that appointed for connecting up to the signalbox, and the Engineering and Signal Departments must, as far as possible arrange for the fittings to be framed and fitted up, so that on the day appointed for cutting them in the work may be done with the utmost despatch.

(ii) The Permanent Way Inspector and Ganger must see that the switches (whether facing or trailing) which have been cut in, but not connected up to the signalbox and brought into use, are secured in the following manner:—

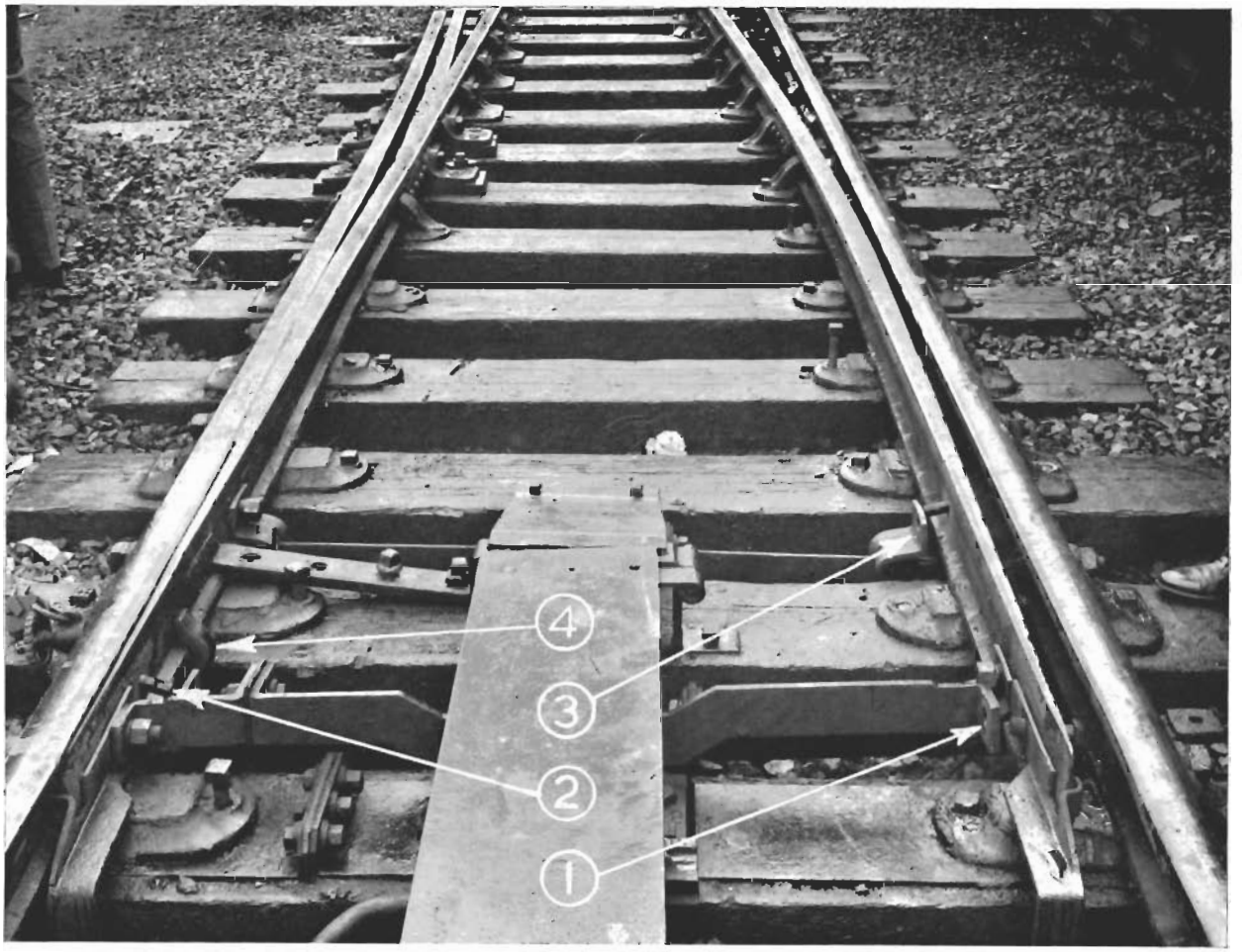
(*a*) The closed tongue to be fastened by a screw clip, padlocked and clipped by a fish-plate bolted down to the sleeper by two fang bolts.

(*b*) The open tongue to be secured in place by the front switch rod being properly fixed complete with all its bolts and also by the insertion of an oak chock wedge between the switch and the stock rail, the wedge being bolted down to the sleeper by two fang bolts.

(iii) The traffic Department will supply the rail clips and padlocks and the keys must be held by the District Traffic Superintendent (or Divisional Operating Officer, London), who will supply a competent man to lock and unlock the switches and supervise any work which may be necessary to carry out between the time the switches are cut in and when they are finally rodded up and brought into use. For the purpose of locking points in such circumstances "Red Padlocks" must be used.

(iv) When switches in Main Passenger Lines become redundant and are disconnected from the signalbox, but a period of time is likely to elapse before the fittings are removed, arrangements must be made for them to be secured in the manner outlined in Clauses (ii)(a), (ii)(b) and (iii).

Paragraph (iv) above was issued in 1963 as an amendment to the original instruction published in the 1960 edition of the Appendix. It was promulgated in Weekly Engineering Notice K2/7/63.



Photograph of the facing connection at which the derailment occured with the open switch blade in the position in which it was found after the accident, showing:—

1. Nut missing at right-hand end of facing point lock stretcher
2. Nut missing from left-hand end of first point stretcher bar
3. Nut missing from right-hand end of second point stretcher bar
4. Closed switch blade secured by padlocked clip

Evidence of Traffic Staff

11. The driver of the train was *Driver W. T. Robbins*, stationed at Worcester, with *Fireman I. C. Teague* acting as Secondman. After leaving Moreton-in-Marsh 8 minutes late they were running through Kingham under clear signals at about 76 m.p.h. when they felt a pluck followed a second or two later by a second pluck whereupon the brakes went on. At this time the locomotive had already passed the overbridge at the London end of Kingham station. Robbins first tried to recreate vacuum but his secondman looked out and told him he thought the tail of the train was derailed. The train came to a stand with the locomotive just beyond the Up Advanced Starting Signal and Robbins sent the secondman forward at once to protect the opposite line.

12. Robbins stated that he did not see any permanent way men working on the lines as he approached Kingham and felt nothing unusual as the locomotive passed over the points and crossing near the signalbox.

13. In charge of the train was *Guard H. C. Otley* who was travelling in a brake compartment in the sixth coach. He felt a violent snatch and saw the vacuum gauge fall to zero as the train passed through Kingham station. He did not realize the last coach had been left behind until after the train stopped, when he walked back and saw the broken vacuum pipe and the buckeye coupling at the rear of the seventh coach in its normal position with the jaw closed.

14. On duty on the train was *Travelling Ticket Collector J. K. Forty*. As the train approached Kingham he was walking towards the rear of the train to start his ticket examination and was about half way along the rear coach when he felt a series of bumps and realized the coach was derailed. He was thrown on his back and slid forward along the corridor under the influence of the sudden deceleration, ending up inside the second compartment from the leading end as the coach tipped towards the Down platform. He was fortunate to receive only minor bruises and scratches and, as soon as he had collected himself, he set about helping the injured passengers out of the coach.

15. *Porter W. G. Hemmings* was the only member of the staff on duty at Kingham station when the accident occurred. He heard an unusual noise as the train ran through the station and looked out of the Porters' room and saw that the rear coach had parted from the train and was careering through the station churning up ballast in all directions. As soon as the coach came to rest he ran to the scene where he found a Mr. Ahearn, the owner of the Station Garage close beside the line, who told him that his wife had already telephoned for the emergency services. Hemmings then ran back to the station office and reported the accident over the telephone to the stationmaster, Mr. Lane, who was at Charlbury.

16. Travelling on the train as a passenger in the second coach from the engine was *District Inspector G. Jones*, stationed at Oxford. As the train passed through Kingham he was aware of two successive checking motions, followed by a heavy brake application. He looked out but could see nothing wrong with the train, but when it stopped he saw the enginemen get down, the secondman going forward immediately to protect the opposite line. He jumped down and spoke to the driver who told him he had "lost the vacuum". He was about to examine the train when the Guard shouted that they had lost a coach and he immediately went to the rear where he found the knuckle of the buckeye coupling scarred and the vacuum brake train pipe broken.

17. Inspector Jones then took charge of the situation, and after confirming that the train had been protected in rear, that the emergency service had been summoned, and that the passengers from the derailed coach were being assisted to detrain, went at once to the signalbox where he restored all the running signals to danger and ascertained that the signalmen on either side were aware of the situation and had applied the appropriate emergency regulations. He then reported the situation to Control and made arrangements for the onward movement of the train.

Evidence of Permanent Way Staff

18. Kingham lies within the area for which *Permanent Way Inspector W. J. Weeks*, stationed at Oxford, was responsible. He described the extent of the work that had been planned for Sunday, 17th July which included the removal of the facing and trailing sets of switches adjacent to one another in the Up Main line at 84 miles 65 chains, close to Kingham signalbox. He had given no specific instructions about the preparatory work to be carried out since this work of removal of redundant connections had been going on for some time and the procedure was well understood. He had visited the site of the work on Thursday, 14th July, the day before the derailment when a mobile gang under Ganger Longshaw were running, oiling and retightening the fang bolts. The bolts on the stretcher bars were not being dealt with at that time and were in position when he left the site at about 11.45.

19. On the day of the derailment Mr. Weeks reached Kingham at about 13.10 and went at once to examine the track leading up to the point of derailment. On reaching the redundant facing connection at 84m. 65ch. he saw at once that three stretcher bar nuts were missing, they were the right-hand nut of the facing point lock stretcher, the left-hand nut from the first point stretcher bar and the right-hand nut from the second stretcher bar. The respective bolts were still in position with packing pieces and washers lying on the ballast below. He was only able to find one nut, with a fine thread, which was lying beneath the left-hand end of the first stretcher bar. It had been cut through with a cold set and was so damaged that it could only have been very loose on the bolt. He noticed also that the threads of the bolt above it were filled with dry dirt indicating that the nut had not been removed by a spanner, and that there was no sign of fresh oil, either thick or thin, on any of the bolts or any other indication that the bolts had been run off and retightened in the normal manner. I inquired of Mr. Weeks whether he had ever known a nut on a stretcher bar bolt, even if

it had been slacked off, work its way completely off the bolt. He replied that he had only known it occur as a result of vibration over a long period of time and in the present case he was of the opinion that the nuts had been deliberately removed. Because these three nuts were missing, the right-hand, or open switch blade was free to move and he saw a mark on its extreme tip which indicated that it recently had been hit, presumably by one of the wheels of the train.

20. I asked Mr. Weeks why the open switch blade was not chocked in accordance with paragraph (iv) of the instruction reproduced above and he admitted that, while he knew and had always observed this instruction as it applied to new work, he had not been aware of the amendment issued in 1963 and had never seen it carried out in practice.

21. Responsible for the detailed planning of the renewals to be carried out on Sunday, 17th July was *Sub-Inspector G. E. T. Cooper*. He was not normally in charge of the Kingham area but was to stand in for Sub-Inspector Sollis, who was on leave. He visited the site on Thursday, 14th July whilst the mobile gang was carrying out preparatory work but he was sure that all the stretcher bar nuts were still in position when he left the site at dinner time.

22. On the following day he was in the Permanent Way office at Kingham when the derailment occurred. After making a telephone call to Oxford to call out the Permanent Way Inspector, he went across to the point of derailment and as far as he knew he was the first person to look at the switchblades after the accident. He confirmed Mr. Weeks' evidence with regard to the missing nuts and said that he noticed that the remaining nuts were well screwed up. He did not think that any of the bolts showed signs of having been oiled recently, nor did he notice any signs of their having been damaged by the use of a cold set. He had never known a nut work itself off within a period of 24 hours and, like Mr. Weeks, thought they had been deliberately removed.

23. Supervising the preparatory work at Kingham on the day before the accident was *Patrolman (Acting Sub-Inspector) W. R. Sollis*, acting in place of his brother who was on leave. He spent all Thursday at Kingham and saw the work the gang was doing during most of the day. He told me he saw the Ganger assisted by the Sub-Ganger split the right-hand nut on the rear stretcher bar with a set and hammer, not right through, but enough to free the nut, and he positively identified the bolt concerned on the photograph reproduced with this report. He did not see any work done on any of the other bolts on that day and he was sure all the nuts were still in position when he revisited the site at 07.45 on the morning of the derailment at which time he told me he tested the rear stretcher bar with his foot since one of the nuts had been half-split. Sollis did not revisit the site until after the accident, though the gang continued to work there until about 10.30.

24. When I asked him how he thought the nuts had come off, Sollis was reluctant to say that they had been deliberately removed, though he, too, had never known a nut to come off of its own accord in such a short time. Like the Permanent Way Inspector, Sollis had never heard of the instruction that the open switch blade of a redundant connection should be secured by means of a chock.

25. In charge of the mobile gang which was carrying out the preparatory work was *Ganger P. Longshaw*. He started work on the redundant leads on Thursday, 14th July and spent the whole day with the available members of his gang clearing ballast from between the timbers, running off fang bolts and cutting off fang bolt heads where necessary. During the morning he dealt personally with the nuts on the stretcher bar bolts and facing point lock stretcher bolts. He told me that he had put paraffin on all the nuts, slackened them three or four turns and then turned them back up tight. I asked him whether he had used a cold set to loosen any of the bolts and he told me that the right-hand nut on the facing point lock stretcher had been tight and that he had loosened it with a set, not cutting the nut right through but just easing it so that he could turn it with a spanner.

26. Ganger Longshaw was quite insistent that this was the only nut dealt with in this manner and positively identified it to me on the photograph reproduced with this report. On the following morning, he said, they continued the preparatory work and though they did not touch the stretcher bar bolts again he was satisfied they were in position and tight. They completed the work on the redundant connections at about 10.30 and went to correct a minor track irregularity at 85m. 5ch. in the Down line, about $\frac{1}{4}$ mile distant. He told me he had no idea how the nuts had come off, though he did not think anyone had gone near them again until after the derailment.

27. Like the other members of the permanent way staff, Ganger Longshaw was not aware of the existence of the regulation about placing a chock between the open switch blade and stock rail of a redundant connection.

28. Assisting Ganger Longshaw on Thursday, 14th July was *Sub-Ganger A. Field*. He had held the cold set while the ganger half split the nut on the right-hand facing point lock stretcher and positively identified the bolt concerned in the photograph. He told me that this was the only nut he had worked on and that it had not been oiled. None of the other members of the gang, *Lengthman S. Field*, a brother of the Sub-Ganger who had been detailed as Acting Patrolman on the day of the derailment, *Lengthman H. H. Sollis*, another brother of the Sub-Inspector, who was look-out man on both days and *Lengthman C. W. Jarvis*, who had been working on the chair bolts, had any occasion to notice what work was done on the stretcher bars, and were unable to throw any light on what had taken place.

Site Inspection

29. I paid a visit to the scene of this derailment on the day it occurred, arriving at Kingham at about 17.30. The redundant facing connection, which was the point of initial derailment, had been left exactly as it was found by Sub-Inspector Cooper immediately after the accident, as shown in the photograph reproduced in this report, which was taken looking in the direction the train was travelling.

30. The heavy cranked steel bar in the foreground is the facing point lock stretcher. Beneath the hinged plate in the centre the locking plunger was fully home through the hole in the stretcher. The nut from the coarse-threaded bolt at the right-hand side was missing and nowhere to be found. This was the bolt upon which the Ganger and Sub-Ganger admitted to using a cold set and a mark can be discerned on the threaded portion of the bolt as if it has been damaged in the process.

31. Immediately behind the facing point lock stretcher and almost hidden by it lies the first point stretcher bar. On the left the nut was missing and the end of the bar had slipped off the fine-threaded bolt. It was from beneath this bolt, between the timbers, that the Permanent Way Inspector picked up a fine threaded nut which had been cut by a cold set.

32. Between the next pair of timbers can be seen the second point stretcher bar with the nut missing from the right-hand bolt. It was this nut that Acting Sub-Inspector Sollis averred he saw the ganger and sub-ganger split with a set and hammer. It was not found after the accident.

33. In the photograph, the locked clip securing the left-hand switch blade to the stock rail, and the additional precautionary measure consisting of a fishplate held down by two coach screws, can clearly be seen and it is at once apparent how the removal of the three stretcher bar nuts leaves the right-hand switch blade entirely free to move towards the stock rail.

Conclusions and Remarks

34. The accident occurred because the unsecured open switch blade of a redundant facing connection moved under the vibration of a passing train, causing the trailing bogie of the last coach to become derailed. The switch blade was free to move because three nuts, one holding the switch blade to the facing point lock stretcher and one from each of the two point stretcher bars connecting the two switch blades, had been deliberately removed and no chock had been inserted between the open switch blade and the stock rail.

35. There was no suggestion that the nuts could have been tampered with maliciously between the time the gang left the site and the time the accident took place some $1\frac{3}{4}$ hours later, and I have no doubt whatever that the three nuts were in fact removed by Ganger Longshaw while he was preparing the switches for removal from the track, probably during the morning of 15th July.

36. I do not think for a moment, however, that Ganger Longshaw appreciated at the time that, by the removal of these nuts, he had left the open switch blade free to move. I believe that during the preparatory work for the removal of this connection, just as he had loosened or removed the heads of one of the two fang bolts securing each chair to the timbers, as can be seen in the photograph, he had applied the same rule of thumb to the stretcher bar bolts without realizing the effect of his actions. He could in fact, with the facing point lock plunger in the position it was, have removed all the bolts except the right-hand bolt on the facing point lock stretcher without leaving the switch blade free to move under the train.

37. It is understandable possibly, in view of the close personal and family loyalties existing within the gang and its immediate supervision, that no individual was prepared to admit the full facts of what had taken place, and though the prime responsibility must rest on Ganger Longshaw, I consider that the other members of his gang working with him must have known what was done and should have realized the danger.

38. The Instructions reproduced in paragraph 10 of this Report would, if properly applied, have effectively prevented this accident. All the members of the Civil Engineer's staff concerned, however, including even the Assistant Divisional Engineer, were completely unaware of the existence of the amendment, issued 3 years previously, extending it to cover redundant switches. I have since been assured by the Chief Civil Engineer, Western Region that the importance of securing the open switch blades of redundant connections has been brought to the notice of all the staff concerned, and I am glad to report that a further amendment has now been issued to paragraph (iv) of the Instructions which deletes the words". . . . . but a period of time is likely to elapse before the fittings are removed, ...". This has the effect of making it mandatory that switches in main passenger lines are to be secured immediately they are disconnected from the signalbox.

I have the honour to be,

Sir,

Your obedient Servant,

I. K. A. McNAUGHTON.

Lieutenant-Colonel.

The Secretary,

Ministry of Transport.

(95710) Dd. 134579 K.9 5/67 Hw.