DEPARTMENT OF THE ENVIRONMENT

RAILWAY ACCIDENT

Report on the Derailment that occurred on 11th June 1972 at Eltham (Well Hall) Station

IN THE
SOUTHERN REGION
BRITISH RAILWAYS

LONDON: HER MAJESTY'S STATIONERY OFFICE
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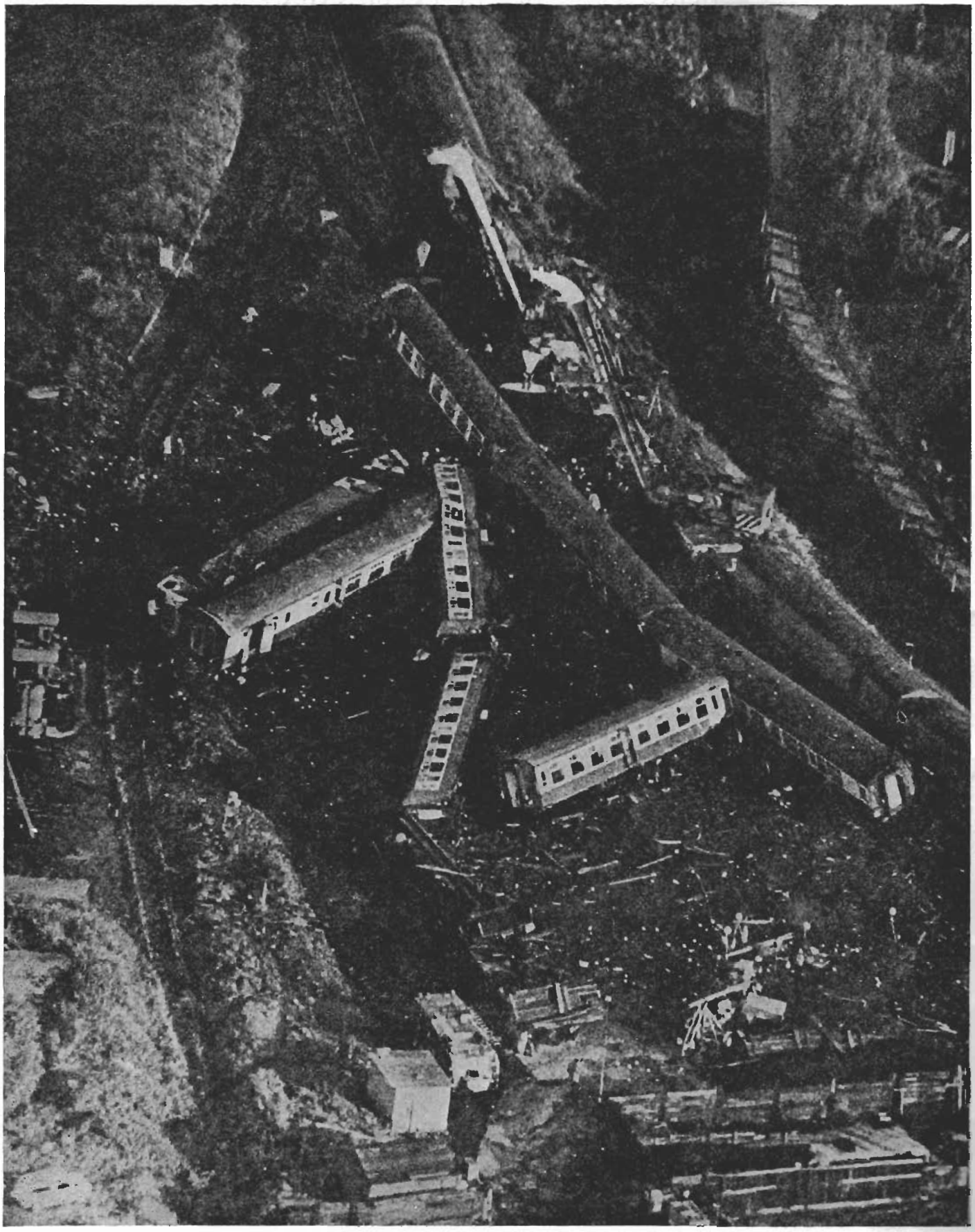


THE LOCOMOTIVE (on its side) AND FIRST SEVEN COACHES AFTER DERAILMENT.
(The cranes and coaches on the Down line are part of the breakdown train).

Picture reproduced by courtesy of London Express Pictures.

RAILWAY INSPECTORATE
DEPARTMENT OF THE ENVIRONMENT
2 MARSHAM STREET
LONDON S.W.1
1st June 1973

Sir,

I have the honour to report for the information of the Secretary of State for the Environment, in accordance with the Order dated 12th June 1972, the results of my Inquiry into the high speed derailment of a passenger excursion train, at 21.36 on Sunday 11th June 1972, on a sharp curve in the Up line a few yards on the London side of Eltham (Well Hall) Station in the South Eastern Division of the Southern Region of British Railways.

The train was the diesel-hauled 20.05 Margate to Kentish Town excursion train and it comprised ten coaches, well filled with passengers returning from a day's outing at Margate. On a cloudy but dry evening, shortly before dusk and in good visibility and running under clear colour light signals over a route with easily identifiable landmarks, the driver failed to take any braking action to reduce his train's speed on the steeply falling gradient through Eltham Park to Eltham (Well Hall) in preparation for its entering the 12 chain radius right hand curve just beyond Well Hall station, the speed round which is permanently restricted to 20 mph. As a result the heavy locomotive entered the curve at some 65 mph and, distorting the track and sharpening the curve immediately ahead of its wheels, overturned to the left and dragged the train after it into almost total derailment. The cause of the driver's failure was that he had grossly impaired his ability to drive safely by drinking a considerable quantity of alcohol both before and after booking on duty, including some shortly before leaving Margate, and some more in his cab during the journey.

The locomotive, after sliding across a coal yard on its near side, came to rest some 135 yards from the point at which it had started to overturn and some 13 yards from the Up line and pointing at an angle towards it: the leading coach, a brake corridor, jack-knifed with the locomotive and came to rest alongside and parallel with it, upright but without one bogie, which lay upside down on the upturned off side of the locomotive's trailing end. As the first four coaches bucketted and plunged across the coal yard in the locomotive's wake some of their buckeye couplings parted and, without this constraint, the 2nd, 3rd, and 4th coaches zigzagged to form, with the 1st, a pattern on the ground like the letter N, the 4th coming to rest parallel to the 1st but leaning over at 45° towards it and the 2nd and 3rd lying in line but on their sides to form the middle member of the N. The other six coaches kept generally upright and in line under the constraint of their couplings and although mostly derailed they ran on, at a tangent to the track that they had left and past the N of the zigzagged coaches, to come to a stand with the leading end of the 5th coach some 5 yards to the left of the Up line and 19 yards past the arrowhead formed by the locomotive and first two coaches.

The 5th, 6th, and 7th coaches were all generally in line but leaning over at 25° to the left and the 8th, 9th, and 10th coaches were upright and in line, with the side of the 7th in contact with the end of the zigzagged 4th coach which lay at right angles to it to form the stalk of a short-stalked T with the last six coaches. The 10th coach remained on the rails, as did the rear bogie of the 9th coach. The contrast between the disarray of the locomotive and first four coaches and the comparatively good order of the rest of the train is well shown by the photograph opposite which was taken after the last three coaches had been drawn clear.

I much regret to report that five passengers in the train and its driver lost their lives and that 126 people, including the secondman on the locomotive, were injured and were either taken to hospitals in the area or received medical attention at the site of the accident: 40 of those taken to hospital were detained, some of them being very seriously injured. The original death roll among the passengers was three but one died of her injuries in mid-August and another of his injuries in November.

The emergency services were summoned promptly by railway staff at the station and in Dartford signal box. The Police, the Fire Brigade, and the Ambulance Services responded with commendable speed, the first police officer arriving within five minutes of the derailment and the first appliance and ambulance within seven minutes. The last casualty was removed from the scene at 23.59. Ready and rapid assistance was also afforded by many other organisations and individuals, and I wish to express here my admiration of all those who did such good relief work so willingly and well. At the same time I wish to record my disgust at the conduct of those sightseers who, in their thoughtless determination to relish all the sad scenes of tragedy, crowded quickly to the site and sadly hampered the relief work.

The uninjured passengers from the train were taken on by special buses to Kentish Town, where the staff of London Midland Region helped them to disperse to their homes.

Relief work by breakdown trains from Hither Green and Chart Leacon blocked the Down line and caused the suspension of the train services over the route between Dartford and Blackheath via Bexleyheath, and a special bus service was instituted in its place. On the following (Monday) morning special bus services were run for passengers from Eltham Park, Eltham (Well Hall), and Kidbrooke, to Blackheath, Mottingham, and Grove Park, to connect with trains to London, and a special train service was run between Falconwood and Dartford and Falconwood and London via Barnehurst. The Down line was opened from 16.30 to 19.30 on Monday afternoon for the operation of a modified Down evening business service, and at 05.14 on Tuesday 13th June both lines were reopened to traffic and normal working was resumed.

DESCRIPTION

Layout, Gradients, Curvature, and Speeds

1. Eltham (Well Hall) Station lies between Eltham Park and Kidbrooke on the Dartford to Blackheath line via Bexleyheath, which is known as the Bexleyheath line to distinguish it from the Dartford loop via Sidcup and Hither Green to the south and the North Kent line via Greenwich to the north. Eltham (Well Hall) is exactly 9 miles from Charing Cross and the two stations on its country side are, in order approaching it, Falconwood at 10m. 28ch. and Eltham Park at 9m. 41ch. from Charing Cross.

2. The diagram at the back of this Report shows the general layout of the line approaching Eltham (Well Hall) from Dartford and the gradients, and the detailed layout at Well Hall and the positions in which the various parts of the excursion train came to a stand after the derailment.

3. On the Main line between Margate and Dartford, where the line speed is in the 85 to 90 mph range, there are several severe permanent speed restrictions (PSR), ie at Faversham where the PSR through the junction is to 30 mph, approaching Rochester Bridge Junction where the PSR is to 30 mph followed by 20 mph through the junction itself and round the curve to and through Strood Junction, and by 15 mph between Strood Station and Strood Tunnel, and then through Gravesend Station where the PSR is to 30 mph. Also, at the time of the derailment, there was a temporary speed restriction to 20 mph, on account of track renewals, for 30 ch. one mile short of Dartford Station.

4. Through Dartford Station, at 16m. 79ch., there is a PSR to 20 mph, followed by one to 40 mph to Dartford Junction after which the line speed limit for the Bexleyheath line is 60 mph. After leaving Dartford Junction however a train routed via Bexleyheath has to run through Crayford Creek Junction (North Kent line) where the PSR is to 20 mph and round the curve towards Perry Street Junction where the PSR is to 35 mph, and after Crayford Creek the line rises steadily, and in places at gradients as steep as 1 in 68, 1 in 75, and 1 in 80, until it levels off at 13m. 33ch. and runs level for over a mile through Bexleyheath (12m. 60ch.). At 12m. 18ch. the line begins to rise again, but at easier gradients, to a summit at 10m. 08ch., 20ch. beyond Falconwood, after which the Up line falls at gradients steepening to 1 in 65 closely approaching the start of the 20 mph PSR round the 12ch. right hand curve that starts at 8m. 78ch. just beyond Well Hall Station (called hereafter in this Report the Well Hall Curve).

5. From Falconwood the line is straight, except for a short curve of radius 120ch. just beyond Eltham Park, to just short of Eltham (Well Hall) where it curves left handed through the station at a radius of 86ch. until entering, through a short transition, the 12ch. Well Hall Curve. The start of the Well Hall Curve is marked by the standard PSR cut-out sign showing the figure 20 and painted yellow but not illuminated: this cut-out sign was mounted, at about 6 ft above rail level, on a black post on the left of the Up line.

The Track

6. The track round the Well Hall Curve was of 95 lbs BH rail laid in 1970 and carried in standard chairs on softwood sleepers spaced at 28 per 60-ft rail length on stone ballast. The curve, of nominal radius 12ch., was fitted with a check rail also laid in 1970.

Recognition Marks

7. The main distinguishing feature of the Up Bexleyheath line between Dartford and Eltham (Well Hall) is that it rises steadily and steeply from just beyond Crayford Creek Junction (itself a landmark) to a point half a mile beyond Barnehurst Station (13m. 70ch.), the first station beyond Dartford and with a footbridge over the line: between Dartford and Barnehurst there are eight Up line colour light signals. From about half a mile beyond Barnehurst the line runs level (the change from a steep up-grade of 1 in 80 is noticeable) through Bexleyheath and then rises again, though the change in grade is not noticeable, through Welling (11m. 28ch.) and Falconwood to the summit at 10m. 08ch. Between Barnehurst and Falconwood there are nine Up line colour light signals. When I ran over the line, in the cab of a diesel locomotive similar to the one that hauled the excursion train and at the appropriate time (allowing for its being 12 days after the accident) and under similar weather conditions, I particularly noticed how well Falconwood and its overbridge stood out as a very readily recognisable landmark. The ready recognisability of Falconwood Station is of considerable importance in relation to the Well Hall Curve. Between Falconwood and Well Hall there are four Up line colour light signals.

8. Each of the five stations between Dartford and Well Hall has a footbridge and there are 15 road overbridges, including one at the London end of Eltham Park Station, some 900 yards short of the point of derailment. The land beside the line is mostly residential.

9. The Bexleyheath line is one on which a driver could not easily become lost and the landmark most critical to the Well Hall Curve, Falconwood Station, is particularly outstanding.

Signalling

10. The Bexleyheath line is fully track circuited and worked in accordance with the Track Circuit Block Regulations. Control of the route is shared by Dartford and St. John's (Lewisham) signal boxes, control on the Up line passing from the former to the latter between automatic Signals A 489 (the Falconwood Up Starting signal) and A487 (a mid-section signal between Falconwood and Eltham Park).

11. Running signals are 4-aspect colour lights, all those between Barnehurst and the point of derailment being automatic: the Starting signals at Bexleyheath, Falconwood, and Well Hall have emergency replacement switches, the first two being under the control of Dartford and the third being under the control of St. John's.

12. There is a system of automatic time recording by which the clock time (from the start of the minute) at which a train occupies a track circuit at 17m. 20ch. just short of Dartford Station (Dartford passing time) and the clock time (from the start of the minute) at which it occupies a second track circuit at 10m. 13ch. just beyond Falconwood (Falconwood passing time) are automatically recorded. As the record however is not exact in either case, but from the start of the minute, the true elapsed time can be up to a minute more or less than the recorded elapsed time, ie the recorded time can be up to 2 minutes wrong.

The Train

13. The train was hauled by No. 1630 Class 47 2750 HP Brush Type 4 Co Co diesel-electric locomotive with No. 2 end leading, and comprised 10 coaches as follows, in order behind the locomotive.

BSK	M35302	built in	1962	with	C/W	bogies
SK	M25614	,,	,, 1958	,,	B4	,,
CK	M15929	,,	,, 1956	,,	D/B	,,
SK	M25290	,,	,, 1957	,,	D/B	,,
SK	M25731	,,	,, 1962	,,	C/W	,,
SK	M25900	,,	,, 1962	,,	C/W	,,
CK	M15940	,,	,, 1956	,,	D/B	,,
TSO	M3952	,,	,, 1954	,,	D/B	,,
SK	M25981	,,	,, 1962	,,	C/W	,,
BSK	M35070	,,	,, 1957	,,	D/B	,,

[BSK stands for a brake second class corridor coach, SK for a second class corridor coach, CK for a composite first and second class coach, and TSO for an open second class coach].

14. The locomotive was fitted with air brakes and equipped for operating vacuum braked trains. In full working order it weighed some 116 tons. It was built in 1964 at Crewe Works and was allocated to the London Midland Region. It last underwent classified repairs at Crewe Works in June 1969 since when it had run just over 100,000 miles; it last underwent unclassified repairs at Crewe Works on 16th February 1972 since when it had run 20,861 miles. Its brake force was 99 tons (85.9 % of its full weight) and its brake blocks had been renewed 17 days before the derailment.

15. All 10 coaches were of modern design and all-steel construction. They were fitted with vacuum brakes with DA valves and were buckeye-coupled together, the leading BSK being coupled to the locomotive with the latter's screw coupling. The gross weight of the train was 377 tons and its brake force 268 tons: its overall length including the locomotive was 243 yards.

The Damage to the Train

16. The positions in which the locomotive and first four coaches came to rest in total disarray and the rest of the train in comparatively good order was as described in the first part of the Report and as shown by the photograph on page 2 and on the diagram at the back.

17. The locomotive was on its near side but damage to this side was surprisingly light, the upper part of the leading cab only and the door being torn off. This cab was full of debris comprising a mixture of coal, coke, black earth, and grass. The trailing cab had its windows broken and was also full of debris and had a 6-ft square hole in its roof. The side panelling of the body was buckled in places and what had been the trailing bogie of the BSK behind it lay on its upturned off side towards the rear and the roof was buckled and displaced. The two near side buffers had been torn off and the screw coupling to the BSK had parted, probably fairly late since the BSK had followed the locomotive until it jack-knifed with it as the locomotive stopped.

18. The BSK, which had jack-knifed end to end with the locomotive, was upright and still on its leading bogie which had dug its way deep into the dirt of the coal yard. Its underframe and brake gear were badly damaged and its corridor side was pushed in and torn away from the solebar, panelling and frames being buckled throughout. The compartment side was pushed in and damaged at the trailing end and both ends of the coach were pushed in, the panelling, framing, and gangways being damaged. The roof panelling and framing was damaged from end to end and there was considerable interior damage, with the seats in all four compartments displaced. The buckeye coupling between this coach and the 2nd had parted, though also in the final stages of the derailment since the 2nd coach had followed it closely, probably until the latter jack-knifed with it and turned onto its near side as did the 3rd coach which stayed in line with the 2nd to form the cross-piece of the N, the buckeye in this case holding.

19. The 2nd and 3rd coaches were cut up on site without being lifted upright and I was unable to determine the damage to their near sides. Both bogies were torn off each and damaged, those from the 2nd coach being badly so and partly buried in the dirt: the leading bogie was thrown back towards the track and overridden by the 4th coach, coming to rest under its trailing end, and its trailing bogie lay upside down in the angle between the 3rd and 4th coaches.

20. Visible damage to the 2nd coach included a badly bent and twisted underframe, and about a quarter of its roof was torn out and the compartments beneath the missing length were gutted. The off side was pushed out over this length and torn in other places and both ends were badly damaged.

21. The underframe, underframe gear, and buffers of the 3rd coach were badly damaged and one end was torn out. The roof was holed during rescue work but it was also badly buckled throughout and the panelling of the upper side was racked.

22. The buckeye between the 3rd and 4th coaches parted and the 4th coach jack-knifed to come to a stand almost at right angles to the line it had left, tilted over at 45° towards the locomotive and with its trailing end against the side of the 7th coach, which was the third of those that had run on past the N of the first four coaches. The 4th coach had its leading bogie partly buried in the dirt, with its frame damaged and its trailing bogie torn off. Its solebars and crossbearers were bent and its underframe gear destroyed or badly damaged. The end of the coach that was in contact with the side of the 7th was stove in and its outside badly damaged throughout with panels and framing buckled, and it had a hole torn in its off side by contact with the displaced bogie of the 2nd coach: its own trailing bogie lay close to the 7th coach and upside down on top of a displaced bogie from the 3rd coach, the trailing bogie of which ended up upside down alongside the leading end of the 8th coach. The interior of the coach was also badly damaged and some of its seats were displaced. The buckeye between the 4th and 5th coaches parted, allowing the 5th coach to run ahead at a tangent to the track and reasonably in line with those behind it.

23. The trailing end of the 5th coach had a corner stove in and about half of its near side was pushed in and badly damaged, probably through passing contact either with the trailing end of the 4th coach or with the two bogies, one on top of the other, from the 3rd and 4th coaches: the roof over this length was badly damaged and some seats were displaced. The 6th coach also had much of its near side partly torn away, also by passing contact with either the end of the 4th coach or the two bogies: its interior suffered some damage and some of its seats were displaced. The last four coaches suffered only minor damage, though some seats were displaced, particularly in the 9th coach. The 10th coach remained on the rails and was very little damaged though some seats were displaced.

24. The buckeye couplings between the last six coaches held.

Damage to Permanent Way and Signalling

25. Three 60-ft lengths of checked BH track were damaged as were four other 60-ft rails and many sleepers and chairs. Damage to the signalling equipment was limited to two impedance bonds and two bond connections broken.

26. Three 60-ft lengths of 150-lbs conductor rail were damaged. The record in the electrical control room showed that the Eltham (Well Hall) substation circuit breakers tripped on short circuit at 21.36: the control room clock was checked with the Dartford automatic clock during the night 11/12 June and was found to agree with it. This identifies the time of the derailment as 21.36.

Relevant Geography at Ramsgate and Margate

27. The carriage cleaning shed at Ramsgate is on the north side of the station and houses carriage sidings Nos 1 to 4, the latter being the furthest from the station. The motive power signing on and supervisor's office is at the west end of the cleaning shed and there is a walkway from that end of the shed to the area of the shunters' lobby, which is located at the west end of the carriage inspection shed. The walking distance from the motive power office to the shunters' lobby is about 140 yards and that from the shunters' lobby to the locomotive of a train standing on No 4 carriage siding and ready to leave for Margate is about 350 yards.

28. The walking distance from the British Railways Staff Association Club building at Ramsgate to the shunters' lobby is about 140 yards.

29. The locomotive of a 10-coach train standing in No 4 platform in Margate Station is a short way past the end of a walkway that leads to the ramp at the London end of No 1 platform. Near the middle of this platform and some 170 yards from the locomotive there is a ticket barrier which gives access to a ticket hall with the ticket office on one side and the station buffet on the other. Half right from the station exit and some 70 yards from it is the Flag and Whistle public house, and about 350 yards from the exit and on the corner between Hatfield Road and Canterbury Road there is a fish and chip shop. There is no lavatory off the ticket hall.

On the State of the Track

30. *Permanent Way Supervisor P. G. Dawes*, who was in immediate charge of the track through the Well Hall Curve, was on leave at the time of my Inquiry. His statement to the Railway Officers after the derailment was however quite straightforward and I did not think it necessary for him to give me any further evidence. Mr. Dawes had said that the last time he had examined the traek through the curve was some three to four weeks before the derailment. He did so at that time with the area civil engineer and their aim was to take details for the re-railing proposals for 1974. He examined the rails in the curve for side wear but did not measure the cant. He confirmed however that the track seemed to be in generally good repair: the last time that any work had been done on it at this point was in January 1972 when the cant was corrected by beater packing, followed by Kango tamping. He said that there was no drainage problem and that the track was fully ballasted.

31. *Leading Trackman A. Sandy*, based on Westcombe Park and with 26 years' railway service, said that he had been a patrolman for several years, his section extending to about 10 miles of track, and that he normally patrolled through Well Hall on the Monday, Wednesday, Friday, and Sunday of each week though he had not done so on the day of the derailment because he was on week-end leave. He had last patrolled through Well Hall on the Friday and he said that he had paid particular attention, as he always did, to the track round the Well Hall Curve because of the sharpness of its curvature. He always carried a fishbolt spanner on patrol but had had no fishplate trouble, had noticed nothing amiss, and regarded the track as in good condition with a good ballast shoulder.

32. *Leading Trackman A. Cerri*, also based on Westcombe Park and with 16 years' railway service, said that although he was not the regular patrolman he knew the section through Well Hall well since he had acted as Sandy's look-out man for four years on the latter's Sunday patrol and had patrolled the track himself when Sandy was on leave; he was well used to patrolling since he was the regular patrolman of an adjoining section. When patrolling the section he paid particular attention to the Well Hall Curve and he regarded the track as well established and easy to maintain. When patrolling, in Sandy's absence on leave on the day of the derailment, he found five or six check rail keys out and drove them home but he saw nothing else amiss such as loose fishplates.

33. *Mr. J. L. Newing* had been Divisional Civil Engineer, South Eastern Division, for less than 4 months at the time of the derailment and, being responsible for about 2000 miles of track he had not yet had the opportunity to walk or ride over the Bexleyheath line. He said that the track, approaching and round the Well Hall Curve had been relaid in 1970 and was mechanically maintained and that, the high rail having been turned as recently as January 1972, the side cut was negligible: the check rail clearance was correct at 2 inches. The Matisa track recording trolley had last run over the line on 22nd April 1972, only 8 weeks before the derailment: I had already studied the trace lines on the record in some detail and we discussed them together. He agreed that the track twist closely approaching and round the Well Hall Curve was satisfactory although at one point the cross level needed some, but not urgent, attention: the only points where the cross level needed earlier attention were well beyond the point of derailment. The gauge was satisfactory throughout, varying between 3mm. tight and 4mm. wide, and the run up of cant and the versines through the transition, and the cross levels round the curve, were all satisfactory for the speed to which trains negotiating the curve were restricted: the versines of the curve itself were a little spiky as was to be expected when measured by Matisa on a sharp curve, the spikes being accounted for by the rail joints and the measurements being of the track directly rather than of the ride. The top showed some low joints but only to the extent of about 6mm. The track in general, although not in very good fettle and in some need of attention, was safe for the permitted line speed of 60 mph and certainly safe for the speed of 20 mph round the Well Hall Curve.

34. *Mr. K. C. Haysom*, the Assistant Civil Engineer (Permanent Way) Southern Region, had reached the scene of the derailment at about midnight, found that a detailed survey of the track was already being completed, and himself examined the rails. He tabled two plans the first of which was the standard derailment chart showing the results of the detailed survey, the measurements for level, cant, and cant gradient having been taken at each sleeper and those for curvature by versines to a 12m. chord at every 4th sleeper. (The chart had been given an arbitrary base (sleeper 0) 20 sleepers in rear of where the mark of a flange running on the head of the check rail started and continued for 3 feet before crossing it in a length of 6 inches). Mr Haysom agreed that the measurements of levels, cant, and twist, were much as those shown by the Matisa trace taken on 22nd April. The measured versines however showed that after the derailment the curvature towards the end of the transition, which had been developing very steadily, sharpened after sleeper 44 (44th in rear of the arbitrary base sleeper 0) to a peak at about sleeper 34: the peak was at the start of the circular curve and was to the equivalent of a local radius of about 8ch. Beyond the peak the versines showed a slight snaking of the track and Mr Haysom thought it probable, though he said that he could not be positive, that the train had moved the track outwards at the point of the peak though by not more than about one inch.

35. Mr. Haysom also tabled a plan showing in some detail the marks found on the running edge and head of the high rail, and on the head of the check rail, after the derailment: a lot of the marks had been recorded soon after the derailment and confirmed in daylight on the following morning. The plan showed a continuous pressure or scuffing mark, along the inner edge of the head of the high rail and about 12mm. in

from the running edge, from a short way after the start of the curve to sleeper 38, the second sleeper after a rail joint, where a similar continuous scuffing mark on the outer edge of the head started, as did a continuous rolling mark along the running edge just below the head. Over sleepers 38 and 37 the scuffing marks were along both the inner and outer edges of the head but at sleeper 37 the inner mark on the head ended as if the pressure on the inner side had lifted. The rolling mark along the running edge just below its top continued, and at sleeper 28 the scuffing marks became general across the whole head of the high rail up to sleeper 14, two sleepers short of the next rail joint where the mark along the inner edge of the head stopped. There was a climbing mark at sleeper 4 followed by a diagonal flange mark across the high rail to sleeper 1, where the scuffing mark along the outside edge ended, and at sleeper 0 there was the first mark on the corner of a chair: the second such mark was at sleeper –2 (the second sleeper beyond sleeper 0) and was followed by a diagonal score mark across the outside ends of the next four sleepers. There were also flange marks across the high rail at sleepers –5 and –6 in the area of the next rail joint, and between sleepers –16 and –17, beyond which the marks and damage became general. The first mark on the check rail, that of a flange along and then sharply across the rail's head, started at sleeper –20, after which marks across the check rail's head were general. In Mr. Haysom's opinion the changeover of the scuffing marks on the head of the high rail from its inner to its outer edge just beyond sleeper 37 suggested that the locomotive probably began to overturn at this point. (The derailment chart showed the cant at sleeper 36 as 57mm.). He felt sure that the marks on the high and check rails in the area of sleeper –20 were marks made by the derailing coaches. He considered that the marks and the lightness of the damage to the track were consistent with the locomotive's having rolled off the rails rather than with its having climbed over the high rail into derailment. At this point I asked *Mr. Newing* whether he agreed with this view: he said that he had at first thought that it had been a climbing derailment at the point where the marks on the check rail started but that he now thought that it might have been a rolling derailment, though he could not be positive one way or the other. There were some marks on the centre of the rail head that could have been caused by skidding.

On the State of the Train before the Return Journey

36. *Driver J. E. Wilkinson*, based on Hither Green and a driver for 12 years, said that he had had about 3 years' experience in driving Class 47 diesel-electric locomotives though as an occasional and not as a regular driver of them: he had a pretty good knowledge of their peculiarities and considered them easy to drive although, being much heavier than the Southern Region locomotives to which he was more accustomed, they needed "a bit more care to handle". He was the driver who took the excursion train down to Margate on 11th June and he booked on at Hither Green, personally and dressed in uniform, and travelled as a passenger to Cricklewood where, at 08.14, he took over locomotive No 1630 from its London Midland Region driver who made no adverse comments on it. He said that he made a brake test when he took the locomotive over and that during the earlier part of the journey, from Longhedge Junction to Hither Green, he was subjected to a number of signal delays because of a goods train ahead and had to brake his train frequently: both then and in later braking he found the brake satisfactory except that its reaction to an initial light application was a little slow though "a good application gave a good brake". His only other, and also minor, criticism of the locomotive was that it was slow in building up speed: he agreed that the train was a good one and said that he was pleased with it and that his journey to Margate was quite satisfactory. On the train's arrival at Margate his passengers detrained and he then worked the empty stock into No 4 carriage siding at Ramsgate and ran round it to put the locomotive at its leading end for the return journey to Kentish Town.

37. *Leading Railman R. D. Cook* of Ramsgate was on duty as a shunter in the carriage sidings there for the 06.00–14.00 shift on 11th June. He said that at about 11.00 the empty stock for the return excursion train ran into No 4 carriage siding and that it stopped quite normally. Its driver told him that the locomotive was to run round the train and he uncoupled the locomotive, placing the brake hose pipe of the last coach back on its dummy and securing it. During the run round the driver seemed to have no difficulty in braking the locomotive to the three stops involved. Cook said that when he coupled the locomotive to the London end of the train he used the locomotive's coupling and screwed it up tight to bring the buffers together and then coupled up the vacuum hose pipe.

38. *Carriage and Wagon Examiner D. V. Stone* started his examination of the empty stock for the return excursion train shortly after 11.00 on No 4 carriage siding at Ramsgate and completed it in half an hour. He found everthing to be in good order with couplings and brake pipes correctly connected and with the vacuum hose pipe properly on its dummy on the rear coach.

39. The locomotive's *maintenance and defect record* for 1972 showed that it had been given an examination during the night before the excursion to Margate that would have included a functional test of the brakes and of the Driver's Safety Device (DSD) in both cabs. The inspector on duty at the time in the depot was interviewed and said that there had been no need to interfere with the braking equipment. The locomotive's *repair book*, which was found in the leading cab after the derailment, did not have any entry relating to the brakes nor were there any entries that had not been signed off. The locomotive's *wheels and tyres record sheet* for May 1972 showed only moderate wear and the tyre profiles that were taken after the accident showed good flanges on all wheels.

On the Train Crew's Movements on 11th June

40. At the opening on 14th June of the Coroner's Inquest into the deaths of those who were killed in the derailment it was disclosed that Driver R. Wilsdon, the driver of the excursion train on its return journey from Margate, had been drinking to an extent that resulted in his blood alcohol level after death being 278 milligrammes per 100 millilitres and his urine alcohol level being 326 milligrammes per 100 millilitres. This fact introduced an added and most unusual factor into the derailment equation: in an ordinary derailment the main factors that must be considered and perhaps balanced are the state of the track, the state of the train, and the train's speed: in this case the added factor was alcohol and its effect on the driver's competence to drive safely. The alcohol factor was clearly of great importance and my first witness, on this aspect, was Dr. J. M. Cameron MD, PhD (Glas), MRC Path, DMJ, who, in addition to being a distinguished pathologist who had made the postmortem examination of Driver Wilsdon, is a Reader in Forensic Medicine in the University of London.

41. *Dr. Cameron* agreed that he had a very considerable experience in postmortem examinations and blood analyses. He said that he took blood and urine samples from Driver Wilsdon's body at about 14.15–14.30 on the day after the accident and sent them for analysis in the Section of Toxicology in the Department of Forensic Medicine in London Hospital Medical College and that they were analysed first at 16.30 and again during the following morning. He confirmed from the chemical analysis report signed by Dr. Ann Robinson, who had made the analysis, that the blood and urine alcohol levels were as stated at the Inquest. He said that the blood alcohol level would be equivalent, in terms of drink taken, to some 8½ pints of beer or 8½ tots of spirit at 70° proof.

42. I asked Dr. Cameron whether the considerable lapse of time, some 20 hours, between the driver's death and the analyses could have had any effect on the alochol levels disclosed and he said that, in his opinion

> "there is no difference at all in this case because on examination there was no evidence of fermentation that one could have expected had the blood sugar played a part in the change, and neither was there any evidence, on bacteriological examination of the blood, that there were any organisms to produce alcohol."

He was therefore of the opinion that the levels of 278 in the blood and 326 in the urine were as at the moment of Wilsdon's death. He agreed that he had taken special measures to exclude any bacterial contamination of the blood and said that there were no organisms at all growing in the urine that might have affected the urine alcohol content.

43. As regards the difference between the blood and urine alcohol levels Dr. Cameron said that, on the assumption that the ratio should be 1.0 to 1.3, the urine level should have been 369 and that the fact that it was only 326 suggested that Wilsdon's blood was still absorbing alcohol at the time of his death (21.36) and that "his alcohol figures had not reached the peak". Dr. Cameron could not say at what time before his death Wilsdon had last taken alcohol and that, working only on the heart blood and in the absence of blood samples from other organs, which he had been unable to take, he could not be definite on this point, except that Wilsdon's last drink might have been within an hour of his death. He said that the effect on Wilsdon of this amount of alcohol would depend "on his tolerance and experience of alcohol" and that at the least it would have made him careless. He had examined him for all drugs and the only one in Wilsdon's body was alcohol: his tissue fluids had been carefully screened and the possibility of his having taken alcohol in some medicine could be discounted.

44. The post-mortem report had mentioned "a slight collection of fluid in the heart sac" and I asked Dr. Cameron whether the heart itself was in good order. He said that there was a small area of old scarring on the heart's front wall which suggested that there might have been some minor episode in the past, but he had made special enzymatic tests and they had not shown any evidence of a heart attack on this occasion. His examination of the liver "showed evidence consistent with an acute alcoholic ingestion but no evidence of old chronic changes that one would have expected from chronic alcoholism". When I asked him whether, if Wilsdon had been a fairly persistent drinker, he might have had a permanent alcohol level, Dr. Cameron said that he had found no evidence of such a state.

45. *Mr. R. Farmer*, Driver Wilsdon's father-in-law, whom I asked about Wilsdon's drinking habits, said that he drank a fair amount of beer when he was off duty: he had never known him to drink whisky. He spoke of his daughter as saying that when Wilsdon went off to work that afternoon he was "as right as rain": she had also said that if ever Wilsdon was the worse for drink she would not have let him go to work and he believed this to be true. Mr. Farmer agreed however that Wilsdon did occasionally drink to excess when he was off duty.

46. *Mr. W. Wilsdon*, aged 30 and Driver Wilsdon's younger brother, said that he and Wilsdon and John, the youngest of the three brothers, had gone by car to the Cherry Orchard public house at Rainham at lunch time on 11th June, reaching it at about 12.55 and leaving at about 14.05, just after it had shut. He said that he could remember quite clearly that Wilsdon drank two pints of light and bitter and a half pint of light ale during this time. He said that between their leaving the Cherry Orchard and his taking Wilsdon in his car to Rainham Station at 17.15 he had not drunk any more and he denied that during this time he, Wilsdon, and the younger brother had drunk sherry together. He said that Wilsdon could "carry" a lot of beer and that 8 pints or so would be "well within his capacity": he thought that Wilsdon could drink a good deal more than this and that a dozen pints would not "have affected him that much". He said that Wilsdon very seldom drank whisky, though he might have done so at a party. As far as he knew Wilsdon never carried a flask on him.

47. *Mr. J. Wilsdon*, aged 26 and the youngest of the three brothers (Driver Wilsdon was aged 33) confirmed that Wilsdon had drunk only 2½ pints in the Cherry Orchard public house, saying that he was sure of this because he had drunk the same himself. After they got home from the pub they had some lunch at about 14.30 and spent the afternoon playing indoors with the children. He also denied that they had drunk any sherry during the afternoon and said that he himself never drank sherry anyway.

48. *Driver J. Neale*, of Hither Green Depot and aged 33, said that he knew all the Wilsdon brothers and was specially a friend of Driver Wilsdon. He said that Wilsdon drank only beer, except for an occasional whisky at a party, and that he could hold drink very well: he agreed that he had occasionally "gone out on the beer" with him.

49. *Driver P. S. Stevens*, a driver for 12 years who acts as motive power supervisor at Hither Green as occasion arises and who was acting in that capacity on 11th June, said that at about 14.45 Driver Wilsdon, who was diagrammed to book on duty at Hither Green at 15.22 to work the return excursion train from Margate, telephoned the depot and that he answered the call. Wilsdon, whom he knew fairly well, identified himself and said that he was going to travel as a passenger to Ramsgate and pointed out that the 15.42 train that he was supposed to catch from Hither Green to Dartford, where he was to change, did not run on Sunday and that his official booking-on time should be amended to 15.12 as for catching the 15.32 which did run. Wilsdon asked him to tell *Secondman Stokes*, who was to be his secondman on the excursion train's return journey, to catch the 15.32 from Hither Green and that he would meet him on the train. Wilsdon asked what was the number of the locomotive that he was to take over but Mr Stevens replied that he did not know and that Wilsdon should see the motive power foreman at Ramsgate who would be able to tell him. He checked with the service book and found that there was indeed no 15.42 Down train that Sunday.

50. Mr. Stevens said that the conversation lasted for about two minutes and was perfectly normal: Wilsdon's speech and manner were as usual. I asked him whether it was usual for drivers to book on duty by telephone and he said that it was "a practice from time to time, especially for drivers who live a distance from the depot and there has been a disruption in the service through engineering working or something like that". He agreed that in such circumstances the only check on the driver's condition was through his speech and way of talking but said that in most cases such a driver would meet some supervisor, either traffic or motive power, in the course of his duty.

51. Mr. Stevens went on to say that *Secondman Stokes* arrived at Hither Green at 15.12 and that he told him to book on at that time and to travel as a passenger to Dartford on the 15.32, and that he was to meet Wilsdon on the train. I asked Mr. Stevens what was the actual procedure when a man booked on personally and not by telephone and he said that he would report to the foreman, usually by coming to the hatchway, and would call in the time he was on duty: he would then ask if there were any alterations to his turn of duty, would examine his diagram working, and any engineering etc notices that might have been posted. Mr. Stevens said also that Stokes telephoned him from Margate at about 18.00—he did not note the time—and that he told him he should be in Ramsgate.

52. *Leading Railman F. T. Fleming*, aged 59, said that he was on duty at Rainham collecting tickets at the barrier and attending to Up trains from 16.30 on 11th June. He said that he knew Wilsdon by sight through his use of the station and that at about 17.30 Wilsdon walked into the staff room on the Up platform and that he followed him in. Wilsdon was wearing an ordinary and not a uniform jacket—he could not recall what type of trousers he had on—and was not carrying a driver's bag: he spoke only briefly to Fleming and in a quite natural voice, told him that he was the driver for the Up excursion train, studied the special notice applicable to it, said "That's all right", and walked out. Fleming did not see him again but assumed that he had caught a Ramsgate train that was booked to stop at Rainham at 17.45 on that Sunday because of engineering works and which, because of this extra stop and the works, arrived at Ramsgate at 18.53.

53. The secondman on the locomotive of the return excursion train from Margate was *Secondman P. E. Stokes*, aged 18 and a secondman, based on Hither Green, for nearly two years. I interviewed him at Brook Hospital on 21st June 1972. I had already read the record of a statement that he had made, under caution, to Acting Chief Superintendent A. Newman of the British Transport Police and I told him so. I also told him what Driver Wilsdon's blood and urine alcohol levels had been at the time of his death and that I had been advised that their unbalance suggested that his last drink might have been taken on the train.

54. Secondman Stokes said that he had known Wilsdon for about 18 months and had been secondman to him before. He had come across him occasionally in public houses but they did not go out together: he thought that Wilsdon "could hold a fair bit" and as far as he knew he drank light and bitter or whisky. In describing his own movements Stokes said that on the Saturday evening he had been drinking with his mates and that on the Sunday, after a good night's sleep, he ate his mid-day meal, without taking any drink with it, and then went to work and booked on at about 15.15 at Hither Green, where Mr. Stevens told him that Wilsdon was not going to book on there but would meet him at the train at Ramsgate. He travelled as a passenger to Dartford where he changed for Margate and when he got there he telephoned Mr. Stevens at Hither Green and was told that he should be at Ramsgate: he picked up a copy of the special traffic notice applicable to his train in the lobby at Margate and then went on to Ramsgate and, at about 18.20, spoke to the motive power supervisor, who told him that his train was "on No 4 road". He said that he was then carrying a blue duffle bag. He went to the locomotive, checked that it was coupled up, and boarded it, and about five minutes later was joined by Driver Wilsdon who "was still dressed in his holiday togs" and was

without a railway jacket. They chatted about Wilsdon's holiday and he appeared to be quite normal and steady, though when Stokes turned round and directly faced Wilsdon he "smelt something pretty strong" and said "Christ, what have you been doing", to which Wilsdon replied that he had "had some beer at dinner time" and had "ended up going somewhere and drinking some sherry". (Stokes had said in his statement to Mr. Newman that Wilsdon had told him "that during the afternoon he had drunk a bottle of sherry with his brothers after he had been out drinking with them".) After further talk and at about 19.00 Wilsdon said "What about a couple of pints—we've got time" and they walked together to the Railway Staff Association Club.

55. Secondman Stokes went on to say that when they got to the club, which had just opened, Wilsdon went to "the one armed bandit" while he himself bought the first round of a pint each of light and bitter: Wilsdon bought a second round of the same and Stokes said that he bought a third. I had seen a statement by the club steward that the two had drunk some light ale and I asked Stokes whether they might each, in addition, have drunk a half pint of it: he said that they might have done—"Bob (Wilsdon) might have got one in"—but all that he was certain of was that they had each drunk three pints of light and bitter in the club before they left it, when Wilsdon said to him "Come on, hurry up, we haven't got much time".

56. According to Stokes the next thing he remembered was Wilsdon's speaking to the guard whom they met walking back along the train at about 19.45 on their way back from the club to the locomotive and he thought that mention was made of a brake test and of the composition of the train. He said that he remembered very little of what happened after this—certainly nothing of what they did at Margate while the train was stopped there.

57. *Motive Power Supervisor W. C. T. Reeves* of the motive power depot at Ramsgate and a supervisor for some 5 years, said that at about 18.20 to 18.25, when he was speaking on the telephone to Ashford, a man wearing a uniform jacket, a yellow shirt, and light green civilian trousers came into the motive power supervisor's office at the west end of the carriage cleaning shed at Ramsgate: he particularly noticed the green trousers because, as an old railwayman, he disliked seeing staff on duty wearing civilian clothes, which they sometimes did. At the time he had thought that the man was a driver but when I described Secondman Stokes to him he agreed that it must have been him. Stokes said that he was "Hither Green Special 16" (the return excursion train) and asked where his locomotive and stock were. Mr. Reeves asked him to wait while he finished his telephone conversation but Stokes said that he would go to the mess room and come back later which, according to Mr. Reeves, he did "well after 19.10", when he told him that the locomotive was a Brush and was already on the train on No 4 carriage siding. Stokes then went into the mess room and Mr. Reeves followed him to speak to another driver and saw him pick up a "sort of black bag with fold-over lid" and, he thought, two handles, from the table and go out.

58. When I questioned Mr. Reeves about times and put to him the possibility that Stokes had come to his office only once and that what he had described had all happened then, at about 18.20 to 18.25, he was positive that there were two visits as he had said and that he could remember the times because the first visit had coincided with his telephone conversation with Ashford and the second, when he followed him into the mess room, tied in with the timings of another crew and that was why he was so sure that the time was "well after 19.10 when he came in the second time". Mr. Reeves stood up well to close questioning on this point and I do not think he was mistaken. He said that it was quite customary for only one of a pair of footplate men, either the driver or the secondman, to come to the office to ask where the train was and he agreed that in this case when Driver Wilsdon arrived at Ramsgate he probably went straight to the locomotive which, as the only one of its kind in the shed, he would know from experience was his. He himself had not seen Wilsdon.

59. *Mr. J. Buckett*, Steward of the British Railways' Staff Association Club at Ramsgate and a retired motive power supervisor in the South Eastern Division, said that on 11th June he arrived at the club at about 19.02 and at once opened the bar, which filled up very quickly since there had been a cricket match that afternoon. After about three minutes he served Wilsdon, who spoke to him by name and whom he recognised, and Stokes with a pint of bitter each. Both were quite steady and normal, were not excited, and behaved as usual all the time they were in the bar. Mr. Buckett was alone behind it and he said that after he had served them with their first pints he only served Wilsdon with a half of bitter and Stokes with a small bottle of light ale: he was emphatic that he had not served them three times, with a pint apiece each time, as Stokes had said and he thought that they had left the bar by 19.25 though he had not seen them go. I noticed that while Mr. Buckett was talking to me his lids were lowered so that his eyes were half shut, and when I asked him about it he told me that he had twice been burnt in the face by blow-backs when he was driving steam locomotives and that his lids began to droop when he was tired, but he was quite sure that he had seen the men when he served them. He said that although he stocked miniature bottles of spirits he did not put them out on the bar but kept them in the office: he had not served anyone with a miniature that evening.

60. *Station Supervisor K. R. Henderson*, the station supervisor at Ramsgate, had occasion that evening to visit the shunter's lobby to discuss the stock situation and night berthing with the head shunter and while he was there Driver Wilsdon, whom he knew by sight, and Secondman Stokes came into the lobby, he thought between 19.15 and 19.30. Wilsdon told the head shunter that he was ready to leave and asked permission to draw down to the exit signal, to which the head shunter agreed saying that when the signal cleared the train could leave. Mr. Henderson said that there was nothing out of the ordinary. Wilsdon was "just a normal driver

picking his train up to go away from Ramsgate". Just as the driver and secondman left the lobby Mr. Henderson decided to check that the tail lamp was on the excursion train and alight and he followed the pair down towards the train: there was nothing odd about them to draw his attention and he described them as "just walking down, just normal chaps".

61. *Guard H. Atterbury*, aged 57 and a guard for 24 years though a passenger guard for only just over a year, said that his duties on 11th June were to work the empty stock of the excursion train from Ramsgate to Margate and then the train itself from Margate to Clapham Junction whence it was to be taken on to Kentish Town. He signed on at London Bridge at 15.15 and travelled as a passenger to Ramsgate where he went to the guard's room and stayed there, having his tea, until about 19.30 when it was time to prepare the excursion train for its return journey. He knew where the train was from a fellow guard and he went straight to it, put his bag and lamp in the rear van, and then walked down the train taking its particulars. There was no one on the locomotive when he got to it and, after a pause, he was just starting to walk down the train's other side when he saw two men approaching: when he first saw them he guessed that they were the locomotive's crew and then he recognised Wilsdon, whom he had worked with before, from his characteristic walk. As he passed the pair he exchanged a few words with Wilsdon, telling him the composition and weight of the train: Wilsdon seemed to be quite normal and his speech was not slurred. I asked Guard Atterbury what his reaction had been when he first heard how high Wilsdon's blood alcohol level was and he said "It puzzles me. I just can't make it out sir, just can't make it out at all . . . I just can't believe it".

62. Guard Atterbury went on to say that a short time after he had rejoined his brakevan the usual brake test was made: the driver raised the vacuum to 22 inches, Atterbury destroyed it with his brake valve, and the driver brought it up again to 22 inches. The train then pulled forward to the exit signal and stopped, and after about two minutes it left for Margate, stopping there quite normally at 19.59 in No. 4 platform where the passengers entrained. Atterbury said that he stayed near his brakevan, helping where necessary, and that none of the passengers, who were mostly railwaymen and their families, offered him a drink as guard of their train. At 20.05, the booked departure time, the station staff signalled the "right away" to him and he signalled it back to them for transmission to the driver but the train did not start. One of the station staff told him that they were waiting for the driver: at 20.13 he again received the "right away" and signalled it back and the train left, smoothly and without any snatch. Atterbury did not see the driver at Margate.

63. *Mr. L. H. Arundell*, Station Manager B at Herne Bay, said that he was on duty that evening at Margate supervising the train working. He said that a man whom he now knew was Stokes came into his office at about 18.05 to ask about the running of the excursion train. Later, at 19.59, he watched the stock for the return excursion train draw into No. 4 platform and it stopped very smoothly and at its proper position for entraining passengers. He supervised the entrainment, speaking to many of the passengers, and at 20.04 he passed a message to the signalman and as a result the platform Starting signal was cleared to Green. After blowing his whistle several times without response from the train he walked forward to the locomotive and found its cab empty and with its offside door open. He saw nothing unusual but when, after walking some four coach lengths back along the train, he returned to the locomotive he then saw two small bottles of beer on the offside window ledge: they were ordinary beer bottles which he "assumed the organisers had given to the driver, one each for the driver and secondman, which is practically normal on these occasions". When he again looked out from the locomotive's off side he saw the driver and secondman coming towards the train from No. 1 platform by the walkway: neither man was wearing a uniform jacket and the man with Stokes was wearing a brown pullover and a dark pair of trousers: they were walking quite normally and neither man was carrying anything. He told them to hurry and that the train was late already and Wilsdon said "All right, we'll make it up before we get there": his gait was normal and his voice "steady and clear".

64. I asked Mr. Arundell whether excursion passengers sometimes gave rather more than two small bottles to the trainmen and he said that this was the normal amount and that he had never noticed anything more being given. He had seen a duffle bag on the floor of the cab but no driver's bag, and he said, when questioned, that he had not seen any small bottle of spirits. He said that while he was supervising the entrainment of the passengers he had not seen anyone go to the locomotive as if to speak to the driver.

65. *Junior Railman C. M. Hope* said that he was standing on No. 3 platform at Margate when the empty stock for the excursion train drew into No. 1 platform. After two or three minutes he saw the driver and secondman climb down from the locomotive's off side, cross the track, and walk along the walkway and onto No. 1 platform and out through the ticket barrier. The driver was carrying a white tea can and he assumed that they went to the buffet to get some hot water. I asked Hope if he knew the positions of the fish and chip shop and of the Flag and Whistle public house and he said that he did and that he thought that in the interval during which the two men were away from the train they would have had time to visit the fish and chip shop.

66. *Mrs. Hobday and Mrs. Randall*, who were serving in the station buffet at Margate Station on the evening of 11th June, were agreed that between 20.00 and 20.15, after the passengers had left to catch the excursion train which was due to leave at 20.05, the buffet was virtually empty though they were busy washing up and tidying: there had been two excursion trains out of Margate that evening and the two ladies had been very busy. Mrs. Randall thought that between 20.00 and 20.15 they might have had one or two customers and that she would have noticed them: she had seen a photograph of Wilsdon. Mrs. Hobday

could not recall any customers at all during this time and she had seen press photographs of both men and had watched a television interview of Stokes. Mrs. Hobday said that they did not sell quarter or half bottles of spirits and that the miniatures that they did sell were not much in demand: if she had sold one that evening she would have remembered it as unusual.

On Driving Up Through Trains towards Well Hall

67. The route for the outward journey to Margate had been via the Dartford Loop, but I questioned *Driver Wilkinson* (para 36) on the characteristics of the Up Bexleyheath line from Dartford to Well Hall and on how he would handle a passenger train over this part of the line. He said that he had not worked a train over the line in the last six months and previous to that only goods trains, but his description of it showed that its landmarks were many and that he knew them: he said that it was not a difficult route to remember nor one on which he could get lost except in thick fog, and he agreed that he would be quite happy if somebody told him that he was to work an excursion train over it at short notice. When I asked him how he would have handled the excursion train, which he had driven down to Margate in the morning, on its approach to Well Hall he said that he would keep his speed steady at, he thought, about 50 mph and would shut off at or just after Falconwood so as to coast over the summit—just over a mile short of Well Hall—at about 45 mph, and would make a brake application of about 10 inches of vacuum when approaching Eltham Park. He said that if he was running late he would not adopt any different driving techniques nor would he, on this route, drive his locomotive any harder.

On the Running of the Return Excursion Train

68. *Guard Atterbury* (para 61) said that he had not recently run on the Bexleyheath line in a through passenger train: he was used to stopping trains, and goods and ballast trains, over this line and he knew its characteristics and speed restrictions, though not the maximum line speed. He said the train left Margate at 20.13, eight minutes late but starting off quite normally: he was travelling in the last coach, a BSK. The journey was as usual until Sittingbourne when the train was stopped briefly by signals: he did not himself see a Red aspect but had seen a double and then a single Yellow through his periscope. The train was stopped again just short of Rainham but the stop was only a very short one and the train then ran on and stopped in Rainham Station: both stops were quite normal. After, he thought, about "a couple of minutes" the train started again quite normally and although, in Atterbury's view, the speed around the curves between Gillingham and Chatham "seemed to be a little bit excessive" the driver braked—"it was a heavy one"—between Gillingham and Chatham and "seemed to get the train under control for going round to Rochester and Strood".

69. Guard Atterbury thought that the driver reasonably observed the temporary speed restriction approaching Dartford and the PSR through the station and those immediately beyond it, but approaching Eltham Park he though the driver "was going a bit excessive, over and above what he should have done": so much so that at this point Atterbury made two quick brake applications—"splashes is what we term it"—to draw the driver's attention and he thought, though he did not observe the vacuum gauge, that the vacuum dropped momentarily from 22 inches to 16 inches. (He demonstrated to me the movement and duration of these "splashes" and I asked for tests to be made to see whether or not they would have had any braking effect on the train or effect on the needle of the driver's vacuum gauge.) Atterbury said that he made these "splashes" on the brake because he felt that the speed was excessive, and that the next thing he knew was "the terrific banging and that was when the accident happened". He was sure that he neither heard, felt, nor got the impression of, any brake application being made approaching Well Hall: nor did he hear an application just before the derailment. He said that he could not tell whether or not the driver had shut off power but he was positive that there was no brake application. When I asked him whether he had considered stopping the train himself he said that he had a well experienced driver who had braked well during the journey from Margate and that by the time he had made the two "splashes" and waited to see if there was any response it was too late.

70. *Signalman F. D. Obee*, on the late turn in Rainham signal box, said that since the excursion train was running late—it did not leave Sittingbourne until 20.44 (which was four minutes after its booked time)—and he had two buses waiting at his level crossing, he opened the gates to road behind the previous train to let the buses cross and thereby stopped the excursion train momentarily at his Up Home signal. When that signal cleared the train drew slowly into the station and stopped, although the Starting Signal was clear, with its cab level with the ticket collector's box at the barrier. Someone then telephoned the signal box from the station, said he was the excursion train's driver, and asked whether the previous train was to run ahead of him all the way. Obee replied that the train ahead was to be looped at Gillingham and the driver then told him that he was booked to pass at Newington and that he (Obee) should "read (his) weekly notices". Obee said that the driver was in no way aggressive and that his speech was clear, but that he was a little surprised by the query, not having had such a one before, though he did not argue. The train was at a stand in the station for about three minutes, and it stopped and then started again quite normally.

71. *Leading Railman Fleming* (para 52) said that he was in the ticket collector's box on the Up platform at Rainham when the excursion train drew into the station and stopped with its locomotive's cab opposite the ticket box: at that time the Up Starting signal was at Green. He asked Driver Wilsdon whether he had broken down but Wilsdon just said "No" and jumped down from the cab, which he did without difficulty and without a stagger on landing, and went straight to the telephone in the ticket box and spoke to the signalman: the telephone that he used was connected only to the signal box. During the telephone conversation Fleming was standing about three yards from the ticket box and he did not overhear what was said except that he heard Wilsdon use the words "special notices". He said that Wilsdon, having chosen the right one of two telephones in the ticket box for his purpose, spoke on it as anyone would do over the telephone and that his speech was quite clear and not slurred. The secondman stayed in his seat when Wilsdon left the cab and seemed to be awake. In reply to questions Fleming said that no one except himself and Wilsdon were on the Up platform while the train was in the station and that he did not hand any package to Wilsdon while he was there.

72. *Secondman Stokes* (para 53) told me that he could remember, though very hazily, something of what had happened at Rainham and in "just the last few seconds" at Well Hall. At Rainham he remembered the train being at a stand and Wilsdon climbing back into the cab and saying that there was a train ahead of them to which he replied that it must be an earlier excursion train from Margate which his father was driving: Wilsdon said something like "he's a slow bastard" but he said this jokingly and, though he acted as if annoyed, he did not seem to be excited or aggressive. All that Stokes remembered of the last few seconds was that he heard Wilsdon shout "f.....g hell" in a frightened way and that he himself, at the same moment, "saw the bend coming" and just had time to brace himself and put his feet out before the locomotive "tipped over". He told me that he could not remember Wilsdon making any brake application. In his statement to Mr. Newman he had said that he "didn't see Bob use the brake at all" and explained that when interviewed by reporters on the day after the derailment he had told them that "the brakes had failed" only to protect his mate (he did not then know that Wilsdon was dead) and that he had "had no intention of saying this to any official inquiry". In speaking of the reporters to me he said that "once they started asking questions (he) had to tell them something".

73. Secondman Stokes thought that the speed of the train just before derailment was about 60 mph.

74. *Traffic Regulator H. L. Hickmott*, who had come on duty in Dartford box at 21.25, said that, when he took over, the excursion train had already passed through Dartford and was at Dartford Junction: he had not seen the train on his way to the box but the regulator from whom he took over told him that trains were running normally, though without specifically mentioning the excursion. The train ahead had already left Falconwood and the excursion train was running under clear signals. The first hint he got that something was amiss was at 21.35 when what appeared to be a power surge on the panel put all track circuits on the Bexleyheath, North Kent, and Sidcup Loop lines west of Dartford momentarily to occupied. He was trying to contact the technician about this when he took a call from the leading railman at Well Hall who told him of the derailment: he at once called out to the signalman to put back the Falconwood Starting signal to Danger (although an automatic it has a replacement switch) and then telephoned the electrical control room at Lewisham, was told that the circuit breakers were out, and asked for them to be kept out because of the derailment. He then dialled 999 and asked for the emergency services. The Obstruction Danger signal was exchanged with St John's box while he was speaking to Well Hall.

75. *Leading Railman R. T. Akehurst* said that at about 21.30 he was tidying the Up platform at a point alongside the ticket office at Well Hall whence he had a good view back along the line to Eltham Park: although the evening was cloudy and dusk was approaching he had a clear view back to that station and there had been no rain. Something attracted his attention—he did not know what but it was not the sound of a horn—and he looked back towards Eltham Park and saw the excursion train coming under the overbridge at the London end of that station: he described the locomotive as "wobbling about" and said that, thinking that its speed was much faster than usual and that its driver might have forgotten the speed restriction round the Well Hall Curve, he dropped his broom and waved his arms in an attempt to attract the driver's attention and slow the train down. It came on at speed however and he neither saw nor heard any signs or sounds of braking. He could not estimate the train's speed through Well Hall—his guess was that the speed of 65 mph reported in the newspapers might have been correct—but he said that it was far faster than that of a previous excursion train, which had passed through the station some 20 minutes earlier, or of other through trains. He had been able to see details of the people in the previous excursion, eg he recognised the guard to whom he waved and noticed that a woman passenger had her spectacles on the end of her nose, but he could see no such details in this second excursion train because of its speed. He did see the driver, because he had been trying to attract his attention, and his first thought was that he was a big man slouched forward over his controls but when I told him that Wilsdon was a small man he said that the driver must have been "standing up over his controls . . . . . leaning forward". Akehurst saw little of the derailment itself because of the debris and dust it created, but he realised what had happened and at once telephoned the Dartford signal box and then protected the rear of the train with detonators.

76. *Mr. W. R. A. Thorley*, a booking clerk at Well Hall, aged 58 and with 23 years' service with British Railways, 14 of which had been at Well Hall, after previous railway service in India, was busy in the ticket office on the Up platform. He heard the excursion train approaching and looked out through his window, the bottom half of which was frosted, and saw it "flash past": he estimated its speed at about 65 mph

and he said that he did not hear any sounds of braking. It seems that it was Mr. Akehurst who had the initiative to get the coal yard gates open ready for the arrival of the emergency services. *Leading Railman J. C. Hibbs*, who was returning to the station from the station approach and was at the top of the steps leading from the bus depot when the excursion train passed through, also did not hear any sounds of braking.

77. *Mr. W. R. Lasseter*, a retired railwayman of great experience who had been station manager at Well Hall until his retirement 3½ years ago and who now lives in the station house, was at home at the time of the derailment and was watching television in his sitting room from which he has a good view of passing trains, though only of their upper halves because of the embankment. He said that he saw the excursion train pass and said to himself "Blimey, you're belting" and when I asked him to put a figure on its speed he thought that it was in the region of 50 mph. The sound of his television set prevented his hearing whether or not the brakes were being applied.

On the Contents of the Cab and the State of the Brakes after the Derailment

78. *Mr. D. J. Mitchell*, the Divisional Motive Power Assistant, reached the scene of the derailment shortly after 23.00 and examined the locomotive's leading cab as soon as the driver and secondman had been extricated from it. From the quantity and kind of the debris in the cab—coal, coke, black earth, ballast, and grass—he formed the opinion that the locomotive had slid on its side across the coal yard, scooping up this debris through the stove-in and ripped-away near side of the cab as it did so. The debris was not compacted and he was able to dig down gently into it, using a screw driver, and he found the straight air brake and the vacuum brake handles in the release and running release positions respectively: both the handles were free to move and he made the point to me that they might have been forced into the positions in which he found them by the feet of people working to extricate the driver. The power control handle, which was also free to move, was in the Off position and the reverser handle was forward. Mr. Mitchell had listed the positions of all the cab controls as he had found them and the points of possible significance were that one of the two cab heaters was on, the offside (secondman's) drop side window was shut, and the cab's roof ventilator had probably been shut also. The appropriate traffic notice, folded back at the right page for this journey, was found in the debris.

79. *Mr. A. J. Barter*, the Divisional Traction Engineer, reached the site at 23.25. He confirmed that the brake and controller handles were as Mr. Mitchell had said. He had also shown me the results of a very detailed examination and of tests that he had made after the derailment and of tests that had been made at Crewe Works of the various brake components, eg the brake, triple, and relay valves etc (the speedometer generator was not recovered), and he later sent me the full results of other brake tests that I had asked for. The results of all these examinations and tests showed that the brakes were in good working order and had not been applied in emergency in anything like time enough to check the train before it entered the curve.

80. One main point made by Mr. Barter was that tests on the test stand of the locomotive's vacuum controlled triple valve showed that the time delay from the initiation of a full brake application to there being 65 psi in the locomotive's brake cylinders, ie to a virtually full brake application, was 5.5 seconds, the permissible delay range being 5 to 8 seconds (the second triple valve when tested after the public hearing was found to operate in 6 seconds). In Mr. Barter's view the full application of the train's vacuum brakes under these conditions might possibly have led, or at least would have been simultaneous with, the application of the locomotive's brakes. (He has subsequently confirmed this by reference to published material quoting a propagation rate of 200 ft/sec, say 3 to 4 seconds for this length of train, and a cylinder fill time of 1½ seconds leading to a total time from initiation at the front to application at the rear of some 5½ seconds closely comparable with the 5½ and 6 seconds respectively for the operation of the two vacuum controlled triple valves on the locomotive.)

81. *Mr. R. Calvert*, Operating Officer, South-Eastern Division, said that he searched the driving cab of the locomotive, as well as he could at that stage, during the early hours of the morning following the derailment and again later. He found a duffle bag but no driver's bag, although he was particularly looking for the latter. He handed to me a quantity of pieces of broken glass that he had found in the cab and which included the broken necks of two ½-pint bottles of beer each with its crown cap still attached—they had clearly not been opened—and the top of what seemed to have been a large soft drink bottle. There were also four small pieces of clear glass that I thought might have been part of a small flask or bottle of spirits and I asked the Divisional Manager to arrange for them to be analysed.

NOTE

I am much indebted to the British Railways' Research Department, and to United Glass Ltd. who are the major manufacturers of spirit bottles in this country and have a very comprehensive library of all types of bottle, for the very thorough examination and analysis that they made of these fragments of glass. They concluded that two of the fragments probably came from an old style rectangular shaped medicine bottle of a capacity between 10 and 16 fluid ounces and the other two fragments from a separate bottle which might have been a rectangular shaped bottle with a flat shoulder, but with which none of the known spirit bottles matched satisfactorily.

Speed/Distance Curves

82. The staff of the Chief Mechanical and Electrical Engineer (CM & EE), Southern Region, kindly prepared for me speed/distance curves for the performance, over the Bexleyheath line from Dartford to Well Hall, of a train formed and hauled as was the excursion train. These showed that, if the driver of such a train complied with the PSRs through Dartford, Dartford Junction, and Crayford Creek Junction (para 4), the train could not achieve the maximum line speed of 60 mph until it got to about 12m. 25ch. which is well past Bexleyheath Station and where the line is level. Although the line begins to rise again at 12m. 18ch. and continues rising to the summit at 10m. 08ch. beyond Falconwood it does so at easier gradients and if the driver were to be careless of the speed limit he could exceed it but, assuming that he so regulated his train that his speed at the summit was 60 mph and that he then shut off power and coasted, his speed if he did not then take any braking action would rise on the falling gradient beyond the summit and he would run through Eltham Park Station at some 65mph and would enter the Well Hall Curve at some 68 mph. If he were to fail to shut off power and start to coast at the summit his speed through Eltham Park would be some 73 mph and he would enter the Well Hall Curve at some 78 mph.

83. Guard Atterbury recorded the train's time past Dartford as 21.23 but he did not record its time past Falconwood. According to the automatic time recording clock (para 12) the elapsed time for the journey from the Dartford TC point to the Falconwood TC point was not less than 9 and not more than 11 minutes: the Dartford passing time was recorded as 21.24 and the Falconwood passing time as 21.34. A differential calculation from the speed/distance curves gave an elapsed time of 10.77 minutes which is within the time recording clock's limits and thus shows the practicality of the curves.

Regulation of the Train

84. Driver Wilsdon satisfactorily passed his examination for working Class 47 2750 HP diesel-electric locomotives in April 1969: this examination includes the use of both air and vacuum brakes. He had frequently worked the class of locomotive on normal duties at Hither Green. He was "in date" with his route knowledge of the Bexleyheath line and had last re-signed for it on 20th March 1972.

85. The recording clock only recorded passing times from Strood onwards whereas Guard Atterbury recorded them throughout the journey and did so to the nearest minute. In comparing the booked passing times in the special traffic notice for the train with the recorded passing times I have therefore used in the following table the times booked by the guard.

Location	Miles from Margate	Passing Times		Lateness of train in minutes
		As shown in the traffic notice	As booked by the guard	
dep Margate	—	20.05	20.13	8
Herne Bay	11	20.19	20.24	5
Faversham	22	20.32	20.33	1
Sittingbourne	29	20.40	20.41•	1
Gillingham	38	20.49½	20.58	8½
Strood	41	20.56	21.04½	8½
Gravesend	48	21.06	21.13	7
Dartford	55	21.16	21.23	7
Bexleyheath	59	21.24	21.31	7

• Signalman Obee in Rainham signal box gave this time as 20.44, being the time when the train was described from Sittingbourne signal box.

The picture presented by this table is one of an attempt to make up for lost time after the late start (Driver Wilsdon had said to Mr. Arundell at Margate that he would "make it up before we get there") followed by considerable loss of time between Sittingbourne and Gillingham which would be accounted for by the signal check at Sittingbourne and by Wilsdon's being stopped by the Rainham Home signal and then stopping of his own accord in the station to telephone to the signalman. A little time was made up between Gillingham and Gravesend—this might account for what Guard Atterbury recorded as "the little bit excessive" speed round the curves between Gillingham and Chatham—but the timings after Gravesend suggest a regulation of the train in accordance with the speeds implicit in the timings in the special notice.

86. In the fast first part of the journey, between Margate and Faversham, Driver Wilsdon gained 7 minutes on the booked timing of 27 minutes and had nearly made up for his late start. This makes it all the more extraordinary that he should have squandered perhaps 3-4 minutes in a quite unnecessary stop in Rainham Station to telephone to the signalman. Apart from the episode at Rainham however Wilsdon's regulation of his train seems to have been unremarkable.

Braking Capabilities

87. The CM & EE's staff also prepared for me braking curves for a train formed and hauled as was the excursion train. These showed that the combined brake forces of locomotive and train (paras 14 and 15) were such that if a full service vacuum brake application had been made when the train was running through Eltham Park Station at 60 mph on the falling gradient it would have reduced the train's speed to 20 mph in 660 yards, ie some 330 yards short of the start of the Well Hall Curve. Even if the speed through Eltham Park had been 65 mph such a service brake application at that point would still have reduced the speed to 20 mph well short of the start of the curve.

Guard Atterbury's "Splashes"

88. The CM & EE also arranged for comprehensive tests to establish whether or not the brake "splashes" that Guard Atterbury said that he made in an attempt to attract Driver Wilsdon's attention when the train was closely approaching Eltham Park at what he thought was too fast a speed (para 69) could have been effective. Such "splashes" were simulated at the rear of a similar train with its exhaustor running to maintain the brake pipe vacuum against leaks, as it would have been when Atterbury made his attempts, and in each case there was a vacuum reduction at the locomotive but this would have been less than 6 inches Hg. owing to the volume of the vacuum brake pipe. Atterbury thought that when he made his "splashes" the reduction was from 22 inches to 16 inches. In these circumstances it is unlikely that the air brake operated on the locomotive.

The Locomotive's Overturning Speed

89. As it seemed to me likely that this had been an overturning and not a climbing derailment and that the locomotive had begun to overturn as Mr. Haysom had thought (para 35) I asked the CM & EE to calculate for me the lateral and vertical rail head forces that would be imposed by a Class 47 diesel locomotive when negotiating a curve of 8 ch. radius and with 57mm. of cant. The calculations allowed for the effect of the locomotive's suspension and assumed a wheel/rail frictional resistance ($\mu = 0.2$) and they showed that at 60 mph the lateral force on the outer rail would have been 46.3 tons and the vertical loads on the outer and inner rails respectively would have been 107.8 tons and 5.9 tons. The speed at which the vertical load on the low rail would have become zero and the locomotive would have started to overturn would have been 63 mph.

First Conclusion

90. When I visited the scene of the derailment in the early hours of the morning after it the disarray of the locomotive and first four coaches, and the distances that they had travelled after derailing, convinced me that the train had entered the Well Hall Curve at a speed very much faster than the 20 mph at which it should have done so. My own judgement at that time was that the speed of derailment must have been at least 60 mph.

91. Guard Atterbury neither heard, felt, nor got any impression of, a brake application approaching Eltham Park or later. If his own brake "splashes" were as short in fact as they were in his demonstrations of them at my Inquiry they would not, in my view, have had any braking effect on the train. The evidence generally was that if Driver Wilsdon made any brake application at all when approaching Well Hall he made it in the final seconds and thus too late to check the speed of the train before it entered the curve: the marks of skidding on the rails that Mr. Newing described would certainly have been made by coach wheels after the train brakes to the rear had been applied automatically by the rupture of the train pipe.

92. Guard Atterbury could not tell whether or not the driver had shut off power approaching or at the summit. There was no evidence however that the locomotive was still under power when closely approaching Well Hall and the controller handle was found in the "Off" position. I do not think that the speed at derailment was as high as 78 mph and I am inclined to give Driver Wilsdon the benefit of the doubt and conclude that he did shut off power at the summit.

93. The evidence on speed generally suggests that the speed of derailment was about 65 mph or about the overturning speed at the slight sharpening at the start of the curve. This was, I think, an overturning and not a climbing derailment.

94. I am satisfied that the brakes were in good order and that there was no brake failure. The track was absolutely safe for a speed of 20 mph round the curve: the slight sharpening in the curve at what I think was where the locomotive began to overturn was not at all a serious defect and the slight snaking of the track beyond it was, I am sure, a result of the derailment.

95. The immediate cause of the derailment was that Driver Wilsdon failed to take any braking action to reduce his train's speed on the steeply falling gradient approaching Well Hall, in preparation for entering the Well Hall Curve at 20 mph, so that its locomotive entered the curve at some 65 mph and overturned.

96. I accept Guard Atterbury's evidence that he tried to attract the driver's attention when he thought he was driving too fast approaching Eltham Park. As far as he knew the driver was fully in charge and he had handled the train correctly up to that time. Atterbury had only a year's experience as a passenger guard and the decision to take over control of a train is a difficult one for a guard to take. I do not consider that Guard Atterbury was in any way to blame for this accident.

The Alcohol Factor

97. There is no doubt at all about the levels of alcohol in Driver Wilsdon's blood and urine at the time of his death (21.36). The post-mortem tests and Dr. Cameron's expert evidence showed that they were then 278 and 326 milligrammes per 100 millilitres respectively, and the necessary checks had been made to ensure that the levels had not risen after death and that alcoholic liquor was their only source. The blood alcohol level was equivalent, in terms of drink taken, to some 8½ pints of bitter or 8½ tots of spirits at 70° proof. Dr. Cameron's evidence was also that the urine alcohol level was not as high as it should have been relative to the blood alcohol level and that this suggested that Wilsdon's blood was still absorbing alcohol at 21.36. Dr. Cameron could not say for certain at what time before his death Wilsdon had last taken alcohol except that he might have done so within the hour, ie in the locomotive's cab after the train left Margate at 20.13.

98. What is in doubt is how much Wilsdon actually drank to achieve these levels and when he drank it. The point is important because the earlier in the day that he did most of his drinking the sooner he might have drunk himself into a condition that should have been noticed by an alert supervisor. And the less he drank in the middle of the day and early afternoon, when he was not on duty and his drinking was less reprehensible (though each drink became more so as the time of his duty approached) the more he must have drunk later, when he was on duty and his drinking was wholly disgraceful. Anyone who may have sought to conceal or discount what he drank before he went on duty did Wilsdon a disservice.

99. There were only two at all serious discrepancies in the evidence about the driver's and secondman's movements before the train left Margate.

(a) The first, and it only merits mention because it might be taken as casting some doubt on the truth of some of Secondman Stokes's statements, was that Stokes told me that he went to the motive power supervisor's office at Ramsgate only once, at about 18.20, whereas Mr. Reeves said that he went there twice, first at about 18.20 and then again "well after 19.10". I think that the truth is that Stokes, having left his bag in the mess room when he first visited the office at about 18.20, went back to retrieve it some time after 19.30 and, in his shaken condition after the accident, he quite honestly forgot that he had done so. The discrepancy does not, in my view, cast any serious doubt on the rest of Stokes's statement.

(b) The second, and much more serious, discrepancy is that

  (i) Driver Wilsdon's brothers said that he remained quietly at home with his family between returning from the Cherry Orchard public house shortly after 14.05 and being taken by car to Rainham Station at 17.15, and did not drink during that time, whereas

  (ii) Stokes told me that Wilsdon had told him that after "having had some beer at dinner time" he had "ended up going somewhere and drinking some sherry", and

  (iii) Stokes told Acting Chief Superintendent Newman, after being cautioned, that Wilsdon had told him that during the afternoon he "had drunk a bottle of sherry with his brothers after he had been out drinking with them".

What Wilsdon in fact did during the early afternoon must be a matter for speculation but I found the manner of Stokes's statement to me about the strength of Wilsdon's breath, when he first faced him at Ramsgate, pretty convincing and 2½ pints of beer drunk four hours earlier could hardly have had that effect.

100. There was also a discrepancy in the evidence about how much the two men drank in the club at Ramsgate. Mr. Buckett struck me as giving honest evidence and I am satisfied that he did not sell a small bottle of spirits to Wilsdon. I think however that the droop of his eyelids may well have made it difficult for him to see for certain whom he was serving when he served them. He said that Wilsdon, whom he knew, bought the first round but Stokes said that Wilsdon went straight to the fruit machine on entering the bar and that he, Stokes, bought that round. The bar was busy and I prefer Stokes's positive evidence that he and Wilsdon drank three pints of beer each to Mr. Buckett's negative evidence that he served them with no more than one pint of beer and a half bottle of light ale each.

101. Assuming that during each of the possible drinking times the maximum amount referred to in evidence was in fact drunk and allowing for the lapse of time after the first admitted drink was taken, it seemed clear to me that the amounts did not add up to what Wilsdon must have drunk to achieve the high blood alcohol level that was found in him after death. In building up a possible pattern of Wilsdon's drinking during the afternoon and evening of 11th June I therefore hypothesized that he took a small bottle of spirits into the cab and drank it there after leaving Margate: he had the opportunity to buy one, he might have had one (saved perhaps from his holiday) in his pocket all the time, and one may have been put unobserved in the cab at Margate, as were the two bottles of beer which I am satisfied were not drunk. There was certainly no evidence of such a small bottle in the cab after the accident but in my view any driver who drank thus would have got rid of the evidence through the cab's side window.

102. The hypothetical pattern of Wilsdon's drinking thus became

Serial	*Time*	*Fairly certain*	+ *Possible*
(a)	12.55–14.05	2½ pints of beer	—
(b)	14.30–16.30	—	⅓ bottle of sherry
(c)	19.05–19.35	3 pints of bitter	—
(d)	20.15–21.30	—	Up to a ¼ bottle of spirits

103. It is quite clear that whether or not he drank on the train Wilsdon had drunk a good deal between 13.00 and 20.13 when he finally drove his train out of Margate. Within the last 75 minutes of this period he was seen by and spoke to Mr. Buckett (who had been a supervisor), Station Supervisor Henderson, Guard Atterbury (an experienced man), and Mr. Arundell (a station manager), and they all said that he seemed quite normal, steady in his gait, and with his speech clear. His manner and actions—apart from his drinking—seem to have been quite ordinary. I was particularly impressed by the evidence to this effect by Mr. Henderson: I found him to be a very good witness and his account of how Wilsdon walked ahead of him towards the train was wholly convincing. Later, when Wilsdon stopped for no good reason at Rainham, the evidence is that he jumped down from a fairly high footplate without a stagger and picked up the right telephone first: his speech was clear and his gait steady.

104. It seemed to me odd that none of these witnesses, and particularly none of the supervisors, should have noticed that Wilsdon had been drinking heavily. I therefore asked the General Secretary of the National Federation of Licensed Victuallers to make some inquiries among a cross-section of his members as to whether they have among their customers some, particularly in the 30–40 age group, who could drink up to, say, 10 pints of bitter in a few hours without showing it. Mr. Boardman very kindly questioned some of his members whom he regarded as representing a cross-section of licensees in London and the provinces. He told me that they all stated quite categorically that they had customers who regularly drank 10 or more pints of bitter beer in an evening's drinking session and to all appearances continued to converse intelligibly, play darts with their customary efficiency, and be in full possession of their normal faculties. He added that his members had emphasised that their experience did not extend to how such customers would react if they were in charge of a vehicle.

105. The evidence of his family and friends was that Wilsdon was accustomed to drinking fairly heavily.

Second Conclusion

106. In my opinion none of the supervisors who saw Driver Wilsdon and heard him speak can fairly be criticised for not having noticed that he had been drinking.

Further Inquiries

107. I put the possible pattern of Wilsdon's drinking to Professor R. D. Teare, MD, FRCP, FRCPath, Professor in the Department of Forensic Medicine, St George's Hospital Medical School, and asked for his expert advice on whether the drinking in the Serials (a), (b), and (c) would have raised Driver Wilsdon's alcohol levels to those found in him after death and whether the drinking in Serial (d) would have been necessary to put the blood and urine alcohol levels out of balance to the extent they were. I also asked him how much, if Wilsdon did in fact drink spirits in the cab, he would have had to drink there. He told me that he thought that "5½ pints of bitter, a third of a bottle of sherry, and a quarter of a bottle of spirits, would probably just about achieve a blood alcohol level of 278 mg% and a urine alcohol level of 326 mg%, always provided that the bulk of the spirits was drunk between 20.15 and 21.30". He added his opinion that, if Serials (a), (b), and (c) were correct and not an underestimate (see last sentence of para 98), Wilsdon must have drunk at least a quarter of a bottle of spirits in the last 75 minutes of his life.

108. I told the Professor that, apart from his drinking and a short absence from the footplate at Margate, Driver Wilsdon had behaved quite normally and had not done anything odd or out of line until the incident at Rainham which I described in some detail. I asked him for his views on the order in which the alcohol would be most likely to have affected Wilsdon's various faculties. He told me that he had consulted all the reputable reference books on the subject and that, although none of them were willing to tie any particular behaviour to a given blood alcohol level, all were agreed on the three stages, merging into one another, of excitement, confusion, and stupor. He said that in his view Wilsdon's behaviour at Rainham suggested that he had reached the second stage "which could be indentified as irascibility due to alcohol intoxication, though his speech and gait still appeared normal".

109. About half an hour after the incident at Rainham the train reached the point at which Wilsdon should have shut off power and then made the brake application necessary to reduce his train's speed to 20 mph before entering the Well Hall Curve. I believe that he shut off power but I am quite certain that he did not apply his brakes. I think that his driver's instinct as the train ran over the summit was enough, even in his confused condition, to tell him to shut off power, but his condition was by now so confused that he could not possibly have remembered the Well Hall Curve.

Final Conclusion

110. The sole cause of Driver Wilsdon's allowing his train to enter the Well Hall Curve at some 65 mph was that he had grossly impaired his ability to drive safely by drinking a considerable quantity of alcohol both before and after booking on duty, including some shortly before leaving Margate and some more in his cab during the journey.

111. Secondman Stokes, on his own admission, drank three pints of beer in the club at Ramsgate and in direct disobedience of Rule 3(v) of the then British Railways' Rule Book which was that "employees MUST NOT consume intoxicating liquor while on duty". This was disgraceful. I am quite sure that Wilsdon was the ring leader in the drinking at Ramsgate. Stokes, aged 18, was much the younger man and he would have needed a stronger character than he had not to have followed his driver's lead.

112. It would seem that the driver's regulation of his train up to the point where he failed to brake was reasonably normal, probably through instinct. I understand that Stokes had never acted as secondman over the Bexleyheath line before. He did not know the route and he could not have realised, even if he had been stone-cold sober, that Wilsdon was not braking for the Well Hall Curve when he should have been.

113. Driver Wilsdon alone was to blame for this accident.

Remarks and Recommendations

Driver Wilsdon's Career Details and Formal Disciplinary Record

114. Robert Wilsdon entered the railway service as a cleaner at Bricklayer's Arms on 30th December 1953 at the age of 15. He became a passed cleaner a year later and a fireman a year after that. He was reprimanded in October 1960 for absence from one day's duty without satisfactory explanation and in February 1961 he was suspended from duty for one day for persistent lateness on duty despite previous reprimand. Then, on 8th November 1961, he was found guilty by the Chatham Magistrates' Court of being drunk and disorderly on 7th November, causing wilful and malicious damage of £150 to a shop window, and assaulting a police officer, and was fined £52. He was not on duty at the time and his age was 23. When the facts of this offence became known to the railway authorities he was summarily dismissed from further duty on 12th November as was another passed fireman, aged 24, who had been his companion on 7th November and had been similarly convicted.

115. Robert Wilsdon appealed against his dismissal, citing his two years' attendance at improvement classes twice a week to help him become a driver, which he had always wanted to be, and his pride in his work: he said that his drinking on 7th November had been in celebration of his having passed for driver and in company with a man who had much helped him to do so. His appeal was heard on 15th December by the then Line Manager, who has since left British Railways, and his case was put by an advocate from the Associated Society of Locomotive Engineers and Firemen (ASLEF) of which he was a member and which had advised the Chief Establishment and Staff Officer that they supported the appeal. The advocate stressed Wilsdon's youth, ability, and keenness, saying that he had learned his lesson and was thoroughly ashamed of himself, and said that, following a talk with Wilsdon, he was convinced that the offence had been an isolated case of misbehaviour and that, if given another chance, Wilsdon would prove to be a satisfactory employee: Wilsdon had "assured him that he would not touch intoxicating liquor again". In concluding his plea the advocate mentioned that the then General Secretary of ASLEF had personally reviewed this case and decided to support Wilsdon.

116. The Line Manager "after very careful consideration of all the circumstances decided that Wilsdon should be reinstated in his former position at Bricklayer's Arms M.P. Depot with effect from Monday 18th December 1961, the period since his dismissal . . . . to be regarded as suspension with loss of pay". The other passed fireman was similarly reinstated.

117. On 25th December 1961 Wilsdon was promoted driver and transferred to Hither Green M.P. Depot. The other passed fireman was promoted on the same day and similarly transferred: after a series of suspensions and severe reprimands in 1962 and early 1963 he resigned four days before a disciplinary hearing, the likely outcome of which would have been his dismissal.

118. After being suspended for one day in February 1963 for a relatively minor train driving offence Wilsdon appeared at Lewisham Magistrates' Court on 29th March 1969 on a charge of being drunk in Ennersdale Road, Lewisham, at 23.15 the previous night. He was found guilty and fined £1. In this case confirmation about this off-duty offence did not reach the railway authorities until 18th April when the responsible motive power officer was informed. This officer was however very heavily committed at the time and then went on leave and, in retrospect perhaps unwisely, he did not make time to see Wilsdon as soon as he knew of his offence with the result that the latter was not seen until 19th June after he had returned from his leave. After such a lapse of more than 2½ months the motive power officer could really, in my view, have done no more than he did, which was to advise Wilsdon "in no uncertain terms that such action even in off-duty hours could not be tolerated" and that in the event of a recurrence "a more serious view would be taken".

119. In view of the fact that Wilsdon's drunken offence in 1961 appeared to be an isolated lapse and that it occurred when he was off-duty and had a success to celebrate, and taking into account his keenness and comparative youth, I do not at all criticise the then Line Manager for deciding to give him another chance by allowing his appeal. I find it quite extraordinary however that Wilsdon was then promoted to driver, quite automatically, only 7 days after his reinstatement. Not only was his dismissal cancelled but it may well have seemed to the young man that he was restored to the full approval of his superiors.

120. I understand that the disciplinary code is such that the penalty of dismissal for an offence can, on appeal, be allowed to stand or be reduced. On this basis the first mitigation of a penalty of dismissal would be to permit retention in the service, but at a lower level. Such mitigation was hardly applicable in Wilsdon's case however since he was only a fireman at the time and the only practicable lesser punishment to which the penalty of dismissal could be reduced was the very minor one that, instead of being reinstated with effect from the date of his dismissal, which would have been derisory, he was reinstated from a later date and thus got no railway pay for some 5½ weeks during which time of course he had done no railway work. I understand also that once Wilsdon had been reinstated as a fireman then his promotion to driver was quite automatic, though it was open to the Management to impose such conditions as they might choose upon the nature of work on which he could be employed following that promotion to driver. The position would have been quite different in the case of, say, a signalman since a dismissed signalman could, on appeal, be retained in the service but as a railman and employed on platform duties. I consider that the disciplinary/promotion procedure should be such that on a secondman's reinstatement it should be possible, in such a case as Wilsdon's and through a recognised procedure, to impose some effective punishment in place of the dismissal, and I suggest that the withholding of promotion for two or three years, during which the man concerned would be regarded as being on probation and his conduct watched accordingly, would be appropriate. Such a much smaller reduction in punishment would I think have brought home to Wilsdon that his conduct was still viewed by his superiors with severe disapproval and might have brought him to see the error of his ways. As it was the virtually complete success of his appeal followed almost at once by promotion may well have made him think that self-discipline was something of little real importance.

121. I recommend therefore that the Railways Board should re-examine their disciplinary/promotion procedure with a view to introducing a formal withholding of promotion, for a term appropriate to the original offence, as the reduction in punishment when a passed secondman, or some other railwayman in a similar position as regards promotion, is reinstated on appeal but still cannot be absolved from serious blame.

British Railways' Rules on Drinking

122. At the time of this accident the rule about drinking was as stated in para 111. In the revised Rule Book, which was then ready for publication and which came into force in October 1972, Rule A1.2.2 goes further and lays down that employees "must not report for duty under the influence of intoxicating liquor or dangerous drugs, or consume such whilst on duty".

123. When it became known after the accident that the driver had been drinking one suggestion made to the Minister was that train crews should be subjected to rules no less stringent than those applied to airline pilots regarding abstinence from alcohol for a determined period before duty. The first relevant restraint that is statutorily and directly imposed on air crews is by the Air Navigation Order 1972 (Statutory Instrument 1972 No 129) and is, in effect, much the same as the new British Railways' rule. The second restraint stems from the fact that each operating company must, under the Statute, submit to the Civil Aviation Authority an Operations Manual which, although it is not required by Statute to include instructions about drinking, does so on the instructions of the flight operations inspector who reviews it. I understand from Mr. W. H. Tench, Deputy Chief Inspector of Accidents (to aircraft) in the Department of Trade and Industry, that an

instruction to the effect that air crew members are not allowed to drink within eight hours of the start of the flight is standard. The flight time limitation instructions are complex but it is quite clear to me that air crews work to rosters quite different from those of train crews. Any rule that train drivers should not drink at all within eight hours of taking duty would, in my view, be unfair to the ordinary responsible, sober, and decent driver who likes a drink with his dinner, and it would be unenforceable.

124. The nearest counterpart to a train driver is surely the driver of a heavy goods lorry which, if it were to run out of control on a motorway, could well cause many casualties. The Secretary of the Road Haulage Association Ltd very kindly made inquiries for me among the road haulage industry and has told me that the general policies of operators are to trust to the sense of responsibility and self-discipline of their drivers. Mr. Russell stressed that his Association were not aware of any problem or difficulties as regards drink and the driving of goods vehicles.

125. I consider that the present railway rules about drinking are sensible and sufficient.

Alcohol-Tests for Train Drivers

126. When the driver's blood alcohol level—over three times the maximum permitted for motorists—became known suggestions were made in Parliament and elsewhere that railway train drivers should be required to take breath-tests, with appropriate penalties in cases where the alcoholic content of the blood is greater than the maximum permitted for motorists. One suggestion, by a Member of Parliament, was that every driver should be tested every time he books on duty.

127. Under the 1972 Road Traffic Act a police constable is empowered to require a road driver to take a breath-test only

(a) if the police constable has reasonable cause to suspect that the driver has alcohol in his body, or

(b) if the driver has been involved in an accident, or

(c) if the driver has committed a traffic offence while his vehicle was in motion.

The first purpose of the breath-test is to enable the constable to stop the motorist from continuing to drive if the test is positive.

128. The suggestion that each train driver should be required to take a breath-test before going on duty would thus make the law to be applied to train drivers much more severe than that applied to motorists. It would in effect be equivalent to a universally applied option for the random testing of motorists and it must be remembered that although a provision for such testing was included in the first draft of the Road Safety Bill in 1967 it was dropped after a considerable outcry from the press, motoring organisations, and members of the public. Also, as regards (a), the present position on the railways is that any railway supervisor who suspects that a train driver has been drinking can stop him from booking-on, or remove him from the footplate, without more ado, and without the support of a positive breath-test: this makes the requirement for a breath-test under circumstances similar to (a) unnecessary. Additionally, breath-tests before booking-on would be quite impracticable because of the numbers involved. I understand that the number of breath-tests required of motorists in January to November 1972 averaged 9,650 a month. An estimate of the number of bookings-on made daily by British Railways' train drivers is some 15,500. If each of these drivers were to be required to take a breath-test when booking-on there would be something like half a million railway breath-tests a month. A breath-test is moreover only a screening device and a back-up procedure for blood and urine testing is needed to confirm or otherwise any positive result.

129. I am also quite sure that the introduction of any kind of alcohol-test for train drivers before booking-on, even if such tests could be made practicable, could only possibly be justified if there was a serious problem of drinking among drivers. The last accident to a passenger train, previous to that at Well Hall, in which alcohol played any significant part and that was serious enough to warrant a public Inquiry, was the derailment at Wormit in Scottish Region in May 1955: one adult and one child passenger who were travelling irregularly on the footplate of the steam locomotive, which overturned, were killed as was the fireman. Colonel McMullen held the Inquiry into this accident and it seems clear, from a remark in his Conclusions that "on a hot day even a small amount of alcohol may have been sufficient to slow down the driver's reactions and possibly also to make him a little reckless", that he did not think that the driver had drunk much: he attributed the derailment to recklessness, and thought it possible that the driver had been "showing off" to his unauthorised passengers. To find a similarly serious passenger train accident previous to Wormit and in which alcohol had played a significant part I had to go back to the derailment of a passenger train at Donemana between Londonderry and Strabane, in which one passenger was killed, in September 1913. The part played by drink was more serious in this case: Colonel Pringle attributed the train's excessive speed at derailment to its driver's "confused condition of mind" and this confusion to "the stupefying effects of drink". A significant point is that in each case the driver was unusually exposed to temptation: he did his drinking after booking-on and during a long interval when he was on duty but had no duties to perform. Thus there have been only three passenger train accidents that have warranted a public Inquiry and in which alcohol was a factor—the main factor at Donemana and Well Hall but only a possible contributory factor at Wormit—in at least 60 years: I did not carry my researches further back than 1913.

There was also a case of a goods train being driven at excessive speed past four signals at Danger into collision with a light locomotive near Todmorden in August 1967, the driver of the colliding train being killed: no public Inquiry was held into the accident but the Inquest showed that the driver had drunk 5 or 6 pints of beer in an unaccounted-for 40 minutes between his booking-on and his taking over his locomotive. The infrequency of this kind of accident suggests that there has not been a drinking problem: and that there is not one now is, I consider, borne out by what transpired when I asked British Rail Headquarters to get the Regions to check back through their records to establish how many cases of drivers found to be under the influence of alcohol there had been in the previous three years. The results showed that

(a) there had been no train accidents that were attributable to the driver's being under the influence of alcohol,

(b) 7 drivers had been stopped from taking up duty,

(c) 14 drivers on duty but not actually driving at the time had been charged with being under the influence of alcohol, and

(d) 21 drivers had been removed from the driving cab during duty.

This I think shows also that railway supervisors have been making use of the power that I describe in the third sentence of para 128.

130. I am strongly of the opinion that any introduction of breath-tests for train drivers when booking on duty would be unjustified and would be, and would be seen to be, a serious slur on the self-discipline and integrity of a fine body of responsible men.

131. There remains however the problem of the driver who is involved in a train accident in circumstances that are such as to arouse a reasonable suspicion that he was under the influence of drink. There is at present no machinery by which such a driver's blood alcohol level at the time of the accident can be properly established if he survives it. In my view the existence and use of such machinery would act as a considerable deterrent on drivers who are tempted to drink before driving and its development would be in the interests of public safety and perhaps also of drivers themselves. As the Railways Board are responsible for the safety of railway operation it should, in my view, be for them to consider what should be done in this matter but I recommend that they should seriously consider the development of such machinery and to see that if introduced it is used.

Booking on Duty by Telephone

132. A driver who books on duty by telephone, as Driver Wilsdon did, may not necessarily be seen by any supervisor before he takes over his train. Such bookings-on should, in my view, be very carefully controlled.

133. There are at present three kinds of booking-on or off by footplatemen by telephone viz:—

(a) *The "official" kind.* These are those made under properly authorised arrangements, often of long standing, that have been agreed with Local Departmental Committees (L.D.Cs) and/or Sectional Councils. An all-line survey has shown that the overall average of these throughout British Railways is 1.1% of all bookings-on, with the same average for bookings-off. The figures for Southern Region are 1.3% and 1.1% for bookings-on and off respectively. The sort of circumstances underlying these "official" bookings-on or off include remoteness of depots (particularly in London and the major conurbations where residence may necessarily involve extensive travelling), the closure of depots and the transfer of work elsewhere, and, in Southern Region in particular, the widespread overnight stabling of electric stock. In general such authorised arrangements are beneficial to both management and men, reducing unproductive time spent by footplatemen in travelling and often facilitating the preparation of programmes and giving financial savings in travelling time, overtime, etc, and improved service punctuality and reliability. In such cases proper arrangements are made to ensure that the men concerned obtain, and sign for, weekly and late notices, etc. Provided a railway telephone is used for such an organised booking-on I would not wish to suggest that "official" booking-on be stopped.

(b) *The "unofficial" kind.* Some 0.6% of footplatemen book on duty by telephone under "unofficial" arrangements. The bulk of this occurs in Southern region where the figure is 3.2% and where it is concentrated entirely in the South Eastern Division, 10 depots (of which 6 are in the London inner suburban area) being involved: owing to the complex programming of footplatemen in this area there are many cases where a man not only lives a long way from his depot but may also be expected to travel as a passenger to another station, also a long way from his depot, to start his day's work. A factor in this is that Southern Region have absorbed many drivers applying to transfer on promotion from elsewhere on the railway. Although these unofficial bookers-on have to report to the depot as needed to collect notices, etc, such "unofficial" arrangements are, in my view, unsatisfactory and I am happy to report that the Executive Director, Systems and Operations, of British Rail Headquarters has instituted an examination of the need for this kind of booking-on by telephone at those depots where it is practised, with a view to those cases being put on an official footing (agreed with the L.D.C.) only where it is to the management's overall interest to do so and to the elimination of other arrangements.

(e) *The "casual" kind.* Driver Wilsdon's booking on duty by telephone on 11th June was of this kind and it was wholly for his own benefit. When he telephoned he pointed out that the programme called for him to travel on the 15.42 train from Hither Green, but that this train did not run on Sundays. It was agreed that the programme should have referred to the 15.32 train from Hither Green, for which the appropriate booking on time would be 15.12, and he was therefore shown as booking on at that time. In fact he did not leave his home (or wherever else he may have been between 14.05 and 17.00) for duty until 17.15 (Para 46) and he thus got credit for two hours of duty (in the form of travelling time) that he did not perform. The fact that he did not telephone the depot until 14.45 by which time, if his request had been refused, it would have been too late for him to get by train from Rainham to Hither Green in time to catch the 15.32 train, shows, in my view, that he was quite confident that his casual booking-on by telephone would be accepted without demur. During my inquiries I got the impression that casual booking-on by telephone was a not uncommon practice in the area, and indeed this is borne out by evidence given to Lieutenant-Colonel Townsend-Rose at his Inquiry into a collision at Wimbledon on 12th October 1972 that the driver had booked on duty casually by telephone on the evening of the accident and also on the previous evening. And in the Wimbledon case also there was a suspicion that the driver had been drinking.

134. In my view any booking-on by footplatemen by telephone that has not been made official should be forbidden. I recommend that thoughout British Railways it should be made a firm rule that any booking-on by a footplateman by telephone that is not covered by an officially agreed arrangement must be reported at once to the shed master of the man concerned and that the shed master should investigate it without delay. I am happy to report that this recommendation has been accepted and will be put into practice.

Warning of Permanent Speed Restrictions (PSR)

135. As a result of the high speed derailment of a passenger train at Morpeth on 7th May 1969 special arrangements for giving a positive advance warning to a driver that he is approaching a severe PSR on the open line are now being installed on lines where the permitted speed is 75 mph or more (high speed lines). The Bexleyheath line is not a high speed line and these special arrangements, which are described in my Report on the Morpeth derailment, will not be installed on it. This accords with my view, which I expressed in my Morpeth Report, that such special warnings are not usually warranted on lines where the maximum permitted speed is less than 75 mph. In my view there is no general need on such slower lines for anything more elaborate than the present long-established cut-out signs indicating the actual start of the PSR and the permitted speed through it. The purpose of these signs is to show the driver where the PSR starts and to help drivers to learn the route. Learning a route and everything about it, including the positions and speeds of all PSRs in it, is part of a driver's normal duty and of his expertise as a skilled professional man. Special arrangements are indeed made to give early warning of a *temporary* speed restriction on any line but they are needed specifically because the restriction is temporary and cannot form part of a driver's route knowledge.

136. The Well Hall Curve can however fairly be described as quite exceptional in that there is only one regular booked train on the Up line that does not stop at Eltham (Well Hall) Station. Any other booked train on the Up line enters the curve from a standing start after its driver has had the 20 mph cut-out sign and the curve itself just in front of him for at least 20 seconds. Through passenger trains on the Up line are thus, with only the one regular exception, excursion trains or the like or trains diverted onto it for a special reason. The driver of such a train will of course have signed for the route but the last time that he drove over the line may have been some months earlier: Driver Wilkinson (para 67) knew the route but had not driven over it in the six months preceding 11th June 1972. The regular Up trains are EMUs and do not carry secondmen, so that a secondman who knows the route is a rarity.

137. For these reasons I considered that there was on this line a need, which was quite exceptional and which should not in any way be taken as a precedent for other locations, for the driver of a through train approaching Well Hall on the Up line to be given some form of early warning that he is approaching the PSR round the Well Hall Curve. It seemed to me that the simplest and most effective way to do this would be to apply to the 4-aspect Well Hall Up Starting Signal No A479, which is just short of the curve's start, an approach control that would hold it at Danger and thus the two signals in rear at YY and Y in order approaching it, until a train has occupied its berth track circuit for a length of time so calculated that the train's driver would need to reduce its speed in ordinary response to signals to one that will ensure that the train enters the Well Hall Curve at no more than 20 mph.

138. Had there been such a control on the signals on 11th June 1972 it would not necessarily have prevented this accident since Driver Wilsdon might well, by the time the second signal in rear at YY came into his view, have reached a condition in which he would not have responded to signals, and Secondman Stokes, with three pints of beer inside him and in a warm cab, might have been inattentive. Such a control should however certainly prevent any fit driver from being surprised by the Well Hall Curve and I am glad to report that, on my recommendation, this control has now been installed, as has a similar control on the corresponding Down line signal.

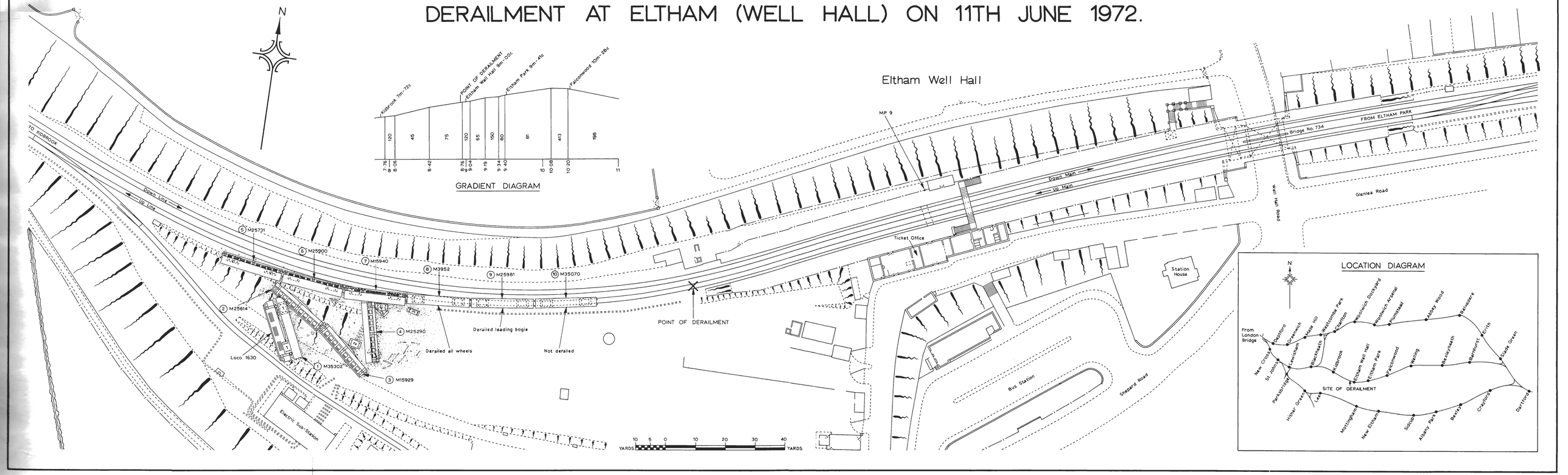
I have the honour to be,
Sir,
Your obedient servant,

J. R. H. ROBERTSON

Colonel.

The Permanent Secretary
Department of the Environment

DERAILMENT AT ELTHAM (WELL HALL) ON 11TH JUNE 1972.



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