

DISASTER AT WEEDON

Earlier in this issue, we discussed the tasks involved in keeping the steam locomotive functioning efficiently and safely. Exactly 35 years ago, a major disaster emphasised just how vital and demanding this work was. For a few autumn days, a hitherto quiet field in rural Northants provided a focus for all the skills the steam railway could muster. LEWIS READE recounts what happened

Liverpool (Edge Hill) motive power depot; 6.35 am on 21st September 1951 and Driver Tomlin booked on duty. Based at Camden, the 52 year old engineman had worked to Liverpool the day before on a lodge turn and was rostered to return to London driving the 8.20 am Liverpool (Lime Street) to Euston express.

Outside the running shed his engine awaited him: ex-LMS Princess Elizabeth Class Pacific 46207 *Princess Arthur of Connaught*. She had already been prepared by shed staff, but Tomlin went round the engine, carefully checking that the lubricator corks were all securely in place, and he also oiled the lubricators of the bogie side bearer slides. Joined by his regular fireman, A.S. Wallis of Camden shed, he coaled and watered the Pacific and, exactly an hour after booking on, took her off shed and light engine to Lime Street to collect his train. 46207, then 16 years old with 980,537 logged miles, was in perfect order. Or so it seemed. Her crew had no way of knowing that the big Pacific was a potential death trap, capable, while in motion, of derailing herself and her train at any second.

The 8.20, popularly known as 'The Breakfast Train' and that day composed of 15 corridor coaches of modern design weighing a total of 467 tons, left Lime Street three minutes late and, hampered by signal checks during the 35 mile run to Crewe, was soon 10 minutes down. The day was fine and clear but with a first winter chill in the air. On the footplate, Tomlin and Wallis, accustomed to signal checks on a line still struggling back to pre-war timings after the toll of the wartime years, had no cause for complaint: the engine was steaming well and riding with all the smooth efficiency of her class.

Further signal checks between Crewe and Rugby — where the train was not booked to stop — aggravated matters and 46207 was logged by the signalman at Rugby No.7 box at 10.58 am, 16 minutes late but otherwise running in fine form. The 8.20 ran southwards into the hilly Northamptonshire countryside. From

the summit at Kilsby Tunnel, the up line falls on easy gradients — 1 in 640, 1 in 415, 1 in 350, 1 in 490 — for some 6½ miles towards the sleepy wayside station of Weedon, opened by the LNWR in 1888. On the downgrade, the booked average was 65 mph and the express was running at more than a mile a minute as it approached Weedon station, swept round the long right handed curve through the platforms and, watched by Stationmaster Yorke, entered a 840 yd left handed compound curve with an average radius of 50 chains. A split second after the engine passed under bridge No.234, without warning, the drama commenced as its leading bogie wheels were derailed to the right. In the brake compartment of the second coach, the assistant guard noticed "a rattling noise and side to side movement" but did not judge it severe enough to stop the train for report. In the kitchen car, marshalled seventh, crockery was smashed and some pots fell from the stove while, in the last coach — a corridor brake third — a travelling carriage cleaner remarked that the riding was rough but assumed it was "just the speed". On the footplate, Tomlin and Wallis noticed nothing amiss and, as the engine plunged into the straight 492 yard Stowe Hill Tunnel, the rough riding of the train noticed by a small number of passengers had ceased. The 588 ton express was travelling smoothly at 60 mph, the engine's leading bogie wheels displaced 7 to 10 inches to the right.

The fact that it ran in this condition for some ¾ mile after the point of initial derailment — onto the straight, through the tunnel and beyond — was due entirely to the fact that the track had, in 1939, been re-laid with flat bottom rails of heavy section with clip fastenings. The right hand derailed wheels had not dropped sufficiently to damage the cast iron bearing plates and were meeting no significant obstruction.

But some 220 yards beyond the south portal of the tunnel, bullhead

track with chairs recommenced and at that point the fate of the speeding express was sealed. The derailed bogie wheels began systematically to smash the chairs and the weight of the train began to spread the track. The speeding express, horrifyingly, was destroying the track on which it ran. It was 11.14 am.

On the footplate, Tomlin immediately noticed a shaking at the engine's front end, shouted across to Wallis that "something seemed to be wrong with the leading bogie", shut the regulator and made a full brake application. It was too late. A second or so later the big Pacific gave a final lurch and left the rails entirely.

Although the train's speed was not of the highest, although it was not as fully loaded as a later working might have been, and given that the derailment could so easily have occurred in the tunnel, the destruction and loss of life which followed could have been worse. They were, however, quite bad enough.

The line at that point runs on a 12 foot high embankment and the engine, carrying before it a bow-wave of earth, turf and fence posts, ploughed for 100 yards down the slope and fell onto its left hand side in a field. Amidst a cacophony of noise and a chaos of dust and steam, Tomlin — driving on the left — was buried under an avalanche of coal from the tender while Wallis clung grimly to the cab handrail on the opposite side. *Princess Arthur of Connaught* came to rest on her side, her front end half buried in the soft earth at the foot of the bank: cushioned by it, she was almost entirely undamaged, except for a twisted bogie frame and a broken footstep. Behind and above her, however, her train suffered horribly.

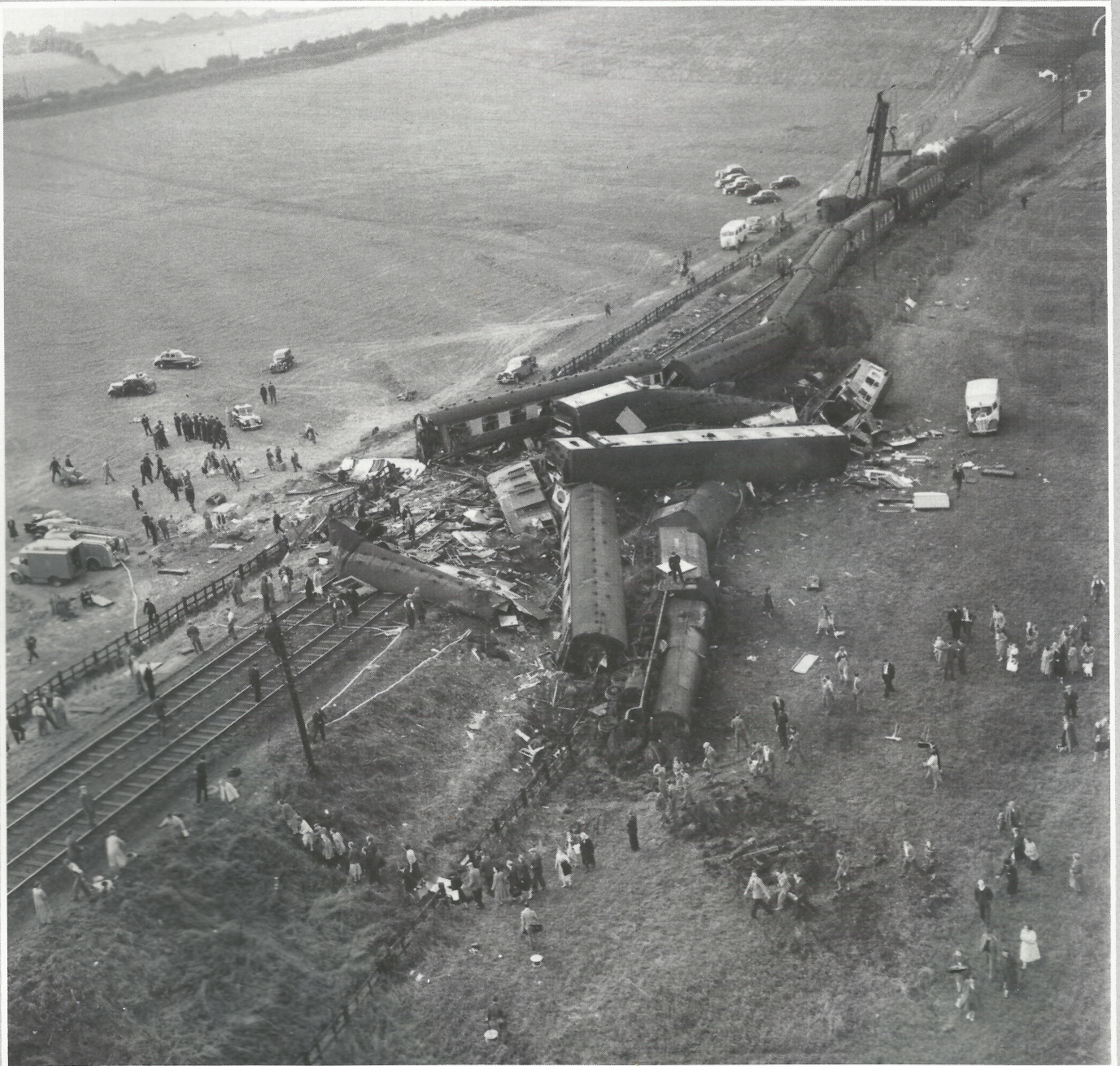
The leading brake third stayed coupled to the tender and fell on its left hand side half way down the embankment while the second coach — a corridor brake third, only a few months old — was thrown further into the field, virtually inverted. These two vehicles were the only ones to follow the engine and were wrecked by the sixth, a 35 ton first class vestibule dining car, which

was hurled across them on its left hand side. The following six coaches, running at 60 mph onto the remains of the track broken up by the derailed engine, were spread in a 'star' formation across both tracks. The third and fourth coaches, both corridor firsts, absorbed much of the sudden deceleration of the train and were almost completely demolished, their wreckage strewn across the tracks

and down both sides of the embankment. Terrible forces were unleashed, twisting the heavy steel underframe of the fourth coach through 180 degrees.

By contrast, the fifth coach escaped comparatively lightly, passing clear of the wreckage before it and coming to a halt on the bank above the engine, undamaged except for a crushed rear

end. The kitchen car, seventh, was demolished as it ploughed into the wreckage of coaches three and four, while the eighth, a vestibule third, was thrown diagonally across the tracks, upright with a smashed front end. The ninth coach came to rest leaning at 45 degrees half way down the bank, but the last six coaches were left practically in line, the last two still on the rails.



The grim scene at Weedon on 21st September 1951, approximately two hours after the accident occurred. Visible, top right, is bridge No.231 with the portal of Stowe Hill Tunnel just discernible beyond. This aerial view gives a very clear impression of the destruction of the train and the dispersment of the coaches, each of which can be identified from the accompanying text.

Only two ambulances are seen in attendance, all the injured having been transported from the scene by 12.15 pm. In the foreground the uninjured passengers are mounting the embankment; a police constable is directing them up the line to Heyford signal box where they will board the halted down 'Royal Scot' which will at 1.45 work back to Blisworth.

The breakdown crane is from Rugby. It was supplemented by those from Willesden at 4.00 pm and Bletchley at 5.30 pm. Note the fire officer standing on the cab side sheet of the engine, presumably checking that the fire is safely out; the hose snaking across the tracks no doubt having been used for this purpose. A linesman is already working on the telephone wires brought down by the accident and note the elegant Bentley standing in the field above the wrecked coaches, a local doctor perhaps? Photo: The Press Association

DISASTER

As the dust settled and the noise ceased, one of the first people to move was Fireman Wallis. Although bruised and severely shocked, it is to his great credit that he did not forget his first duty as a railwayman. As he climbed onto the side sheet of his cab — now horizontal — he was not thinking only of his own train, now a mass of wreckage behind and above him, but also of a second: the down 'Royal Scot'. Running at a mile a minute, it was due on the scene at any second. Heyford signal box was situated 950 yards to the south. Wallis had no way of knowing if the signalman had seen or heard the derailment which had blocked both tracks. He dropped to the ground and began to run.

In the corridor brake third, at the rear of the train and still on the rails, Guard P. J. Burns picked himself up off the floor where the force of the impact had thrown him, jumped to the ballast and ran towards the engine. Spotting Wallis in the distance making his dash for Heyford box, Burns immediately retraced his steps and set about protecting the rear of the train with detonators.

Wallis had been entirely correct in his action, but in fact the Heyford signalman had witnessed the disaster and already thrown all his signals to danger. The approaching 'Royal Scot' was brought to a stand at the Heyford outer home signal at 11.19, just five minutes after the disaster had occurred. Finding that the block and telephone wires northward had been severed, the Heyford signalman passed a message south to Control via Blisworth and the very real possibility of a double disaster, with a second train ploughing into the wreckage of the first, was averted, at least at Weedon. A little over a year later, however, just such a disaster occurred at Harrow & Wealdstone, with consequences of almost unprecedented tragedy.

A few minutes later, the two men were joined in the box by a shocked and distressed Driver Tomlin who had managed to extricate himself from his wrecked engine, and subsequently by the fireman of the 'Royal Scot' which the signalman had drawn forward to the box. The atmosphere in the box can only be imagined.

Also witnesses to the disaster were officers of the Metropolitan Police; passing in a car on the nearby main road they alerted, by radio, the emergency services. Local doctors arrived at the scene within seven minutes and by 11.45 fire appliances, ambulances and locally based army units were at the crash site in force. Local residents helped, too; including a retired nurse, Miss Raynor, who walked two miles to the scene carrying a case of medical supplies; over 70 years old, she was later praised in the official MoT report.

In the wreckage at Weedon, seven passengers and a dining car attendant were killed outright and seven more passengers died later in hospital. 26 passengers, Driver Tomlin and nine dining car staff were admitted to hospital; fifteen of these were discharged the same day and a further 25 people were treated at the crash site for minor injuries or shock.

The line was blocked in both directions for just over 30 hours. Many freight trains were cancelled but most passenger traffic, in both directions, was diverted quite satisfactorily via Northampton. The breakdown and relaying gangs worked round the clock with only snatched meals; 155 yards of the up line had to be relayed and new rails were required on 40 yards of the down line. Traffic began to pass the scene again at 5.30 pm the day after the accident, but piles of debris on and below the embankment, shrouded in tarpaulins, marked the site of the tragedy for many days.

Once the lines were reopened, the Motive Power Department — responsible for the clearance of accident wreckage — marshalled its resources. Coach bodies and debris well clear of the tracks were cut up where they lay and, to avoid unnecessary occupation of the running lines, transported to Wolverton Carriage & Wagon Works by road. Those coaches still mobile were rerailed and moved to sidings at Weedon for dispersal. On Sunday 7th October the last debris for removal by rail was loaded into wagons by the Willesden 50 ton and Rugby 30 ton steam cranes and the MPD turned its attention to the locomotive. Its recovery, one of the most elaborate and difficult operations of its kind ever undertaken in this country, was to tax their ingenuity to the limit.

46207 lay on its side at a 15 degree angle to the line and 60 feet (smokebox end) to 42 feet (cab) from it, outside the 40ft radius of the cranes available which, in any case, could only lift 16 tons. 50 tons could be lifted, but only at a radius of 18ft. The engine, however, weighed 94½ tons, the tender 27 tons.

On a fine sunny Sunday, 28th October 1951, an army of occupation descended on that hitherto quiet field in Northamptonshire. On the up line, now double sleepered to take the weight, stood the Willesden and Crewe 50 ton cranes. Adjacent to them, on the down line, stood two Class 8F 2-8-0 locomotives acting as stabilisers to the track. The embankment had been reinforced with steel piles and many

days' preparatory work was about to reach its climax. At 7.55 am operations began. Working in unison, the two cranes rolled the engine's tender upright onto its wheels and then lifted it onto the down line between the two 8Fs. Neither the cranes, baulks, packing or tracks showed any sign of movement.

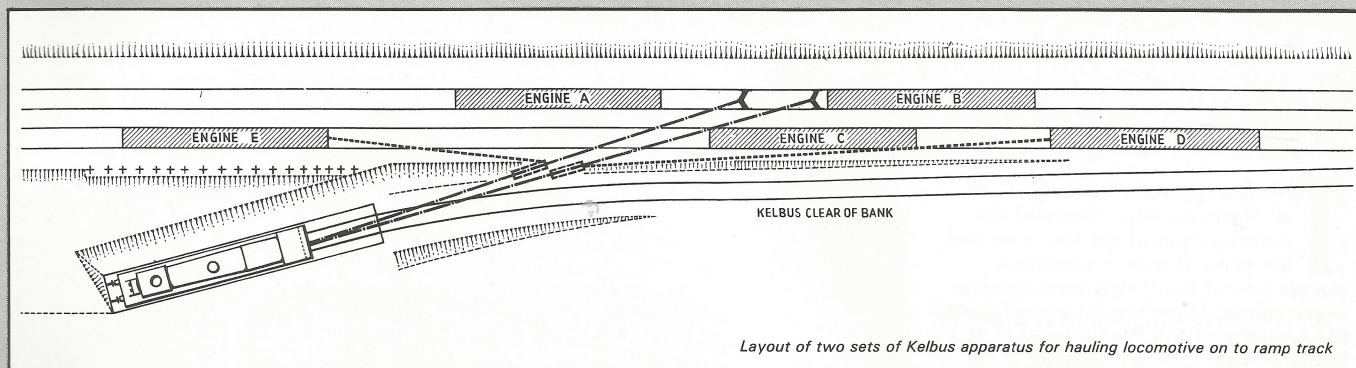
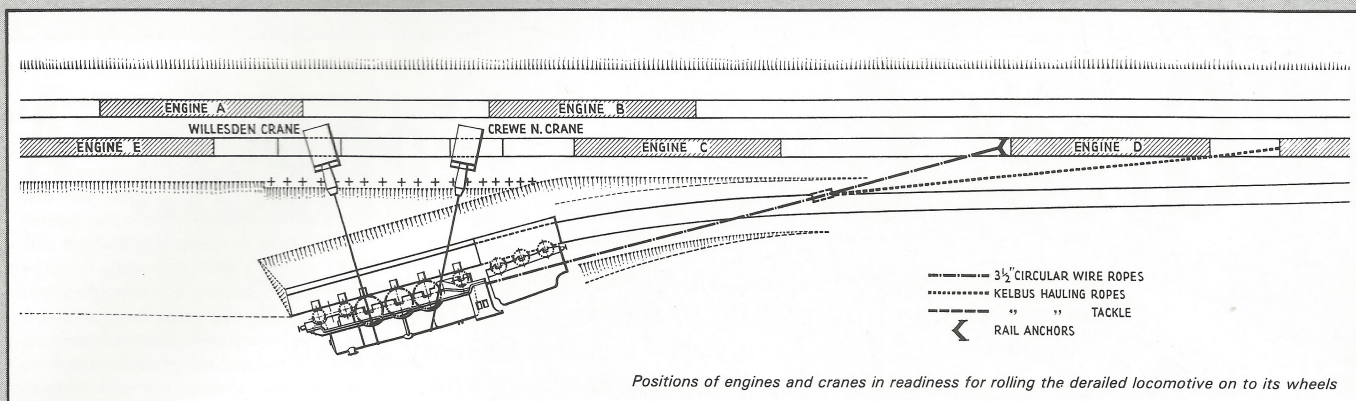
Now the cranes swung towards the locomotive. Wire ropes had already been looped around the coupled wheels, passing over the top of the springs and under the horn stays. Four 8F engines, the two on the down line and one to the front and one to the rear of the cranes on the up line, acted as stabilisers and a fifth 8F was attached to the Pacific by a rope anchor which was tightened by the 8F inching towards Weedon.

The third lift began, and despite the rear wheels of the Willesden crane lifting off the track, the Pacific was successfully rolled upright and landed neatly on the lower end of a 440 yard length of chaired track, specially laid onto a ramp. The woebegone engine, coated with mud, was cleaned, her oil cups and mechanical lubricators replenished and piston rods greased. Meanwhile, the two cranes were worked to Heyford where they crossed to the down line.

Now the five 8Fs, acting together via a Kelbus apparatus, hauled the Pacific up the ramp to the top where, level with the running lines, it came to a halt. The cranes were now positioned on the down line opposite the top of the ramp and lifted the Pacific off its bogie (already the object of great suspicion) and placed it on the up line on a new bogie. The following day, 46207 and its old bogie arrived separately at Crewe Works and the cause of the disaster was sought in earnest.

In an accident of this kind, where wheels and track part company, each becomes suspect. The track, first examined shortly after the disaster, was — apart from damage resulting from the derailment — found to be in good order and no adverse reports of rough riding caused by track deficiencies on the length of track concerned had been received at the District Engineer's office. The seven man PW gang responsible for the 2½ miles of double track between Weedon station and Stowe Hill Tunnel were adjudged to have carried out their work satisfactorily. The engine crew, too, were absolved from blame, it being quite common for the derailment of a pair of bogie wheels to be undetectable on the footplate.

Attention turned to the engine. As early as 24th September, excavation in the field at Weedon had allowed the Ministry of Transport Inspecting Officer, Lt. Col. G. R. S. Wilson, to make a preliminary examination of the engine's bogie wheels. Light indentations and deeper bruising immediately showed where the leading wheels had come into violent and repeated contact with, respectively, the elastic spikes of the flat bottom rail and the chairs of the



bullhead rail. These marks corresponded closely with the damage to the track between the points of initial and final derailment. No other wheels were damaged and it was thus established at a very early stage that only the leading bogie wheels had initially become derailed, and examination of the track gave clear evidence that this was subsequently the direct cause of the total derailment. But why had the bogie wheels derailed in the first instance?

The answer could not be found until the bogie assembly had been completely dismantled at Crewe Works. Generally, it was found to be in good condition: all tyres and flanges had good profiles, there was no excessive side play between the axles and their boxes and the boxes and the horns, and wear on the central pivot was light. The coil springs were in satisfactory condition as were all journals and bearings, with no evidence of overheating. It was only when attention was turned to the bogie's leading axle boxes that the cause of the tragedy at Weedon became apparent. Both boxes were much too tight in the fore and aft direction and unusually bright patches on all four white metal faces provided clear evidence of excessive friction. Conversely, the two trailing axle boxes of the bogie showed very slack fit, with more than 3/32" fore and aft play on the right hand side.

Suspicion fell on Edge Hill shed. It had long been the practice on the LMS, and later the LMR, to change engine bogie wheels from front to back at the sheds in order to even out tyre wear and to lengthen effective tyre life between visits to works. No other region on BR

then carried out such an operation, so crucial to the safe running of the locomotive, in the sometimes far from ideal working conditions of a running shed, it being left until the scheduled visit to works, where the tightest operating tolerances were best achieved.

On 13th September 1951, an examining fitter at Edge Hill shed had reported that 46207's left hand leading bogie wheel flange was beginning to wear sharp. Authorisation to change over the bogie axles, front to back, was given by the foreman fitter and the work was duly carried out on the next 'X' day routine examination and boiler washout. That day was 19th September — two days before the accident.

The unfortunate fitter who performed the work was closely questioned. In the words of the MoT Inspector, he was "unable to account" for the tightness in the leading boxes and the slackness in those to the rear. An experienced man, he "understood fully that the over-tightness of an axle box on its horns was one of the things to be avoided above all others." Lt. Col. Wilson suggested in his report that the fitter, working in the dirty, ill-lit running shed, may have misinterpreted the calliper readings used to assess clearances and he also criticised the apparent lack of direct supervision by the foreman fitter. The changing over of the Pacific's two bogie axles, Wilson concluded, had been mismanaged.

On a steam locomotive, the primary function of the bogie is to guide the engine steadily and safely on the rails. It is crucial to this function that the wheels are allowed freedom to rise and fall under the action of the springs as they follow the normal inequalities inherent in even the best maintained track. In his report, Wilson wrote:

"There is no doubt whatsoever that the derailment of the leading wheels of the engine bogie was brought about by the lack of freedom on the axlebox in the horns." The reader has already seen how this defect led, inexorably, to a major disaster.

Although the MoT report, as ever a model of erudition and thoroughness, was not published until 1952, its conclusions had been anticipated by the professional railwaymen concerned. As soon as the tight fit of the bogie axles was suspected, the Divisional Motive Power Superintendents of the LMR had issued strict instructions that no locomotive axles were to be changed around without their personal authorisation. Thus, as so often in railway history, the line was safer after an accident than it was before.

The disaster at Weedon remains an enduring example of the classic irony of the railway accident: the contrast between trivial initiating error and horrifying and often inevitable consequence. It is a sobering reminder that, in the operation of a safe railway, nothing less than unremitting professionalism of the highest order will suffice, and the report into its causes marked another small but positive step along the long road towards the remarkably safe British railway of today. □

SOURCES

MoT Report into the Accident, HMSO, 1952 — from which all direct quotations are taken
Contemporary press and railway journal reports