

LONDON, MIDLAND AND SCOTTISH RAILWAY.

Ministry of Transport,

7, Whitehall Gardens,

London, S.W. 1.

13th January, 1927.

SIR,

I have the honour to report, for the information of the Minister of Transport, in accordance with the Order of the 22nd November, the result of my Inquiry into the causes of the collision between a passenger train and derailed wagons, which occurred on the 19th November, about 11.15 a.m., near Parkgate and Rawmarsh Station, on the London, Midland and Scottish Railway.

In this case the 10.10 a.m. express passenger train from York to Bristol was travelling on the up fast line at a high speed, and came in contact with wreckage caused by derailed wagons of the 7.20 a.m. special mineral freight train from West-houses to Royston, which was travelling at a slow speed on the adjoining down slow line. The engine of the passenger train escaped damage, but the debris scraped the sides of the first three coaches, and ripped out the sides and interior of the two rear coaches. No vehicle of the passenger train was, however, derailed. I much regret to report that nine passengers were killed or succumbed to their injuries, two others were detained in hospital, and twenty-five suffered from minor injuries or shock effect. The guard of the passenger train was also slightly injured.

The passenger train was drawn by 2nd class engine No. 387 (4—4—0 type) with 6-wheeled tender, which weighed in working order 90 tons 14½ cwt., and included the following coaching stock :—

- No. 2217 eight-wheeled corridor 3rd class coach, gas lighted.
- No. 2816 " " composite coach, electrically lighted.
- No. 1230 " " 3rd class brake, " "
- No. 3005 " composite coach, electrically lighted.
- No. 560 " 3rd class brake, gas lighted.

The train was fitted throughout with the vacuum continuous brake, working blocks on all wheels except those on the engine bogie.

The mineral train was drawn by two engines as follows :—

Leading, No. 270 passenger engine (type 2—4—0) with six-wheeled tender, weighing in working order 77 tons 1½ cwt.

Train, No. 3980 goods engine (type 0—6—0) with six-wheeled tender, weighing in working order 89 tons 19 cwt.,

and comprised 90 four-wheeled wagons loaded with coal, and a 15-ton brake van. Five of the wagons were of 8-ton, 54 of 10-ton, and 31 of 12-ton capacity. The total length of the train was approximately 672 yards, and the weight behind the engines about 1,270 tons. The first seven vehicles behind the engine were as follows, but there is some doubt as to the relative position of the last five of these vehicles :—

1. G.W.R. No. 25337, steel framed wagon.
2. S.E. & C.R. No. 316, steel framed wagon.
3. L.M. & S.R. No. 110821, 10-ton wagon.
4. G. & S.W.R. No. 7270, 10-ton wagon.
5. Hickleton Colliery Company No. 1264, 10-ton standard wagon.
6. Grassmoor Colliery B. 1404, 10-ton standard wagon.
7. Grassmoor Colliery B. 264, 10-ton standard wagon.

The first six of these vehicles, when the train came to a stand, were mounted one on top of the other, and badly broken or smashed up ; the seventh was derailed with an end knocked in. The remaining 83 wagons and brake van were on the rails.

2. The 8 a.m. special empty wagon train from Normanton to Toton was travelling slowly at the time of the collision on the up slow line. This train included two engines in front, 81 wagons and a 10-ton brake van. Five wagons, apparently the eighteenth to the twenty-second (inclusive) from the engines, were derailed by the debris of the mineral train, three of them being thrown over wholly or partly on their sides. These wagons were :—

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|------|---|---------------------------------------|
| 18th | Fox, Derby, No. 259, one pair of wheels derailed. | |
| 19th | Shipley Colliery No. 1413 | } derailed and thrown on their sides. |
| 20th | Foxfield No. 94 | |

21st Birchenwood No. 1031, derailed and leaning over.

22nd Fox, Derby, No. 12, derailed and buffers locked.

3. A list of damage to rolling stock and permanent way will be found in Appendix I.

Description.

The scene of this accident was about a quarter of a mile south of Parkgate and Rawmarsh Station on the Company's main line from Sheffield to Leeds. The Railway in the vicinity is straight, and has a general south-west (Sheffield) and north-east (Leeds) direction. There are four running roads, known respectively from east to west as up and down slow, and up and down fast lines. Between each pair of slow and fast lines the space between the rails is six feet; and between the down slow and up fast lines the interval is approximately ten feet.

Rawmarsh South signal-box is situated on the east of the railway, about 170 yards from the south end of Parkgate and Rawmarsh station platforms, and the distances to the undermentioned points, signals, etc., after the collision, were approximately as follows:—

Rawmarsh North signal-box	...	...	354 yards north-east
Down home signals for Rawmarsh South	...	82	„ south-west
Front engine buffers of down mineral train	...	261	„ „
Point of collision	...	309	„ „
Up slow starting signal, Rawmarsh South	...	314	„ „
Up fast starting signal, Rawmarsh South	...	317	„ „
Position of derailed vehicles of empty wagon train	...	300 to 326	„ „
Commencement of wheel marks outside chairs of down slow track	...	367	„ „
Wagon door in six-foot way between down slow and up fast lines	...	437	„ „
Front engine buffers of empty wagon train	...	464	„ „
Markings commence on sleepers of down slow line	...	508	„ „
Thick deposit of coal in four-foot of down slow line	...	521	„ „
Rear buffers of passenger train after collision...	...	522	„ „
Front engine buffers of passenger train	...	638	„ „
Centre of Bridge No. 147	...	640	„ „
Parkgate Junction signal-box	...	1,180	„ „

From Rawmarsh South signal-box the gradient south-westwards (up direction) rises at an inclination of 1 in 647 for a distance of 700 yards. The track beyond this point to Parkgate Junction signal-box, a distance of about 480 yards, is practically level. From Parkgate Junction the rails rise in the up direction at an inclination of 1 in 436 for about a mile and a quarter.

The up fast line starting signal for Rawmarsh South is carried on a bracket-armed post situated in the 10-foot space between the up fast and down slow lines. The signal post was newly erected in May, 1926, and constructed of sawn and creosoted timber. The standard carrying the bracket and runner has a height of 19 feet 5 inches above rail level, its dimensions being 12 inches square at the foot and 7½ inches square at the top. The runner, which is supported by an iron bracket, is a timber 9 inches square with a length of 9 feet 8 inches. On the runner are fixed two posts, the left-hand (placed 6 feet from the centre of the standard) carries two arms 30 feet and 26 feet respectively above rail level—the upper arm being the starting signal for the up fast line, and the lower arm the distant signal for Parkgate Junction. The right-hand post, placed vertically over the standard, carries a second distant signal for Parkgate Junction, the arm being at an elevation of 24 feet above rail level. The balance weight-bars are fixed to the main standard about 12 feet above rail level on the fast line side of the post. On the north-east side of the post there is a short ladder giving access to the weight-bars, and on the south-west side a longer ladder leading to the stage. Upon the stage a short ladder gives access to the signal arm and lamp of the up fast line starting signal. The standard is stayed in a north-east and south-west direction by wires fastened to each end of the runner. The clearance between the nearest edge of the cornice (10 feet 8 inches above rail level) of a passenger coach and the nearest side of the standard is about 3 feet.

Evidence.

I. All the events, which immediately preceded this deplorable accident, took place in a very short period of time, probably not much more than a minute. It is important, therefore, in view of apparent divergencies in the accounts given by various witnesses, to realise that their attention may have been attracted to the circumstances at different moments of time.

II. Two miners, who saw the collision take place from points outside and north of the railway boundary, gave evidence. The first of these, John Edwards, was employed at the time on the roof of a chapel about 33 feet above ground level, and situated, as afterwards determined by reference to an ordnance sheet, about 170 yards from the actual scene of the collision. He appears to have had a longer and more continuous view of the events than any other witness. He noticed a train (empty wagon) with two engines apparently standing on the line farthest away (up slow), and a second train of loaded wagons, also with two engines, approaching the first on the down slow line. In the latter train there was a gap, the actual position of which he was not certain, beyond that it was comparatively close to the engines. Behind the first portion of what appeared to be a divided train, there was an attachment dragging which he thought might be a draw-bar. The first wagon behind the gap was, he thought, off the rails as the body seemed to be rocking backwards and forwards. Immediately afterwards he heard engine drivers on the up slow line whistling several times, and noticed that the engines on the down slow line stopped, presumably because of the whistling. As the result of these engines stopping, the gap between the two portions of the train diminished. The rear portion then came into contact with the front portion and the wagons began to mount. Just as the mounting began to take place, Edwards noticed a passenger train approaching on the up fast line. Immediately afterwards he saw, just as the passenger train was passing the heap of wagons, a piece of material, some two and a half feet in length, which was thrown up in the air. Then he saw splinters fly, and realised that the carriages were being ripped open. He did not actually notice the existence of a signal post in the vicinity of the scene.

The second outside witness was Harry Mitchell. He was standing on the waste ground on the north side of, and about 50 yards from, the railway fence. This would be about 80 yards from the actual collision. His attention was first drawn to a mineral train on the railway, which was travelling pretty slowly towards Rotherham, by the grinding noise it made. He then noticed that the floor of the first wagon behind the engine, which bore the letters G.W. and five figures, two of the figures being 2 and 7, was sagging and that it was broken. He then saw the door of a wagon behind the first, perhaps the fourth and fifth from the engine, burst outwards, and therefore quickly made his way towards the railway. Before he could reach the fence, however, he saw the two engines of the mineral train had stopped, and that there were wagons piling up behind them. He was on the point of getting over the boundary fence, when he saw a man alight from one of the engines, and cross the line in front of an approaching passenger train. Immediately afterwards he heard the crash of the collision. He agreed he might have made a mistake in thinking that the floor of the first wagon behind the engine was bent downwards, if, as was true, the frame of this wagon was subsequently found bent upwards.

With regard to the evidence of these two witnesses, I conclude that Mitchell's attention was first attracted to the events before him at a later moment than Edwards. If this was so, there is no real inconsistency between the statements of the two men.

III. The signalmen at Rawmarsh South (Herbert Edwin King) and at Parkgate Junction (Benjamin Hambleton) signal-boxes testified to the times for acceptance and movement of all three trains concerned in this case.

King stated that the empty wagon train arrived at his up slow starting signal at 11.11 a.m., and was uncertain whether the train was actually brought to rest. But it was not accepted by Parkgate Junction, and the signal was not lowered, until 11.12 a.m. At this time also the "train entering section" signal for the mineral train on the down slow line was received from Parkgate Junction. He thought that this mineral train passed his distant signal before it was actually cleared. There was some little mist, and the driver of the mineral train would not have sighted his down slow home signal for some considerable time after passing the distant signal, and would therefore be running at reduced speed. The up express passed his post at a speed of about 50 miles an hour at 11.14 a.m. Immediately afterwards there was an unusual

noise in his signal-box as though something had come in contact with the signal wires. He looked out therefore towards Parkgate Junction, and saw that several wagons of the empty train were off the rails. At this time he did not realise that there had been a collision between the express and the mineral train.

Signalman Hambleton's booked time for the acceptance, and for the receipt of the "entering section" bell-signal, of the empty train on the up slow line was 11.14 a.m. The mineral train passed his post at 11.13 a.m., at which time he would have forwarded the "entering section" signal to Rawmarsh South. At 11.14 he received the "train entering section" signal for the up express. His attention, also, was first attracted by the rattling of the levers in his signal-box which work the distant signals for the up fast and up slow lines. He looked in the direction of Rawmarsh and saw the express actually come to a standstill just north of Bridge No. 147, about half a mile from his post. He had noticed that the down slow distant signal for Rawmarsh South, which is carried under his down slow starting signal, was at danger when the engines of the mineral train were quite close to it. He watched this train pass his signal-box, and did not observe anything wrong; there was certainly no division at that time. Steam was shut off and the train was, he thought, buffered up from end to end as it passed his post at a speed of ten to twelve miles an hour.

IV. Drivers C. K. Griffiths and A. Birkinshaw were in charge of Nos. 2537 and 303 pilot and train engines respectively of the empty wagon train, and drove from the right-hand side of the foot-plate. In their evidence it is proved that the train was stopped at the up slow starting signal for Rawmarsh South, and stood for about a minute before the signal was lowered for them to proceed. Griffiths stated that when he had run forward about sixteen wagon lengths, he noticed the mineral train approaching on the down slow road. As soon as the pilot engine of this train had passed him, he observed a wagon on the mineral train collapse, the fourth or fifth from the engine. The side door of this wagon fell outwards, and struck his engine as it passed breaking the sandbox. The wagon seemed to have broken in the centre, but all four wheels were on the rails as they passed him. The door cleared his tender, but struck the tender of the train engine behind. As soon as he noticed what was taking place he gave a series of short sharp whistles. His impression was that the mineral train was moving without steam applied at a speed of eight to ten miles an hour, and he observed no division of the train. He applied the brake and stopped the empty wagon train in about an engine length. He then turned and saw the express passing on the up fast line, and noticed the serious damage done to the end coaches. He thought the rear of the passenger train, when it came to rest, was about an engine length or somewhat more from his front buffers. He assisted in rescuing the passengers, and estimated that all the killed and injured were removed within ten minutes.

Birkinshaw stated that they had moved forward about 100 yards from the up slow starting signal, when the mineral train began to pass them. He saw the first wagon behind the engines collapse as it passed. It appeared to him that the wheels of the wagon were out of position, and that it was being dragged along on its headstock by the coupling. He also saw the third or fourth wagon from the engines collapse just before they passed his pilot engine, and noticed the side door drop out. This struck the leading engine, rebounded and hit the tender of his own engine. He did not, however, observe any division in the mineral train as it passed him at a speed which he estimated to be four or five miles an hour. His own train was moving at the time still more slowly. He looked back after the first few wagons of the mineral train had passed him, and noticed that they began to pile up, and come in contact with his own train and force some of the wagons off the rails.

Freeman, who was fireman to Birkinshaw, stated that his driver pulled him over to the right side of the foot-plate and drew his attention to part of a wagon on the mineral train which came in contact with one of the axle boxes of their tender. He thought it was the third or fourth from the engine of the mineral train. He did not notice the first wagon behind the engines, but saw the wagons of the mineral train pile up, and also saw a signal post fall. In its fall, in a northward direction, it appeared to scrape the top of one or more of the front passenger coaches as they passed, and then disappear from view. His own train was only just on the move, and he believed the speed of the mineral train would be about ten miles an hour.

Goods guard Hales was in charge of the empty wagon train, and estimated that the train stood about two minutes at the up slow starting signal for Rawmarsh South. His attention was drawn by observing the fall of this signal post towards the wagons of his train, and he saw one of the wagons topple over towards the embankment.

By this time his train had been brought to a standstill, and he noticed that wagons of his train and those of a train on the down slow line were in contact.

V. Ernest Staniforth and Charles Ellis were relief drivers of the pilot and train engines respectively of the down mineral train. They signed on duty at 9.40 a.m. on the day of the accident, and took over charge of their engines at Masborough Sorting Sidings North Junction at 10.40 a.m.

Staniforth (Engine No. 270) stated that when running at a speed of about 20 miles an hour on the down slow line about half a mile south of Parkgate Junction, he noticed that the distant signal for Rawmarsh South was at danger and shut off steam. He did not apply the brake, and estimated that the speed of the train when it passed Parkgate Junction was about ten miles an hour. He was not able to observe the position of the down slow home signal on account of obscuration of vision by steam from other engines, until he had passed two engines that were working a train on the adjoining up slow line. The signal was then cleared, and the speed of his train had been reduced to about five miles an hour with no steam or brakes applied. He thought that all wagons on his train would then be buffered up against the engine. Just as he was about to apply steam, he heard the popping of engine whistles on the up slow road, which he thought indicated that there was something wrong with his train. He looked round immediately on the right side of the engine, and saw a wagon, about the sixth or seventh from the engine, was off the rails, on the six-foot side, and was coming in contact with the train on the up slow line. He could clearly see the first wagon behind the engines of his train, and there was nothing the matter with it. He applied the brake gently to check his train, by a reduction of the vacuum from 20 to 15 inches, and immediately the wagons at the head of the train began to pile up. He thought his engine ran about 15 yards after the brake was applied. Staniforth's evidence was confirmed by his fireman, Charlesworth, except in the detail that the latter stated he was unable to see the first wagon of their train as it was obscured from view by the train engine.

Driver Ellis (Engine No. 3980) stated that the vacuum pipe between the pilot and train engines was coupled, and that driver Staniforth was controlling the brakes on both engines. The mineral train was examined by wagon examiners at Masborough Sorting Sidings. He estimated the speed of the train when passing Parkgate Junction was 10 to 15 miles an hour and shut off steam. He had just passed some engines on the up slow line, and was about 10 to 15 wagon lengths from the up starting signals for Rawmarsh South, running at a speed of about six to eight miles an hour, when he heard several short sharp whistles. His fireman looked behind from the left-hand side and said "there is something wrong with our train." He then turned round and, looking over the top of the tender, saw a wagon, the sixth or seventh from his engine, toppling about and evidently off the rails. He then looked round the right-hand side of the engine, and saw the front part of the wagon next his engine had apparently lost its wheels, and was riding on the rails on its buffer beam. He also saw some wagons behind being piled up, and at the same time the vacuum brake was applied. All these events appeared to happen in a flash as it were. He shouted to the leading driver "take your brake off," thinking that he had applied it. The brakes were not previously applied on the journey from Parkgate Junction, and he did not observe any check or snatch in the easy rolling movement of the train. He thought the couplings on the train whilst so moving would probably be slack. He found after the collision that the vacuum pipe behind his tender had been broken by the impact of the wagons in rear. The passenger train passed them on the up fast line whilst the piling up of the wagons in rear of his engine was still going on. He thought that this piling up had actually commenced when he noticed that the front wagon was apparently riding on its headstock. In his experience with a long train, running slowly, without brakes and without steam, there would be a certain amount of buffering up and tightening of the couplings, which would involve some strain upon the drawgear. He did not think the strain would be sufficient to break drawgears or couplings unless they were seriously defective.

Fireman Bosworth generally confirmed driver Ellis's evidence, but received the impression, when he first looked round, that there was a gap between the tender and the first wagon, which appeared to be being pushed along on its headstock, or to have been tilted up at the rear end. He jumped off the engine when the vehicles struck the tender, when his engine was running at a speed of four or five miles an hour, and crossed the up fast line just before the express train ran by.

Arthur Morris, who was in charge of the mineral train from Westhouses to Masborough, recollected clearly that the leading wagon on the train was one of the old type four-plank-sided G.W. goods wagons, and the second was a 10-ton S.E. & C.R. wagon, because of the fact that the labels on these two wagons were insecurely or inaccurately placed, and he had to adjust them.

Goods guard F. T. Smith was in charge of the mineral train from Masborough Sorting Sidings North, where the engines watered and the train was examined. The train left Masborough at 11.5 a.m., and there was fair visibility with little or no mist. He saw the Rawmarsh South down slow distant signal cleared when he was about 30 wagon lengths from it, and the speed of the train was about 10 miles an hour. The first thing he noticed in connection with the accident was the fall of the up fast starting signals for Rawmarsh South. These appeared to fall towards the down slow line. Immediately after noticing the signal-post fall, he heard the noise of wagons on his train buffering up sharply, and was thrown on to his knees. He did not observe any jerk or rebound on the train which would be likely to cause a breakage of drawgear or couplings unless they had been defective, prior to seeing the signal-post fall. He applied the brake in his van, but not until after the rebound, which took place as a consequence of the wagons buffering up at the moment of the collision. The position of his van after it came to rest was 70 or 80 yards beyond the down slow line distant signal for Rawmarsh South.

VI. Driver Collingwood and fireman Cook were with engine No. 387 of the express passenger train. They were travelling at a speed of about 50 miles an hour when the attention of both men was attracted by a thud on the train behind them. Cook was engaged firing, and immediately looked back on the left-hand side of the foot-plate and saw the damage which was done to the train. He shouted "Whoa." Collingwood immediately slammed the brake over, and brought the train to rest with the engine just clear of the north side of bridge No. 147. The engine itself was not struck.

Frederick Peaker, passenger guard, was in charge of the express, and rode in the brake compartment of the third vehicle from the engine. The train passed Swinton Junction on time. Soon after passing Rawmarsh South signal-box he heard a noise, and was struck on the head by what he thought was a piece of glass, and fell on the floor. He was unable to speak in respect of the nature of the obstruction which the express struck. All the killed and injured passengers had been removed from his train in about ten minutes' time after the accident. There were about seventy passengers in the train, the last stop having been at Pontefract Station. No wheels of the train were derailed, and he thought the speed was about 45 miles an hour when the collision took place.

VII. Sub-ganger Harry Scott gave evidence that he examined the down slow line concerned in this case on the afternoon of the 18th November, and found it in good order. He was working on the up slow line immediately south of underbridge 147 with an underman when the accident occurred. He had his back to the mineral train as it passed them on the down slow, but his underman was working with his face to the train, and would have noticed and called his attention to any division of the train, or to anything wrong in its movement, if such had existed. He afterwards turned northward, and saw a wagon of the mineral train off the road which appeared to be moving in the direction of the up slow line. He thought the derailed wagon struck the wagons of an engine on the up slow line, and went back to Parkgate Junction to tell the signalman.

Ganger Robert Cawthorn was in the platelayer's hut at Rawmarsh Station when the collision took place. He had just completed his examination of the fast lines, and had looked over the down slow lines on the afternoon of the 18th. Everything was then in order, and he had tested the gauge of the rails on November 13th. He gauged the down slow line after the mishap and found it correct. Permanent way inspector Thomas Shaw, in charge of the Masborough to Cudworth South district, stated that all four roads in the vicinity are laid with 100 lb. section rails. He had previously walked this length on November 17th, and found the rails in good order. The up and down fast lines were renewed in 1918 and 1923 respectively, the up and down slow lines in 1923 and 1903. After the accident he found dribbles of coal in the four-foot of the down slow line, commencing at a point about mile 163, chain 25, and patches of fine slack at intervals as far as mile post 163½. In the vicinity of this mile post there was a pile of about 30 cwts. of the same class of coal in the four-foot way. North of the mile post there was coal in larger quantities

extending over the ten-foot way, and some also in the four-foot right up to where the wagons were piled together. He saw a wagon door with other pieces of a wagon in the six-foot way between the slow lines in the vicinity of mile post 163½, close to where the engines of the empty train were standing. Immediately north of the small pile of slack in the vicinity of 163½ mile post, there were marks on both ends of the sleepers of the down slow line with intermittent marks on the centres of the sleepers. These marks were more accentuated closer to where the wagons were standing at the point of contact, but they were not marks of actually derailed wheels.

VIII. Robert William Wilson, carriage and wagon district foreman at Sheffield, arrived at the scene of the accident at about 1.30 p.m., and examined the railway with the object of discovering the cause of the accident. Coal commenced to show in the four-foot at a distance of 216 yards from the up fast starting signal post, and continued for a distance of about 63 yards, where there was a pile of coal. He found the first mark on the permanent way 220 yards south of the signal post in the form of a chip on one of the sleepers. The side door of a wagon with rail attached was found in the six-foot 120 yards south of the signal post, and an axle and pair of wheels in the ten-foot about 30 yards south of the post. He identified the wagon door, and also the axle and pair of wheels (by means of the marks and name on the cast iron boss) as belonging to Hickleton Main Colliery wagon No. 1264. The other axle and wheels (maker—S. J. Claye) belonging to this wagon were subsequently recovered from the piled up wagons at the signal post. He thought that altogether six wagons were heaped up on the down slow line near the signal post.

The leading wagon had apparently mounted the buffer beam of the train engine, indenting the end of the tender, and damaging the vacuum pipe. The piled up wagons lay across the down slow line in the direction both of the up fast and slow lines. The ladder of the signal post of the up fast line starting signal was lying across the rails of the up fast road. Later, when the debris had been partly removed, he found the drawgear of the Hickleton wagon under other wagons which had bunched together. The drawgear and buffer springs of this wagon were generally above the minimum dimensions for this type of standard private owner's wagon. He found the trailing intermediate drawbar broken at the pinhole. This would throw the intermediate drawgear out of use. The surfaces of this break were discoloured, and in his opinion the fracture was therefore some days old. Both the through rods were also found broken with fresh surfaces. The leading end of the drawbar was broken at the shank, at an unsound weld, showing partly new fractured surfaces. He did not think the break in the intermediate drawbar would have been noticeable during any ordinary examination by train examiners. He found the up slow starting signal post was lying on the top of the nineteenth vehicle from the front of the empty wagon train.

IX. Frederick James Jackson, wagon examiner at Clay Cross, gave evidence that his duties included the examination of empty wagons in the up sidings at Clay Cross, of private loaded wagons from certain collieries, and the passing out of repaired private wagons from various private repair shops. He thought that it was probable that he examined Hickleton Colliery wagon No. 1264 on the 17th November, when it was standing empty with other private wagons in the up sidings. If so, he found nothing in its condition to draw his attention, otherwise he would have labelled the wagon "Not to go." He knew that it was one of the loaded wagons which was worked forward on the 7.15 a.m. special mineral train Westhouses to Royston which left Clay Cross at 8.30 p.m. on the 18th November. He did not go under the private wagons he examined at Clay Cross, and he thought that if there had been a break in the intermediate drawbar, it would have shown itself by the dropping of the cradle, which he would have observed. If, therefore, the wagon was one of those he examined on the 17th November, he thought that the breakage was not then in existence. It might have occurred in the sidings after he had examined the wagon. It was not so easy to detect a breakage of this kind in an empty as in a loaded wagon.

Wagon examiners Edward Veal and Herbert Vickers, stationed at Masborough, gave evidence that they remembered inspecting the 7.15 a.m. special mineral train on the main line, after its arrival at Masborough Sorting Sidings North. The former examined the left side, and the latter the right side of the train. The time occupied in examination was from 10.37 until 11.2 a.m. They thought the time was adequate for the purpose; not being a booked train there was no specified time allotted for its examination, and the train therefore did not start until they had satisfied themselves so far as possible, with its condition. They both agreed that a breakage in an intermediate draw-bar is difficult to detect, unless it resulted in a considerable drop in the

position of the cradle, which would attract attention. They stated it was a common enough practice for an examiner to get under a wagon to inspect anything which appeared to be doubtful, or gave indication that a more detailed examination was advisable. No such indication was afforded in this case, otherwise they would not have hesitated to have put on a red label "Not to go," on any wagon, even if marshalled in a train waiting to be despatched.

X. Ernest Kerry, foreman fitter, was in charge of the breakdown gang which arrived from Sheffield on the scene of the accident at 12.20 p.m. He found that there was no coupling connection between the mineral train engine and the first vehicle, and that there was a mass of wagons piled up behind the tender. The actual vehicle nearest to the tender was upside down and minus its wheels. It was at right angles to the down slow line and was foul of the up fast line. There were six wagons altogether piled up behind the tender, and the seventh wagon had one pair of wheels off the rails. All the remaining vehicles of the mineral train were on the rails. The wagon, which was lying across the down slow line and foul of the up fast line, was about seven or eight feet above rail level. He did not think that it was this obstruction which caused the damage to the passenger coaches, or that there was any of the debris of these piled up wagons which was at a higher elevation than eight feet.

XI. Arthur Joseph Owen, relief clerk acting as station master at Parkgate and Rawmarsh, gave evidence that he heard by telephone of the accident about 11.20 a.m. and hearing that some people had been killed, he gave instructions to the booking clerk to telephone for all available doctors and obtain all ambulance equipment possible, before proceeding to the scene of the accident. He satisfied himself first that all the lines were protected, and by the time he arrived at the actual scene the dead and badly injured passengers had been moved from the train to the side of the line. The injured passengers were receiving first aid, and he went through the train to find if there were any further passengers still requiring assistance. There were several cases of minor injury which he quickly attended to. In a very short time motor ambulances were on the scene, and plenty of assistance was available to remove the injured. The passengers in the express were sent forward by the 11.30 a.m. passenger train from Pontefract to Sheffield which left the scene of the accident about 12.50 p.m.

XII. Mr. J. Purves, chief outdoor assistant to the carriage and wagon superintendent, Derby, gave evidence that it was the Company's practice to ensure that men appointed to examine trains were as efficient as possible in their duties. They all therefore had to go through a course of twelve months in one of the Company's repairing shops, and participate in dealing with wagons which required having their various members taking apart, so as to get experience where defects were likely to arise. They were also particularly trained in the fitting of axle boxes, brasses and other vulnerable parts.

Incandescent instead of oil lamps had also been introduced to facilitate the work of the examiners. He stated that examiners had absolute authority to stop wagons with defects, that they were the only people who could decide whether the wagon should be stopped for repairs, and that no one disputed their authority if a red label "Not to go" was placed on any wagon. The defective wagon had then to be taken out of the train, and put into the cripple sidings, or into private owners' or repairers' sidings. Before the "Not to go" card is removed from the wagon it is the duty of one of the examiners appointed for the purpose to see that all defects which were found in the wagon have been repaired and put right. Before the wagon is put into traffic, the examiner has an opportunity of going under the wagon, and making a careful examination of all its parts.

Report.

I. The coal deposits, and the position of wreckage, found on the permanent way after the collision, assist in determining the sequence of events and the origin of this accident. Permanent way inspector Shaw found small patches of fine slack coal at intervals in the four-foot way of the down slow line immediately south of bridge No. 147. Further north, between points approximately 205 to 165 yards from the up fast starting signal post for Rawmarsh South, carriage and wagon foreman Wilson noted a continuous deposit of coal of the same kind in the four-foot way. It is obvious that leakage at first light and intermittent, and afterwards heavy and continuous in character, was taking place from the floor and bottom doors of one of the wagons of the special mineral train. There followed, over a distance of about 20 yards (165 to 145 yards from the signal post), a still heavier discharge, both in the four-foot

way and extending beyond the ends of the sleepers into the ten-foot space between the down slow and up fast lines. The conclusion may be drawn that the left-hand side of the same wagon had burst open, and discharge of coal had taken place both sideways to the left and downwards. About 120 yards from the signal post a side-door with part of the side-rail attached, was found in the six-foot way between the down and up slow lines. This door, together with an axle and pair of wheels which were found in the ten-foot space, 30 yards from the signal post, were identified by foreman Wilson as belonging to Hickleton Main Colliery wagon No. 1264. It was this side door, evidently, which came in contact with the engines of the empty wagon train on the up slow line, as described in the evidence given by drivers Griffiths and Birkinshaw. The second pair of wheels of the same wagon were subsequently found in the pile of wrecked wagons in the vicinity of the signal post.

There were definite cuts observed on the sleepers in the four-foot way of the down slow line about 163 yards from the signal-post, and from a point about 143 yards distant marks were noted at both ends of practically all the sleepers to within 50 yards of the post. These marks, however, were not recognisable as having been made by derailed wheels. But over the last 50 yards definite wheel marks were found both on the left hand ends, and in the centre of the sleepers of the down slow line.

The evidence does not clearly establish the relative position of the first seven wagons of the mineral train. But the statements of goods guard Morris may be taken, in conjunction with that of Harry Mitchell, as sufficient to prove that the two leading wagons were G.W.R. No. 25337 and S.E. & C.R. No. 316. The opinions of the four drivers, Griffiths, Birkinshaw, Staniforth and Ellis, in respect of the position of the wagon on the special mineral train which came in contact with the engines of the empty wagon train, differ. The two first-named thought it was either the third, fourth or fifth wagon from the engine, and the last two either the sixth or seventh. If it be assumed that the actual position of this wagon was fifth, the leading engine buffers of the special mineral train would be some 50 yards south of the signal post when the right-hand side door of the wagon fell to the ground, after striking the engine of the empty wagon train.

I assume that driver Griffiths "popped" his engine whistle, as a danger signal, after his engine and that of driver Birkinshaw was struck by the door of the collapsing wagon, possibly about the moment when the door fell to the ground. Driver Staniforth's attention was thereby attracted, and after looking round to see what was wrong, and observing a wagon of his train was off the rails, as he thought, and coming into contact with the empty wagon train, he applied his brake gently to check his train, by a reduction of the vacuum from 20 to 15 inches. The special mineral train in accordance with the statements of various witnesses, was then travelling at a speed of between five and ten miles an hour, and moving therefore from $7\frac{1}{2}$ to 15 feet per second. Some seconds at least must have elapsed between the moment when Griffiths began popping his whistle and Staniforth applied his brake, during which the mineral train would have continued its forward movement. The leading engine of the mineral train would therefore have been close to the signal-post when the brakes began to take effect upon the engines. These eventually came to a final stand with the leading buffers about 46 yards beyond the signal-post. The result, of what must have been a more sudden check to the mineral train than driver Staniforth intended, was that the leading wagons began to pile up behind the engine. The wreckage evidently fouled the signal-post carrying the up starting signal for Rawmarsh South. This post was found broken in two places about 3 feet 3 inches and 10 feet 8 inches above ground level. It was seen to fall by fireman Freeman and goods guard Smith in a northward direction, and inclined towards the mineral train. The approach of the passenger train appears to have coincided with the fall of the post. The post, broken into three pieces, was subsequently found buried under coal and wreckage from the piled up wagons.

It appears from the evidence given by foreman fitter Kerry, who was in charge of the breakdown gang, that none of the wreckage after the collision was found at a greater height than 8 feet from the ground. The damage to the first two coaches was at the level of the cornice, about 10 feet 6 inches above ground level. It does not appear, therefore, that this damage at the front of the passenger train was the result of contact with wagon wreckage. On the other hand the damage at the rear end of the body of the third coach, and over the whole length of the last two coaches, indicated contact with an object from 5 to 8 feet above ground level. The top step board and some step irons of the two last coaches were also splintered and bent.

II. Before taking the evidence, I made a careful examination of the wreckage of wagons recovered from the scene of the collision, and of the stock damaged, which had been collected together in adjoining sidings. The steel frame of G.W.R. wagon No. 25337 was badly buckled upwards and devoid of all body work. The wheels and axles were found in the pile of debris and were to gauge. The drawgear of this wagon was complete from end to end. No marks were discernible on the headstocks to show that either of them had been riding on the rails for any distance. The damage to the wagon I concluded was consistent in all respects with what might be expected to result from very severe pressure between wagons in its rear and two engines in front, which had been rapidly stopped. The mineral train, assuming the wagons were fully loaded, carried some 944 tons of coal and the moving weight behind the first wagon must have been in the neighbourhood of 1,270 tons.

The drawgear of Hickleton Main Colliery wagon No. 1264 was recovered, and I found two breaks in its continuity. At what was apparently the trailing end, the metal at the eye end, where the rear end of the intermediate draw-bar is secured to the buffing spring buckle, was broken on each side of the pin. The surfaces of the two fractures had a dull black appearance, as if the breakage had taken place at all events prior to the collision. At the leading end, the metal at the rounded shank of the draw-bar, immediately in rear of the headstock, was broken. The area of broken metal showed that the fracture had taken place at an old unsound weld, about half the fractured surface showing clean bright metal. Both through rods, which were corroded in places from 1 inch to $\frac{3}{4}$ inch diameter, had been broken showing fresh fractured surfaces. Pieces of sole bars were found broken through strap bolt holes, apparently having been pulled apart by tensional stress. One such breakage was close to a headstock, and the timber surfaces exposed were discoloured and decayed. A face plate had been bolted to the sole bar abutting the headstock. The existence of this face plate indicated, I think, that tenderness of the timber in the sole bar had at one time been observed. In the centre cradle, carrying the ends of the intermediate draw-bars, Wallace's patent rubber springing was in position instead of standard springing, which is now specified. These rubber rings were perished, much reduced in thickness, and hardened to the consistency of wood. There was therefore complete lack of any springing effect in the cradle, and therefore of tension on the intermediate draw-bars. It seems improbable, therefore, although the rear intermediate draw-bar was broken at the pin-hole, that the bar would be withdrawn from its position between the jaws of the buckle. The breakage would therefore not become visible at any ordinary examination. If the springing in the cradle had been operative, the broken end of the bar would, I think, have been withdrawn from the buckle, and the cradle by its weight would then have dropped out of its normal horizontal position between the central timber longitudinals of the frame, and perhaps have become visible below the timbering.

III. Hickleton Main Colliery No. 1264 (10-ton standard) wagon was examined and registered by the Midland Railway Company in 1903, under plate number 41438. It was therefore 23 years old. It then complied in respect of details of construction, strength, etc., with the Specification in force for Private Owners' 10-ton wagons. The Railway Company had no information at the time of my inquiry when the wagon was last overhauled by the owners. But in accordance with Clause 3 of the Regulations relating to the conditions under which private owners' wagons are allowed to work on the railway, the owners should have periodically examined the wagon in the Colliery Sidings before handing it over for transit. The wagon, it appears, was one of twenty empty privately-owned wagons, which, in accordance with a request received by the Westhouses Railway Control Office from the Coal Controller at Chesterfield, were placed in sidings at Clay Cross for loading outcrop coal. It is probable that the wagon was one amongst other empties which were examined by carriage and wagon examiner Jackson in the up sidings at Clay Cross on Wednesday, 17th November. In this case it was Jackson's duty, if he found anything out of order, to have stopped the wagon from going to be loaded, by placing on it a red "Not to go" label. Assuming it was one of the wagons he examined on this date, Jackson considered that had a breakage of the intermediate draw-bar existed, it would have shown itself by the cradle falling out of its normal horizontal position. This he would have observed when he made his examination from the side of the wagon, and his attention would have been attracted to the breakage.

The wagon, after loading in the sidings, left Clay Cross at 8.30 p.m. on the 18th November, and with 40 other loads was worked forward from Avenue Sidings (Hasland) with the 7.15 a.m. special mineral train. The train arrived at Masborough Sorting Sidings North about 10.35 a.m. on the 19th November. Here the train was examined, whilst it stood on the main line, by wagon examiners Veal and Vickers, who occupied 25 minutes in this duty. The former made his examination on the left and the latter on the right side of the wagons. They thought the time occupied was sufficient for the usual examination, and could have taken longer time if they thought it necessary. Both men observed no defect in any of the wagons. They agreed that unless there was an out-of-position of the cradle such as could be seen from the side of the wagon, it was very difficult to detect a breakage in an intermediate draw-bar. If the out-of-position of the cradle was observable, it would be the duty of the examiner to get under the wagon to make a more detailed inspection.

All these three examiners had, in accordance with the Company's general practice, spent twelve months in carriage and wagon shops employed in wagon repairing and lifting. They had been employed at their several stations as examiners for periods varying from six to seventeen years.

IV. I wrote to the Hickleton Main Colliery Company for information regarding wagon No. 1264, and their practice in dealing with records of wagon repairs, and received a reply to the effect that the wagon underwent repairs in the colliery shops in October 1924, March 1925, July 1925 and January 1926. A list of repairs executed will be found in Appendix II. On all these occasions the wagon was thoroughly examined for any defects. It is also stated that the wagon ran normal journeys in February, March and April, 1926, and was inspected on each occasion on its return to the colliery. Since the 21st April, 1926, the wagon was exclusively in the possession and under the control of the London, Midland and Scottish Railway Company. The Hickleton Main Colliery Company were informed that on its last journey the wagon was loaded with 11 tons 9 cwt. of outcrop coal, instead of the prescribed 10 tons, and state that this loading and user was not authorised by nor known to the Colliery Company.

With regard to the lists of repairs carried out between October, 1925 and January, 1926, I note these contain no mention of the replacement of the Wallace patent rubber rings in the intermediate draw-bar cradle, or of new through rods. The perished condition of the former, and the corroded state of the latter should, I think, have been noticed if the wagon was thoroughly overhauled. In October, 1924, the wagon was 21 years old, and it is questionable whether the decay in the sole bar, which it appears was observed, since a plate and bolts were provided, should not have been more drastically dealt with by replacement of the old by a new timber bar. The addition of a face-plate such as appears to have been provided in October, 1924, would not add to the strength of the decayed end of the sole-bar.

It must, however, be remembered that the wagon had probably been standing idle for six months, on account of the strike, and would not therefore be in good running condition.

Conclusions:

My conclusions on the whole case are : —

J. That the originating cause of the accident was the defective condition of Hickleton Main Colliery wagon No. 1264 which was marshalled possibly fifth behind the engines of the special mineral train. The dominating defects were a breakage existing prior to the accident in the eye-end of the rear intermediate draw-bar, where it is attached to the buckle of the buffing springs; the rubber springing in the cradle was perished and ineffective for the purpose intended; one at least of the timber sole-bars was rotted and decayed close to the front headstock, where a face-plate had been bolted on; and there was corrosion of the two 1-inch through rods, the metal being reduced at places to $\frac{3}{4}$ inch. The result was that a pull on the front draw-hook was not transferred to the rear intermediate draw-bar and hook, but to the front buffer springs and thence through the headstock to the two through rods. The latter broke, and the pull on the draw-hook was then transferred to the timber frame of the wagon. It appears that the front headstock was pulled away from the decayed end of the left sole bar. The frame of the wagon would then begin to open and coal would be deposited in the 4-foot way. The collapse of the bottom and side doors would eventually follow. The fracture through the bad weld in the shank of the draw-bar at the leading end of the wagon occurred, I think, after the collapse of the wagon had commenced, other-

wise the draw-hook would have pulled out of the headstock, the train would immediately have divided, and the frame of the wagon would not have opened out and collapsed.

II. That the immediate cause of the accident was the sudden check to the mineral train, when it was moving at a speed of five to ten miles an hour, by brake application on the engines. The result of the check was that the moving weight behind the engines began to pile up and derail the front wagons fouling both the ten-foot and six-foot spaces. The signal post for the up fast line was fouled by these derailed wagons, and thrown down just as the express was passing. Damage to the sides of the first two of these passenger vehicles was in my opinion caused by some part of the signal post. Whether the damage to the last two or three coaches was caused by the same obstacle, or by part of the wrecked wagons, is not clear.

III. Responsibility of Railway Company's servants.

1. The action of driver Staniforth on the pilot engine of the mineral train, in applying his brake to check the train, when he discovered a wagon was, as he thought, off the rails, was normal and necessary. But it is evident that he misjudged the effect that a brake application would have upon two engines, followed by so heavy an unfitted train moving at a speed of about eight miles an hour. Staniforth expressed the opinion that the engines were brought to a stand in a distance of 15 yards. The distance may have been somewhat greater, as much as 50 yards. Crushing and piling up of wagons behind the engines would in the circumstances probably ensue. On the other hand, it was manifest that there was danger to the train of empty wagons on the down slow line, and therefore special reason for a rapid stoppage of the mineral train. Staniforth could not have been aware of the other entirely fortuitous circumstances in this case—that an express train was approaching on the up fast line, that the existence of a signal post in the 10-foot way might cause a dangerous obstruction at the moment the express was passing—otherwise it is probable that he would not have applied his brake until the express had passed. Having regard therefore to all the exceptional conditions I think his misjudgment was excusable.

2. With regard to the defective condition of wagon No. 1264—I think the breakage of the intermediate drawbar certainly took place subsequent to the 21st April, 1926, the last occasion when it is stated to have been examined by the Hickleton Colliery Company. It is, I think, clear that a breakage of this type inside the buffing-spring buckle cannot be detected without a much more critical examination than it is possible to make in sidings or on running tracks, especially when the springing in the cradle of the drawgear is not effective. In that case, the end of the draw-bar would not be withdrawn from between the jaws of the buckle, and no displacement in the position of the cradle would result. In view of the perished condition of the rubber springing in use in the cradle, I do not think there could have been any displacement of the cradle in this case. The through rods were entirely concealed from view, as was also the decayed condition of the sole-bar, owing to its face-plate. In the circumstances, I am not disposed to place responsibility for failure to detect these defects upon either of the three men who examined the wagon at Clay Cross and Masborough Sorting Sidings North on the 17th and 19th November.

IV. With regard to the general maintenance and examination by the Colliery Company of wagon 1264, it is satisfactory to learn that an accurate record of repair work executed in their shops is kept, and is available for reference. I have commented upon the method of treatment, apparently adopted in January, 1924, of the decayed end of one of the sole-bars. The plate fixed would prevent the condition of the timber being observed at any subsequent ordinary examination. The breakage of the intermediate draw-bar at the eye-end did not, as above stated, exist on the last occasion when the wagon was in the Colliery Company's Sidings, and therefore was not then observable. With regard to Wallace draw-springing, it appears to have been first introduced (without authority) in South Wales, but it has been accepted by Railway Companies as an alternative to the type of draw-springing prescribed in the Specification for Private Owners' wagons. I am informed that in 1909 demonstration tests carried out on the Midland Railway proved that the rubbers used in this type of springing were too light in character, and were therefore condemned. But there does not appear to be any official record at the Railway Clearing House regarding this type of draw-spring. It seems therefore that its existence, even in a perished and ineffective condition, would not have been taken exception to, had it been observed, by the wagon examiners of either the Railway or Colliery Companies.

On the point made by the Colliery Company that the wagon was over-loaded at Clay Cross to the extent of 29 cwts., it does not appear that overloading to this extent was the immediate cause of the collapse of the wagon, since all the circumstances point to the wagon having been pulled apart. In any case such a load would not, I think, have caused a collapse of the wagon unless it had been seriously defective.

V. The circumstances attending this collision were exceptional, and some of them very fortuitous in character. If there had been no signal post at this particular spot, or if the express had passed the point two or three seconds earlier, there would have been no collision. But the very serious results which followed the failure of this wagon make it necessary that further precautions should be taken to ensure a high standard of wagon maintenance in general, and that stock is not allowed to deteriorate and get into a weakened condition. Ordinary inspection such as is given by carriage and wagon examiners is not sufficient to secure this. More detailed periodical examination is therefore necessary.

VI. I recommend therefore that all wagons should be submitted for detailed and careful examination at least once in every ten years of their life. With regard to Private Owners' wagons, this would necessitate re-registration at the end of every ten years, without which wagons should not be permitted to run on railway lines. To be of practical service, Regulations calling for periodical registration of Private Owners' wagons must be common to all Railway Companies. The matter appears to be of such importance that I feel sure it will receive the careful consideration of Railway Companies generally.

The Wallace type of rubber draw-springing is not to be recommended, indeed, as above stated, it appears to have been condemned—though not officially—in 1909. The substitution of one of the latest approved alternative types of draw-gear springing should be made a condition of re-registration in future.

VII. Availability of first-aid equipment, stretchers, etc.

Information furnished by the Railway Company regarding the availability of first-aid appliances in the vicinity of the scene of the accident may be of general interest. The passenger express carried the Company's standard first-aid and rescue equipment. There were in addition ambulance boxes available (a) in Parkgate and Rawmarsh booking office, (b) in Parkgate and Rawmarsh platelayers' cabin, (c) in Parkgate Junction platelayers' cabin, and (d) in Parkgate Junction signal-box. Three of these boxes were used on this occasion. An ambulance box was also sent from Rotherham (Masborough) station. A stretcher was available in Parkgate and Rawmarsh booking office.

In addition five stretchers and first-aid appliances were voluntarily supplied by Messrs. John Brown and Company, Limited, Aldwarke Main Colliery; and three stretchers, only one of which was used, along with first-aid appliances by the Parkgate Iron and Steel Company Limited.

Two motor ambulances belonging to the Rotherham Corporation and one to the Rawmarsh Urban District Council were used for conveying the injured from the scene of the accident. One baker's motor delivery van was also utilised.

Of the London, Midland and Scottish Railway Company's employees on the scene of the accident, five were qualified in ambulance work.

I have the honour to be, Sir,

Your obedient servant,

J. W. PRINGLE,

Colonel.

The Secretary,

Ministry of Transport.

APPENDIX I.

DAMAGE TO ROLLING STOCK.

I. Engines.				
No. 2537	...	...	...	R.H. Engine sand box broken.
No. 3980	...	...	...	Tender back plate badly bent. Vacuum stand pipe broken on tender back. Tender framing bent.
II. Coaching Stock.				
No. 2217	...	...	...	Corner of roof on left leading side grazed.
No. 2816	...	...	...	Leading corner of vehicle on left side broken in lavatory compartment, and one third class compartment smashed in, rear corner of roof on left side grazed.
No. 1230	...	...	...	Leading corner on left side, and the side cut away into corridor up to brake compartment.
No. 3005	...	...	...	All left side of vehicle cut away and passenger compartments demolished and smashed through.
No. 560	...	...	...	All left side of vehicle cut away, and passenger compartments demolished; also brake compartment.
III. Wagon Stock on Special Mineral Train.				
No. 316 S.E. & C. Railway	...	...	...	Turned over and badly broken.
No. 25337 G.W. Railway Steel-framed wagon	...	...	...	Destroyed.
No. 110821 L.M.S. 10-ton	...	...	...	Destroyed.
No. 7270 G. & S.W. 10-ton wagon	...	...	...	Destroyed.
No. B. 1404 Grassmoor Colliery 10-ton standard wagon	...	...	...	One wheel axle bent, and badly damaged.
No. 1264 Hickleton 10-ton standard wagon	...	...	...	Destroyed.
No. B. 264 Grassmoor Colliery 10-ton standard wagon	...	...	...	Derailed. One end knocked in and otherwise damaged.
IV. Wagon Stock on Empty Mineral Train.				
No. 3537. Bentley Colliery 12-ton standard wagon	...	...	...	1 brake guard bent; 1 sole-bar split; 1 axle-box broken.
01045. Barber Walker & Co. 10-ton standard wagon	...	...	...	2 axle-boxes broken; 1 brake guard bent.
H.2493. B.W. & Co. 10-ton standard wagon	...	...	...	1 brake guard bent; 1 axle-box broken.
0951. B.W. & Co. 10-ton standard wagon	...	...	...	1 brake guard bent; 1 axle-box broken.
0651. B.W. & Co. 10-ton standard wagon	...	...	...	1 brake guard bent.
2129. Butterley 12-ton standard wagon	...	...	...	1 standard oil axle-box lid broken off; 1 brake guard bent.
2398. Butterley 12-ton standard wagon	...	...	...	2 standard oil axle-box bottoms broken; 1 brake guard bent.
1306. Butterley 10-ton standard wagon	...	...	...	1 axle-box broken; 1 brake guard bent.
1969. Butterley 10-ton standard wagon	...	...	...	1 axle-box broken.
1728. Butterley 10-ton standard wagon	...	...	...	1 brake guard bent.
1609. Butterley 10-ton standard wagon	...	...	...	2 quarter planks grazed.
1544. Butterley 10-ton standard wagon	...	...	...	1 brake guard bent.
259. Fox, Derby, 12-ton standard wagon	...	...	...	Derailed, one pair of wheels.
1413. Shipley 12-ton standard wagon	...	...	...	Thrown over on its side, signal post laid on top of wagon; wagon damaged.
94. Foxfield Colliery 10-ton standard wagon	...	...	...	Thrown over on its side and body planks rather badly damaged.
1031. Birchenwood Colliery, Stoke, 10-ton standard wagon	...	...	...	Derailed both pair of wheels, thrown partly over and damaged.
12. Fox, Derby, 10-ton standard wagon	...	...	...	Buffer-locked and off road, slightly damaged.

APPENDIX I.—*continued*.

DAMAGE TO PERMANENT WAY AND SIGNALLING.

No.	
200	Sleepers damaged.
2	36-foot rails badly bent.
17	chairs broken.
1	fishbolt broken.
2	signals demolished :—
	1 two armed signal.
	1 three-armed half-bracket signal.
7	signal wires broken.
4	cranks broken.
2	wheels broken.
2	wood wheel horses broken.
2	timber posts broken.
18	pulleys broken.

APPENDIX II.

PARTICULARS OF REPAIRS TO HICKLETON WAGON No. 1264 IN COLLIERY SHOPS.

October, 1924.

Four side springs reset.
 Screwing up all round.
 Brakework repaired and regulated.
 One new brake block.
 One new buffer shoe.
 Two plates for back of end door-bar.
 Two new address plates.
 Two new check springs.
 Two new check spring plates (S.D.).
 One new plate on sole-bar.
 End door cross-bar repaired and filled in.
 One new complete brake.
 Two draw-straps rescrewed.
 One cross rod repaired, two new $\frac{7}{8}$ -inch ends.
 Three new end door planks.
 Two diagonal knees rebolted.
 Four new 7-inch by $\frac{7}{8}$ -inch guard bolts.
 Two side rails rebolted.
 One new $5\frac{1}{2}$ -inch by $\frac{3}{4}$ -inch bolt.
 Three new $5\frac{1}{4}$ -inch by $\frac{5}{8}$ -inch bolts.
 Five new 9-inch by $\frac{5}{8}$ -inch bolts.
 Eight new $4\frac{3}{4}$ -inch by $\frac{5}{8}$ -inch bolts.
 Eight new $7\frac{1}{4}$ -inch by $\frac{5}{8}$ -inch bolts.
 Six new $6\frac{1}{4}$ -inch by $\frac{5}{8}$ -inch bolts.
 Two new $4\frac{1}{4}$ -inch by $\frac{5}{8}$ -inch bolts.
 Four new $5\frac{1}{4}$ -inch by $\frac{3}{4}$ -inch cotter bolts.
 One new $5\frac{1}{2}$ -inch by $\frac{7}{8}$ -inch cotter bolt.
 Six new saddle planks.

March, 1925.

One new bottom door rod.
 Bottom door band repaired.
 One axle-guard repaired.
 Flooring renailed.
 Saddle planks renailed.
 End door repaired.
 New bolts, nails and washers.

July, 1925.

Brakework regulated.
 Lifting, brasses cleaned and greasing.
 Doors eased.
 Screwing up.

January, 1926.

One new buffer shoe.
 Two reset bearing springs.

On all of the above occasions this wagon has been thoroughly examined for any further defects.