Sir,

I have the honour to report, for the information of the Minister of Transport, in compliance with the Order of the 20th April, the result of my Inquiry into the cause of the collision which occurred on the 16th April, about 2.52 a.m., at Sprotbورو' Junction, between Bentley and Hexthorpe Junctions, on the Doncaster Avoiding line (goods) of the Great Central Section of the London and North Eastern Railway.

In this case, the 10.30 p.m. down express goods train, Barnetby-Ashton Moss, became divided owing to the breakage of a draw bar when starting away at Hexthorpe Junction. The rear portion, comprising 32 wagons and the brake van, ran back for a distance of about 1,120 yards and collided violently at a point near Sprotbورو' Junction with the engine of an empty wagon train, Immingham-Denaby, which was following under the Permissive arrangement.

Goods guard Edward Quickfall, goods guard John Lindley Brown, and fireman Ronald E. Scorah, were killed instantly, while driver C. Brown was injured and severely shaken. The three last-named men, who had formed the crew of another train and had been relieved, had joined the train in question at Stainforth, nine miles from Hexthorpe Junction, and accompanied Quickfall in the brake van.

Of the stock which ran back, the brake van and five wagons were destroyed or badly damaged and derailed, fourteen other vehicles being also affected in respect of broken headstocks, buffers, end boards, etc. The front of the engine of the following train was also damaged, but it subsequently went forward with its train. In regard to the track, only 9 sleepers and 13 chairs were broken.

The breakaway took place between the sixth and seventh wagons, the drawbar of the latter, No. 38806, L. & Y. type L.M. & S.R., having failed. The train, which was unfitted, comprised 35 loaded and 3 empty wagons with a 15-ton brake van, and weighed approximately 500 tons. It was drawn by a 6-wheeled tender, engine No. 6206, type 2-8-0, weighing 121½ tons in working order. The engine of the following train—81 empty wagons with a 12-ton brake van—was No. 6208, of the same type and weight. Both were fitted with steam brakes operating blocks on the coupled and tender wheels, and with the hand brake working the same blocks on the latter.

It was a rough, dark night, and though accounts varied in regard to the precise bearing of the wind at the time it may be accepted that it was blowing with gale force from a westerly direction.

Description.

At Sprotbورو' Junction the Avoiding line runs in a north (Bentley Junction) and south (Hexthorpe Junction) direction, the down road rising on a tangent from the site of the accident—150 yards south of Sprotbورو' Junction box, which was switched out at the time—towards Hexthorpe Junction on gradients as follows:—

- For 290 yards ... ... 1 in 565.
- For 240 yards ... ... 1 in 176.
- For 155 yards ... ... 1 in 184.

Thence the railway curves westward on a radius of 40 chains for 900 yards to Hexthorpe Junction, the inclination continuing thereto and increasing to a maximum of 1 in 92 for 200 yards over the River Don Bridge, which is crossed at a point 400 yards before reaching the junction.
The Ashton Moss train had been brought to a stand at Hexthorpe down inner home signal, 140 yards short of the junction and a few yards south of the box, the front half of the vehicles which broke away then standing on a gradient of 1 in 113, and the rear half on 1 in 130. It may be assumed that the total weight of these vehicles was roughly 425 tons, and that they ran back for a distance of 1,120 yards before colliding with the train in rear. As already explained, the first half of this distance was traversed over curve falling at inclinations varying from 1 in 92 to 1 in 130, and the other half over straight on the easier grades of 1 in 134 to 1 in 565.

Evidence.

(1) The circumstances attending this collision were, briefly, as follows:—The Ashton Moss train—which was well under maximum load for the class of engine on this section of line and was booked at 15 miles an hour—after attaching 11 wagons in front at Keadby (No. 39806 being the seventh) ran to Stainforth, 13 miles, where driver Brown, fireman Scorah and guard Brown were picked up. Thence, after passing Bentley Junction at 2.24 a.m. at the usual speed of about 30 miles an hour, it was brought to a stand at 2.35 a.m. at the inner home signal for Hexthorpe Junction to await the passage, 2.44 a.m., of the Leeds-Sheffield newspaper train on the main line.

Signalman Leedell said he lowered the signal for the train to proceed at 2.45 a.m., but though the whistle was blown the engine did not move forward for at least a minute. According to the evidence of driver Coates it was probably two minutes, viz., 2.47 a.m., owing to the necessity for applying the steam brake to facilitate the release of the hand brake before starting away. The engine was standing at the signal slightly ahead of the box, and Leedell's suspicions were at once aroused by the easy manner in which the start was made. Both men referred to the absence of any rough handling in this respect, and, as will be referred to later, all couplings must have been taut at the time. While Coates was convinced that the whole of the train must have travelled six wagon lengths before the breakaway occurred—and this was also driver Brown's impression—Leedell was of opinion that the rear portion did not move forward at all. It is clear, however, that Coates brought the front portion to a stand after traversing less than 50 yards.

Leedell did all he could to attract guard Quickfall's attention by lowering and replacing several times the outer home signal, and he also waved his lamp in a last effort to warn driver Calthorpe of the Denaby train. Leedell observed the extinction of the headlights of this train, and at once turned, 2.52 a.m., to his block instrument to find that the needle had moved to its normal position owing to the severance of communication. The collision, therefore, must have taken place at least five minutes after the division.

(2) The Denaby train had been held at Bentley Junction to await the passage of the Ashton Moss train, and after Calthorpe had been duly warned, his train left the junction at 2.32 a.m. Calthorpe said he was proceeding cautiously, and upon passing round the curve approaching Sprotbor' he observed the tail lights of Quickfall's brake van ahead. The train was then travelling at 12 miles an hour, and having regard to the rapidity with which Calthorpe found he was approaching the lights he realised that a breakaway had occurred, and was just in time to bring his train to a stand, shout to his mate Lawton, and jump from his engine. The collision took place, however, before Lawton could act upon his driver's advice.

Both men estimated the speed of the vehicles at 30 to 35 miles an hour, and this is of interest in view of driver Brown's evidence. Having regard to the time taken to traverse the distance of 1,120 yards over the curve and gradients mentioned, with the heavy side gale blowing, I feel sure, by rough calculation, that the speed could not have been more than 15 or 16 miles. Moreover, bearing in mind the weight of the vehicles and the resulting damage, this is, I think, a more accurate estimate, the slow rate of acceleration being one reason why the four men in the brake van did not realise what was happening.
The van in question was No. 53355, six-wheeled, of the double verandah (glazed) type, there being a central compartment (also provided with end windows) round which were situated lockers, with a stove in the middle. It had a timber under frame, was vacuum fitted, and the hand brake pedestals on each verandah operated independently the whole of the blocks on all wheels.

(3) Driver Brown, a man with thirty-five years' service, gave his account of what transpired in a very straightforward manner. When he and his mates joined the train at Stainforth, Quickfall remained in the van compartment and guard Brown gave the signal to driver Coates to proceed, calling out to Quickfall that he was doing so. General conversation then commenced, the four men sitting on the lockers round the stove, driver Brown's position being in the leading right hand corner, from which a view could be obtained of the road ahead as the train passed round the curve approaching Hexthorpe Junction.

On coming to a stand there Brown said that Quickfall remarked, "He has brought us up very nicely to a stand without a jerk, and I won't put the brake on." This remark was not made as the result of any comment from the other men, Brown adding that "We shall be held up here until the parcels train passes." Brown heard this train pass, observed it from the window, and subsequently saw the inner home signal lowered. He then made the general remark, "He is ready for us, we are going," and as far as he could remember Quickfall said, "Are we?" Brown stated he could remember the engine starting away smoothly and the brake van moving forward in the right direction—"There was a slight pull but not in any way serious. I am quite convinced the brake was not applied on the van wheels... Certainly it was not a rough start."

When Brown observed the signal cleared he stood up, resuming his seat as the train moved forward. Conversation continued, and Scorah handed round cigarettes. Later Brown became aware of the fact that the van had not reached the cutting ahead of Hexthorpe Junction, and he got up to go to the leading door of the van for the reason that "I felt a little dubious as I had not heard the rattle of the wheels in the cutting. I thought we were in a long time reaching the cutting. I made no remark to anyone as I got up. The others were still talking at the time. I cannot say that I thought we were moving fast, nor do I remember that I thought we were going backwards. I simply was wondering in my mind why we had not reached the cutting, and this made me dubious... It is quite clear in my mind that none of us thought the train was running backwards."

As Brown grasped the door handle the collision occurred, and it is marvellous how he escaped with his life. He appears to have fallen through the floor of the van in some manner.

Conclusion.

(4) Signalman Leedell, who has served at Hexthorpe Junction for two years, referred to the infrequency of divisions on this bank, and the Company informed me that from the 1st January, 1924, to the date of this accident, there had been only two previous cases, viz., 13th November and 13th April, of a broken coupling link and a drawbar respectively.

The wagon in question was of the low-sided, 4-wheeled goods type, tare 5 tons 11 cwt., carrying capacity 12 tons (loaded with potatoes at the time). It was built at Newton Heath and sent into traffic on 18th April, 1921, for common user purposes. The draw gear comprised standard short Gedge draw-bars, connected together in the usual manner (through laminated buffer springs located at each end inside the 5½ in. by 12 in. headstocks) by means of intermediate bars, coupled centrally by cradle, volute springs, rubbers and washers. There was no record of re-taring or lifting since the wagon had been in service.

The shank of one of the short bars failed at a point about 1½ ins. behind the base of the hook inside the headstock, where inspection would not be possible. The overall size of the bar at the point of fracture was 2½ ins. by 1½ ins., instead of 2⅞ ins. by 1¼ ins., and the surfaces of the bar indicated that it had been burnt, thus causing the metal to waste. The fracture had clearly taken place at a defective weld. Discontinuity was evident practically all round, the area of good metal
in two vertical strips only amounting to some 1\(\frac{1}{8}\) sq. ins., and a portion of that had a brittle appearance. With a draw-bar pull of 14 tons it is really remarkable that failure had not taken place before.

Mr. Reid, the Carriage and Wagon Superintendent, L.M. & S. Rly., informed me that the bar was of American manufacture, purchased during the war by the L. & Y. Company, hook and bar being one steel drop forging made without weld. The repair which had been carried out was extraordinary. Apparently, previous fracture had taken place at some date unknown, when an attempt had been made to weld the bar by dropping in a piece of iron at the neck. Not only was the weld a failure, but the metal had undoubtedly become burnt and deperected in the process.

To avoid risk of bad workmanship, of course the greatest attention is paid in railway works and out-station depots to the welding of draw-gear generally. No information, however, was forthcoming in respect of the repair referred to, and it can only be surmised, therefore, that it was undertaken in some private works over which control is impracticable. I think the attention of Railway Companies generally should be drawn to this feature of the case, viz., the difficulty that now appears to exist in allocating responsibility for the execution of inferior repair work of this nature.

(5) While, then, the primary cause of the division was solely due to the fracture of this very defective draw-bar, and had nothing to do with the manipulation of the train, the question of responsibility in respect of the resulting collision remains. This I feel must in a measure rest upon guard Quickfall, whose death, like that of the other men, is to be deplored. The case emphasises the necessity, in the interests of railwaymen generally, for constant and unremitting vigilance on the part of guards of unfit trains, particularly at night and under bad weather conditions.

Had Quickfall taken the precaution of applying his brake when the train came to a stand his attention, at least, would have been diverted from trivial conversation and drawn to the movement of the train upon starting away. Or, again, he would have taken steps during the interval of 7 minutes, from the time the signal was lowered till the collision took place, to go out on to one of the verandahs of his van to exchange signals with his driver in accordance with Regulations, he would presumably have become aware of the division by the direction of travel of the vehicles. And even if control could not have been retained, the warning should have been sufficient for all four men to have saved themselves by jumping.

The fact is that after leaving Stainforth Quickfall had taken no active part in the running of the train, though it should be recorded, according to Coates’ evidence, that at all previous stopping places on this unfortunate journey the usual signals had been exchanged. Moreover, Coates, who had worked with Quickfall for nine months and knew him well, said that he was a very careful man in this respect. It can, therefore, only be assumed that generally the weather conditions which prevailed, the hour of the night, and the presence of the other men in the van, had the effect of causing this temporary lapse of attention to duty.

I have the honour to be, Sir,

Your obedient Servant,

A. H. L. MOUNT,

Lient.-Colonel.

The Secretary,

Ministry of Transport.