some extent responsible, owing to the incunctous way in which various of these schemes have been recom-
mended and praised in reports and public documents.

Perhaps you will kindly return the report of Mr. Cudworth, which is an original document.

I have, &c,

The Assistant Secretary,
John Shaw,
(Railway Department,) Secretary.
Board of Trade.

South-Eastern Railway,
Locomotive Department,
Ashford, 5th July 1873.

DEAR SIR,

I return herewith the communication from the Board of Trade respecting the fastening of tyres, and give below my replies to the questions asked, so far as the locomotive department is concerned.

1st. The diagram attached shows the mode of fastening adopted for steel and iron tyres.

2nd. Four good engines and two tenders are fitted with "Mansell's Patent" tyre fastening out of a total stock of 243 engines, and 213 tenders.

3rd. Within the last ten years we have put under the engines and tenders 1,396 steel tyres and 2,510 weldless iron tyres, and not a single case of a tyre breaking on the journey has hitherto occurred; the risk of breakage cannot therefore be very great.

Captain Tyler, in his report of January 9th, recommends Mansell's patent fastening without a wood lining between the tyre and wheel, and he states that there is no reason, mechanical or economical, why the system should not be adopted. He seems however to have overlooked the fact that, by the system he recommends, ten-fifths of the bearing surface between the wheel and tyre are removed; and that in the most effective part, the consequence will be that the tyres will almost certainly become loose, and thus a risk of another kind will be created which will be as dangerous as the breakage of the tyre. It is, I believe, very doubtful whether the retaining rings will hold a loose or broken tyre under the leading wheel of an engine in its place, and it certainly has not hitherto been thoroughly tested.

4th. I do not propose to alter the present system of fastening tyres until it has been proved by the experience of other railways that the system recommended by Captain Tyler is safe and effective.

I am, &c,

John Shaw, Esq.,
Secretary,
London Bridge.

Printed copies of the above report were sent to the Company on the 14th February.

MIDLAND RAILWAY.

Board of Trade,
(Railway Department for
Whitehall, 6th December 1873.

Sir,

I have the honour to report for the information of the Board of Trade, in compliance with the instructions contained in your minute of the 6th ultimo, the result of my inquiry into the circumstances which attended the collision that occurred on the 3rd ultimo, between an express passenger and a mineral train at the south side of Chesterfield station on the Midland Railway, on which occasion six passengers are reported to have been injured.

The Midland Railway Company are engaged at the present time in providing additional accommodation for the working of their traffic on various parts of their line; and they are now doubling their lines between the north side of Chesterfield station and Claycross, so as to have two lines of railway for their passenger traffic and two separate lines of railway for their goods traffic.

This part of the company's line is worked on the absolute block system, with the assistance of the electric telegraph, and one of their telegraph signal boxes, called the south box, is situated about half a mile south of the Chesterfield station. There are sidings on each side of the main lines at this part, and many of those on the eastern side are intended ultimately to be converted into the up and down goods lines. These sidings are entered at different places from the up and down main lines.

On the day in question, an up mineral train reached the Chesterfield south box at 4.17 p.m. by the up main line, and drew ahead over a pair of trailing points at the south end of a cross-over road, which connects the up main line with the adjacent siding east of it, intended to be the down goods line, and stopped for the purpose of being shunted into this siding, or down goods line, and thence across to another lying east of it. The trailing points of the cross-over road being worked from the south box by levers, the signalman on duty observed these points, and saw that the waggon was properly passing over them back into the siding; the signalman received the telegraphic signal "train on line" from the next telegraph station to the south for the down express train also at 4.17 p.m., and he forthwith gave "train on line" to the signal box at Chesterfield signal box for this down express train, and then proceeded to make the proper entries in the register book, and on looking round, he observed that the mineral train was coming across from the down goods line, passing over the up main line, and approaching the down main line.

I should explain that the cross-over road before referred to is 55 yards in length; and about seven yards north of the north end of the cross-over road, a slip road had been put in some weeks since, for connecting the down goods line with a through road that passes obliquely across the up and joins the down main lines, and also serves to connect the sidings lying west of them, and those (the greater number) situated to the east of the main lines.

The points on this slip road had been spiked down so as to stand all right for trains to continue travelling on the down goods line; but on this day, a mechanic, who was engaged in connecting these points with weights so as to make them self-acting in one direction, had withdrawn these spikes, and he had attached the rod that moves the points to the lever on which the weight is placed. There are two holes on each side of the pivot, on which it is supported and moved. If the point rod be attached to the lever at one of these holes, the weight brings the facing-points of the slip road into the same position as they had been when spiked down, whereas, if attached to the other hole, the weight causes the facing-points to stand open from a train to pass on from the down goods line across the up main line and then towards the down main line; and this is exactly what had been done, and happened on the 3rd ultimo. The mechanic made a mistake, and attached the point rod to the hole in the lever at the wrong side of the pivot on which it worked, and the mineral train thus passed by means of these facing-points (while being shunted) from the down goods line across the up and towards the down main line, at the moment when the down express train was approaching the south box.

The signalman stated that when he observed the mineral train approaching the down main line, the down express train was inside the distant, but had not passed the down home-signal situated 60 or 70 yards south of his box, and he put up the down home-
The train which ran into the mineral train was the 3.0 p.m. down express train from Derby. It consisted of engine and tender, with two third-class carriages, and a break-van at the rear of the train; and the driver states that as he approached Chesterfield he found the signals worked from the south box were off for him to proceed, and he was running at the usual speed with the steam off for stopping at Chesterfield station, or at 30 miles an hour, when, as he was about passing the home-signal, he saw that the guard's break of the mineral train was foul of the right rail of the down line on which he was running.

He says he told the fireman to put on the tender break, reversed his engine, applied the steam the reverse way by the Chekalier process, whistled for the guards break and did all in his power to stop, but the collision took place about 4.18 p.m. The distance was too short to make any material difference in the speed after he observed the obstruction; he did not see the home-signal put up to danger.

The engine and tender were not thrown off the rails, but broke away from the carriages. The engine had its buffer plank broken, steps, motion link, one axle-box, smoke box door, and two driving springs damaged. One carriage was thrown off the rails. The leading carriage had its right side (as the train was travelling) smashed in; the next carriage was a complete wreck, all the right hand side being knocked in; the third carriage had one compartment knocked in, on the right side, the panels indented for the whole length, and the body of the carriage shifted on the framing; the fourth carriage had a hole made on the right side, and the guards van was slightly damaged.

Nine mineral wagons were completely smashed.

It is very remarkable that the injuries received by the passengers were not very much more serious than they are represented to be, as the collision must have been a very severe one.

The collision was entirely due to the mistake of the mechanic. I did not see this man, as he was suspended from duty immediately the collision took place, and he left at once, and had not been seen since; but I was told that he had been in the service of the company for about two years, and for one year had been employed on the line at signal boxes, points, and crossings.

No other servant of the company appears to be blamable.

I would beg to suggest, seeing what frightful consequences may result from so simple a mistake, that the connections between sidings and main lines should never be completed, as far as the connecting of the facing-points that lead out of or into the main line, except an inspector of the permanent way, or other responsible person, be present.

I have, &c.,

W. Yolland,
Secretary, Railway Department,
Board of Trade.

Printed copies of the above report were sent to the Company on the 27th December.

MIDLAND RAILWAY.

Board of Trade, (Railway Department),
Whitehall, 30th December 1873.

Sir,

I have the honour to report, for the information of the Board of Trade, in compliance with the instructions contained in your minute of the 24th ultimo, the result of my inquiry into the circumstances connected with the collision which occurred on the 20th ultimo in the Colwick cutting near Nottingham, on the Midland Railway, between a mail train and a goods train.

Five passengers and a post-office clerk have complained of injury.

The spot where this collision occurred is situated about 1 mile 700 yards on the west of Carlton station, the first station out of Nottingham on the line between Nottingham and Lincoln. The line from Carlton towards Nottingham, after having been quite straight for a long distance, here curves to the right in running round a hill-side. The gradient is practically level.

At 9.15 on the evening in question, a special goods train, consisting of a 6-coupled engine and tender, 38 loaded goods waggons, five empty waggons, and a break-van, started from Thorpe sidings, about half a mile west of Newark, for Nottingham, who had served as such for two years, was not well acquainted with this part of the line, having been on it only three times previously as fireman, with the exception of the down journey in the morning. The fireman, a cleaner in the Nottingham sheds, who had not been quite a year in the service, had never been on the line before this day. The guard knew the line well. Some conversation took place, before starting, between the driver and guard, as to whether they could reach Nottingham before the mail due out of Newark at 8.37; and it was decided that as the 8 o'clock goods train was allowed 55 minutes for running the 17 miles from Newark to Nottingham, and as they ought to be able to make the journey in the same time, they could reach Nottingham at 9.10 p.m., the mail not being due at the ticket platform till 9.14 p.m., and at the station till 9.17 p.m. The train accordingly started, with the consent of the fireman in the Newark yard, who accompanied it to the Thorpe branch.

The driver declares that he maintained a steady pace of about 35 miles an hour all the way to the Colwick cutting, where, on finding the distant-signal from a level crossing (on the Nottingham side of the cutting) against him, he for the first time slackened his speed to about 10 or 15 miles an hour; that upon this signal being taken off in response to his whistle, he again gradually quickened his speed, having looked back and seen that he had got the whole of his train, and was not aware that anything had happened till he was entering the Nottingham station yard, when he found he had lost 11 waggons and the break. The driver further states that there was a slight fog in the neighbourhood of Colwick cutting, but that he was well able to see the tail lights of his train, and the crossing distant-signal 300 yards off. He is quite positive as to having felt no sensation on the engine of having been run into, and says his engine was quite matter of the train.

The fireman's evidence agrees with that of the driver as to there having been no check to the speed, which was a steady pace till the Colwick crossing distant-signal was sighted at danger, when the speed was gently reduced, and again gently increased on the signal being taken off. He declares also that he felt no blow on the engine, but says that on looking back twice after the signal had been taken off, he was unable to see the tail lights on account of the fog, and told the driver so; and that the latter then looked back, but made no reply.

The goods guard states that he was alone in the van; that he looked at his watch just before reaching Lowdharn (nine miles from Thorpe), and found the