

THE REPORT OF THE COURT OF INQUIRY,

HELD IN PURSUANCE OF AN ORDER OF THE BOARD OF TRADE,
DATED THE 12TH SEPTEMBER 1874,

INTO THE CIRCUMSTANCES ATTENDING THE COLLISION ON THE

GREAT EASTERN RAILWAY

WHICH OCCURRED NEAR

N O R W I C H

On the 10th September 1874.

Presented to both Houses of Parliament by Command of Her Majesty.



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1874.

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Collision on the Great Eastern Railway which occurred near Norwich on the 10th September 1874.

*Board of Trade,
(Railway Department),*

1, Whitehall, 30th September 1874.

SIR,

In compliance with your appointment of the 12th of this month, I have the honour to report to the Board of Trade the result of the public inquiry into the collision which occurred on the night of the 10th of September, about $1\frac{3}{4}$ miles from the Norwich (Thorpe) station on the Great Eastern Railway.

On this occasion the express train, due to leave London at 5 p.m., and Norwich at 9.10 p.m., came into collision with the up mail train, 8.20 p.m. from Lowestoft, and 8.40 p.m. from Yarmouth, which was running in an opposite direction on the same line of rails, at about half-past 9 p.m. I regret to say 19* passengers, of whom one was a servant of the Company, and 4 other servants of the Company, were killed on the spot or have since died from their injuries, besides 73 passengers and 2 servants of the Company who were more or less seriously injured.

The Court sat in the Guildhall at Norwich, which was kindly placed at our disposal by the Mayor of that city, who further afforded us every assistance during our investigation.

After an inspection of the scene of the accident, proceedings were commenced on Monday the 21st of September, and were continued on the following day. After an adjournment, they were resumed on Monday the 28th, and were concluded on Tuesday the 29th instant. Altogether, 33 witnesses were examined, and their sworn depositions accompany this report.

The Coroners for the county of Norfolk and for the county of the city of Norwich, who were holding independent inquests on the bodies of persons killed in the collision, attended our inquiry and rendered us valuable assistance which we desire thus to acknowledge.

Description.

The Great Eastern Railway has a double line of rails from the Thorpe station at Norwich, for rather more than a quarter of a mile, to the Norwich (Thorpe) junction, whence it diverges to Brundall and Reedham for Yarmouth and Lowestoft on the east, and to Ely on the west. From that junction to Brundall, about $5\frac{1}{2}$ miles, the line is single; but a portion of it, about $1\frac{1}{2}$ miles long, to the East Norfolk junction, is in course of being doubled, and will shortly be opened as a double line for traffic; and powers have been obtained for doubling the remainder of the line to Brundall. From the latter place to Reedham, six miles and a half, the line is double; and thence to Yarmouth and Lowestoft there are single lines. According to the evidence of Mr. Langley, the engineer of the Company, the site of the collision (shown in diagram No. 1), was about 126 chains from the Norwich (Thorpe) station, and $1\frac{3}{4}$ chains on the east of the river Yare; and the Norwich train would have run for 13 chains up a gradient of 1 in 2,443, then for 10 chains up 1 in 357, and then for about $2\frac{1}{2}$ chains down a gradient of 1 in 228; whilst the train from Brundall would have been ascending a long gradient of 1 in 228 up to the point of collision.

At the Norwich (Thorpe) station there is an arcade, under which are two platforms (shown in

diagram No. 2), with three lines of rails between them. The booking and telegraph-offices (diagram No. 3) are on the departure-platform. The telegraph-office has a small window, with an aperture below it, $9\frac{1}{2}$ inches wide by $12\frac{1}{2}$ inches deep, closed by a wooden shutter, and referred to in the evidence as the telegraph-wicket; and a desk under it on which messages may be written. A special book is kept in this office in which single-line messages should all be entered. The distance from the telegraph-window to the edge of the platform is about 23 feet. This window is also about eight yards from the open end of the arcade, and 70 yards from the closed end of it. It is, therefore, conveniently situated to enable anyone in charge of the station to communicate with the telegraph-clerk. There is no entrance from the platform to the telegraph-office, and the only means of communication between the platform and the telegraph-office is through the aperture or wicket below the window above referred to. At the back of the telegraph-office, and on the road of approach to the station, there is a door, and near this door is a desk for the use of persons sending ordinary messages. There is a glass screen between this desk and the interior of the office, but the public are in the habit of also writing messages on the desk below the aperture on the platform. Inside the telegraph office there are eight speaking instruments, of which the third from the approach road and the sixth from the platform is used for messages between Norwich and Brundall, though this instrument appears to be used also for other purposes when required. This description of the telegraph-office and its fittings will be better understood by a reference to diagram No. 3. The departure-platform is continued beyond the arcade, and the ticket-platform about half-way between the middle of the station and the Norwich (Thorpe) junction, as will be seen in diagram No. 2; but there is a curve in the line to the left in looking from the departure-platform, and the ticket-platform cannot be seen from the departure-platform by a person standing opposite the telegraph window. The end of it becomes visible, however, on stepping off the platform across the departure-line, to the further side of that line of rails.

The Evidence.

In giving a summary of the evidence it will be desirable to commence with that which treats of the system of working the traffic over this portion of the line, and then to proceed with that relating to the facts of the case.

Mr. James Robertson, superintendent of the whole of the Great Eastern Railway for the last 18 years, in describing the arrangements for working the traffic over this portion of their system, said, all ordinary trains were passed over the single line in accordance with the working time-tables for goods and passenger trains. If any irregularity occurred the trains were directed by telegraph. The regulations on pp. 46, 47 of the Company's working time-tables (now put in), comprised all that was required, and was enforced, in the working of the single line between Norwich and Brundall. These regulations had been in force for 20 years, so far as they were contained in the Company's rule-book. Engine-drivers of all trains had to be furnished by written authority before passing

* Afterwards increased by two other deaths.

over this single line, and without written orders no engine-driver could do so. He produced the order, dated 28th August 1872 (Appendix A.), under which this was done, and also a copy of the form of ticket to be given to each engine-driver passing over the single line (Appendix D.). There were no instructions beyond what had been thus produced for the working of the single line between Norwich and Brundall. The only alteration during 20 years had been the addition of this starting order. The book produced containing entries of telegraph messages was used specially for this particular portion of single line and for that purpose only. The practice was to sign the entries before the messages were sent, and there was an order by the chief of the telegraph-department on that subject. Replies should also be signed before action was taken on any message. This had been the practice, but there were no printed or written instructions for it. The object of these regulations was to enable those in charge of the stations to alter the crossing-places so as to facilitate the running of the trains.

He put in a copy of a letter, dated 21st November 1872 (Appendix B.), to the district superintendent, Norwich, with reference to the starting of the 8.40 p.m. mail train from Yarmouth to London.

In altering the crossing of trains a message should be sent from Norwich to Brundall, signed by the inspector on duty before it was sent. The inspector was the responsible man. He might employ the clerk to write it, but it was the inspector's message, and the telegraph-clerk was responsible if he sent it without signature. If the inspector could not get an immediate reply, it would still be his duty, even if he left the telegraph-window, to return, and receive that reply, and sign it. The message would be complete at Brundall on being received there with the signature of the Norwich inspector, and the train might be despatched from Brundall accordingly. They trusted to the inspector that he had sent the message to Brundall, and would not send any other train to Brundall. In the event of a change of duty, they trusted to communication between the men to prevent one man from ordering a train from one direction and another man from starting a train in the opposite direction. He had never considered it necessary to make any extra safeguard to meet this contingency. The amount of traffic and the number of special trains running had prevented the adoption of the train-staff system. There were a great number of special fish-trains. With the experience of this accident he should not be disposed to adopt the train-staff system between Brundall and Norwich because the traffic could not be carried on without great irregularity. If the train-staff system was possible it would give additional safety, and he would adopt it to-morrow if he thought the traffic could be carried on. He would recommend that the train-staff system should be adopted between the East Norfolk junction and Brundall when the double line had been completed from Norwich to the East Norfolk junction. He had had that in view for some time, and should further recommend his directors to adopt the same system between Reedham and Yarmouth and Reedham and Lowestoft. Where the train-staff system could not be adopted he knew of no other safeguard that he could recommend. It would be easier to work between the East Norfolk junction and Brundall on the train-staff system than between Norwich and Brundall, as one length was four and the other six miles, and it would be easier to send from either end in the event of a break-down and more easy to pass the trains on account of the shorter distance.

Mr. Thomas Stevenson, district superintendent for the Great Eastern Railway Company, said that his district extended for 220 miles, from Norwich to Ely, from Ely to Wells, from Wells to Heacham, from Dereham to Hunstanton junction near Lynn, from Norwich to Yarmouth, from Reedham to Lowestoft, also from Yarmouth to Beccles on the East Suffolk section, from Norwich to Tivetshall, and from Tivet-

hall to Beccles. This included the portion of line upon which the late accident occurred. He had been in the service of the Company for 27 years from last May. Till 1852 he was principally in the goods department at Thorpe station, Norwich. In November of that year he was appointed station-master there. At that time the single line between Norwich and Brundall was worked under his immediate supervision, and until he was appointed district superintendent in March 1854. It was worked then as now. He found it so and continued it. When trains were working in their ordinary course, that was to say, in accordance with the working time-tables, no telegraphic message was sent, no other than verbal orders were given to the engine-drivers, and, in fact, they trusted to the time-tables for safety. In the event of any irregularity he believed a message was sent, for instance, from Norwich to Brundall, asking for a certain train to be sent on in the same form as was now employed. He gave the messages himself and not through an inspector, and they were forwarded by a telegraph-clerk. He started the trains, or, in his absence at meals, &c., the inspector on duty. No irregularity, with one exception, ever occurred up to the present time in working the single line. It occurred on a Saturday, when they were blocked with traffic from Yarmouth, about 17 years ago. He had ordered a special to be got ready to Yarmouth, and a shunter who had no authority to start the train, gave an order for it to start without permission of the inspector on duty; and, being a special train, it should not have started without a telegraphic order. No collision occurred, for it was in the middle of the day, and the engine-drivers of the two trains saw each other and pulled up, not far from the site of the recent collision. He was not aware of any other irregularity in the starting of a train from either end, nor of any messages being sent irregularly by telegraph-clerks, or delivered in without signatures of inspectors. He had the most perfect confidence in the working of the present system, and his confidence was only shaken now by this accident. He believed the inspector did not carry out his duty. He ought in the first place to have signed the message calling the mail on from Brundall, if he intended it to go. He did not think an inspector would dictate a message intending it not to be sent until it received his signature. He might, possibly, being in a hurry, order the message to be sent, promising to return and sign it. He might expect the clerk to send the unsigned message if he were called away in a hurry. This was his opinion. He was not aware of messages being so sent, nor had he any reason to believe it had been done. From the very large and uncertain traffic passing over that portion of line, and coming from Yarmouth and Lowestoft, he felt it would be impossible to work that portion of line satisfactorily by the train-staff system. He knew of no other additional safeguard to the present system that could be used to advantage. The more heavy and variable the traffic, the more necessary it was to provide as far as possible perfect safeguards, and if such could not be applied, then the only other alternative was to double the line.

In this case, it being a frequent message to Brundall, he had no doubt an inspector would intend it to be sent though he did not sign it, but he would rather not express an opinion as to whether, in the event of a message being dictated or handed in without being signed, an inspector or telegraph-clerk should be held responsible in regard to it. The traffic between Lowestoft, Yarmouth, and Norwich was increasing, and was probably one-third more than it was 15 years ago. The passengers passing over that line must be counted by thousands. The traffic was very heavy. He was aware that Rule 142 (Appendix C.) had not been observed as regarded the second part of it, owing to the inconvenience of giving the order to the guard of a long train. The order, which was a printed form (Appendix D.), was now given to the engine-driver; and there was only a verbal communication to the guard.

The doubling to the East Norfolk junction was on account of the traffic of the East Norfolk line being added to that of the existing Norwich and Brundall line. A portion of the line between Reedham and Lowestoft was worked on the train-staff system, because direct trains ran so frequently between Reedham and Lowestoft and Yarmouth and Lowestoft. It was not worked on that system until the direct line between Yarmouth and Lowestoft was opened, and increased traffic thrown upon the section. It had been the custom for the last six or eight years to call on the mail from Brundall when the express was about 25 minutes late. It was only telegraphed from Brandon to Norwich when 15 minutes late. It might, of course, be always telegraphed in order that information might be afforded as to what time it was keeping. There is no such book in existence as that referred to in Rule 98 (Appendix E.) Since the taking off of the express train between Ely and Norwich the slow train had come in more irregularly.

The arrangements for working the telegraphs were described by *Mr. Henry Vinay Draper*, superintendent of telegraphs for the district including Norwich, Peterboro', Cambridge, Lynn, Ipswich, and other places. He said he had been at Norwich in that capacity since 5th November 1870, and had been altogether 28 years in the telegraph service; he was principally engaged on the line, but spent much of his time in the telegraph-office at the Thorpe station.

In altering the crossing of trains on this single line, the inspector came to the telegraph-window on the platform, which was conveniently situated for the purpose, and got the single-line book. He sometimes wrote in it the message to be sent himself, and sometimes he asked the clerk to do it for him. They sanctioned the clerk doing it for him, because the inspector was not always able to do it for himself. The message must then be signed by the inspector, but there were no written or printed instructions on the subject. His superior told him (the witness) to satisfy himself that any clerk employed for single-line messages must understand his duties before being allowed to transmit single-line messages. Those were his instructions when he first joined the department in 1870, and he had been told so many times since. When a clerk was appointed he considered whether he was capable of doing single-line duty. The clerks came as "good telegraphists," and worked for two weeks or more under the eye of the clerk in charge of the telegraph-office before they were entrusted with the sole responsibility of single line messages. It would be the duty of the telegraph-clerk to see the message duly signed by the inspector before accepting it for transmission. He had never in his life seen a single-line message sent before it was signed. If he saw such a message had been sent before having the sender's signature, he should very severely reprimand the clerk. When the message was signed it might be forwarded at once. The reply was received generally in from one to two minutes. As it was received it was written in the book, and put through the aperture below the window, and left there for the signature of the inspector to the reply-message. The inspector generally left the window for one, two, or three minutes, and came back to sign this. He had never known an inspector let any considerable period of time elapse before doing so. He must come to receive his reply-message before he could act upon it. There was a bell which could be rung from the telegraph-office. It was fixed outside under the arcade and above the platform, near the window of the office. It was specially used to call the inspectors; when the station-master at Brundall wanted to cross a train out of the ordinary way, then the inspector came to see what was wanted. If the inspector did not come immediately the bell should be rung. In the event of a message from Norwich to Brundall having been sent, and the book with the reply having been placed in the wicket door, or left inside for the inspector's signature, the bell would not be rung for him, but the book would remain until he came back, even if he stayed away an hour. He considered that

the telegraph-clerk had done his duty when he had placed the book, with the reply in it, within reach of the inspector at or inside the telegraph-window, and that it was not his duty to ring the bell to call the attention of the inspector to it. The clerk took his orders from the inspector on duty. It was the former's duty to send the message and receive the reply, but not to call the inspector afterwards. He believed this accident would have occurred even if the bell had been rung immediately for the inspector. If he had been in the office at the time he should have probably rung the bell for the inspector, though it would not be his duty. He was in the telegraph office about two hours after the accident occurred. Hubbard, the clerk in charge, was there, and Robson, but the latter was the only person who ought to have been there at 9.35, and no one else had any right there unless he came on business. He looked at the single-line book and found the following message in the book, now produced unsigned, "Send up mail train on to Norwich before the 9.10 p.m. down passenger train leaves Norwich. Time received 9.24 p.m. Time sent 9.25 p.m."

He found also the following reply entered in the opposite page: "I will send the up mail train on to Norwich before the 9.10 p.m. down passenger train leaves Norwich. Signed, W. Platford. Time received 9.25 p.m."

He said to Robson, "Robson, why have you not carried out your instructions in getting the message signed before sending it? You know the importance of the matter as well as I do?"—He replied, "I am aware of it. Cooper, the night inspector, came to the wicket, dictated this message to me. I wrote it down. Cooper left the wicket, saying he would come and sign instantly." The witness rejoined, "Why did you not get it signed then? You see the serious consequences of the affair, and the trouble it is likely to bring you in." He replied again, "I see my error, I did it to oblige Cooper; I never did such a thing before in my life."

Robson having sent an unsigned message might have rung for Cooper, but he could not say that he ought to have done so, even though he had sent an unsigned message, as he considered it to be the inspector's duty to return to the wicket to sign the message.

If an inspector told a telegraph-clerk to write a message he should consider he intended it to go though he did not sign it. He did not know of such a case having occurred before. He had never known an unsigned single-line message being given in before.

There were eight instruments in the Norwich (Thorpe) telegraph office, and the Yarmouth instrument (the third from the approach end), used for single-line messages, and also for other purposes, was an ordinary, double-needle speaking-instrument. A glass partition separated the lobby used by the public for sending messages from the office containing the instruments. There were no telegraphic means of stopping the trains when once the mistake had been made.

He had often called Robson's attention to the importance of getting messages signed, though he never knew him to omit this duty. Robson was once fined, about twelve months ago, for having a stranger in the office. Otherwise he had been most commendable in the discharge of his duties. He had been 14 or 15 months in the department at the Norwich (Thorpe) station. He (the witness) had watched him and could give him the best of characters. Robson was still doing duty in the office, but was not allowed to touch the single-line instruments.

Herbert Samuel Taylor, a telegraph-clerk in the employ of the Great Eastern Railway Company at Thorpe station for 16 months, said he took alternate duty with Robson. He was on duty alone in the night but not by day. He had sent single-line messages for the last 16 months. In sending single-line messages in the day the inspector himself most frequently wrote the message in the book, and at night

the clerk most frequently wrote for him. When the inspector wrote he signed at once. When the clerk wrote for him he was sometimes called away, and then the message waited until the inspector returned. He had waited as many as five minutes for an inspector to return and sign a message after he had dictated it. If the inspector did not return the message should lie where it was. He would not call the inspector or ring the bell. He confirmed the last witness as to its being their duty not to send a single-line message away without its being signed by the inspector on duty, and said he would not do so. He had been frequently cautioned by his superintendent not to send away such a message. He had worked the Newmarket single line at the Cambridge station on the same system before coming to Thorpe.

Mr. Sproule, station-master at Norwich (Thorpe) station for 16 years, said the number of trains running daily up and down between Norwich and Brundall averaged 15, he believed. There were ten up trains on Mondays and Saturdays and nine up trains on ordinary days. There were 11 down on Mondays and 12 down on Saturdays, and 10 on ordinary days. There were specials nearly every day, and fish trains in the fish season. At present these averaged about one up and one down daily, but in the fishing season they averaged more than three trains each way daily. The fishing season embraced October, November, and December. The express train, when more than 15 minutes late, was always telegraphed from Brandon, but no telegram was received for the express train, 5.0 p.m. from London, on the evening of the 10th September. He (witness) never interfered with the working of the single line as regarded the alteration of the crossing-places for trains. That was at Norwich the special duty of the inspectors—Parker by day and Cooper by night. If he were there they sometimes consulted him on the subject, but not as a matter of duty. He simply gave the general instructions, leaving the inspectors to carry them out. When an inspector wished to change the crossing-place he should go to the telegraph-wicket and ask for the single-line book, and enter in it the usual message sent on such occasions. They did not always write the message themselves, owing sometimes to the weather, but requested the telegraph-clerk to do so. He had not seen this happen so far as he could remember, but he knew it was done, having seen the messages written in a handwriting not the inspector's. They were invariably signed by the inspectors and handed to the telegraph-clerks, and he could not conceive an inspector omitting to do this. A message being signed was sent by the clerk, the inspector as a rule waiting to sign the reply. Occasionally, as he had seen happen many a time, the inspector went away upon some duty and returned to sign the reply. He (the witness) only dealt with the telegraph-clerks through their superintendent. They were not under his charge. If he had known an unsigned message had been sent he should have left the matter for inquiry. He had no hesitation in saying that he should blame the inspector for giving in an unsigned message more than a telegraph-clerk for receiving it, especially considering the difference of age and experience as between Robson and Cooper. It seemed to him utterly impossible that an inspector should ask a telegraph-clerk to write such a message not meaning it to go until it was signed, because the risk was so great, and because he had never known such a thing to have occurred previously. No trains of any description were allowed to leave the station without written authority being given to the engine-driver. The inspector wrote it himself and handed it himself to the engine-driver. They sent the booked trains forward without any telegraphic communication, and they might follow one another without notice of "line-clear" from Brundall, or of their having been despatched from Norwich. No special train could be started without a distinct order by telegraph. The bell outside the window of the telegraph-office had always, as far as he knew, been used for summoning

the inspector to receive a single-line message from Brundall, and, he believed, occasionally for the receipt of an urgent message. On the receipt of an unsigned message the clerk should take no notice of it at all, or might ring the bell at his discretion and inquire what was meant. His best course would be to decline sending a message until it was signed. If he received such a message he should say, "There is the message, I will send it when you have signed it, but not till then." If the inspector wrote the message promising to come back and sign it, the clerk would not be justified in sending it without his signature. During the 16 years he had been at the Norwich station no alterations had been made in the system, except as regards the starting orders since 1872. They previously worked under the same system without the starting orders, except when trains were out of their course, for which they were always used. He always had confidence in the system. He knew of no difficulty in the relief of inspectors, and had seen them consult each other night and morning. (Rule 98 (Appendix E.) of the General Regulations provides for interchange of duty.) Inspector Parker had been on duty all day September 10th, and Inspector Cooper came on duty at 9 o'clock p.m. to relieve him. It was understood that Parker should remain to assist until the 9.10 p.m. train had left, though his duty had ceased. It had always been the custom for Parker to remain and start the down express, unless it was very late, but with the consent of the night inspector. Parker made no communication to him before starting the train. Cooper had been an inspector on the line at Thorpe station about 14 years, and had borne an excellent character. He never had a more careful man under his directions. Cooper was away ill about five weeks in May, June, and July 1869, and he received an injury to his hand last year which caused his absence from the 6th to the 20th of December.

Proceeding to the facts of the case, Mr. Sproule said that on the night in question he was in his office, which was next the telegraph-office, when Cooper came in to get his usual orders for the night at about 9.16 p.m., and said to him, "What about having the mail up, sir?" Witness looked at his watch which was right,—it was 9.17 p.m.,—and asked Cooper "What time the mail was due at Brundall?" He replied, "9.25 p.m." Witness said, "We will not have the mail up, certainly not." Cooper then remarked, "You know, sir, there is an order allowing us to detain the 9.10 p.m. down train as late as 9.35." He said, "All right, we will soon get her off." Cooper then left his office. He could not have been there more than two minutes. A few minutes afterwards, at 9.23, witness heard the down express run in under the arcade. In eight minutes, at 9.31, he saw the train start again while standing at the door of his office. He went in there again and heard some few minutes after a sharp click of the wicket-opening at the telegraph-window. He wondered and listened, and heard something about mail. He rushed out and said, "What about mail?" Cooper was then standing against the telegraph-window. He turned round, and had the appearance of a man paralysed, and said "I have ordered it up," or "the mail up," he was not sure which. He (the witness) was so unstrung that he hardly knew what took place. He felt for Cooper so much that he could hardly speak to him, but put the ticket collector, Hayden, in charge, he did not know at what time. He suspended Cooper some time early in the morning, feeling he was wrong. He knew that no other person could give the message for the train to come on. He had made no inquiry.

Mr. Sproule, having been recalled towards the close of the inquiry, was further examined, and said that Cooper came into his office at 9.17 p.m. that night. It would take him two or three minutes to look through his orders. It was impossible that he was ten minutes in doing so. He (witness) was engaged signing pay-sheets and letters during that time. He could not tell the exact time Cooper came into his office, for he did not look at his watch until he asked about the

mail. But it was quite true he came into his office and looked through the orders before he asked about the mail. He was very busy and hurriedly engaged signing pay-sheets and letters in order to get them away by the mail. He did not think it possible that more than three or four minutes could have elapsed before Cooper asked him about the mail. He saw Cooper come into his office. There would be about half a dozen orders, of about two or three lines each. Some of the orders would be addressed to Cooper himself, which he would read. He repeated that he told Cooper distinctly not to order the mail up. Cooper left the door of his office open, but he did not hear him say anything at the wicket. He could have heard anything spoken in an ordinary tone at the telegraph-wicket from his office, but that night was windy, and the wind might have prevented him from hearing. There was no one in his office between 9.6 and 9.20 except Cooper. He went on uninterruptedly signing when the latter came in.

William Parker (day inspector at the Thorpe station for 20 years) said that he came on duty on the 10th September at 9 a.m. he ordinarily left duty at 9.10 p.m. He first saw Inspector Cooper that evening at 9.24, one minute after the down express had run into the arcade. Witness had been assisting in collecting the tickets of that train and came on with it to the arrival platform, and there found Cooper. Knowing the train was late, he asked Cooper whether he had ordered the up mail on to Norwich; this was at 9.24. He replied, "Certainly not. Let us get the train away as soon as possible." Perhaps a quarter before nine, but he could not say for certain, he wrote the order for starting the train. He wrote it then so as to have it in readiness in case the train should be in time. This was his usual practice. He did what he could in assisting to get the train away, and then handed the starting order to the engine-driver. He always did this himself; he said to the engine-driver on that occasion you have got to go to Brundall before the up mail arrives. Nothing else happened before he started the train. Cooper told him afterwards in conversation that he had gone to the wicket, and ordered the up mail train on to Norwich, about the time when the down train reached the ticket-platform; that he had remained near the wicket till he saw the down train run into the station; and that he had then gone back to the wicket and cancelled his previous message.

John Hayden, ticket-collector at Thorpe station, and 20 years in the service of the Great Eastern Railway Company, said that he, on the 10th September, also went to the ticket-platform at 8.50 p.m. and collected the tickets of the express which arrived at the ticket-platform at 9.18, and he rode in with the train to the arrival-platform and assisted the passengers out of the train. He saw Cooper and Parker on the arrival-platform assisting with the passengers and luggage. He heard nothing pass between the inspectors. Afterwards, when he was on the arrival-platform, he heard Cooper, who was standing near the telegraph-office, call out "I did not." He went across to the departure-platform, and saw him, and said, "What is the matter?" He replied, "The mail is coming up." Witness said, "Good God! this will be a frightful thing." After seeing Mr. Sproule, he called the men together and got them to light the lamps of the express-train carriages, and to go with Mr. Sproule to the scene of the accident, of which we had not heard, but which he expected to occur. Mr. Sproule when he left for the scene of accident told him to take charge of the station. When inspectors Parker or Cooper had been away he had very often taken their duty, and sent messages altering the crossing-places of trains. The process he adopted was to write the message himself in a single-line book. He did not remember to have ever asked a telegraph-clerk to write it for him, or know that the inspectors ever did so. Both this and the last witness said they always signed a message before sending it. It was against the

rules to send one unsigned. He never sent a crossing order to an engine-driver, he always handed it to him himself.

Edward Trew, inspector of police for three years in the employ of the Great Eastern Railway Company, said his duties were solely police duties, and he knew nothing of the working of single lines. He was on duty at Thorpe station on the 10th September, about 9.30, and was at the telegraph-office window, and saw Robson inside the telegraph-office, standing against the wicket, so that the witness could not see anyone else in the office. Robson asked him if he knew where the down express was. He replied, "She has just left." Robson then said, "What, left the yard?" and seemed about to make an exclamation. Cooper came up hurriedly and said, "You have't ordered the mail up, have you?" or "Don't order the mail up;" he was not sure which, but was inclined to think it was the former. Robson said, "Why you told me to order her up." Cooper replied, "I distinctly told you not to do so." Cooper then turned from the wicket to Inspector Parker, who was standing near, but whom witness had not seen before, and said, though he could not give his exact words, "They have ordered the mail up." Witness stopped to hear no more. He knew what must occur, and hurried away to make arrangements for the relief of the sufferers of whom he expected to hear.

John Bye, a shunter at Thorpe station, in the service of the Great Eastern Railway Company, said that he was at the station on the night of the accident, and about three minutes after the express had started Inspector Parker called to him and told him that Cooper had ordered up the mail from Brundall. This was the first he heard of it. He had occasionally taken crossing-orders from Inspector Parker to the engine-drivers, but never from Inspector Cooper.

William Turner, a passenger porter, said he heard Cooper tell Parker the mail had left. Cooper spoke first.

Thomas Browne, John Barker, George Daynes, James Hart, George Balls, Samuel Platten, and Edward Chapman, the other porters on duty at Norwich (Thorpe) station that night, added nothing important to the above evidence.

We come now to the evidence as to what transpired in the telegraph-office at the Norwich (Thorpe) station, which is amongst the most important evidence in the case.

John Keeble, for six years a clerk in the goods office, Thorpe station, in the service of the Great Eastern Railway Company, said that on the night of the accident he was in that telegraph-office. He went there about a quarter past nine, to speak to Robson, but he had no business of the Company to transact. He stayed there until about 9.33 p.m. About 9.22 there were several knocks at the wicket, which was fastened, and Robson went and opened it. Witness looked out, and saw Cooper, who had some conversation with Robson; and he remembered hearing the words, "Tell Brundall to send the mail on to Norwich," and he said something more to Robson which he thought he heard at the time but did not remember even the substance of. Cooper then went away and Robson shut the wicket but did not fasten it. When he heard this conversation he was sitting on a chair on the right-hand side (looking towards the platform) of the wicket. Immediately Cooper left, Robson asked him to get up whilst he sat down and wrote out the message. He complied, and Robson sat down and wrote down the message directly. He asked witness the time as he could not see the clock, and he told him it was 9.23, but corrected at to 9.24.

Robson put that down, and sent his message to Brundall directly. He (Keeble) saw him send it. He did not understand the working of the instrument. The reply came back immediately, and Robson wrote it in the book at once. Nothing more occurred till a few minutes afterwards, when Inspector Trew came to the wicket and asked something about a message. He did not remember what. Robson went to the wicket to reply to Trew, and asked him where the express was. His words were, he believed, "Trew, where is the 'express?'" Trew answered, "It is gone." Robson then asked some other question which he did not remember. At that moment Cooper came up to the wicket again, and said something about the mail. He did not remember his words or the effect of them. He was on the point of leaving when Cooper came up the second time. He left the office and heard no more. He believed Robson was at the instrument when he left the office. He did not hear him say anything. Three persons only came into the office while he was there. These were William Banham, and John Holroyd, and some one he did not know (Charles Donkin). He thought Holroyd was a clerk somewhere, but had never seen him before that evening. Banham was formerly engaged in the telegraph-office. Holroyd and Banham were speaking to Robson part of the time. Holroyd and the one he did not know came in together. Banham went away after Cooper came to the wicket. When he (Keeble) got round to the platform Cooper and Robson were talking together. He did not remember what was said; or recollect whether Robson was alone or not when he went in to see him; nor was he sure whether Holroyd and the man he did not know were in Robson's office when he went in, but he thought they were and was sure no one else was there. Banham came into the office before Cooper came the first time to the wicket. He thought Holroyd and the one he did not know were in the office when Cooper first came to the wicket.

He was afterwards recalled, and said further:— He went into the telegraph office as he had before said. He spoke to Robson, he did not remember what he said. He was standing nearly all the time he was there, but not in one particular place. The first thing he noticed out of the common was Cooper knocking at the wicket, which was fastened by a book being placed to prevent it from being slid back. He was about two or three feet from the wicket and on the side of it on which the instruments were placed. When Cooper knocked at the wicket Robson moved the book away and opened the wicket. He passed Robson as he stood at the wicket and sat down on the chair between the platform-wall and the table. He distinctly heard Cooper say, "Tell Brundall to send the mail on to Norwich." He was in a perfectly good position for hearing, but he did not remember now what else was said. Cooper afterwards went away, and Robson shut the wicket, and asked him to get up for him to write the message. He believed Robson had sent several messages while he was in the office. He might have gone to the Brundall instrument but he was not certain. Immediately after he spoke with Cooper, Robson took the book up from the shelf by the wicket, brought it and laid it down on the table, and asked him to get up and let him write in it, and he did this before he went to the Brundall instrument. He did not know why he asked him to move. He could not remember whether anyone was sitting on the other side of the table. He could not account for Robson's coming to sit on the chair he occupied, and turning him out for the purpose, unless it was because he always wrote on that chair. If Donkin said he was sitting in that chair it was not true. He did not see him sitting in it during the evening. Neither did he ask him to get up for him to pass by. When Robson wrote the message he stood close by the wicket. He only wrote one message, and that was on the left-hand side of the book. He asked him the time. He looked and thought it was 9.23., but now remembered that either Holroyd or Donkin

said J. D. H., which meant in post-office telegraph-language 9.24. He believed they stood against the glass partition near the entrance to the office. He was certain the person who spoke did. He saw Robson write 9.24 in the book. He then sent the message to Brundall, and the reply came back immediately. He believed Robson then wrote the reply, going to the same chair and writing in the book. He could not tell whether Robson wrote on both pages, or on one page of the book. He did not on that occasion ask anyone to move from the chair. It was unoccupied. Witness did not remember having ever seen either Donkin or Holroyd before that night. After Cooper told Robson to send on the mail from Brundall, Robson shut the wicket before leaving it, but he did not fasten it. He did not think it could have been opened again without his noticing it. He did not see it opened again till Inspector Trew came. Inspector Trew opened the wicket himself. He (Keeble) was standing about the middle of the office. Trew asked Robson about a message. He did not remember what Robson was doing. He remembered Robson asking Trew where the express was. Trew answered, "It's gone." Robson then said something else to Trew. He believed it was, "What, left the yard?" Then Cooper came up and asked Robson something about the mail. He (Keeble) then left the office alone, and went on to the platform, because he knew something was wrong, and to see what it was. He knew Robson had ordered the mail up, and that the express had left. He saw Cooper at the wicket, but heard nothing. As soon as he got to the wicket Cooper went away. He asked Robson in at the wicket from the platform whether the mail had left, and he said "Yes." He had known Robson about three months. They did not live near each other. He saw him often during the week, and had seen him many times since the accident.

William James Banham, a law-clerk, occasionally employed by the Great Eastern Railway Company as telegraphic-messenger, confirmed the above statements as to the message and to its being sent. He said he did not remember that Cooper added anything more to it, or that there was any reply. Witness was standing about two yards from the wicket, close to the counter on which the telegraph-instruments were placed. He was there when Robson shut the wicket. The latter wrote the message in the usual book and called on the instruments. He worked the instruments for about a minute and seemed to be sending the message, and then seemed to receive a reply, for he went to the same book and wrote in it, but he did not see what he wrote. No interval elapsed between the shutting of the wicket and sending of the message. Robson then shut the book and placed it near the wicket. He had to get up, to reach round a small partition-board, and he placed the book on the shelf near the wicket-door inside the office. The wicket was then quite shut. No one else came to it. He stayed at the office four or five minutes after that, and then went away. No one but Keeble, Holroyd, and Donkin were there. There was no noise or talking whilst Robson worked the instrument.

Afterwards he was further examined, and said that on the night of the accident, about 9.20., he saw Cooper come to the wicket and say to Robson, "Tell Brundall to send up the mail before the down train leaves Norwich." He believed Keeble was sitting with his back to the platform-wall. Witness was standing between the wicket and the cupboard on which the instruments stood. Holroyd was standing near the entrance-door by the glass-partition, and he did not know where Donkin was. After Cooper gave in the message Robson shut the wicket, took the book, and wrote in it. Then he worked on the instrument, and returned and wrote in the book again. He could not say whether he wrote on two sides of the book, or on one side, before he went to the instrument. When he came back from the instrument he wrote only on his right side of the book. He could not say whether he wrote on the top of the book, the

middle of the book, or the bottom of the book, before he went to the instrument, or whether he wrote on the top of the book or the bottom of the book when he came back from the instrument. He did not hear him ask anybody the time, or see him write the time in the book. The wicket could not have been opened after Cooper first visited it without his seeing it. It was not opened again until he left the office at 9.28. When he first went into the office he asked Robson for his short-hand book, and, excepting that and perhaps another word or two more, he was talking to Keeble all the time. Their conversation was chiefly about telegraph-working, and he was trying to read off by the ear-taps which Keeble made on the table. Keeble was all this time on the chair inside the wicket against the platform-wall. Keeble resumed his seat after Robson had written in the book, and he was there when he left the office. When Robson wrote in the book Keeble stood near him. He (Banham) believed he saw Donkin sitting in the chair between the table and the wall for about a minute. He believed he got up to speak with Holroyd at the door. He sat on the other chair which was by the fire-place just after he entered the office. He got up from that chair to work one of the telegraph-instruments. That was before Cooper came to the wicket. A message was laid on the instrument in the usual place, and he was calling "Y. M." for Wymondham. He did not remember whether he received any reply from Wymondham, and it was then Keeble was tapping on the table. He believed Keeble was interrupted in his taps when Cooper knocked at the wicket, and that Keeble was tapping on the table both before and after Cooper came to the wicket. During part of the time Donkin was talking to Robson, and part of the time to Holroyd. Donkin was sitting in the chair between the table and the wall before Cooper came to the wicket. After Robson had written in the book he rose from the chair, and put the book round the little wooden partition on to the shelf. He (Banham) was now engaged in learning the duties in the telegraph-office at Thorpe station, but not at the time of the accident. He went away home after Cooper had given in the message. He heard him say no more.

John Holroyd, a clerk in the post-office since January 1870, said he went to the office at 9 or 9.10, and Keeble came in about 9.15. The next thing he saw was Cooper coming to the wicket, which was open, and speaking to Robson; but he did not hear what he said; he (witness) was standing against the door of the office. He saw Robson write in a book and send a message on the instruments, but he thought he sent the message first, and wrote in the book afterwards. He wrote in the book at the table on the right of the wicket, looking towards the platform. Witness was talking to Charles Donkin, standing near the door at the time. He did not see Robson write in the book more than once. He thought he wrote two messages down at once. He believed he wrote on the left-hand side of the book first, and then on the right-hand side, at the same sitting. He did not hear anyone ask the time at that moment. He was facing Robson as he wrote, and about a yard and half from the book. Witness left the office, and went out on the platform, when he saw it was 9.33 by the station clock. At about 9.30 he saw Cooper come to the wicket on the platform. Robson left the wicket and went to the instrument. He heard Cooper say, "Oh, my God!" and then he turned away, saying something else which he did not catch. He saw no one else at the wicket at that time, nor heard anything that Robson said. Robson ran to the instrument directly, but did not appear to send a fresh message, and was not there half a second. He could not see any other person outside on the platform if anyone stood in front of the wicket. He did not see Cooper after he first came to the wicket until he came again at 9.30, but he might have come without his seeing him. There was no larking at all in the office, and no one interfered with Robson in the performance of his duties. Donkin was there to see Robson about some lodgings. They were not on telegraph-duty; he accompanied Donkin, a friend

of his; no one was there besides Robson, Banham, Keeble, Donkin, and himself.

He also was recalled and added that his only reason for going to the telegraph-office on the 10th September was to accompany Donkin. They reached the office between 9.0 and 9.10 p.m., and he sat down on the cupboard near the glass partition. He did not remember what Donkin did. The first thing that attracted his attention was the entrance of Keeble; he did not notice where he went to; he (Holroyd) was sitting on the cupboard doing nothing and saying nothing; he had not exchanged a word with Donkin about his evidence. He was in court yesterday when Donkin gave his evidence, but did not know, as he was unable to hear, all that he said. He saw Cooper come to the wicket, and saw Robson go to the wicket. He heard nothing and only saw Robson and Cooper; Robson left the wicket and went straight to the instrument. He thought he went to the third one from the cupboard on which he (witness) was sitting. He appeared to be sending a message, and then he left, and went to the table, and wrote something in a book. Robson sat down; he saw no one move for him. He sat on the chair between the table and the platform-wall. Some one might have moved without his seeing it. When Robson was at the instrument the second time he said, "Leave the office, leave the office." He supposed he intended that to apply to Donkin and him. They left directly, about 9.32. Keeble had gone out just before, and Banham five or ten minutes before. He did not see Inspector Trew come to the wicket, he could have come without his seeing him. He did not notice Donkin sitting at all. He spoke to him against the fire-place, they were then standing. He did not see what Robson wrote in the book. He saw him write at that sitting on both sides of the book.

Charles Donkin said he was a telegraph relief-clerk employed at the post office in Norwich. He was at the telegraph office at Thorpe station on the evening of the accident. He went there between 9.0 and 9.10 p.m. He went with Holroyd to speak to Robson in regard to lodging with him, and did so. He had known him about four months, and had occasionally called to see him. When he reached the office Robson was disengaged. Keeble and Banham were there. He had not seen Keeble before. He did not notice anything until 9.30 or 9.35, five minutes before he left. During the 20 minutes previously he saw Robson go to two or three instruments. He kept talking with Robson and Holroyd nearly all the time. The principal conversation was between Robson, Holroyd, and himself. It was chiefly about lodgings. About 9.30 he saw Robson go to the Brundall telegraph-instrument, and he supposed he was sending a message. He did not notice his writing in a book, nor did he see anyone come to the wicket to speak to him before he went to the instrument. He (witness) was sitting in the right-hand corner (looking towards the platform) of the office, and his back was turned to the platform. He was $1\frac{1}{2}$ or 2 yards from the wicket, but there was a thin screen about 3 feet deep, and 12 or 18 inches wide, between him and the wicket. He was in a good position for hearing anything which Robson might have said, or for hearing anything that might have passed at the wicket. He did not hear anyone come to the wicket before Robson went to the instrument. After he went to the instrument witness rose from the place where he had been sitting. Holroyd was near the fire-place and he was speaking to him. Robson had pointed out the Brundall instrument to him before. He noticed the single-line message book on the table where he was sitting. Robson could not have gone to the instrument without first writing in the book unless he had seen it. He did not write in the book first. He did not see or hear anybody at the wicket before Robson went to the instrument. He saw Robson leave the instrument and then go to write in the book. He seemed to write two sentences on the left-hand side of the book, and one sentence on the right-hand side. He was sitting at the table whilst he did so, and the

witness was standing at the fire-place, about a yard from the table, and the book was between them, so that he looked over the top of it while he wrote. He did not afterwards read what he wrote. After he had finished writing he resumed his conversation with Holroyd and himself. That conversation was interrupted by Robson opening the wicket, because somebody knocked at it. He supposed it must have been Mr. Cooper who knocked, because, when the wicket was opened, he saw him standing outside, and no one else. He knew him by sight. The wicket was shut and fastened by some books at the time of the knocking. He did not see the books put there, and had not seen the wicket opened before then. It was about 9.30. He (witness) was sitting in the same position at the table between 9.0 and 9.10, when he reached the office, and the time when he saw Robson go to the Brundall instrument. He got up of his own accord just after Robson went to the Brundall instrument. He had only read Holroyd's evidence. Banham was sitting at one end of the table and he at the other. The table was about four feet long. Banham got up before him and sat down again. Banham had been sitting there three or four minutes before Robson went to the Brundall instrument. When he left the table Banham got up to make way for him to get out, and then sat down again. Then Robson asked him to get up and let him write in the book, and then it was that he saw Robson write those three messages in the book. When Robson opened the wicket on the knocking at it, the first words he heard were, "Oh, my God!" from Cooper. They had been speaking before, but he did not hear what was said. He was not taking particular notice. Cooper made a remark as he left the wicket which he did not hear, and returned a few seconds after with Inspector Parker. Before Cooper came back with Parker, Robson went to the Brundall instrument and said something, in effect "Had the mail left," and he heard him say "It's left." Witness then left the office with Holroyd and went round to the platform. He saw Cooper in an agitated state. Robson was also in an agitated state when Cooper came to the wicket first. When Cooper and Parker came to the wicket afterwards they said nothing. They seemed to be waiting for an answer from Brundall, but did not even ask for it. When he left the office they were at the wicket. He then left the station and went home, knowing what would happen, without making any inquiry. On seeing the single-line message-book he recognised three messages as those which were written by Robson at the table as he was looking at him after he came from the Brundall instrument. He saw Inspector Trew on the platform when he left the office, but not at the wicket when Cooper came to it. He did not know what became of the book after Robson had written in it.

Afterwards he said he was mistaken in saying that he heard Cooper knocking at the wicket, and saw him standing there, on the night of the accident. He remembered that it was on the previous night that that happened. He also had made a mistake between Keeble and Banham. He (witness) sat between the platform-wall and the table near the wicket until 9.20 or 9.25. About that time, as he judged, he got up and passed Keeble, who was sitting in a chair near the wicket at the end of the table. He got up to let him pass, and then sat down again. He went to the fire-place where Holroyd was standing, and stood talking to him from about 9.25 till he left the office at 9.34. He left the office because Robson said, "Go out of the office." Although he was sitting close to the wicket, he did not hear or see Cooper or anyone else come to the wicket that night until he saw Robson working the Brundall instrument.

John Robson, 17 years of age on the 22nd October 1873, having been cautioned that he need not say anything (and who was assisted by a solicitor) said he was a telegraph-clerk in the employment of the Great Eastern Railway Company and had been so between 14 and 15 months. He came on duty at 8.0 p.m. on the 10th September. He was

not very busy then; there was just enough work to keep him comfortably employed. Four of his friends called at the office. Holroyd and Donkin came first together about 9.5 or 9.10; then he believed Keeble came in about 9.15, and Banham a few minutes later. He had been in the habit of sending single-line messages for upwards of 14 months. The practice was for the inspector to come to the wicket in the case of sending one of these messages, but sometimes he came into the office. As regarded Cooper he believed that he as often wrote the messages for him as he wrote them for himself. He had nearly always written the messages for Parker. Parker sometimes came into the office, but Cooper very seldom did so. When they wrote the messages for Cooper they had to put the book out at the wicket for him to sign. He had never within his recollection sent a message first and then written it in the book afterwards. He had never till this occasion sent a single-line message before it was signed by an inspector. Between 9.23 and 9.24 on the evening of the accident some one knocked at the wicket. There was no fastening to the wicket, but it was shut at the time, and he thought it was fastened by a book being behind it. He opened the wicket and saw Cooper, who said to him, "Tell Brundall to send the up mail train on before the down train leaves." He immediately asked Keeble, who was sitting in a chair, to get up and let him write the message in the book. He was quite certain he wrote the message in the book before he went to the instrument. After writing it he went directly to the instrument. He did not wait for Cooper's signature before sending the message, because Cooper said he would come back directly and sign it. He never recollected his doing such a thing before. Cooper then went away immediately after handing in the message, and he had not an opportunity of speaking to him. The bell outside the telegraph office was used to call the inspector to attend to a message from Brundall, of which he knew nothing, but he might have used it to call him back to sign the message. He saw Cooper run away from the wicket. He had not had a moment's hesitation in writing the message, going to the instrument, and despatching the message. He knew he was breaking his instructions, but he expected Cooper to return and sign it. What was entered in the book was not precisely what he sent to Brundall, because he added "A. Cooper" to it. He sent it as a signed message to Brundall, although it had not been signed in the book. After sending the message he received the reply from Brundall before leaving the instrument, and then wrote it in the book. He was certain he wrote the message before going to the instrument, and the reply after leaving it. Before writing 9.24 on the left-hand page at the top of the book, he asked Keeble for the time and he gave it him. The entry 9.25 opposite the message and reply was from his own observation of the clock. The succeeding message,—"When the up mail train has arrived at Norwich will line be clear for 9.10 p.m. down passenger train to Brundall?"—he wrote as soon as he had finished writing the reply at 9.25 from Brundall; and he wrote it without orders, but in readiness, because he believed that the inspector would shortly require such a message to be sent to Brundall before the down train could leave Norwich. He next laid the book on the ledge near the wicket, ready for the inspector to come and sign it. This would be about 9.26 p.m. He then went on with other messages of which no record was kept, except by filing the messages themselves. He believed there were four other messages. At about 9.30 Inspector Trew came to the wicket to inquire about a message for Walsingham, when, on looking out of the wicket, he noticed that the express train was not standing under the arcade, and he said to Trew, "Where is the down train?" or "Has the down train gone?" He did not remember the words, but that was their effect. His reply was that she had gone. He asked if it had left the yard? Just then Inspector Cooper rushed to the wicket; appeared to be in a state of great excitement; told

him to tell Brundall to cancel his single-line message and stop the mail. When he looked at the clock it was 9.32. He knew there was no time to write the message in proper form in the book. He ran to the Brundall instrument, and told Brundall, "Stop mail." Brundall immediately replied, "Mail left." He told Cooper what Brundall said, and asked him to sign the message and the reply. Cooper said, "No, I never gave you the message." He said, "Yes you did, or why, if you did not give me the message, do you now come back to cancel it?" He believed that was all that transpired between Cooper and him. The above was as nearly accurate as he could remember. He received the message at 9.24, and as the mail was due to leave Brundall at 9.25 he feared that he should delay it if he did not send off the message immediately.

He was waiting between 9.25 and 9.32 for Cooper to come back and sign the message. If he had rung the bell Cooper would have returned and "made a row" for being called away from his duty. The message never lay waiting for the inspectors' signatures. They might go away, but not for a minute, and they always came back and signed it before it was sent. When they did not come back to sign the reply, he sometimes rang the bell to call their attention to it, and that was when they complained. He did not use the bell on this occasion, for he was expecting Cooper's return every half minute. When he was sitting at the table, writing the message in the book, Holroyd was facing him, and was between the fire-place and the door. Before getting up the second time he wrote the message which he thought would be required, but was not sent. This would explain that he did write two messages on opposite sides of the book at the same sitting.

He also was recalled, and said further, after being again cautioned, that he was positive that Keeble was in the chair between the table and the platform-wall at 9.24, when Cooper came to the wicket, for he asked him to get up for him to write. He wrote the message on the top of the left-hand page before he went to the instrument; he then went to the instrument and sent the message, and received the reply, and then wrote the reply on the right-hand page, and then second the message on the left-hand page below the first message. He saw Donkin near the fire-place with Holroyd, but not near the chair between the platform-wall and the table.

He was then examined as to certain unsigned messages (Appendix F.) found in the single-line books. He accounted for the first unsigned message of February 12th, 1874, by supposing that Cooper might possibly have signed on the right-hand when sending the message, and returned to put the date to the reply. In the next case, May 1st, 1874, he wrote down the message as he read it off the instrument from Brundall, but had omitted apparently to put down the signature telegraphed. The two next cases witness had nothing to do with, as Mr. Hubbard had entered the messages. In the third case, which did not relate to him, Inspector Humphrey had dictated the message, but had not signed until he returned for the reply at 1.24 p.m., six minutes after the time the message was given in for transmission, when he had signed the reply only. In the fourth case, 24th August 1874, the message was sent and the reply received at the same time, 1.22, and the reply only was signed. It was perhaps explained by the inspector not thinking it necessary to sign twice in the same minute.

Alfred Cooper (who was also cautioned), said he was an inspector at the Norwich (Thorpe) station, in the service of the Great Eastern Railway Company, and had been so for 15 years. He had been in the habit all that time of sending what are called single-line messages. The responsibility of altering the crossing-places of trains on the single line had rested on him during that period when he had been on duty. His practice in regard

to that duty had been to go to the wicket at the telegraph office, and sometimes, but very seldom, into the office. If he wanted a train sent forward from Brundall out of the ordinary course, he either wrote the message himself or asked the clerk to write it for him. It was very awkward sometimes writing messages himself, and he frequently asked the clerk to write them for him. In the case of the clerk's writing it, he (the witness) stood outside and waited till he had written it, and then signed it. He had sometimes asked the clerk to write the message, and then gone to make out the starting order, and returned to sign the book. He had never given an order for that train, and gone away without signing it. Sometimes he had been called away in the morning, and gone without completing a message, and had returned afterwards to sign it. He was not aware, and should have no means of knowing, whether in the meantime the message was despatched or not. He was not so liable to be called away from the wicket while sending a message in the evening as in the morning. His first duty when he came on of an evening was to attend to the express train from London and the mail from Yarmouth. When he had left a message unsigned, the clerks frequently had rung the bell for him to come and sign it. He believed he might have complained when they had rung the bell for him from the telegraph-office. They rang the bell commonly when they had a message for the inspector. On the 10th September, the express being late, and looking from the platform at the telegraph-wicket, and seeing that it had not come in, he opened the wicket, but did not knock at it, and said, "Mr. Robson, the express is not in; we will have the mail up before the down train leaves," or words to that effect. He said, "All right," and he (witness) stepped a pace or two backwards and forwards waiting to sign. He did not go away anywhere. He expected Robson to write out a message for him to sign. About half a minute after, or in less than a minute, he saw the express running in from the ticket-platform to the arcade. He went straight to the wicket, not having gone more than three yards from it since he had given in the message, and said, "Mr. Robson, don't order the mail up. The express is running in; we will get her away first." The wicket was open, and Robson was standing at the table facing him. He was not sure whether the wicket had been shut between the time of his giving in the message and the time of his cancelling it. He understood Robson to say, "All right, captain," which was what he used to call him. He then left the telegraph-wicket, and went to the arrival-platform at the opposite side of the station to assist with the express. Inspector Parker came to him, and asked if he had ordered the mail up. When the express was late he always asked the question. He replied, "No, sir; certainly not," or "I have not. Let us get the train away as soon as possible." This was done, and the express started at 9.31. He walked round to the telegraph-wicket again, to advise Reedham of the time the down train left Norwich, which is the practice when the train is 15 minutes late, and said to Robson that he wanted to send an "MT," i.e., a train-message to Reedham. Before he could get the words out of his mouth, Robson said, "I have ordered the mail up." Witness said, "Good God, Robson, how dare you order the mail up when I distinctly told you not to do so." He said, "You did nothing of the kind." Witness said, "How dare you assert such a lie?" and added, "A lie stands for nothing." Robson had not time to write the message in the book before he cancelled it. When waiting to sign he did not see what was going on inside the office. He could not account at all for what Robson did. He thought he noticed three young men in the office when he handed in the message, but not when he cancelled it. He believed the wicket was shut while he was waiting. He slipped the wicket back to cancel the message. He heard no talking in the telegraph-office. When the express arrived that night, he went

round and assisted with the passengers' luggage at the arrival-platform. He had no means of knowing when the train was at the ticket-platform. Mr. Sproule and he had spoken about the express being late, and it was in consequence of that he went to the wicket and gave the message. He did not know that he had ever had occasion to cancel a message before. He had before allowed the wicket to be shut whilst he was waiting to sign a message.

Afterwards he also was recalled and re-cautioned, and he made the following further statement. Before the arrival of the express, and about 9.6, he went into Mr. Sproule's office, and remained there until about 9.20 or 9.21, looking through the orders for the next day. He (Cooper) was standing in the office all that time looking through the orders. The orders related to the traffic-arrangements for the next morning. Mr. Sproule was there all the time. They were speaking about business, and with regard to the mail train he thought he spoke first about 9.20, and said the express was not in. They had had no advice about it, and he suggested the bringing up of the mail. His (Mr. Sproule's) words were, "You had better do so," or something to that effect. (It will be remembered that Mr. Sproule directly contradicted this, and said first that Cooper came to his office at 9.16 and afterwards that Cooper was not in his office more than three or four minutes.) He understood Mr. Sproule to assent to bringing up the mail. It was then he went to the wicket, and he believed he knocked at it. It was closed, and Robson opened it. He said to him "The express is not in. We had better have the mail up," or words to that effect. He then paced backwards and forwards waiting to sign the message for about half a minute or three-quarters of a minute and saw the express running in from the ticket-platform into the station; and he told Robson not to order the mail up as the express was running in. He understood him to reply, "All right, captain." He observed some one in the office on the first, but not on the second occasion. He closed the wicket, as he always did, because the wind was disagreeable to those inside. He did not inquire whether Robson had written the message as he did not think he had had time to do so.

William Platford, the station-master at Brundall, said he had been so for eight years and nine months. He had often to alter the crossing-places of trains during that time. In case of irregularity in a meeting train he telegraphed to Norwich to arrange accordingly. He sometimes signed a message before it was sent, sometimes afterwards. It all depended on the business. Sometimes he wrote a message, and sometimes instructed his clerk, *Thomas Spicer*, to do so. More frequently the latter did so, and sometimes his son, a lad of twelve years did so, whilst he was standing by, and then they would send the message. He never had allowed the calling on of the mail to be taken on the instrument by anyone but himself. He sent the message himself on the evening of the accident. He produced the book with the entry—

"Send the up mail train on to Norwich before the 9.10 p.m. down passenger train leaves Norwich.

"Signed A. Cooper. Time received 9.26."

He received this himself with the signature "A. Cooper" to it. If that signature had not been attached the train would never have been started. He replied, as noted in the book—

"I will send the up mail train on to Norwich before the 9.10 p.m. down passenger train leaves Norwich.

"Signed W. Platford. Time received 9.26."

The up mail drew into the station just after he had received that message and sent back the reply. He turned round from the instrument and saw the mail stopping at the platform. He wrote the order for the mail to start and gave it himself to the engine-driver. The mail then left at 9.28. After seeing the train leave, he stood watching the instrument, and at

9.33 received the message, "Stop up mail." He replied instantly, "Up mail has left." The next message he received was to block the line after the collision. He accounted for the absence of signatures to the single-line telegraph-messages in the book produced, partly by the clerk having omitted to copy them, and partly by people who had taken his place omitting to sign them, and partly by his not having thought it necessary to sign at the bottom of the message as well as on the opposite page. As he had charge of the telegraph-instruments, and also of the alteration of the crossing-places of the trains, it did not seem to him to be of the same importance that he should sign the messages in the book as at Norwich. He always telegraphed his signatures though he had not always entered them in the book. He had never received an unsigned message from Norwich. The train might wait for ever; and he would not send it off without the receipt of a signed message. His hours of duty were from 6.30 a.m. to 9.25 p.m. He was not hard at work all the time. He had a clerk and a porter, and was sometimes assisted by his son. He watched the latter. He gave no special notice as prescribed by the Rule 142, and quoted in the working time-bill, page 46, for September 1874, to the guard for the train to proceed. He only handed the usual starting-order on a printed form to the engine-driver, and this was his practice. Besides doing this, he informed both guards and the engine-driver verbally "You are going on before the 9.10 down train." He also said to the last guard, "Make haste and get the train away." His books were inspected sometimes by Mr. Draper. The last inspection was less than twelve months ago. He resided in the station with his family.

Thomas Spicer and *William Platford* the younger confirmed the above evidence, and Spicer added that he accounted for the absence of signatures to some of the messages in the Brundall single-line book, by supposing he had been called away before he could sign, or had forgotten to do so. He was not on duty at the time of the accident.

Mr. Symonds, station-master at Brandon for 10 years, said the London express arrived at Brandon on the 10th of September at 7.48 p.m. and left at 7.51. It was due to leave at 7.40, and was therefore 11 minutes late. If the train was 15 minutes late he had orders to telegraph it forward. So that he did not telegraph it on the night of the accident.

Next follows the evidence of two guards, one from each train. The others were too much injured to be able to appear.

James Chapman, (passenger guard in the Great Eastern Railway Company's service for 13 years,) said he was guard from Lowestoft to Reedham with the 8.20 p.m. train for Norwich on the night of the accident. He joined the Yarmouth train at Reedham, and then became under-guard. His portion of the train consisted of one first-class, two second-class, two third-class carriages, and one break-van. His van was placed next behind the Yarmouth train, and his carriages were behind his van. The Yarmouth train was in front of his train. He did not take the time at Brundall as he was not in charge. The station-master there told him they were going up before the down train. That was after they had been half a minute or a minute at the station. He told them to get away as soon as they could. It was raining at Brundall and all the time they were running till the accident occurred. It was very dark indeed. About two or three minutes after leaving Brundall he went to sit on the seat looking out of the window, and he noticed nothing till he felt the shock of the collision. He did not hear a break-whistle, neither did he feel a slackening of speed. His van was the first vehicle that escaped without being broken, except the window, which his arm went through. After the accident he went back to Brundall to protect his train.

George Read, passenger guard in the Great Eastern Railway Company's service, said he left London as head-guard with the five o'clock express. The train arrived at Cambridge at 6.33 p.m., three minutes late. They reached the ticket-platform at Norwich (Thorpe) 9.18, and the arrival-platform at 9.23. His train from Norwich was composed of two first-class, two composite, two second-class, five third-class carriages, two break-vans, and a horse-box. They left Cambridge, he believed, eight minutes late, from delay in attaching a horse-box. They lost a minute or two at Ely. On reaching Norwich, he rode down with Inspector Parker from the ticket-platform to the station. He asked him, "If they were going down before the up mail arrived?" He said "Yes, but he must see Cooper first." Nothing more passed between them. He was riding, when he left Norwich, in the tenth vehicle from the engine, and there were four vehicles behind his van. Parker was calling out at the last moment for some luggage belonging to Mr. Palmer, which was left in the cloak-room; and that luggage was put in at the off side of the train by Barker the porter. It was just beginning to rain when they left Norwich, and it was very dark. He had turned a portmanteau on its end and was sitting on it, and had got out his book to see whether his value-book corresponded with the number of parcels in his van. As he was doing this he felt the shock of the collision. He had heard no whistle nor felt any slackening of speed. He was thrown down. They could not make up time between Wymondham and Norwich, there being only 14 minutes allowed for nine miles, and they did not do so.

John Phillips, an engine-driver in the service of the Company, proved that the engine of the Company, No. 285, which had drawn the express train on that evening from Cambridge to Norwich, and against which some complaints had been made, was in good working order.

Mr. William Adams said he was locomotive superintendent of the Great Eastern Railway, and had been so for about 15 months. He was previously locomotive superintendent of the North London Railway for nearly 20 years. He had visited the scene of the accident, and had ascertained from personal inspection that the engine-drivers of the two trains could, if the atmosphere had been clear, have seen each others head-lights for a distance of 320 yards as the trains approached one another. Even considering the weather, as described on the night of the accident, he believed they might have seen each other for that distance. They would both have been travelling at a speed of about 20 to 25 miles an hour. The train approaching Norwich would have had the steam of its engine shut off a little before that point, and the train from Norwich would hardly have got into speed. The engine of the train from Norwich had cylinders 15 inches in diameter with 24 inches stroke, outside the framing. The wheels were, four of them coupled, and were 5 feet 6 inches in diameter; and the leading wheels were 3 feet 6 inches in diameter. The weight of the engine in running order would be 26 tons. It was No. 218, and was used for goods or passenger trains. The engine of the train from Yarmouth was No. 54, an express outside-cylinder engine, diameter of cylinders 16 by 24 inches stroke, single driving wheels 7 feet diameter, leading and trailing wheels 3 feet 6 inches in diameter; and the total weight was 30 tons. Both were tender-engines. When he saw the engines, the chimneys and smoke-boxes were destroyed, and the smoke-box tube-plates were laid bare. The cylinders were driven back and the framing was bent out. The framing was further bent so that the leading wheels of the express engine especially were thrown out of square. The hand-rails were broken away from the foot-plate. The tanks were knocked away from the under-framings of the tenders. There were 13 vehicles destroyed, and four damaged. The destroyed vehicles were a third-class, a composite, another composite, third, second, third, second, and a

horse-box; all these were in the train for Yarmouth. In the other train were two composites, a third-class, a mail van, and a composite. There were two break-vans to each train, with two guards, besides tender-breaks. He believed the engine-drivers saw each other as he found the steam shut off on both engines. He looked at the reversing-lever of No. 218 engine, and it was in mid gear. He believed also that the firemen of both engines had endeavoured to apply the tender-breaks. There were 14 vehicles in the train from Norwich, and 13 vehicles in the train from Yarmouth.

He went on to say that No. 291 engine took the London express from London to Cambridge, and No. 285 engine took the train from Cambridge to Norwich on the 10th September. These are both express engines, and in first class condition, having 7-foot driving-wheels. There was no truth in the allegation contained in the letter that one engine was inferior to the other.

Mr. William Cockrell Bardwell, a clerk in the office of the superintendent of the Great Eastern Railway Company in London, handed in a list (Appendix G.) of the sufferers by the collision. Up to that time 23* people had died, of whom 19 were passengers and four were servants of the Company working with the trains. Of the passengers killed only one was a servant of the Company. Altogether 73 passengers and two guards had been injured, besides the 23 who had died, so far as he had ascertained.

In Appendix H. will be found a return of the times of arrival of the down express and up mail trains in question, for the year ending 31st August 1874.

Conclusion.

This is the most serious collision between trains meeting one another on a single line of rails, if not the most serious railway catastrophe as regards the numbers of lives lost and serious injuries, that has yet been experienced in this country. In discussing the circumstances under which it occurred, it will be necessary first to consider the system adopted in the working of the line, and how far it was liable to break down in consequence of mistakes or misunderstandings on the part of the servants of the Company employed to carry it out; secondly, to examine the immediate causes by which the accident was produced, and the blame to be attached to the servants of the Company implicated; and thirdly, to consider the principles generally adopted in the working of single lines, and the means by which the risk of accidents of this nature may best be provided against. The system employed may, as will be observed from the evidence, be easily described. Referring to the particular portion of line in question, no engine-driver, whether running punctually or not, with a regular train or with a special train, was allowed to leave either Norwich or Brundall without instructions being handed to him on a printed form (Appendix D.) authorising him to proceed on his journey. The duty of formally starting the engine-driver in this manner devolved on the inspector on day or night duty at Norwich, and on the station-master at Brundall. So long as the trains were running punctually, according to properly-arranged working time-tables, there could of course, in no case, be any risk of such a collision. It was only when special trains were employed, or when there were alterations from the crossing-places laid down in the time-tables, that elements of risk were introduced. Before trains were allowed, in consequence of unpunctuality or otherwise, to cross each other at places not appointed in the working time-tables, telegraphic messages in simple forms always adhered to (Appendix F.), had to be exchanged between the two stations. At Brundall the responsibility rested on the station-master alone. It was his duty to work the telegraph-instruments, as

* There were two other deaths later, whilst this report was passing through the press.

well as to arrange for any alterations in the crossing-places of the trains. At Norwich this duty was divided between the inspector and the telegraph-clerk. It was the duty of the inspector to write, or to employ the telegraph-clerk to write, and when written to sign, any message on single-line business; it was the duty of the clerk to transmit such message when signed; and it was, further, the duty of the inspector to sign the reply, without which the message was not considered complete, and which, when properly received, indicated that it had been well understood. So long as this system was strictly adhered to, no collision between meeting trains could be expected to occur; but there was clearly, in the event of any laxity of practice, less liability to mistake at Brundall, where one man was responsible for the whole arrangement, than at Norwich, where the duty of making and completing the arrangement, and of transmitting the message, was divided between an inspector and a telegraph-clerk. But even at Norwich, there was little, if any, risk of mistake, if the inspector took care that no change of crossing-places was permitted without a proper message, signed by himself, being entered in the telegraph-book for transmission, and a proper reply, also signed by himself, being received to show that it was understood; and if he, at the same time, acted in accordance with any arrangement he had thus made through the telegraph-clerk with Brundall.

As regards this particular case, there appears to have been a misunderstanding in the first place between the station-master, Mr. Sproule, and Cooper, the inspector, as to whether, the express train being late, the mail train should be ordered up from Brundall. Mr. Sproule believes that, whilst engaged in signing letters and pay-sheets, he said "Certainly not" in reply to Cooper's suggestion. Cooper says he understood him to assent to the suggestion, and went straight from Mr. Sproule's office to the telegraph-window and acted upon it. Whatever be the truth of this matter, no danger ought, however, to have arisen in consequence of such a misunderstanding. The rules and practice in regard to the working of the single line ought in either event to have been sufficient to prevent the risk of any accident.

The blame as regards the immediate causes of the collision lies clearly between Inspector Cooper and Telegraph-clerk Robson. The evidence as to what passed between them rests mainly on their own statements, and they contradict each other in important particulars. It is difficult to believe that Inspector Cooper would, almost immediately after leaving the telegraph-window, have informed Inspector Parker that he had not ordered the mail train up from Brundall, and that the express train might be started from Norwich, unless he had at that moment felt satisfied that the message which (according to his own statement) he directed Robson to prepare at 9.21, had either been delayed for want of his signature, or had been cancelled. And it is equally difficult to believe that if Robson had heard and understood Cooper to tell him, (as Cooper states he did), to cancel the message, and had replied "All right, captain," he would, if he had previously transmitted the message, have failed to cancel it, or would afterwards have transmitted it in spite of its having been cancelled. It is evident there was a mistake or misunderstanding between Cooper and Robson, and that both were to blame. Cooper admittedly directed Robson to order the mail train forward from Brundall; and, having once done so, he ought to have made very certain, either that the message was not sent, or that it was cancelled, and that no doubt could exist on the subject, before he permitted Inspector Parker to start the express train from Norwich. It is true that he had not signed the message, that it ought not to have been transmitted without his signature, and that he might suppose that even if it had been transmitted without his signature, it ought not to have been acted upon at Brundall; but he should have taken care that

on a subject of such vital importance there could be no possibility of a mistake. Having once given an instruction for bringing the mail train forward from Brundall, he ought to have clearly ascertained whether the message had been written in the book, whether it had been forwarded, and whether, if so, the usual reply to it had been received; and he ought to have made quite certain that no chance of error could exist, that it was struck out if written in the book and not transmitted, or that it was cancelled by a second message if it had been transmitted before the express train left Norwich. But, as qualifying these remarks, the excuse which Cooper has made, to the effect that he did not more formally cancel the message which was so unfortunately transmitted to Brundall because he did not think there had been time for either writing it in the book or transmitting it, must not be overlooked; and Robson's statement, that Cooper did not cancel the order for the message at all, must also be remembered.

The Telegraph-clerk, Robson, admits, as in fact his book shows, that he forwarded, on Cooper's verbal instructions, an unsigned message to Brundall, that the reply was at once returned from Brundall, and that thus the arrangement was complete for bringing up the mail train from Brundall at 9.26 p.m. And yet he waited for six minutes, until 9.32 p.m., without taking any steps to call Cooper, and to make him sign the message and reply, both of which ought to have received his signature. He had a bell at hand which he might have rung at any moment, and which would no doubt have brought an inspector, if not also the station-master, from the next office, quickly to his window. But he made no use of it, and it was only, according to his own account, when the Inspector of Police (Trew) came on other business to the telegraph-window at 9.32 p.m., that he made an inquiry concerning the express train, and ascertained that during those important six minutes it had run into the station, had started again for Brundall, and was probably about to come in collision with the mail, which was due to leave Brundall at 9.25, and which appears to have left that station, by Norwich time, at 9.27. In order to understand the gravity of his fault in sending an unsigned message, it must further be remembered that he forwarded to Brundall as if it had been received, a signature which had never been attached by Cooper to the message. And there is an important discrepancy in the statements of the witnesses present in the telegraph-office. One of them affirmed that Robson sent not only an unsigned, but also an unwritten message to Brundall on a verbal order from Cooper, and afterwards wrote in the single-line book the message, the reply to it, and a third message in anticipation of its being required. The time occupied in sending the message to Brundall and receiving the reply would account also for the difference between 9.21, when Cooper states he first went to the wicket, and 9.23 or 9.24, when, as the book shows, Robson commenced to write his entries in it. If Robson had never, as he states, previously sent an unwritten or unsigned message, it is difficult to understand how he could possibly rest in his office for those six minutes without taking measures for calling Cooper to sign the message and the reply which he had received to it. And the more so as he had at his hand a bell-cord, which he could easily have employed for the purpose. His excuse for not using it, — because he feared that Cooper might complain, or as he expressed it, might "make a row," and say he had rung the bell unnecessarily, — cannot be considered valid, when the case was so vital and the risk so imminent. He must, apparently, have been transmitting the message to Brundall two minutes after the express train entered the Norwich station, and, say two minutes before the mail train left Brundall. By ringing the bell to ask for Cooper's signature, even after he had sent the message and received the reply from Brundall, he might probably, by calling attention to the message, have shown Cooper the danger of starting the

express train at 9.31, and thus have prevented the collision, even supposing he had not heard him cancel the order for the message. But at this time there were no less than four other young men with him, against orders, in the telegraph-office, whose presence might naturally tend to divert his attention from his duties.

To sum up the case, as between Cooper and Robson, the blame must apparently attach to them respectively as follows:—Cooper, after directing the fatal message to be sent, though it is true he did not sign it, and it ought not to have been sent, or to have been acted upon if sent, without his signature, failed to take such subsequent measures as should prevent the possibility of a mistake, and make certain that there was no misunderstanding in the matter before he allowed Parker to start the express train from Norwich. As an experienced and responsible officer such precautions might reasonably be expected from him. Robson forwarded to Brundall as signed an unsigned, and apparently an unwritten message, which was, he admits, against his instructions, and which he at first stated he had never done before; and he received a reply to it by which the message was, so far as Brundall was concerned, perfected and completed. He then allowed six minutes to elapse without calling Cooper's attention to the fact that he had done so, whilst the express train was entering and leaving the station for Brundall, taking no trouble to prevent misunderstanding on a matter of such vital importance. Robson was further to blame in allowing four young men to be in the office where he ought to have been alone. Though he was not 18 years old, he had for upwards of 14 months been employed on the same duty, and he is a young man of great intelligence and apparently of good education.

Out of 16,082 miles of railway open for traffic in the United Kingdom, there were 7,395 miles of single line at the end of 1873, as returned by the Companies to the Board of Trade; and the various portions of single line making up the above total are worked under different systems, and under a variety of instructions, according to circumstances, and the ideas of the officers of the companies. But the principles involved are few in number. Many years ago the collisions which occurred from trains meeting one another in consequence of mistakes in the working of single lines by telegraph, led to the invention and adoption on many lines of the train-staff system; and it may be said, after considerable experience in the working of that system, that it has been attended with great, though not with entire success, as a means of preventing accidents from trains meeting each other. When train-tickets are used with the train-staff, there is still a liability to collision from trains following one another; but when the train-staff only is employed, and when no engine or train is allowed to pass along a section of line unless it is accompanied by the train-staff appertaining to that section, then the risk of misunderstandings or mistakes is apparently reduced to a minimum. The safest mode of working a single line that has yet been devised is believed to be a combination of train-staff and block-telegraph. With the double check of the staff and the telegraph, there must be an extraordinary combination of mistakes by several persons to produce a collision from trains meeting one another from any two stations. But, unfortunately, increased safety is purchased under such a system at some expense of freedom and convenience in working. And this is especially the case where the traffic is irregular and considerable, and where long continuous portions of single line have to be worked. In such cases other means have been adopted to effect that object. For instance, the station-masters, or persons in charge of the stations, are not of themselves allowed on some lines to alter the crossing-places of trains with each other, and can only do so under instructions from an officer of the Company specially appointed to that duty. This officer, called a train-despatcher,

knowing from day to day by telegraph how all the trains on his line are running, is able, with or without the aid of diagrams, according to circumstances, to direct their movements; and the station-masters, or persons in charge of the different stations, are simply required to obey his instructions—either to send the trains on, or to stop them, or to see that any two trains cross each other, or pass each other at his station, as the train-despatcher may direct. This system is in operation on the continent of America over continuous lengths of single line for hundreds and hundreds of miles, the lines being divided into sections, with train-despatchers constantly employed on this duty, and having no other duty to perform, in central positions on each section, and it is also employed on considerable lengths of line in this country. But none of these systems, except perhaps the combination of block-telegraph and train-staff, have been worked with entire freedom from accident. Collisions have occurred frequently in working single lines under different systems by telegraph, not only when station-masters and others have been allowed to arrange with each other for the alteration of crossing-places or passing-places, but also when such alterations have been made under special instructions from specially-appointed or superior officers. Collisions have also occurred on lines worked under the train-staff system—in one case, when the superintendent of a railway, with his directors in a train, himself violated the train-staff regulations; and collisions may occur under any system that can be devised. Whatever checks may be established with a view to the avoidance, as far as possible, of mistakes and misunderstandings, it is necessary to work with human agents, and there is unfortunately, a tendency, after working for a length of time securely under any system to laxity of practice on the part of employes. They gradually acquire too much confidence in themselves and in their system. They cease to remember the importance of the checks or safeguards by which it is guarded. They fail while engaged in their daily routine of duties to realize the risks that may be incurred by a departure from strict rules, fixed practices, and prescribed forms; and they only awake to the necessity for yielding themselves and requiring from others absolute adherence to rules and practice after some serious warning or disastrous experience. The only mode of avoiding laxity of this description is by the maintenance of rigid discipline, by constant, efficient, and irregular supervision. The occurrence of an accident, and even of a very serious accident, under any particular system should not be taken without full consideration of all the circumstances to be positive proof against that system. And it must always be remembered, as the result of all experience in railway working, that an inferior system, under good discipline, leads to better results than a superior system without good discipline. On the occasion of so frightful an accident as the present, it is useful, with a view to the general knowledge and establishment of proper principles, and in order to obtain increased safety in the future, to recall and sum up such considerations; and it must not be overlooked with regard to this particular case that if only the inspectors at Norwich had, for instance, been in the habit of themselves writing the messages for altering the crossing-places of the trains, instead of employing, as they frequently did, the telegraph-clerks to write those messages for them, the safety of the traffic would not have been dependent upon a verbal arrangement, or at all events there would have been less liability to any mistake or misunderstanding, and this collision would probably never have occurred. The important lesson, then, to be learnt from the circumstances of this most deplorable collision is, not so much that one system of single-line working is superior to any other system as that, whatever the system by which safety is sought to be secured, it should be fenced about with safeguards precisely expressed and carefully observed. That system may,

however, be considered the best which can only fail under the most glaring disregard of detailed instructions, and under which advantage is taken of the improbability of several persons simultaneously concurring in the same neglect or mistake.

It is satisfactory to be able to add, in conclusion, that the Company propose to open a second line of rails to the East Norfolk junction, $1\frac{3}{4}$ miles from Norwich, during the month of October; and then to work the line between the East Norfolk junction and

Brundall, as long as it remains single, by the combined train-staff and block-telegraph system.

I have, &c.

H. W. TYLER.

I concur in the above report.

W. W. RAVENHILL.

The Secretary,
(*Railway Department*),
Board of Trade.

DIAGRAM N^o 1.

To accompany Captain Tyler's Report
dated the 30th September, 1874.

SKETCH OF THE LINE BETWEEN NORWICH (THORPE) STATION & BRUNDALL STATION.

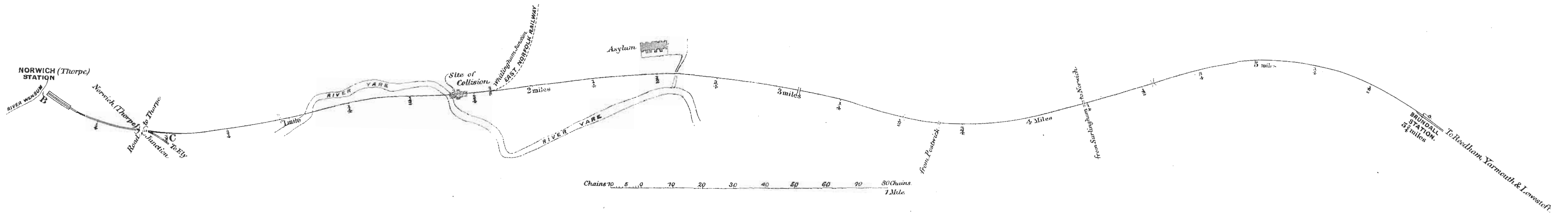


DIAGRAM N^o 2.

ENLARGED SKETCH OF LINE BETWEEN POINTS B & C.

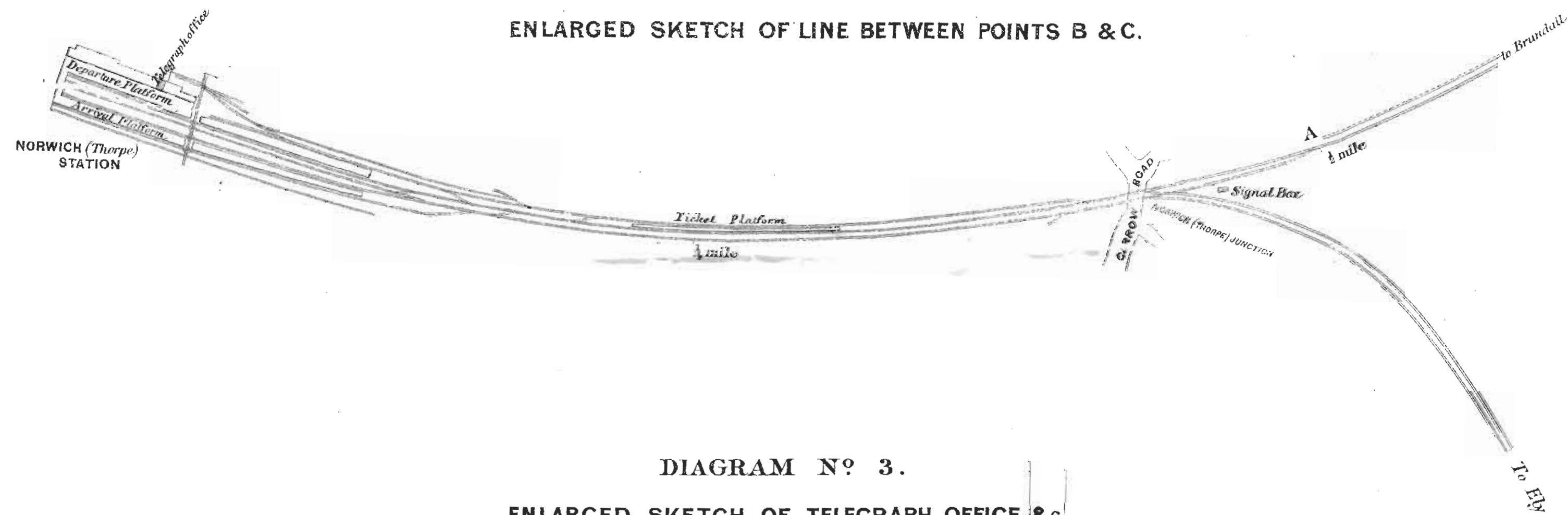
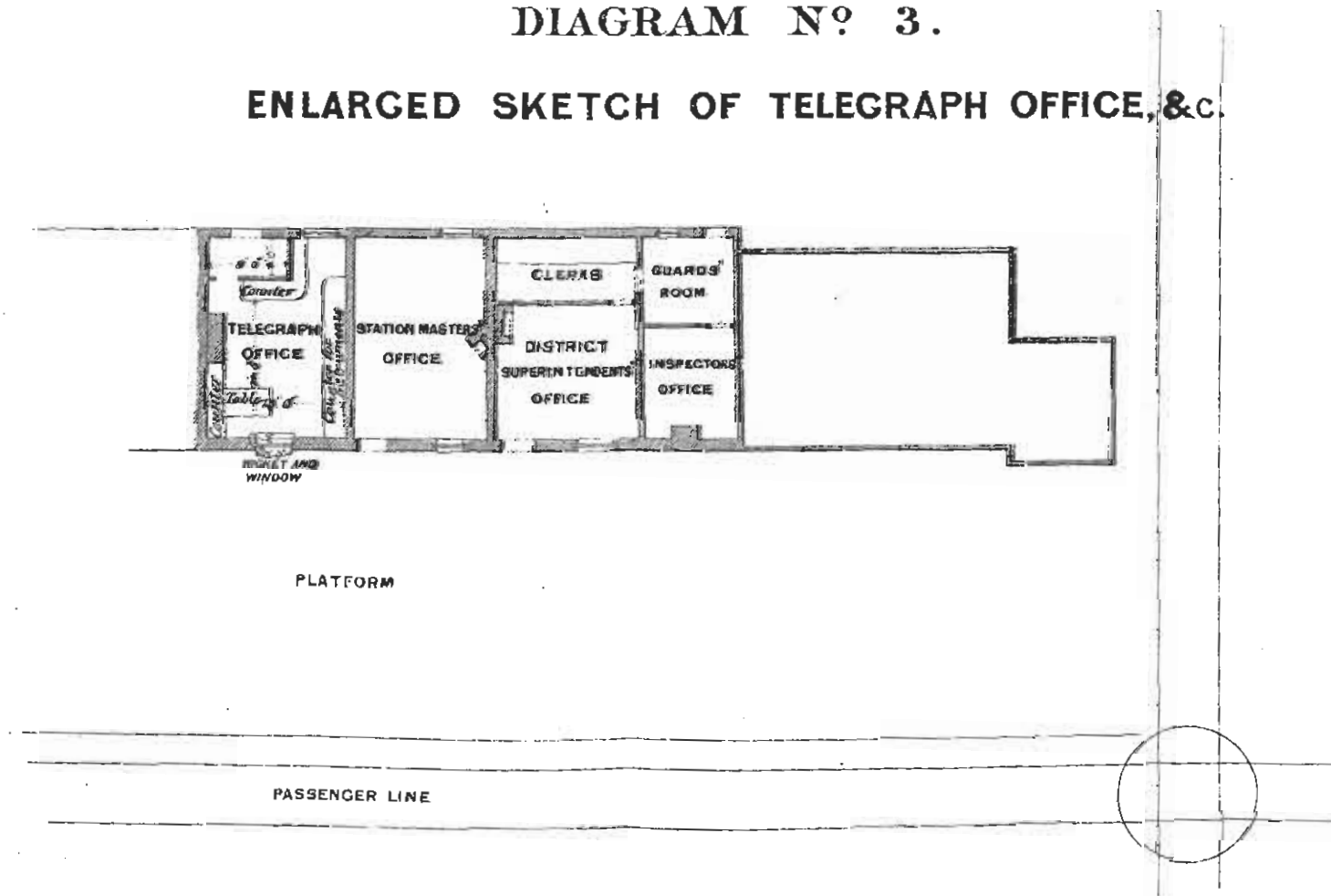


DIAGRAM N^o 3.

ENLARGED SKETCH OF TELEGRAPH OFFICE, &c.



APPENDIX A.

GREAT EASTERN RAILWAY.

Superintendent's Office,
Bishopsgate Station,
August 28th, 1872.

Special Order, No. 1501.

WYMONDHAM and WELLS, NORWICH and YARMOUTH and REEDHAM and LOWESTOFT.—Single-line working.

Commencing 1st September, 1872, engine-drivers of all ordinary trains (whether running to time or not), as well as of all special trains, passing over the single lines between Wymondham and Wells, between Norwich and Yarmouth, and between Reedham and Lowestoft, are to be furnished by the station-master or other in charge, with a written order, authorising him to proceed to the next passing or terminal station, as the case may be; and the driver will be responsible in each case for having such authority before passing over the single line, and for delivering up the order on arrival at the station to which he is authorised by it to proceed.

JAMES ROBERTSON,
Superintendent.

APPENDIX B.

Bishopsgate,
November 21st, 1872.

A. 9486.

DEAR SIR,

8.40 p.m. mail train ex. Yarmouth to London.

If from information you receive from Wymondham, or other station higher up, you arrive at the conclusion that you cannot start the down Yarmouth train from Norwich before 9.35 p.m., arrange to let the mail train come on from Brundall without delay, to pass the down train at Norwich.

In the event of detention to the up mail by reason of starting the down train from Norwich late, every means must be used at Norwich to expedite the departure of the mail and to keep the load of the train as low as possible, so that the time to Ely being ample, the time lost up to Norwich may be recovered. The point of most importance as regards the mail is that it should arrive at Ely to time.

I shall be glad by your having the working of the night mail train both up and down at the stations on your district looked into; latterly we have had delays.

Yours truly,

(Signed) JAMES ROBERTSON.

Mr. Stephenson,
District Superintendent,
Norwich.

APPENDIX C.

RULE 142 OF THE COMPANY'S GENERAL REGULATIONS.

Single-line railways provided with telegraph communication.

When from accident or any other cause a train is prevented from reaching the station appointed for it to pass a train from the opposite direction, the guard, after arranging for the necessary signals, must go himself, or forward written instructions by some competent person to the nearest station, stating the particulars of the detention; and the station-master, on receipt of such communication, must arrange by telegraph for the passage of the trains, and summons assistance from the nearest depôt.

All special trains and engines must be worked under telegraph orders, and in case of irregularity with a regular train the meeting station, as fixed in staff time bill, can only be changed by a telegraphic order being obtained from the station at which it is intended for the train so sent on to pass the one coming from the opposite direction. This order must be given to the guard, who will hand copy to the engineman, and both guard and engineman must satisfy themselves by reading the order that proper arrangement has been made for the trains to proceed.

No special train or engine must be permitted to leave a station at such a time as will prevent its arrival at the next shunting station at least 15 minutes before the time of a regular train being due from the opposite direction at that shunting station.

EXTRACT from Company's Working Time Tables, p. 46.

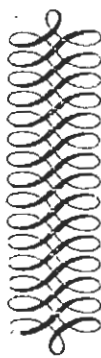
NOTE.—The trains on this single line are worked in accordance with Rule No. 142 of the General Regulation Book.—The figures under which a bar thus — is placed show where trains from opposite directions are to pass each other on the single line. In case of irregularity with a regular train, the meeting station, as fixed by this bill, can only be changed by a telegraphic order being first obtained from the station at which the train to be sent on is to pass the train coming from the opposite direction, and the guard and engine-driver must both satisfy themselves, by reading the order so obtained, that proper arrangement has been made for the train to proceed: All special trains and engines are to be worked under telegraphic orders. All telegraphic notices respecting special trains must state the number of the engine.

In the event of the failure of the telegraph from any cause, no special train is to be run, and the ordinary trains are to be worked strictly in accordance with the working time tables; that is, no train is to be allowed to leave a single-line station until all trains due from the opposite direction have arrived. Ordinary trains as regards order of running are to stand as numbered in the time tables of this single line until cancelled, either by their passing over the single line or by written message between the stations at each end of the single-line section. Trains entered in the special weekly working time bills are on this single line to be treated as special trains.

APPENDIX D.

FORM OF STARTING ORDER.

[88] GREAT EASTERN RAILWAY.
35428
Branch.
This is to authorise the driver of engine No. _____
with the train from _____
station, to proceed to _____ station, where
a train is appointed to pass from the opposite direction.
_____ 187
Signed _____
Station Clerk.



GREAT EASTERN RAILWAY.
Branch.
This is to authorise the driver of engine No. _____
with the train from _____
station, to proceed to _____ station, where
a train is appointed to pass from the opposite direction.
_____ 187
Signed _____
Station Clerk.

APPENDIX E.

RULE 98 OF THE COMPANY'S GENERAL REGULATIONS.

On the exchange of duties between the day and night staff, all circumstances which may have occurred out of the

ordinary course of duty, such as the signal for a special train following, or any accident on the line, or telegraph message requiring attention, must be carefully reported in a book to be kept for that purpose, and also communicated to the relieving staff prior to each man taking charge of the duties allotted to him.

APPENDIX F.

The following are the apparent irregularities and specimens of cancelled messages in the single-line messages taken from the following books:—1st book, August 17th, 1873, to January 31st, 1874, inclusive; 2nd book, Jan. 31st, 1874, to August 8th, 1874, inclusive; 3rd book, August 8th, 1874, to September 11th, 1874, inclusive.

SINGLE-LINE TRAIN MESSAGES.
Date, Thursday, September 10th, 1874.

Time received.	Station from.	Subject of Message.	Stations telegraphed.	Time sent.	Telegraph Clerk's Signature.	Subject of Answer.	Time received.	Telegraph Clerk's Initials.	Railway Officer's Signature and Time delivered.
9.24 p.m.	—	Send up mail train on to Norwich before the 9.10 p.m. down passenger train leaves Norwich. When the up mail train has arrived at Norwich will line be clear for 9.10 p.m. down passenger train to Brundall?	Brundall - Brundall -	9.25	R.	I will send the up mail train on to Norwich before the 9.10 p.m. down pass. train leaves Norwich. W. PLATFORD.	9.25	R.	—

N.B.—The above are the messages entered in the book on the evening of the collision.
Altered from 9.23.

Norwich, Thorpe Station, Sept. 10th, 1874.

9.32 p.m. Norwich to Brundall. "Stop Mail."
9.32 p.m. Brundall to Norwich. "Mail left."

Date, Thursday, February 12th, 1874.

7.41 a.m.	—	May spl. ballast train follow 7.50 a.m. down mixed train to Thorpe Bridges and bk.?	U.L.	7.42	R.	Yes, special ballast train may follow 7.50 a.m. down mixed train to Thorpe Bridges and bk. W. PLATFORD.	7.43	R.	A. Cooper, 7.45 a.m.
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Date, Friday, May 1st, 1874.

3.39 p.m.	U.L.	Is line clear for special fish train, engine 214?	Brundall -	3.45	R.	Yes, line is clear for special fish train, engine 214. W. PARKER.	3.45	R.	W. Parker, 3.45 p.m.
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Date, Tuesday, August 11th, 1874

1.18 p.m.	—	Ballast train is back, and line is clear.	Brundall -	1.20	G. H.	Noted. W. PLATFORD.	1.20	G. H.	W. Humphrey, 1.24 p.m.
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Date, Monday, August 24th, 1874.

1.20 p.m.	—	Ballast train is back, and line is clear.	Brundall -	1.22	G. H.	Noted. J. LAWRENCE.	1.22	G. H.	W. Parker.
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Date, December 3rd, 1873.

Dec. 3 1873. Cancelled.	—	On arrival of 6.0 a.m. up passenger train x Yarmouth will line be clear for special goods train, engine 320?							
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Note.—This is in Robson's handwriting.

Date, Saturday, April 25th, 1874.

6.20 a.m.	—	May special ballast train, engine 355, follow special goods train, engine 325, to Brundall?	Brundall -	—	—	Cancelled, 6.23 a.m. A. COOPER.	—	—	—
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SINGLE-LINE TRAIN MESSAGES—continued.

Time received.	Station from.	Subject of Message.	Stations telegraphed.	Time sent.	Telegraph Clerk's Signature.	Subject of Answer.	Time received.	Telegraph Clerk's Initials.	Railway Officer's Signature and Time delivered.
12.17	—	Ballast train is back, line is clear. J. HAYDEN.	Cancelled, 2.28 R.	—	—	Cancelled, 2.28	—	—	W. Parker, 2.30
12.17	—	Is line clear for special ballast train, engine 428, to Brundall?	Cancelled, 2.28 R.	—	—	Cancelled, 2.28	—	—	W. Parker, 2.30
9.14 (Oct. 4) 1873.	U. L.	Send 9.10 p.m. down passenger train on to Brundall before 7.40 p.m. up Loft. goods train leaves Brundall. C. EASTAUGH.	Brundall	—	—	Inspector Cooper refused to sign for 9.14 single line. J. ROSSOX.	—	—	—
9.4 (Oct. 25) 1873.	Bel.	Send 9.10 p.m. down passenger train on to Brundall before 7.40 p.m. up Lowestoft goods train leaves Brundall. W. PLATFORD.	—	—	—	—	—	—	—
9.19	J. R.	Cancel your single-line order and send up mail train on to Norwich before the 9.10 p.m. down passenger train leaves Norwich. A. COOPER. (This message is in Cooper's own handwriting).	Brundall	9.20	J. R.	I will send up mail train on to Norwich before 9.10 p.m. down passenger train leaves Norwich. W. PLATFORD.	9.20	J. R.	A. Cooper, 9.21 p.m.
(Oct. 31) 1873.	—	May special material train go to Thorpe Bridges and back? I will advise you when line is clear. W. PARKER.	*Brundall	—	—	Cancelled by Insp. Parker, 3.5 p.m.	—	—	—
(Nov. 8) 1873. 9.8 p.m.	—	Send the 9.10 p.m. down passenger train on to Brundall before the 7.40 up Lowestoft goods train leaves Brundall. W. PLATFORD.	Brundall	—	H. S. T.	*Cancel your single-line order and *(Note. — Apparently Cooper's handwriting.)	—	—	—
9.22 p.m.	—	Cancel your single-line order and send up mail train on to Norwich before the 9.10 p.m. down passenger train leaves Norwich. A. COOPER.	Brundall	9.24	H. S. T.	I will send up mail train on to Norwich before the 9.10 p.m. down passenger train leaves Norwich. W. PLATFORD.	9.25	H. S. T.	A. Cooper, 9.31 p.m.
—	—	Send up mail train on to Norwich before the 9.10 p.m. down passenger train leaves Norwich. A. COOPER.	—	—	—	—	—	—	—

SINGLE-LINE TRAIN MESSAGES—continued.

Time received.	Station from.	Subject of Message.	Stations telegraphed.	Time sent.	Telegraph Clerk's Signature.	Subject of Answer.	Time received.	Telegraph Clerk's Initials.	Railway Officer's Signature and Time delivered.
9.20 (Sept. 7) 1874.	—	When up mail train has arrived at Norwich, will line be clear for 9.10 p.m. down passenger train to Brundall? A. COOPER.	Brundall -	9.25	J. R.	I will send up mail train on to Norwich before the 9.10 p.m. down passenger train leaves Norwich; and when up mail train has arrived at Norwich, line will be clear for 9.10 down train to Brundall. W. PLATFORD.	9.28	R.	A. Cooper, 9.29 p.m.

Date, Saturday, August 8th, 1874.

9.20 p.m. (Aug. 8.)	—	Send up mail train on to Norwich before the 9.10 p.m. down passenger train leaves Norwich; and when up mail train has arrived at Norwich, will line be clear for 9.10 p.m. down passenger train to Brundall? A. COOPER.	Brundall -	9.24	H. S. T.	I will send up mail train on to Norwich before the 9.10 p.m. down passenger train leaves Norwich; and when up mail train has arrived at Norwich, line will be clear for 9.10 p.m. down passenger train to Brundall. W. PLATFORD.	9.26	H. S. T.	A. Cooper, 9.28 p.m.
9.22 p.m. (Aug. 15)	—	Same as above. A. COOPER.	Brundall -	9.27	H. S. T.	Same as above. W. PLATFORD.	9.28	H. S. T.	A. Cooper, 9.30 p.m.
9.24 p.m. (Aug. 29)	—	Same as above. A. COOPER.	Brundall -	9.25	H. S. T.	Same as above. W. PLATFORD.	9.26	H. S. T.	A. Cooper, 9.28 p.m.
9.17 p.m. (Aug. 31)	—	Same as above. A. COOPER.	U. L. -	9.20	R.	Same as above. W. PLATFORD.	9.21	R.	A. Cooper, 9.22 p.m.

APPENDIX G.

GREAT EASTERN RAILWAY.

COLLISION at Thorpe, on Thursday, 10th September 1874, between the 9.10 p.m. express train from Norwich, and the 8.40 p.m. mail train from Yarmouth.

LIST OF PERSONS KILLED AND INJURED.

Killed.

John Prior, engine-driver, Great Eastern Railway.
 Thomas Clarke, engine-driver, Great Eastern Railway.
 James Light, fireman, Great Eastern Railway.
 F. Sewell, fireman, Great Eastern Railway.
 George Page, Norwich, leather-seller.
 G. R. Wonnack, Norwich, clothier.
 Rev. Henry Stacey, Norwich.
 Mrs. Stacey, Norwich.
 Sergeant-Major Cassell, Norwich, West Norfolk Militia.
 Sergeant Ward, Norwich, West Norfolk Militia.
 Susan Lincoln, Norwich, housemaid.
 Miss M. Murray, Norwich.
 Mr. Skinner, Norwich, gentleman.
 Miss Taylor, Norwich, forewoman at Mr. Caley's, draper.
 Mrs. Gilding, Mile End Road, London.
 Flora Gilding, Mile End Road, London, daughter of the above.
 John Betts, stoker, Great Eastern Railway.
 Mrs. Betts, wife of above.
 Infant child of Mr. and Mrs. Betts.
 Susan Browne, Norwich, seamstress.
 Mr. Hupton, Great Yarmouth.
 Mr. Slade, Regent Street, London, auctioneer.
 Dr. B. Francis, Norwich, surgeon, &c.

Total killed, 23.*

* Two have died, Mrs. Coote and John Beart, since the above list was made, making 25 deaths.

Injured.

William Baker, Horsford, contusions.
 Mrs. Coote, London, compound fracture of leg.*
 Miss Coote, London, injured head.
 Jane Faulkner, Norwich, both legs fractured.
 Sarah Gibbs, Norwich, fractured leg.
 Elizabeth Baldry, Norwich, injured ankle and back.
 Sarah Woolston, Norwich, fractured leg.
 Elizabeth Smith, London, fractured thigh.
 Mrs. Arbou, Arlesey, contused head.
 William Savage, Horsford, broken leg.
 Robert Savage, Horsford, fractured leg.
 Henry Rudd, Norwich, fractured ribs.
 William Stowers, Norwich, fractured ribs, &c.
 John Beart, Aldboro', amputated arm.†
 F. W. Dendy, Redruth, contusions.
 Miss Chapman, Norwich, severely shaken.
 Jane Wright, Norwich, shaken.
 Mr. Dimmock, Norwich, injured wrist.
 Miss Jones, Norwich, shaken.
 Mr. Elphinstone, Sprowston, contused face, &c.
 Mr. Collinson, Sprowston, fractured rib.
 Mr. Scott, Norwich, injured legs.
 Miss Dodson, Norwich, shaken.
 Mr. Hardimen, Norwich, injured legs, &c.
 Mrs. Fernside, Norwich, injured nose and face.
 Mr. Hewitt, Yarmouth, injured head, &c.
 Mr. Jay, Yarmouth, fractured ribs.
 Mr. Stracey, Yarmouth, injured leg and chest.
 Mr. Gilman, Norwich, injured head, face, &c.
 Mr. Stanley, Norwich, bruised and shaken.
 Henry Fuller, Norwich, back and head injured.
 Dr. Eade, Norwich, injured in face and legs.
 Dr. Smith, Norwich, cut on hands and face.
 Mr. Cocks, Norwich, severely shaken.
 Mrs. Cocks, Norwich, severely shaken.
 Mr. Hands, Norwich, injured legs and shaken.
 Miss Hands, Norwich, shaken.

† Since dead.

Mr. Watson, Norwich, injured face, &c.
 Mr. Green, Norwich, injured legs, &c.
 Mrs. Green, Norwich, contusions.
 Miss Dent, Norwich, contusions.
 Miss H. Dent, Norwich, severe contusions of legs.
 John Devonshire, Lynn, contusions.
 Miss Ramsdale, Norwich, amputation of leg.
 Mr. Felse, Norwich, injured leg, &c.
 Mrs. Squires, Norwich, contusions.
 Ellen Squires (child), Norwich, injured leg.
 Dr. E. Cocksedge, Norwich, injured legs.
 Mr. Etheridge, Yarmouth, injured back, &c.
 Mrs. Vincent, Norwich, injuries to face and legs.
 Mr. J. Bartram, Norwich, injuries to head and legs.
 Mrs. Bartram, Norwich, injuries to head and legs.
 Mr. E. L. Creasy, Norwich, contused legs.
 Mr. Flood, Norwich, injured wrist and legs.
 Ann Rudd, Norwich, injured ribs and shock.
 Mr. Gallant, Norwich, injured face and legs.
 Mr. Page, Norwich, scalp wound.
 William Algar, Norwich, fractured thigh and leg.

Alfred Meredith, London, fractured leg.
 John King, Cambridge, contusions.
 Mrs. Clarke, Ely, scalp wound.
 Elizabeth Clarke, Ely, fractured skull.
 John Clarke, Ely, scalp wound.
 Charles Betts, Norwich, contusions.
 Mr. White, Norwich, injured arm, &c.
 Rev. C. Morse, Norwich, severely shaken.
 Mr. Yaxley, Norwich, injured legs.
 Mr. Wade, Norwich, injured face and legs.
 Mr. Coleman, Grimsby, severely shaken.
 Mr. Rook, London, shaken.
 Mrs. Rook, London, shaken.
 Rev. Mason, Attleboro', shaken.
 Mrs. Stevens and daughters, Norwich, shaken.
 George Wright, Great Eastern Railway guard, scalp wound, &c.
 William Black, Great Eastern Railway guard, severely shaken.

Total injured, 75, so far as at present ascertained.

September 22nd, 1874.

APPENDIX H.

GREAT EASTERN RAILWAY.

RETURN of ARRIVAL TIME of DOWN EXPRESS TRAIN and UP MAIL TRAIN at NORWICH THORPE STATION, for year ending 31st August 1874.

5.0 p.m. from London due at Norwich at 9.0 p.m.
8.40 p.m. from Yarmouth due at Norwich at 9.40 p.m.

September 1873.			October 1873.			November 1873.			December 1873.			January 1874.			February 1874.			March 1874.			April 1874.			May 1874.			June 1874.			July 1874.			August 1874.			
Date.	Ex-press. Minutes late.	Mail. Minutes late.	Date.	Ex-press. Minutes late.	Mail. Minutes late.	Date.	Ex-press. Minutes late.	Mail. Minutes late.	Date.	Ex-press. Minutes late.	Mail. Minutes late.	Date.	Ex-press. Minutes late.	Mail. Minutes late.	Date.	Ex-press. Minutes late.	Mail. Minutes late.	Date.	Ex-press. Minutes late.	Mail. Minutes late.	Date.	Ex-press. Minutes late.	Mail. Minutes late.	Date.	Ex-press. Minutes late.	Mail. Minutes late.	Date.	Ex-press. Minutes late.	Mail. Minutes late.	Date.	Ex-press. Minutes late.	Mail. Minutes late.				
1	16	15	1	6	10	1	25	25	1	20	15	1	11	10	2	19	15	2	10	8	1	5	6	1	5	5	1	4	8	1	3	8	1	65	8	
2	13	27	2	17	15	3	21	27	2	12	12	2	17	13	3	7	5	3	9	6	2	62	34	2	2	5	2	7	5	2	6	13	3	10	25	
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