Public Works (1898) Department.

RAILWAY BRANCH.

G.O., No. 1128-29. Ry.

DATED 12th Septr 1898.

150/1/20/60 Prodl. Ry. Branch

[Despatch Abstract.]

Report of Inspection of the Madras Ry. System

Ordered that the Govt. Inspector's ___ for the half-year ending the 30th June 1898, be comm.d to the Agents for info.n and copy of the Pros. forwarded to the Govt. of India.

Forwarding copy of the Ros embodying the Govt. Inspectors ___ for the half-year ending the 30th June 1898

P. W. D. 233—24-3-98.

Indexed.

BACK PAPERS.

G.O.	No.	Department.	Date.	G.O.	No.	Department.	Date.

FURTHER PAPERS.

G.O.	No.	Department.	Date.	G.O.	No.	Department.	Date.

RAILWAY.

Government {1898} of Madras.

PUBLIC WORKS.

Recd. } 1898. *Enclosures*

Regd. } *Spare copies*

G.O., Nos. 1128, 1129 Ry., 12th September 1898.

SEPTEMBER.

Report of Inspection of the Madras Railway System

Forwarding copy of the Proceedings embodying the Government Inspector's — for the half-year ending the 30th June 1898.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Railway.

Read the following paper:—

MADRAS RAILWAY.

STANDARD, 5′ 6″ GAUGE.

INSPECTION REPORT FOR THE HALF-YEAR ENDING 30TH JUNE 1898.

South-West Line, 496·37 *miles, including the Kolar Gold Fields*, 10 *miles.*

The inspection was made between the 16th and 23rd July. The Agent, Chief Engineer, Traffic Manager and Locomotive Superintendent accompanied the inspection throughout.

2. *Formation.*—Banks and cuttings are well maintained throughout.

3. *Bridges and Culverts.—Ferok Bridge.*—Expansion of girders has not been allowed for by cutting longitudinal timbers and rails and making holding down bolt holes oval. The uncertainty which prevails as to whether this portion will not soon be converted to metre gauge makes the Madras Railway officers unwilling to go to the trouble and expense of doing this work till a decision is arrived at.

Kallayi Bridge.—Same remarks apply to this.

Bridge mile 405/14.—This has been strengthened by putting in extra girders alongside the original ones.

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In addition to the above, I inspected some arched bridges, which appeared to be in excellent order.

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I was informed that it is not so easy to keep the line properly packed up when the stone ballast hides the sand, a sleeper requiring packing was, it is stated, easily discernible when the ballast consisted of sand alone; but now, until the stone blinding is removed, slacks are not observed. Even if this is the case, I consider the addition of the stone a distinct advantage for the travelling public, and I think it is probable that, with the stone blinding, the line gets more thoroughly opened out and examined at fixed intervals than it ever did with sand alone, when the Inspector trusted to his observation.

5. *Rails.*—The rails run over were—

(i) 20-foot double headed iron rails 65 lb. (very old).
(ii) 20-foot double headed iron rails 84 lb. (old).
(iii) 20-foot double headed steel rails 75 lb. (Madras Railway standard pattern).
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The policy of the Company has been to lay out the steel rails at both sides of stations, the best of the iron rails so released being used for necessary renewals on other parts of the iron road.

There are, however, 1½ miles on the Calicut ghât and 51½ miles, the length between Jalarpet and Katpadi, laid with steel rails (State Railway pattern), and from Katpadi to Sholinghur 24½ miles is laid with steel rails, the section being the same as the iron rails.

The running was rough on the old 65 lb. iron rails between Calicut and Podanur; many of these rails have been reversed and turned; an examination showed that in many cases they were split and bulged on the top especially at the ends, these bulges naturally set up oscillation in the carriages. The running on the steel rails was very smooth and pleasant.

Between Podanur and Mettupalaiyam on the 84 lb. rails the running was very smooth, the speed attained being 60 miles an hour.

The running between Podanur and Jalarpet was fairly good, though there were some rough bits; between Bangalore and Bowringpet rough; between Bowringpet and Kuppam better; and between Kuppam and Jalarpet good. From Jalarpet as we were running on the new steel rails, the different speeds were carefully taken and the motion of the carriages observed. Up to Vaniyambadi, travelling at the rear of the train in the Chief Engineer's inspection carriage (E No. 2) a four-wheeled vehicle, speed not exceeding 47 miles an hour, the oscillation was not very pronounced. Between Vaniyambadi and Vinna mangalam the speed through the 119th mile being 53 miles an hour, the oscillation was very considerable. From Vinnamangalam to Ambur I travelled in the Agent's carriage, a six-wheeled vehicle, in the centre of the train, the oscillation was still considerable but not so pronounced as in the four-wheeled vehicle; I observed that there was a great deal of oscillation in a four-wheeled brakevan next but one to the Agent's carriage. From Ambur to Mailpatti I travelled again in E No. 2 at the rear of the train; we attained a speed of 54 miles

and the running was anything but smooth. At Mailpatti, the Consulting Engineer's carriage (E No. 3), a six-wheeled vehicle, was placed at the rear of the train. The speed did not exceed 46 miles an hour, but this carriage oscillated considerably. Between Gudiyattam and Kavanur the gauge had been made 5·6⅛ (the usual gauge being 5-6⅜); this experiment was not a success, as it appeared to me to be the worst bit of road I had been over. From here on to Katpadi, the maximum speed attained was about 52 miles and the oscillation was considerable. From Katpadi to Sholinghur, where steel rails of the Madras Railway pattern were laid, I was led to expect that the running would be exceedingly smooth; perhaps I expected too much, but my impression was that at speeds of over 50 miles there was still a fair amount of oscillation though not so pronounced as on the State Railway pattern rails.

It will be observed that my experience differed from that of the senior Deputy Consulting Engineer and the Chief Engineer who, in reporting on the tests made on the 18th June, state that a six-wheeled vehicle at the rear of the train runs very smoothly on the State Railway pattern steel rails.

Judging by the above-mentioned observations, my opinion is that the severe oscillation is not wholly due to the section of the State Railway pattern rails being different to that of the Madras Railway pattern, but in a great part to the fact that the new steel rails of both patterns are of a different length to the old rails and this has necessitated the respacing of the sleepers and the line, where newly laid, has not yet had sufficient time to set properly.

6. *Sleepers.*—The road was opened out at mile 346/16 where the pot sleepers have been laid for twenty-one years; both sleepers and fastenings were in good order.

7. *Fencing.*—Most of the fencing is of aloe; this gives a great deal of trouble owing to plants dying and leaving gaps. Near Calicut I noticed some wire fencing, which looked in good order and should keep out cattle, but I observed three cows on the line which must have got through.

8. *Stations generally.*—These are clean and well kept all through the line. The orders contained in G.O., No. 91 Ry., directing that the rules for the prevention of the spread of plague should be hung up at all railway stations, have not always been attended to, noticeably in the section between Salem and Jalarpet and on the Bangalore Branch. A station is said to be necessary at mile 5/1 of the Kolar Gold Fields Railway, if built it should be made a crossing station. A deputation met the train at mile 98/13 to ask for a station; the district appears to me to be quite sufficiently served by the stations Valathoor and Gudiyattam, at miles 102 and 95½.

9. *Individual Stations.*—*Calicut.*—The stationmaster complains of his quarters which consist of three rooms 12′ × 12′, the usual allowance being 14′ × 14′. The rooms are certainly small and hot for such a damp climate.

Tanur.—Here, and at some others, the station house has been raised and the verandah is on brackets. This is an improvement on some of the old stations.

Kuttipuram—an old station, in bad repair.

Shoranur.—This will be the junction of the Shoranur-Cochin line. Till the question of gauge is settled, the best junction arrangements are necessarily in abeyance.

Palghat.—Not far from this station there is a siding to the tileworks; this siding is very properly shut off from the main line by a derailment switch which cannot be closed till the key of the box is brought from Palghat.

Olavakkot.—A cross-over road at the east end of the station, which is said never to be used, might be found useful between the 3rd and 4th lines at the west end for shunting purposes.

Coimbatore.—There is a level crossing within the distant signal at the north end of the station; the gates close across the line. The stationmaster cannot pull off his distant signal, until the gateman has pulled a lever. There is nothing, however, to prevent the gateman from pulling off his lever before opening the gates. It would be an improvement if the arrangement in use at Bangalore was introduced here. By this arrangement the signal is locked till the gates are completely opened.

Mangalam.—Addition to goods shed has been completed. The station compound seems cramped; a small piece of land might be taken up at the south-east corner. Squatters are approaching very close to the station.

Kulipalaiyam.—The inhabitants ask for a platform, lay-bye and goods siding. As the last half-year's receipts were over Rs. 2,000, I understand that they are considered entitled to a platform. There is a road being made near the station.

Uttukuli.—Some land might be taken up to square off the compound; at present the boundary approaches to within 50 feet of the platform.

Vijayamangalam.—Assistant station master's quarters are stated to be required here.

Totiyapalaiyam.—A trial station opened ten years. A platform is asked for, but the receipts hardly seem to justify this. Villagers say an approach road was sanctioned by the local authorities some time ago, but it is not made yet.

Erode.—A carriage transhipping dock is stated to be required at the east end of the South Indian Railway goods transhipping siding. This is a matter for settlement between the Agents of the two Companies. Nothing has yet been done to enlarge the refreshment room necessary if mail train passengers to Madras have to dine here. The municipality complain about a latrine, which is near the entrance gate to the station yard and close to the public road. This is used by the occupants of four railway quarters and also by the public passing along the road. I could not see that there was any more objection to it than there is to any public latrine. It was, when inspected, perfectly clean and inoffensive.

Lokur.—There is a question about moving to this place the ghat engines now stationed at Mallapuram, partly because it is thought a more suitable site could be got here and partly because this is the top of the ghat, and the special engines now have to run an unnecessary 7 miles to Mallapuram with their loads. It, however, seems doubtful if a sufficient supply of good water can be obtained, and till this is known no action can be taken.

Mallapuram.—This yard may require remodelling, if it is decided to keep the ghat engines here.

Bisanattam.—A station is being built here of a moveable type to supply the wants of the Mysore Reefs gold mine.

Bangalore City.—The verandahs are in process of being roofed in, 9 units being completed on the Southern Mahratta Railway side and 1 unit on the Madras Railway side. A small piece of the platform has been flagged and I understand that this will be prolonged. A tank is being put up on the top of the station. I was informed that it is intended to bring water into the station from a river 2 miles distant on the Mysore line. The present latrine is so close to the overbridge that it was found necessary to roof it in; this is considered objectionable and it is now proposed to build a new latrine at the west end of the platform. I observed that the approach road to the station, which is between the Madras and Southern Mahratta Railways, was shut off from the Madras Railway by a wall, but there was no fence on the Southern Mahratta Railway side. Fencing on this side appeared to me just as necessary as on the other. On enquiry I was informed that a serious carriage accident had shown the necessity of fencing off the Madras Railway. I consider it unwise to wait for a similar occurrence to show the necessity of fencing off the Southern Mahratta Railway and recommend that it be done as soon as possible.

Jalarpet.—The design for remodelling this yard has not yet been agreed upon. Two units of quarters for family guards have been completed.

Mailpatti.—This station is very much cramped. An extra piece of land on the south side seems necessary.

Vinnamangalam and Mailpatti stations.—These appeared to be very much cramped for room; if receipts justify their retention, some more land would be an improvement.

Katpadi.—Assistant station master's quarters require enlarging; at present two men with their families are living in quarters built for one man. It is proposed to throw out an extra room on both sides.

10. *Watering arrangements.*—At mile 203½ on the Bangalore branch, where there is a 5 × 30 ft. arched bridge built for the double line, it is proposed to put up new watering arrangements.

11. *Points and crossings.*—The different types of point handles have been distributed about the line in a most unsystematic manner. I do not see what object is served by putting new types, which are under trial, at out-of-the-way stations. While on trial, they ought only to be used at one or two stations where they are directly under the eye of the Engineers. Opinions seem still divided as to which is the best type.

North-West Line, 361·30 miles (including Madras-Ennur Section of the Bezwada-Madras Line, 8·45 miles).

12. The inspection was made on the 1st to 5th August in company with the Agent, Chief Engineer, Locomotive Superintendent and Traffic Manager.

13. *General.*—The running was, as a rule, good, with the exception of the Madras-Ennur section and a piece of line approaching the Tungabhadra bridge where wooden sleepers are laid, where the bank is, I understand, a very troublesome one.

14. *Bridges.—Mile 107/10.*—One pier and abutment of this bridge were washed away in 1896 and have been rebuilt. The training of the river is now practically complete.

Ralavonka Bridge.—Expansion has been allowed for by leaving half an inch between the ends of timbers and rails and slotting holding down bolt holes. The bridge being skew the cross girders at the piers unite main girders of different spans and the rivet holes of these cross girders have also been slotted.

Papaghni Bridge.—Expansion has been allowed for by leaving 3 inches between the ends of longitudinal timbers, ½ inch between the ends of rails, and making holding down bolt holes slotted for two rail lengths on each side of the joint.

Mile 240/13—Six-ft. rail girder.—The line was breached at this place last June. The water cut away round the wingwall and cut the bank away for a distance of 300 feet; the bridge itself was uninjured. The channel of the nullah both up and down stream had been allowed to get choked up, and this, probably, partly caused the accident. In addition to this it seems probable that the main stream, of which this is a feeder, and whose course is parallel to the line, had been either naturally or artificially dammed up and that this caused the water of this feeder to be backed up. The channel is hidden by very dense scrub jungle and I recommend that a thorough investigation be made of the main channel with a view to ascertaining if its tendency is to cut a fresh bed for itself, thus impinging on the railway bank.

Tungabhadra Bridge.—This bridge consists of 58 spans of 64 feet clear, the girders being continuous over two spans. These girders are too weak for standard gauge. The waterway appears very ample for all requirements, several of the openings being land spans. It is proposed to convert these land spans into 30 ft. arches and to span the remaining openings with new steel girders.

15. *Ballast.*—The work of blinding the sand ballast with broken stone is progressing, 40 miles between Arkonam and Raichur have been covered during the half-year.

16. *Rails.*—Many of the old 20-ft. iron rails require renewing. The best of the iron rails taken out from near stations, where steel rails are being laid, are being used for these renewals. I saw no rails in the line which were, what I would call, dangerous.

17. *Stations.*—The stations as a whole were well kept and in good order.

Central Station.—The question of enlarging the gasworks will have soon to be taken up, it has for some time been in abeyance pending the settlement of the agency by which the East Coast Railway will be worked. I understand that the present gasworks are only capable of turning out sufficient gas for the present requirements of the Madras Railway.

Washermenpet.—The north distant signal is too close to the home signal which is at the points.

Konnur and Avadi.—There are ballast sidings at these two stations with starting signals which are nearly on the main line and might be mistaken for the up main starter. These starters, if they are necessary at all, should be disc signals and should be more definitely allotted to the sidings.

Trivellore.—On feast days there is a large passenger traffic to and from this station. To deal with this extra traffic two extra dead ends have been put in, these run through part of the platform thus forming the first half of an island platform. There are separate starting signals for the up main and for these special feast sidings; but these signals are so located that either might be mistaken for the other.

Manur.—Station house, stationmaster's quarters and latrine are stated to be required here.

Ponpadi.—This station having justified its opening, it is proposed to build a station house and latrine.

Nagari.—The lay-bye requires extending.

Renigunta.—This appears to be still made use of as an engine-changing station; there were five engines in shed. The intention, I am told, is to pull down both the engine shed and the driver's quarters. It is proposed to relay the Nellore siding as a ballast siding which is stated to be required. There is a native retiring room in use here which seems to be a convenience, it is very close to the back part of the native village and application has been made to have it walled off. As the receipts seem to justify the spending of a small sum, this might be done.

Nandalur.—This is the new engine-changing station which has replaced Cuddapah and Renigunta. The line alongside the platform requires raising. A piece of waste land on the east, which was evidently at one time railway land, should now be re-acquired. At present it is useless and is fast being overgrown with cactus; if only on sanitary grounds, it should be handed over to the railway authorities.

Cuddapah.—The two through sidings next to the locomotive shed have been taken up. The locomotive sidings, which at present take off at the north of the station and run the whole length of the yard to the turntable, should be taken up and a short piece of line put in from the south of the yard to the turntable.

Yerragudipad and Kalamalla.—Station-house, stationmaster's quarters, lay-bye and loading banks are being built at these stations.

Gooty.—The old Assistant Engineer's bungalow is being pulled down. The materials can be used to increase the school accommodation which seems inadequate.

Guntakal.—It was decided that the Traffic Manager, Southern Mahratta Railway, be asked to depute an officer to meet the Telegraph Engineer and discuss alteration in signals, &c. At present the signals are most unsystematic. There would be no difficulty in constructing the short feeder road mentioned in the last report. It would cross the main line just outside the distant signal and run into the old railway line. I do not know if this road is required or not. I would suggest that the crossing only be made and if the traffic proves that a road is required it could be made later on. There is nothing to stop carts forming a kaccha track.

Molagavalli.—This trial station is doing well; it is proposed to build a station-house and extend the lay-bye 60 feet.

Adoni.—Proposals for re-arranging the station yard will be submitted.

Raichur.—The distant facing points at the north end have been removed. Proposals will be submitted for removing the distant points at the south end and laying a shunting neck. This is an expensive scheme and it is possible that a cross over road in the station yard would get over the shunting difficulty.

18. *Watering arrangements.*—These appear to generally give trouble at the end of the dry season.

Renigunta.—The supply is obtained from a well close to a small river at mile 82/5. An auxiliary well was sunk closer to the stream, but this failed during the present season. When I passed, a small 6-ft. well had been sunk in the bed of the river and a picottah was working the water in this into the large well. It would be a great improvement if a proper well were sunk in the bed of the stream and the steam pump erected on the east side of the bridge which is for a double line.

Kondapuram.—The water-supply here is very poor. There is a pump at the Chitravati bridge. If piping were laid from this to the station it should get over the difficulty.

Gooty.—A steam pump is available and should be used in place of the present temporary arrangements at mile 257/14. It is proposed to lay piping from the river, mile 258/11, into Gooty as the present supply is unsatisfactory. When this scheme is accomplished, the steam pump will be moved.

19. *Signals.*—Several systems of interlocking are on their trial. At *Tiruttani* is Saxby and Farmer's system. At *Nagari* is fitted Saxby and Farmer's hydraulic system; this, however, had got out of order and was not working. Puttur was fitted up with Dutton's interlocking system; this is not quite up to date and is to be fitted up with his latest improvements. At *Pudi* is Anderson's system. At *Mamanduru* is Stoney's interlocking system. At *Peddapadu* the points are simply detected.

The Company seem to be unable to come to a decision as to which system is the best.

20. *Level-crossings.*—At mile 0/16 the lattice overbridge has been completed and tested; when the approaches are properly fenced, it may be opened for traffic.

There were two applications on the Madras-Ennur section for new level-crossings; in neither case could I see the smallest necessity for them. A level crossing cannot be given to every individual owner of land.

21. *Miscellaneous.*—At mile 1/3 I observed that a start had been made at filling up the ditch alongside the railway. This seems a necessary work, as the ditch appears to be a sink for the neighbouring sewage farm, and at times gives off a most offensive smell.

J. C. LYLE,
Govt. Inspector of Railways.

11th August 1898.

Remarks by the Senior Government Inspector of Railways, Madras.

The scheme for strengthening the weak bridges on the Madras Railway which still remain unstrengthened is now practically settled, and indents are going home. The swaying of trains at high speed on the South-West line, where the new shaped rail-head is in use, does not seem to be yet satisfactorily accounted for. No decision can be arrived at so long as the change from worn to unworn wheel is only made in a carriage at the rear of a long train, for the swaying throughout such a train will naturally be communicated to the rearmost carriage. Moreover, no test has yet been made of the truth of the theory that the swaying is due to the recently displaced sleepers not yet having settled down; it would be easy to test this theory by setting a good gang to perfect a mile or two of road surface. The Company's officers would do well to design crucial experiments with a view to getting at the truth of the matter. I still think that the swaying is due to want of proper co-ordination between the new flat rail-head and the tyre section which is suitable to the older form of rail-head.

These are the two larger questions demanding settlement. The remaining matters brought to notice in the Inspection Report should receive attention.

Ootacamund,
22nd August 1898.

Francis J. E. Spring,
Senior Govt. Inspector.

Order—No. 1128 Ry., dated 12th September 1898.

Communicated to the Agent and Manager, Madras Railway, for information and necessary action.

2. A copy of these proceedings will be forwarded for the information of the Government of India.

[Here enter No. 1129 Ry., dated 12th September 1898.]

(True Extract.)

Francis J. E. Spring,
Joint Secretary.

To the Agent and Manager, Madras Railway.

Endorsement—No. 1129 Ry., dated 12th September 1898.

Forwarded.

(By order.)

Francis J. E. Spring,
Joint Secretary.

Exd. T. K. Narayana Aiyangar.

His Excellency the Governor
& Cnc.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

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The running between Podanur and Jalarpet was fairly good, though there were some rough bits; between Bangalore and Bowringpet rough; between Bowringpet and Kuppam better; and between Kuppam and Jalarpet good. From Jalarpet as we were running on the new steel rails, the different speeds were carefully taken and the motion of the carriages observed. Up to Vaniyambadi, travelling at the rear of the train in the Chief Engineer's inspection carriage (E No. 2) a four-wheeled vehicle, speed not exceeding 47 miles an hour, the oscillation was not very pronounced. Between Vaniyambadi and Vinna mangalam the speed through the 11·5th mile being 53 miles an hour, the oscillation was very considerable. From Vinnamangalam to Ambur I travelled in the Agent's carriage, a six-wheeled vehicle, in the centre of the train, the oscillation was still considerable but not so pronounced as in the four-wheeled vehicle; I observed that there was a great deal of oscillation in a four-wheeled brakevan next but one to the Agent's carriage. From Ambur to Mailpatti I travelled again in E No. 2 at the rear of the train; we attained a speed of 54 miles

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It will be observed that my experience differed from that of the senior Deputy Consulting Engineer and the Chief Engineer who, in reporting on the tests made on the 18th June, state that a six-wheeled vehicle at the rear of the train runs very smoothly on the State Railway pattern steel rails.

Judging by the above-mentioned observations, my opinion is that the severe oscillation is not wholly due to the section of the State Railway pattern rails being different to that of the Madras Railway pattern, but in a great part to the fact that the new steel rails of both patterns are of a different length to the old rails and this has necessitated the respacing of the sleepers and the line, where newly laid, has not yet had sufficient time to set properly.

6. **Sleepers.**—The road was opened out at mile 346/16 where the pot sleepers have been laid for twenty-one years; both sleepers and fastenings were in good order.

7. **Fencing.**—Most of the fencing is of aloe; this gives a great deal of trouble owing to plants dying and leaving gaps. Near Calicut I noticed some wire fencing, which looked in good order and should keep out cattle, but I observed three cows on the line which must have got through.

8. **Stations generally.**—These are clean and well kept all through the line. The orders contained in G.O., No. 91 Ry., directing that the rules for the prevention of the spread of plague should be hung up at all railway stations, have not always been attended to, noticeably in the section between Salem and Jalarpet and on the Bangalore Branch. A station is said to be necessary at mile 5/1 of the Kolar Gold Fields Railway, if built it should be made a crossing station. A deputation met the train at mile 98/13 to ask for a station; the district appears to me to be quite sufficiently served by the stations Valathoor and Gudiyattam, at miles 102 and $95\frac{1}{2}$.

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Shoranur.—This will be the junction of the Shoranur-Cochin line. Till the question of gauge is settled, the best junction arrangements are necessarily in abeyance.

Palghat.—Not far from this station there is a siding to the tileworks; this siding is very properly shut off from the main line by a derailment switch which cannot be closed till the key of the box is brought from Palghat.

Olavakkot.—A cross-over road at the east end of the station, which is said never to be used, might be found useful between the 3rd and 4th lines at the west end for shunting purposes.

Coimbatore.—There is a level crossing within the distant signal at the north end of the station; the gates close across the line. The stationmaster cannot pull off his distant signal, until the gateman has pulled a lever. There is nothing, however, to prevent the gateman from pulling off his lever before opening the gates. It would be an improvement if the arrangement in use at Bangalore was introduced here. By this arrangement the signal is locked till the gates are completely opened.

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Uttukuli.—Some land might be taken up to square off the compound; at present the boundary approaches to within 50 feet of the platform.

Vijayamangalam.—Assistant station master's quarters are stated to be required here.

Totiyapalaiyam.—A trial station opened ten years. A platform is asked for, but the receipts hardly seem to justify this. Villagers say an approach road was sanctioned by the local authorities some time ago, but it is not made yet.

Erode.—A carriage transhipping dock is stated to be required at the east end of the South Indian Railway goods transhipsiding. This is a matter for settlement between the Agents of the two Companies. Nothing has yet been done to enlarge the refreshment room necessary if mail train passengers to Madras have to dine here. The municipality complain about a latrine, which is near the entrance gate to the station yard and close to the public road. This is used by the occupants of four railway quarters and also by the public passing along the road. I could not see that there was any more objection to it than there is to any public latrine. It was, when inspected, perfectly clean and inoffensive.

Lokur.—There is a question about moving to this place the ghat engines now stationed at Mallapuram, partly because it is thought a more suitable site could be got here and partly because this is the top of the ghat, and the special engines now have to run an unnecessary 7 miles to Mallapuram with their loads. It, however, seems doubtful if a sufficient supply of good water can be obtained, and till this is known no action can be taken.

Mallapuram.—This yard may require remodelling, if it is decided to keep the ghat engines here.

Bisanattam.—A station is being built here of a moveable type to supply the wants of the Mysore Reefs gold mine.

Bangalore City.—The verandahs are in process of being roofed in, 9 units being completed on the Southern Mahratta Railway side and 1 unit on the Madras Railway side. A small piece of the platform has been flagged and I understand that this will be prolonged. A tank is being put up on the top of the station. I was informed that it is intended to bring water into the station from a river 2 miles distant on the Mysore line. The present latrine is so close to the overbridge that it was found necessary to roof it in; this is considered objectionable and it is now proposed to build a new latrine at the west end of the platform. I observed that the approach road to the station, which is between the Madras and Southern Mahratta Railways, was shut off from the Madras Railway by a wall, but there was no fence on the Southern Mahratta Railway side. Fencing on this side appeared to me just as necessary as on the other. On enquiry I was informed that a serious carriage accident had shown the necessity of fencing off the Madras Railway. I consider it unwise to wait for a similar occurrence to show the necessity of fencing off the Southern Mahratta Railway and recommend that it be done as soon as possible.

Jalarpet.—The design for remodelling this yard has not yet been agreed upon. Two units of quarters for family guards have been completed.

Mailpatti.—This station is very much cramped. An extra piece of land on the south side seems necessary.

Vinnamangalam and Mailpatti stations.—These appeared to be very much cramped for room; if receipts justify their retention, some more land would be an improvement.

Katpadi.—Assistant station master's quarters require enlarging; at present two men with their families are living in quarters built for one man. It is proposed to throw out an extra room on both sides.

10. **Watering arrangements.**—At mile 203½ on the Bangalore branch, where there is a 5 × 30 ft. arched bridge built for the double line, it is proposed to put up new watering arrangements.

11. **Points and crossings.**—The different types of point handles have been distributed about the line in a most unsystematic manner. I do not see what object is served by putting new types which are under trial at out-of-the-way stations. While on trial, they ought only to be used at one or two stations where they are directly under the eye of the Engineers. Opinions seem still divided as to which is the best type.

North-West Line, 361·30 *miles* (*including Madras-Ennur Section of the Bezwada Madras Line*, 8·45 *miles*).

12. The inspection was made on the 1st to 5th August in company with the Agent, Chief Engineer, Locomotive Superintendent and Traffic Manager.

13. **General.**—The running was, as a rule, good, with the exception of the Madras-Ennur section and a piece of line approaching the Tungabhadra bridge where wooden sleepers are laid, where the bank is, I understand, a very troublesome one.

14. **Bridges.**—*Mile 107/10.*—One pier and abutment of this bridge were washed away in 1896 and have been rebuilt. The training of the river is now practically complete.

Ralavonka Bridge.—Expansion has been allowed for by leaving half an inch between the ends of timbers and rails and slotting holding down bolt holes. The bridge being skew the cross girders at the piers unite main girders of different spans and the rivet holes of these cross girders have also been slotted.

Papaghni Bridge.—Expansion has been allowed for by leaving 3 inches between the ends of longitudinal timbers, ½ inch between the ends of rails, and making holding down bolt holes slotted for two rail lengths on each side of the joint.

Mile 240/13—Six-ft. rail girder.—The line was breached at this place last June. The water cut away round the wingwall and cut the bank away for a distance of 300 feet; the bridge itself was uninjured. The channel of the nullah both up and down stream had been allowed to get choked up, and this, probably, partly caused the accident. In addition to this it seems probable that the main stream, of which this is a feeder, and whose course is parallel to the line, had been either naturally or artificially dammed up and that this caused the water of this feeder to be backed up. The channel is hidden by very dense scrub jungle and I recommend that a thorough investigation be made of the main channel with a view to ascertaining if its tendency is to cut a fresh bed for itself, thus impinging on the railway bank.

Tungabhadra Bridge.—This bridge consists of 58 spans of 64 feet clear, the girders being continuous over two spans. These girders are too weak for standard gauge. The waterway appears very ample for all requirements, several of the openings being land spans. It is proposed to convert these land spans into 30 ft. arches and to span the remaining openings with new steel girders.

15. **Ballast.**—The work of blinding the sand ballast with broken stone is progressing, 40 miles between Arkonam and Raichur have been covered during the half-year.

16. **Rails.**—Many of the old 20-ft. iron rails require renewing. The best of the iron rails taken out from near stations where steel rails are being laid are being used for these renewals. I saw no rails in the line which were, what I would call, dangerous.

17. **Stations.**—The stations as a whole were well kept and in good order.

Central Station.—The question of enlarging the gasworks will have soon to be taken up, it has for some time been in abeyance pending the settlement of the agency by which the East Coast Railway will be worked. I understand that the present

gasworks are only capable of turning out sufficient gas for the present requirements of the Madras Railway.

Washermenpet.—The north distant signal is too close to the home signal which is at the points.

Konnur and Avadi.—There are ballast sidings at these two stations with starting signals which are nearly on the main line and might be mistaken for the up main starter. These starters, if they are necessary at all, should be disc signals and should be more definitely allotted to the sidings.

Trivellore.—On feast days there is a large passenger traffic to and from this station. To deal with this extra traffic two extra dead ends have been put in, these run through part of the platform thus forming the first half of an island platform. There are separate starting signals for the up main and for these special feast sidings; but these signals are so located that either might be mistaken for the other.

Manur.—Station house, stationmaster's quarters and latrine are stated to be required here.

Ponpadi.—This station having justified its opening, it is proposed to build a station house and latrine.

Nagari.—The lay-bye requires extending.

Renigunta.—This appears to be still made use of as an engine-changing station; there were five engines in shed. The intention, I am told, is to pull down both the engine shed and the driver's quarters. It is proposed to relay the Nellore siding as a ballast siding which is stated to be required. There is a native retiring room in use here which seems to be a convenience, it is very close to the back part of the native village and application has been made to have it walled off. As the receipts seem to justify the spending of a small sum, this might be done.

Nandalur.—This is the new engine-changing station which has replaced Cuddapah and Renigunta. The line alongside the platform requires raising. A piece of waste land on the east which was evidently at one time railway land should now be re-acquired. At present it is useless and is fast being overgrown with cactus; if only on sanitary grounds, it should be handed over to the railway authorities.

Cuddapah.—The two through sidings next to the locomotive shed have been taken up. The locomotive sidings, which at present take off at the north of the station and run the whole length of the yard to the turntable, should be taken up and a short piece of line put in from the south of the yard to the turntable.

Yerragudipad and Kalamalla.—Station-house, stationmaster's quarters, lay-bye and loading banks are being built at these stations.

Gooty.—The old Assistant Engineer's bungalow is being pulled down. The materials can be used to increase the school accommodation which seems inadequate.

Guntakal.—It was decided that the Traffic Manager, Southern Mahratta Railway, be asked to depute an officer to meet the Telegraph Engineer and discuss alteration in signals, &c. At present the signals are most unsystematic. There would be no difficulty in constructing the short feeder road mentioned in the last report. It would cross the main line just outside the distant signal and run into the old railway line. I do not know if this road is required or not. I would suggest that the crossing only be made and if the traffic proves that a road is required it could be made later on. There is nothing to stop carts forming a kaccha track.

Molagavalli.—This trial station is doing well; it is proposed to build a station-house and extend the lay-bye 60 feet.

Adoni.—Proposals for re-arranging the station yard will be submitted.

Raichur.—The distant facing points at the north end have been removed. Proposals will be submitted for removing the distant points at the south end and laying a shunting neck. This is an expensive scheme and it is possible that a cross over road in the station yard would get over the shunting difficulty.

18. **Watering arrangements.**—These appear to generally give trouble at the end of the dry season.

Renigunta.—The supply is obtained from a well close to a small river at mile 82/5. An auxiliary well was sunk closer to the stream, but this failed during the present season. When I passed, a small 6-ft. well had been sunk in the bed of the river and a picottah was working the water in this into the large well. It would be a great improvement if a proper well were sunk in the bed of the stream and the steam pump erected on the east side of the bridge which is for a double line.

Kondapuram.—The water-supply here is very poor. There is a pump at the Chitravati bridge. If piping were laid from this to the station it should get over the difficulty.

Gooty.—A steam pump is available and should be used in place of the present temporary arrangements at mile 257/14. It is proposed to lay piping from the river, mile 258/11, into Gooty as the present supply is unsatisfactory. When this scheme is accomplished, the steam pump will be moved.

19. **Signals.**—Several systems of interlocking are on their trial. At *Tiruttani* is Saxby and Farmer's system. At *Nagari* is fitted Saxby and Farmer's hydraulic system; this, however, had got out of order and was not working.

Puttur was fitted up with Dutton's interlocking system; this is not quite up to date and is to be fitted up with his latest improvements. At *Pudi* is Anderson's system. At *Mamanduru* is Stoney's interlocking system. At *Peddapadu* the points are simply detected.

The Company seem to be unable to come to a decision as to which system is the best.

20. **Level-crossings.**—At mile 0/16 the lattice overbridge has been completed and tested; when the approaches are properly fenced, it may be opened for traffic.

There were two applications on the Madras-Ennur section for new level-crossings; in neither case could I see the smallest necessity for them. A level crossing cannot be given to every individual owner of land.

21. **Miscellaneous.**—At mile 1/3 I observed that a start had been made at filling up the ditch alongside the railway. This seems a necessary work, as the ditch appears to be a sink for the neighbouring sewage farm, and at times gives off a most offensive smell.

J. C. LYLE,
Govt. Inspector of Railways.

11th August 1898.

Remarks by the Senior Government Inspector of Railways, Madras.

The scheme for strengthening the weak bridges on the Madras Railway which still remain unstrengthened is now practically settled, and indents are going home. The swaying of trains at high speed on the South-West line, where the new shaped rail-head is in use, does not seem to be yet satisfactorily accounted for. No decision can be arrived at so long as the change from worn to unworn wheel is only made in a carriage at the rear of a long train, for the swaying throughout such a train will naturally be communicated to the rearmost carriage. Moreover, no test has yet been made of the truth of the theory that the swaying is due to the recently displaced sleepers not yet having settled down; it would be easy to test this theory by setting a good gang to perfect a mile or two of road surface. The Company's officers would do well to design crucial experiments with a view to getting at the truth of the matter. I still think that the swaying is due to want of proper co-ordination between the new flat rail-head and the tyre section which is suitable to the older form of rail-head.

These are the two larger questions demanding settlement. The remaining matters brought to notice in the Inspection Report should receive attention.

Ootacamund,
22nd August 1898.

Francis J. E. Spring,
Senior Govt. Inspector.

Order—No. Ry., dated September 1898.

Communicated to the Agent and Manager, Madras Railway, for information and necessary action.

2. A copy of these proceedings will be forwarded for the information of the Government of India.

[Here enter No. Ry., dated September 1898.]

(True Extract.)

Francis J. E. Spring,
Joint Secretary.

To the Agent and Manager, Madras Railway.

Endorsement—No. Ry., dated September 1898.

Forwarded.

(By order.)

Joint Secretary.

Exd. T. K. Narayana Aiyangar.

RAILWAY.

Government {1898} of Madras.

PUBLIC WORKS.

Recd. } 1898. *Enclosures*

Regd. } *Spare copies*

G.O., Nos. , Ry., September 1898.

SEPTEMBER.

No. 1128 Ry., 12 September 1898.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Railway.

Read the following paper:—

MADRAS RAILWAY.

STANDARD, 5′ 6″ GAUGE.

INSPECTION REPORT FOR THE HALF-YEAR ENDING 30TH JUNE 1898.

South-west Line, 496·37 *miles*, *including the Kolar Gold Fields*, 10 *miles*.

The inspection was made between the 16th and 23rd July. The Agent, Chief Engineer, Traffic Manager and Locomotive Superintendent accompanied the inspection throughout.

2. **Formation.**—Banks and cuttings are well maintained throughout.

3. **Bridges and Culverts.**—*Ferok Bridge.*—Expansion of girders has not been allowed for by cutting longitudinal timbers and rails and making holding down bolt holes oval. The uncertainty which prevails as to whether this portion will not soon be converted to metre gauge makes the Madras Railway officers unwilling to go to the trouble and expense of doing this work till a decision is arrived at.

Kallayi Bridge.—Same remarks apply to this.

Bridge mile 405/14.—This has been strengthened by putting in extra girders alongside the original ones.

Kadalundi Bridge, 8 *spans of* 64 *feet.*—The girders of this bridge, which are continuous on screw pile piers, require strengthening, probably even for metre gauge.

Mile 403/5.—Twelve spans of 64 feet continuous girders on cylinders; girders require strengthening.

Mile 395/5.—Originally 3 spans of 64 ft. clear, one continuous girder; strengthened by inserting intermediate piers.

Tirur Bridge, 5 *spans of* 64 *ft.* + 1 × 20 *ft. on the skew.*—These girders, two being 140 feet continuous over one pier, require strengthening.

Thootha bridge mile 373/12 is carried on new girders.

Bridges on the Nilgiri Branch.—The work of strengthening these bridges by putting in intermediate piers seems to be in abeyance. I examined one bridge at mile 308/12; the piers had been built up to bottom of bedstones and I understand the others are in much the same state. Now that these girders have been calculated as being too weak even for metre gauge I see no reason why this work should not be completed.

Mile 265/2—15 *ft. arch.*—The flooring and revetment of this has been completed.

Cauvery Bridge.—To allow for the expansion of the girders, the rails at the joints nearest the ends of the longitudinal timbers have been cut to allow ½ an inch between the ends; and all bolt holes have been made oval for a distance of 10 feet on each side of these joints.

The end cross beam supporting the longitudinal timbers being only 6 inches wide, it was not considered wise to leave 3 inches between the ends of the timbers as this would have given a bearing of only 1½ inches for each longitudinal timber.

The expansion and contraction does not appear ever to exceed ½ an inch. If everything were free, and rollers working properly, it ought, for a variation of temperature of 70°, to be somewhere about one inch.

Mile 176.—New girders having just been put up, the bridge was tested and passed for traffic during the inspection.

In addition to the above, I inspected some arched bridges, which appeared to be in excellent order.

4. **Ballast.**—The following table shows the progress made in blinding the sand ballast with stone:—

	Covered.	Not covered.
Arkonam to Mettupalaiyam	Miles 284·83	*Nil.*
Podanur to Calicut	„ 8·50	105·12
Jalarpet to Bangalore	„ 45·27	42·15

I was informed that it is not so easy to keep the line properly packed up when the stone ballast hides the sand, a sleeper requiring packing was, it is stated, easily discernible when the ballast consisted of sand alone; but now, until the stone blinding is removed. slacks are not observed. Even if this is the case, I consider the add t on of the stone a distinct advantage for the travelling public, and I think it is probable that, with the stone blinding, the line gets more thoroughly opened out and examined at fixed intervals than it ever did with sand alone, when the Inspector trusted to his observation.

5. **Rails.**—The rails run over were—

(i) 20-foot double headed iron rails 65 lb. (very old).
(ii) 20-foot double headed iron rails 84 lb. (old).
(iii) 20-foot double headed steel rails 75 lb. (Madras Railway standard pattern).
(iv) 30-foot bull headed steel rails 78 lb. (State Railway pattern).

The policy of the Company has been to lay out the steel rails at both sides of stations, the best of the iron rails so released being used for necessary renewals on other parts of the iron road.

There are, however, 1½ miles on the Calicut ghât and 51½ miles, the length between Jalarpet and Katpadi, laid with steel rails (State Railway pattern), and from Katpadi to Sholinghur 24½ miles is laid with steel rails, the section being the same as the iron rails.

The running was rough on the old 65 lb. iron rails between Calicut and Podanur; many of these rails have been reversed and turned; an examination showed that in many cases they were split and bulged on the top especially at the ends, these bulges naturally set up oscillation in the carriages. The running on the steel rails was very smooth and pleasant.

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9. **Individual Stations**—*Calicut.*—The stationmaster complains of his quarters which consist of three rooms 12′ × 12′, the usual allowance being 14′ × 14′. The rooms are certainly small and hot for such a damp climate.

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Erode.—A carriage transhipping dock is stated to be required at the east end of the South Indian Railway goods transhipsiding. This is a matter for settlement between the Agents of the two Companies. Nothing has yet been done to enlarge the refreshment room necessary if mail train passengers to Madras have to dine here. The municipality complain about a latrine, which is near the entrance gate to the station yard and close to the public road. This is used by the occupants of four railway quarters and also by the public passing along the road. I could not see that there was any more objection to it than there is to any public latrine. It was, when inspected, perfectly clean and inoffensive.

Lokur.—There is a question about moving to this place the ghat engines now stationed at Mallapuram, partly because it is thought a more suitable site could be got here and partly because this is the top of the ghat, and the special engines now have to run an unnecessary 7 miles to Mallapuram with their loads. It, however, seems doubtful if a sufficient supply of good water can be obtained, and till this is known no action can be taken.

Mallapuram.—This yard may require remodelling, if it is decided to keep the ghat engines here.

Bisanattam.—A station is being built here of a moveable type to supply the wants of the Mysore Reefs gold mine.

Bangalore City.—The verandahs are in process of being roofed in, 9 units being completed on the Southern Mahratta Railway side and 1 unit on the Madras Railway side. A small piece of the platform has been flagged and I understand that this will be prolonged. A tank is being put up on the top of the station. I was informed that it is intended to bring water into the station from a river 2 miles distant on the Mysore line. The present latrine is so close to the overbridge that it was found necessary to roof it in; this is considered objectionable and it is now proposed to build a new latrine at the west end of the platform. I observed that the approach road to the station, which is between the Madras and Southern Mahratta Railways, was shut off from the Madras Railway by a wall, but there was no fence on the Southern Mahratta Railway side. Fencing on this side appeared to me just as necessary as on the other. On enquiry I was informed that a serious carriage accident had shown the necessity of fencing off the Madras Railway. I consider it unwise to wait for a similar occurrence to show the necessity of fencing off the Southern Mahratta Railway and recommend that it be done as soon as possible.

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Vinnamangalam and Mailpatti stations.—These appeared to be very much cramped for room; if receipts justify their retention, some more land would be an improvement.

Katpadi.—Assistant station master's quarters require enlarging; at present two men with their families are living in quarters built for one man. It is proposed to throw out an extra room on both sides.

10. **Watering arrangements.**—At mile 203½ on the Bangalore branch, where there is a 5 × 30 ft. arched bridge built for the double line, it is proposed to put up new watering arrangements.

11. **Points and crossings.**—The different types of point handles have been distributed about the line in a most unsystematic manner. I do not see what object is served by putting new types which are under trial at out-of-the-way stations. While on trial, they ought only to be used at one or two stations where they are directly under the eye of the Engineers. Opinions seem still divided as to which is the best type.

North-West Line, 361·30 *miles* (*including Madras-Ennur Section of the Bezwada Madras Line*, 8·45 *miles*).

12. The inspection was made on the 1st to 5th August in company with the Agent, Chief Engineer, Locomotive Superintendent and Traffic Manager.

13. **General.**—The running was, as a rule, good, with the exception of the Madras-Ennur section and a piece of line approaching the Tungabhadra bridge where wooden sleepers are laid, where the bank is, I understand, a very troublesome one.

14. **Bridges.**—*Mile 107/10.*—One pier and abutment of this bridge were washed away in 1896 and have been rebuilt. The training of the river is now practically complete.

Ralavonka Bridge.—Expansion has been allowed for by leaving half an inch between the ends of timbers and rails and slotting holding down bolt holes. The bridge being skew the cross girders at the piers unite main girders of different spans and the rivet holes of these cross girders have also been slotted.

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Mile 240/13—Six-ft. rail girder.—The line was breached at this place last June. The water cut away round the wingwall and cut the bank away for a distance of 300 feet; the bridge itself was uninjured. The channel of the nullah both up and down stream had been allowed to get choked up, and this, probably, partly caused the accident. In addition to this it seems probable that the main stream, of which this is a feeder, and whose course is parallel to the line, had been either naturally or artificially dammed up and that this caused the water of this feeder to be backed up. The channel is hidden by very dense scrub jungle and I recommend that a thorough investigation be made of the main channel with a view to ascertaining if its tendency is to cut a fresh bed for itself, thus impinging on the railway bank.

Tungabhadra Bridge.—This bridge consists of 58 spans of 64 feet clear, the girders being continuous over two spans. These girders are too weak for standard gauge. The waterway appears very ample for all requirements, several of the openings being land spans. It is proposed to convert these land spans into 30 ft. arches and to span the remaining openings with new steel girders.

15. **Ballast.**—The work of blinding the sand ballast with broken stone is progressing, 40 miles between Arkonam and Raichur have been covered during the half-year.

16. **Rails.**—Many of the old 20-ft. iron rails require renewing. The best of the iron rails taken out from near stations where steel rails are being laid are being used for these renewals. I saw no rails in the line which were, what I would call, dangerous.

17. **Stations.**—The stations as a whole were well kept and in good order.

Central Station.—The question of enlarging the gasworks will have soon to be taken up, it has for some time been in abeyance pending the settlement of the agency by which the East Coast Railway will be worked. I understand that the present

gasworks are only capable of turning out sufficient gas for the present requirements of the Madras Railway.

Washermenpet.—The north distant signal is too close to the home signal which is at the points.

Konnur and Avadi.—There are ballast sidings at these two stations with starting signals which are nearly on the main line and might be mistaken for the up main starter. These starters, if they are necessary at all, should be disc signals and should be more definitely allotted to the sidings.

Trivellore.—On feast days there is a large passenger traffic to and from this station. To deal with this extra traffic two extra dead ends have been put in, these run through part of the platform thus forming the first half of an island platform. There are separate starting signals for the up main and for these special feast sidings; but these signals are so located that either might be mistaken for the other.

Manur.—Station house, stationmaster's quarters and latrine are stated to be required here.

Ponpadi.—This station having justified its opening, it is proposed to build a station house and latrine.

Nagari.—The lay-bye requires extending.

Renigunta.—This appears to be still made use of as an engine-changing station; there were five engines in shed. The intention, I am told, is to pull down both the engine shed and the driver's quarters. It is proposed to relay the Nellore siding as a ballast siding which is stated to be required. There is a native retiring room in use here which seems to be a convenience, it is very close to the back part of the native village and application has been made to have it walled off. As the receipts seem to justify the spending of a small sum, this might be done.

Nandalur.—This is the new engine-changing station which has replaced Cuddapah and Renigunta. The line alongside the platform requires raising. A piece of waste land on the east which was evidently at one time railway land should now be re-acquired. At present it is useless and is fast being overgrown with cactus; if only on sanitary grounds, it should be handed over to the railway authorities.

Cuddapah.—The two through sidings next to the locomotive shed have been taken up. The locomotive sidings, which at present take off at the north of the station and run the whole length of the yard to the turntable, should be taken up and a short piece of line put in from the south of the yard to the turntable.

Yerragudipad and Kalamalla.—Station-house, stationmaster's quarters, lay-bye and loading banks are being built at these stations.

Gooty.—The old Assistant Engineer's bungalow is being pulled down. The materials can be used to increase the school accommodation which seems inadequate.

Guntakal.—It was decided that the Traffic Manager, Southern Mahratta Railway, be asked to depute an officer to meet the Telegraph Engineer and discuss alteration in signals, &c. At present the signals are most unsystematic. There would be no difficulty in constructing the short feeder road mentioned in the last report. It would cross the main line just outside the distant signal and run into the old railway line. I do not know if this road is required or not. I would suggest that the crossing only be made and if the traffic proves that a road is required it could be made later on. There is nothing to stop carts forming a kaccha track.

Molagavalli.—This trial station is doing well; it is proposed to build a station-house and extend the lay-bye 60 feet.

Adoni.—Proposals for re-arranging the station yard will be submitted.

Raichur.—The distant facing points at the north end have been removed. Proposals will be submitted for removing the distant points at the south end and laying a shunting neck. This is an expensive scheme and it is possible that a cross over road in the station yard would get over the shunting difficulty.

18. **Watering arrangements.**—These appear to generally give trouble at the end of the dry season.

Renigunta.—The supply is obtained from a well close to a small river at mile 82/5. An auxiliary well was sunk closer to the stream, but this failed during the present season. When I passed, a small 6-ft. well had been sunk in the bed of the river and a picottah was working the water in this into the large well. It would be a great improvement if a proper well were sunk in the bed of the stream and the steam pump erected on the east side of the bridge which is for a double line.

Kondapuram.—The water-supply here is very poor. There is a pump at the Chitravati bridge. If piping were laid from this to the station it should get over the difficulty.

Gooty.—A steam pump is available and should be used in place of the present temporary arrangements at mile 257/14. It is proposed to lay piping from the river, mile 258/11, into Gooty as the present supply is unsatisfactory. When this scheme is accomplished, the steam pump will be moved.

19. **Signals.**—Several systems of interlocking are on their trial. At *Tiruttani* is Saxby and Farmer's system. At *Nagari* is fitted Saxby and Farmer's hydraulic system; this, however, had got out of order and was not working.

Puttur was fitted up with Dutton's interlocking system; this is not quite up to date and is to be fitted up with his latest improvements. At *Pudi* is Anderson's system. At *Mamanduru* is Stoney's interlocking system. At *Peddapadu* the points are simply detected.

The Company seem to be unable to come to a decision as to which system is the best.

20. **Level-crossings.**—At mile 0/16 the lattice overbridge has been completed and tested; when the approaches are properly fenced, it may be opened for traffic.

There were two applications on the Madras-Ennur section for new level-crossings; in neither case could I see the smallest necessity for them. A level crossing cannot be given to every individual owner of land.

21. **Miscellaneous.**—At mile 1/3 I observed that a start had been made at filling up the ditch alongside the railway. This seems a necessary work, as the ditch appears to be a sink for the neighbouring sewage farm, and at times gives off a most offensive smell.

J. C. LYLE,
Govt. Inspector of Railways.

11th August 1898.

Remarks by the Senior Government Inspector of Railways, Madras.

The scheme for strengthening the weak bridges on the Madras Railway which still remain unstrengthened is now practically settled, and indents are going home. The swaying of trains at high speed on the South-West line, where the new shaped rail-head is in use, does not seem to be yet satisfactorily accounted for. No decision can be arrived at so long as the change from worn to unworn wheel is only made in a carriage at the rear of a long train, for the swaying throughout such a train will naturally be communicated to the rearmost carriage. Moreover, no test has yet been made of the truth of the theory that the swaying is due to the recently displaced sleepers not yet having settled down; it would be easy to test this theory by setting a good gang to perfect a mile or two of road surface. The Company's officers would do well to design crucial experiments with a view to getting at the truth of the matter. I still think that the swaying is due to want of proper co-ordination between the new flat rail-head and the tyre section which is suitable to the older form of rail-head.

These are the two larger questions demanding settlement. The remaining matters brought to notice in the Inspection Report should receive attention.

Ootacamund,
22nd August 1898.

Francis J. E. Spring,
Senior Govt. Inspector.

No. 1128 Ry., 12th September 1898.

ORDER—No. 1128 Ry., dated 12th September 1898.

Communicated to the Agent and Manager, Madras Railway, for information and necessary action.

2. A copy of these proceedings will be forwarded for the information of the Government of India.

[Here enter No. 1129 Ry., dated 12th September 1898.]

(True Extract.)

FRANCIS J. E. SPRING,
Joint Secretary.

To the Agent and Manager, Madras Railway.

ENDORSEMENT—No. 1129 Ry., dated 12th September 1898.

Forwarded.

(By order.)

Joint Secretary.

Despatched on 22/9/98

Exd. T. K. Narayana Aiyangar.

RAILWAY.

Government {1898} of Madras.

PUBLIC WORKS.

Recd. } 1898. Enclosures

Regd. } Spare copies

G.O., Nos. 1128, 1129 Ry., 12th September 1898.

SEPTEMBER.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Railway.

Read the following paper:—

MADRAS RAILWAY.

STANDARD GAUGE.

INSPECTION REPORT.

South-west Line, 541 miles, including the Kolar Gold Fields, 10 miles.

The inspection was made between the 16th and 23rd July.

The Agent, Chief Engineer, Traffic Manager and Locomotive Superintendent accompanied the inspection throughout.

2. **Formation.**—Banks and cuttings are well maintained throughout.

3. **Bridges and Culverts.**—*Ferok Bridge.*—Expansion of girders has not been allowed for by cutting longitudinal timbers and rails and making holding down bolt holes oval. The uncertainty which prevails as to whether this portion will not soon be converted to metre gauge makes the Madras Railway officers unwilling to go to the trouble and expense of doing this work till a decision is arrived at.

Kallayi Bridge.—Same remarks apply to this.

Bridge mile 405/14.—This has been strengthened by putting in extra girders alongside the original ones.

Kadalkundi Bridge, 8 spans of 64 feet.—The girders of this bridge which are continuous on screw pile piers require strengthening, probably even for metre gauge.

Mile 403/5.—Twelve spans of 64 feet continuous girders on cylinder girders require strengthening.

Mile 395/5.—Originally 3 spans of 64 feet clear continuous girder strengthened by putting intermediate piers.

Tirur Bridge, 5 spans of 64 feet + 1 × 20' on the skew.—These girders two being 140 feet continuous over one pier require strengthening.

Thootha bridge mile 373/12 is carried on new girders.

Bridges on the Nilgiri Branch.—The work of strengthening these bridges by putting in intermediate piers seems to be in abeyance. I examined one bridge at mile 308/12. The piers had been built up to bottom of bedstones and I understand the others are in much the same state. I see no reason why this very necessary work should not be completed, and I think the Chief Engineer agrees in this.

Mile 265/2.—15 *feet arch.*—The flooring and revetment of this has been completed.

Cauvery Bridge.—To allow for the expansion of the girders, the rails at the joints nearest the ends of the longitudinal timbers have been cut to allow ½ an inch between the ends; and all bolt holes are oval for a distance of 10 feet on each side of the joint.

The rail-bearers being only 6 inches wide, it was not considered wise to leave 3 inches between the ends of the timbers as this would have given a bearing of only 1½ inches for each longitudinal timber.

The expansion and contraction does not appear ever to exceed ½ an inch.

Mile 176.—New girders having just been put up, the bridge was tested and passed for traffic during the inspection.

In addition to the above, I inspected some arched bridges, which appeared to be in excellent order.

4. *Ballast.*—The following table shows the progress made in blinding the sand ballast with stone:—

				Covered	Not covered
Arkonam	to	Mettupalliam	Miles	284.83	nil
Podanur	to	Calicut	"	8.50	105.12.
Jalarpet	to	Bangalore	"	45.27	42.15.

I was informed that it is not so easy to keep the line properly packed up when the stone ballast hides the sand, a sleeper requiring packing was, it is stated, easily discernible when the ballast consisted of sand alone, but now until the stone blinding is removed slacks are not observed. Even if this is the case, I consider the addition of the stone a distinct advantage for the travelling public, and I think it is probable that, with the stone blinding, the line gets more thoroughly opened out and examined at fixed intervals than it ever did with sand alone, when the Inspector trusted to his observation.

5. *Rails.*—The rails run over were—

(i) 20-foot double headed iron rails 65 lb. (very old).
(ii) 20-foot double headed iron rails ~~60~~ lb. (old).
(iii) 20-foot double headed steel rails 75 lb. (Madras pattern).
(iv) 30-foot bull headed 7 steel rails 78 lb. (State Railway pattern).

The policy of the Company has been to lay out the steel rails at both sides of stations, the best of the iron rails so released being used for necessary renewals on other parts of the iron road.

There are, however, $1\frac{1}{2}$ miles on the Calicut ghât and $51\frac{1}{2}$ miles, the length between Jalarpet and Katpadi, laid with steel rails (State Railway pattern) and from Katpadi to Sholinghur $24\frac{1}{2}$ miles is laid with steel rails, the section being the same as the iron rails.

The running was rough on the old 65 lb. iron rails between Calicut and Podanur, many of these rails have been reversed and turned; an examination showed that in many cases they were split and bulged on the top especially at the ends, these bulges naturally set up oscillation in the carriages. The running on the steel rails was very smooth and pleasant.

Between Podanur and Mettupalliam on the ~~60~~ lb. rails the running was very smooth, the speed attained being 60 miles an hour.

The running between Podanur and Jalarpet was fairly good, though there were some rough bits between Bangalore and Bowringpet (rough), between Bowringpet and Kuppam (better) and between Kuppam and Jalarpet (good). From Jalarpet as we were running on the new steel rails, the different speeds were carefully taken and the motion of the carriages observed.

Up to Vaniyambadi, travelling at the rear of the train in the Chief Engineer's inspection carriage (E No. 2) a four-wheeled vehicle, speed not exceeding 47 miles an hour, the oscillation was not very pronounced. Between Vaniyambadi and Vaniyambangalam the speed through the 119th mile being 53 miles an hour, the oscillation was very considerable.

From Vaniyambangalam to Ambur.—I travelled in the Agent's carriage, a six-wheeled vehicle, in the centre of the train, the oscillation was still considerable but not so pronounced as in the four-wheeled vehicle; I observed that there was a great deal of oscillation in a four-wheeled brakevan next but one to the Agent's carriage.

From Ambur to Maiyppatti I travelled again in E No. 2 at the rear of the train; we attained a speed of 54 miles and the running was anything but smooth.

At Maiyppatti, the Consulting Engineer's carriage (E No. 3), a six-wheeled vehicle, was placed at the rear of the train. The speed did not exceed 46 miles an hour, but this carriage oscillated considerably. Between Gudiyattam and Kavanur the gauge had been made 5-$6\frac{1}{8}$ (the usual gauge being 5-$6\frac{3}{8}$); this experiment was not a success, as it appeared to me to be the worst bit of road I had been over. From here on to Katpadi, the maximum speed attained was about 52 miles and the oscillation was considerable. From Katpadi to Sholinghur, where steel rails of the Madras pattern were laid, I was led to expect that the running would be exceedingly smooth, perhaps I expected too much, but my impression was that at speeds of over 50 miles there was still a fair amount of oscillation though not so pronounced as on the State Railway pattern.

It will be observed that my experience differed from that of the senior Deputy Consulting Engineer and the Chief Engineer who, in reporting on the tests made on the 18th June, state that a six-wheeled vehicle at the rear of the train runs very smoothly on the State Railway pattern steel rails.

Judging by the above-mentioned observations my opinion is that the severe oscillation is not wholly due to the section of the State Railway pattern rails being different to the Madras R.R. pattern, but in a great part to the fact that the new steel rails of both patterns are of a different length to the old rails & this has

necessitated the repacing of the sleepers and the line where newly laid has not yet had sufficient time to set properly.

6. *Sleepers.*—The road was opened out at mile 346/16 where the pot sleepers have been laid for twenty-one years; both sleepers and fastenings were in good order.

7. *Fencing.*—Most of the fencing is of aloe; this gives a great deal of trouble owing to plants dying and leaving gaps. Near Calicut I noticed some wire fencing, which looked in good order and should keep out cattle; but I observed three cows on the line which must have got through.

8. *Stations generally.*—These are clean and well kept all through the line. Orders contained in G.O., No. 91 Ry., directing that the rules for the prevention of the spread of plague should be hung up at all railway stations, have not always been attended to, noticeably in the section between Salem and Jalarpet and on the Bangalore Branch. A station is said to be necessary at mile 5/1 of the Kolar Gold Fields Railways; if built it should be made a crossing station. A deputation met the train at mile 98/13 to ask for a station. The district appears to me to be quite sufficiently served by the stations (Valathoor and Gudiyattam) at miles 102 and 95½.

9. *Individual Stations—Calicut.*—The stationmaster complains of his quarters which consist of three rooms 12′ × 12′, the usual allowance being 14′ × 14′. The rooms are certainly small and hot for such a damp climate.

Tanur.—Here, and at some others, the station house has been raised and the verandah is on brackets. This is an improvement on some of the old stations.

Kuttipuram—an old station, in bad repair.

Shoranur.—This will be the junction of the Shoranur-Cochin line. Till the question of gauge is settled, the best junction arrangements are necessarily in abeyance.

Palghat.—Not far from this station there is a siding to the tileworks; this siding is shut off from the main line by a derailment switch which cannot be closed till the key of the box is brought from Palghat.

Olavakkot.—A cross-over road at the east end of the station, which is said never to be used, might be found useful between the 3rd and 4th lines at the west end for shunting purposes.

Coimbatore Station.—There is a level crossing within the distant signal at the north end of the station; the gates close across the line. The stationmaster cannot pull off his distant signal, till the gateman pulls his lever. There is nothing, however, to prevent the gateman from pulling off his lever before opening the gates. It would be an improvement if the arrangement in use at Bangalore was introduced here. By this arrangement the signal is locked till the gates are completely opened.

Mangalam.—Addition to goods shed has been completed. The station compound seems cramped; a small piece of land might be taken up at the south-east corner. Squatters are approaching very close to the station.

Kullipalaiyam.—The inhabitants ask for a platform, lay-bye and goods siding. As the last half-year's receipts were over Rs. 2,000, I understand that they are considered entitled to a platform. There is a road being made near the station.

Ullukuli.—Some land might be taken up to square off the compound; at present the boundary approaches to within 50 feet of the platform.

Vijayamangalam Vijiamangam.—Assistant stationmaster's quarters are stated to be required here.

Totiyapalayam.—A trial station opened ten years. A platform is asked for, but the receipts hardly seem to justify this. Villagers say an approach road was sanctioned by the local authorities some time ago, but it is not made yet.

Erode.—A carriage transhipping dock is stated to be required at the east end of the South Indian Railway goods transhipping siding. ~~Agent and Manager will address Agent.~~ Nothing has yet been done to enlarge the refreshment room necessary if mail train passengers to Madras have to dine here. The municipality complain about a latrine, which is near the entrance gate to the station yard and close to the public road. This is used by the occupants of four railway quarters and also by the public passing along the road. I could not see that there was any more objection to it than there is to any public latrine. It was, when inspected, perfectly clean and inoffensive.

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It, however, seems doubtful if a sufficient supply of good water can be obtained, and till this is known no action can be taken.

Mallapuram.—This yard may require remodelling, if it is decided to keep the engine-changing station here.

Bisanattam.—A station is being built here of a moveable type to supply the wants of the Mysore Reefs gold mine.

Bangalore City.—The verandahs are in process of being roofed in, 9 units being completed on the Southern Mahratta Railway side and 1 unit on the Madras Railway side. A small piece of the platform has been flagged. I understand that this will be prolonged.

A tank is being put up on the top of the station. I was informed that it is intended to bring water into the station from a river 2 miles distant on the Mysore line.

The present latrine is so close to the overbridge that it was found necessary to roof it in; this is considered objectionable and it is now proposed to build a new latrine at the west end of the platform. I observed that the approach road to the station, which is between the Madras and Southern Mahratta Railways, was shut off from the Madras Railway by a wall, but there was no fence on the Southern Mahratta Railway side. Fencing on this side appeared to me just as necessary as on the other. On enquiry I was informed that a serious carriage accident had shown the necessity of fencing off the Madras Railway. I consider it unwise to wait for a similar occurrence to show the necessity of fencing off the Southern Mahratta Railway and recommend that it be done as soon as possible.

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Vemmangalam and Mailpatti stations.—These appeared to be very much cramped for room; if receipts justify their retention, some more land would be an improvement.

Katpadi.—Assistant station master's quarters require enlarging; at present two men with their families are living in quarters built for one man. It is proposed to throw out an extra room on both sides.

Watering arrangements.—At mile 203½ on the Bangalore branch, where there is a 5-30 feet arched bridge built for the double line, it is proposed to put up new watering arrangements.

Points and crossings.—The different types of point handles have been distributed about the line in a most unsystematic manner. I do not see what object is served by putting new types which are under trial at out-of-the-way stations. While on trial, they ought only to be used at one or two stations where they are directly under the eye of the Engineers. Opinions seem still divided as to which is the best type.

(Signed) J. C. LYLE,
Govt. Inspector of Railways.

8th August 1898.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Railway.

Read the following paper:—

MADRAS RAILWAY.

STANDARD 5′ 6″ GAUGE.

North-West line, 360 *miles*, (*including Madras-Ennur section of the Bezwada-Madras line.*)

Inspection Report for the half-year ending 30th June 1898.

1. The inspection was made on the 1st to 5th August in company with the Agent, Chief Engineer, Locomotive Superintendent and Traffic Manager.

2. **General.**—The running was, as a rule, good with the exception of the Madras-Ennur section and a piece of line approaching the Tungabhadra bridge where wooden sleepers are laid, the bank being, I understand, a very troublesome one.

3. **Bridges.**—*Mile 107/10.*—One pier and abutment of this bridge was washed away in 1896 and has been rebuilt. The training of the river is now practically complete.

Ralavalka Bridge.—Expansion has been allowed for by leaving half an inch between the ends of timbers and rails and slotting holding down bolt holes. The bridge being skew the cross girders at the piers unite main girders of different spans and the rivet holes of these cross girders have also been slotted.

Papaghni Bridge.—Expansion has been allowed for by leaving 3 inches between the ends of longitudinal timbers/½ inch between the ends of rails/and making holding down bolt holes slotted for two rails length on each side of the joint.

Mile 240/13—Six-feet rail girder.—The line was breached at this place last June. The water cut away round the wingwall and eat the bank away for a distance of 300 feet. The bridge itself was uninjured. The channel of the nullah both up and down stream had been allowed to get choked up, and this, probably, partly caused the accident. In addition to this it seems probable that the main stream, whose course is parallel to the line, had been either naturally or artificially dammed up and that this caused the water of this feeder to be backed up. The channel is hidden by very dense scrub channel and I recommend that a thorough investigation be made of the main channel with a view to ascertaining if its tendency is to cut a fresh bed for itself thus impinging on the railway bank.

Tungabhadra Bridge.—This bridge consists of 58 spans of 64 feet clear, the girders being continuous over two spans. These girders are too weak under existing circumstances. The waterway appears very ample for all requirements, several of the openings being land spans. It is proposed to convert these land spans into 30 feet arches and to span the remaining openings with new steel girders.

4. **Ballast.**—The work of blinding the sand ballast with broken stone is progressing, 40 miles between Cuddapah & Raichur have been covered during the half year.

5. *Rails.*—Many of the old 20-ft. iron rails require renewing. The best of the iron rails taken out from near stations where steel rails are being laid are being used for these renewals. I saw no rails in the line which were, what I would call, dangerous.

6. **Stations.**—The stations as a whole were well kept and in good order.

Central Station.—The question of enlarging the gasworks will have soon to be taken up, it has for some time been in abeyance pending the settlement of the agency by which the East Coast Railway will be worked.

I understand that the present gasworks are only capable of turning out sufficient gas for the present requirements of the Madras Railway.

Washermanpet.—The north distant signal is too close to the home signal which is at the points.

Connur and Avadi.—There are ballast sidings at these two stations with starting signals which are nearly on the main line and might be mistaken for the up main starter. These starters should be put back, if they are necessary at all.

Trivellore.—On feast days there is a large passenger traffic to and from this station. To deal with this extra traffic two extra dead ends have been put in, these run through part of the platform thus forming the first half of an island platform. There are separate starting signals for the up main and for these special feast sidings. Either of these signals might be mistaken for the other. I do not see the necessity for two starters both for trains proceeding on the same line in the same direction. The special siding signal (if required at all) should be a disc signal.

Manur.—Station house, stationmaster's quarters and latrine are stated to be required here.

Ponpadi.—This station having justified its opening, it is proposed to build a station house and latrine.

Nagari.—The lay-bye requires extending.

Renigunta.—This appears to be still made use of as an engine-changing station; there were five engines in shed.

The intention, I am told, is to pull down both the engine shed and the driver's quarters.

It is proposed to relay the Nellore siding as a ballast siding which is stated to be required.

There is a native retiring room in use here which seems to be a convenience, it is very close to the back part of the native village and application has been made to have this walled off. As the receipts seem to justify the spending of a small sum, this might be done.

Nandalur.—This is the new engine-changing station which has replaced Cuddapah and Renigunta. The line alongside the platform requires raising. A piece of waste land on the east which was evidently at one time railway land should now be re-acquired. At present it is useless and is fast being overgrown with cactus; if only on sanitary grounds, it should be handed over to the railway authorities.

Cuddapah.—The two through sidings next to the locomotive shed have been taken up.

The locomotive sidings, which at present take off at the north of the station and run the whole length of the yard to the turntable, should be taken up and a short piece of line put in from the south of the yard to the turntable.

Yerragudipad and Kalamalla.—Station-house, stationmaster's quarters, lay-bye and loading banks are being built at these stations.

Guntakal.—It was decided that the Traffic Manager, Southern Mahratta Railway, be asked to depute an officer to meet the Telegraph Engineer and discuss alteration in signals, &c. At present the signals are most unsystematic. There would be no difficulty in constructing the short feeder road mentioned in the last report. It would cross the main line just outside the distant signal and run into the old railway line. I do not know if this road is required or not. I would suggest that the crossing only be made and if the traffic proves that a road is required it could be made later on. There is nothing to stop carts forming a kaccha track.

The old Assistant Engineer's bungalow is being pulled down. The materials can be used to increase the school accommodation which seems inadequate.

Molagavalli.—This trial station is doing well; it is proposed to build a station-house and extend the lay-bye 60 feet.

Adoni.—Proposals for re-arranging the station yard will be submitted.

Raichur.—The distant facing points at the north end have been removed. Proposals will be submitted for removing the distant points at the south end and laying a shunting neck. This is an expensive scheme and it is possible that a cross over road in the station yard would get over the shunting difficulty.

6. **Watering arrangements.**—These appear to generally give trouble at the end of the dry season.

The ~~Renigunta~~ supply is obtained from a well close to a small river at mile 82/5. An auxiliary well was sunk closer to the stream, but this failed during the present season. When I passed, a small 6-ft. well had been sunk in the bed of the river and a picottah was working the water in this into the large well. It would be a great improvement if a proper well was sunk in the bed of the stream and the steam pump erected on the east side of the bridge which is for a double line.

Kondapuram.—The water-supply here is very poor. There is a pump at the Chittavati bridge. If piping were laid from this to the station it should get over the difficulty.

Gooty.—A steam pump is available and should be used in place of the present temporary arrangements at mile 257/14. It is proposed to lay piping from the river, mile 258/11, into Gooty as the present supply is unsatisfactory. When this scheme is accomplished, the steam pump will be moved.

7. **Signals.**—Several systems of interlocking are on their trial. At *Tiruttani* is Saxby and ~~Yearmen~~'s system. At *Nagari* is fitted Saxby and ~~Yearmen's~~ hydraulic system. This, however, had got out of order and was not working.

Puttur was fitted up with Dutton's interlocking system; this is not quite up to date and is to be fitted up with his latest improvements. At *Pudi* is Anderson's system. At *Mamanduru* is Stoney's interlocking system.

At *Peddapadu* the points are simply detected.

The Company seem to be unable to come to a decision as to which system is the best.

8. **Level-crossings.**—At mile 0/16 the lattice overbridge has been completed and tested. When the approaches are properly fenced, it may be opened for traffic.

There were two applications on the Madras-Ennur section for new level-crossings; in neither case could I see the smallest necessity for these. A level crossing cannot be given to every individual owner of land.

9. **Miscellaneous.**—At mile 1/3 I observed a start had been made at filling up the ditch alongside the ~~line~~ Railway.

This seems a necessary work, as the ditch appears to be a sink for the neighbouring sewage farm, and at times gives off a most offensive smell.

(Signed) J. C. LYLE,
Govt. Inspector of Railways.

11th August 1898.

7

Remarks by the Senior Govt Inspector of Railways Dunedin

The scheme for strengthening the wooden bridges on the Dunedin Dy. which still remain unstrengthened is now practically settled, as indeed we going home. The swaying of trains at high speeds on the S.W. line, where the new designed pattern-bogie is in use, does not seem to be yet satisfactorily accounted for. No decision can be arrived at as long as the change from worn to uneven wheel is only made in a curve at the rear of a long train, for the swaying throughout such a train will naturally be communicated to the rearmost carriage. However no test has yet been made of the truth of the theory that the swaying is due to the recently displaced wheels not yet having settled down; & it would be easy to test this theory by setting a good gang to inspect a mile or two of road each week. The Engineer officers would do well to devise careful experiment with a view to getting at the truth of the matter. I still think that the swaying is due to want of proper condition between the new pattern rail head and the type section which is suitable to the older form of rail head.

There are the two larger questions demanding settlement. The remaining matters brought to notice in the Inspectors report should receive attention.

Rotorua
22-8-98

James A. Young
Senior Govt. Inspector

Madras Railway Company

No. C/1034/872 Chief Engineer's office
Madras 27th June 1898

The Agent and Manager.

Dear Sir,

With reference to para. 19 of Government Inspector's Inspection Report for the half year ending 31st Decr. 1897, I beg to advise you that the further running tests over bull-headed rails therein recommended, were made on the 18th June 1898 by a Special train conveying the Deputy Consulting Engineer and myself, accompanied by the acting District Engineer and 1st Assistant Locomotive Superintendent.

2. The Sections laid with bull-headed rails are on the down line from Kadambatur (29½ miles) to Arkonam (42½ miles) and on the single line length from Katpadi (80½ miles) to Jalarpet (132 miles). A portion of the distances was first run over with the Chief Engineer's Inspection Carriage (E. No. 2) with newly turned tyres at the rear of the train; the speed attained varied

MADRAS RAILWAY.

From

The Agent and Manager,

M. R. Co.,

To

The Consulting Engineer

for Railways.

Dated 188

Read.

No.

varied from 52 to 60 miles an hour, but the oscillation was found to be considerable all through the mileage traversed. This was doubtless intensified partly by occasional slacks in the road, and partly by the motion inseparable from that set up in a four-wheel vehicle with a short wheel base attached to the rear of a fast train.

3. On the 118th mile, where one rail in the back had been elevated half an inch in compliance with the Government Inspector's request, contained in the Report referred to, no diminution of the oscillation was perceptible.

4. For the latter half of the distance the Chief Engineer's Inspection Carriage (E. No. 2) was made to change places with the six-wheeled Consulting Engineer's E No. 3 - which was then the vehicle at the rear of the train. Travelling in both E No. 2 and E No. 3 was tried when it was found that E No. 2 (four-wheeled) still oscillated, although in a lesser degree - but E No. 3 (six wheeled) at the rear of the train ran very steadily.

If

MADRAS RAILWAY.

From

The Agent and Manager,
M. R. Co.,

To

The Consulting Engineer
for Railways.

Dated 188

Read.

No.

5. It was also noted that on the Section between Tiruvallur and Katpadi laid with double-headed steel rails of the standard section hitherto adopted on the Madras Railway, the running of carriage E No. 2 placed as the last vehicle in the train was very steady and free from oscillation at a speed of 51 miles an hour.

6. From these and previous experiments it is concluded that a four-wheel vehicle whether with worn or new tyres, and whether placed in the body or end of the train, oscillates very considerably when running at high speed over bull-headed rails of the present section. This would appear to be confirmed by the numerous complaints made by 1st class passengers by the mail trains between Katpadi and Jalarpet of the serious discomfort to which they are subjected by the oscillation of the double saloons which are all 4 wheeled vehicles. It is possible that this oscillation may sometimes be aggravated by the loose coupling up of the carriage,

or

MADRAS RAILWAY.

From

The Agent and Manager,

M. R. Co.,

To

The Consulting Engineer

for Railways.

Dated 188

Read.

No.

for to slacks in the road, but it is certain that no such complaints were received previous to the introduction of the bull-headed rails, in spite of loose couplings, slacks in the road and worn tyres; on the contrary the smoothness of running at high speed over the double-headed rails has for many years past been a characteristic feature on the Madras Railway.

Yours faithfully
(Sd) Henry C. West,
Chief Engineer.

/True copy/

Edmund.
for Agent & Manager.

The Consulting Engineer
for Railways,
Chepauk.

BVS.

2 601 3097 8
30-6-98
Am.

MADRAS RAILWAY.

From

The Agent and Manager,
M. R. Co.,

To

The Consulting Engineer
for Railways.

Dated 188

Recd.

No.

(A. & M. E.)

No 10347
601

MADRAS RAILWAY.

AGENT AND MANAGER'S OFFICE,

Madras, 30th June 1898.

CONSULTING ENGINEER FOR RAILWAYS
RECEIVED
2 JUL 1898

3097
2-7-98

From

D1

To

The Agent and Manager.
M. R. C.

The Consulting Engineer for Railways.
Madras.

SIR,

With reference to your letter No. 1051 dated 14th April 1898. I have the honour to forward herewith a memorandum containing my remarks on the several points raised in the last Inspection Report which required further reply.

2 To deal with the notes in the manner suggested in the 3rd para of your letter would be most inconvenient in this Office and cause much additional clerical labour.

I have the honour to be,
Sir,
Your most obedient servant,

Agent & Manager.

(2 Enclo.)

Dr. I think AM might be expected that in reference to Dr's letter carried on with his memorandum from above, a list of points that Dr wants in this Margin - He's a most communicative man.

Dr will want this paper on inspection

Dr Submitted

Memorandum containing further replies to points raised in Government Inspector's Inspection Report for half year ending 31st December 1897

Para 19. A copy of Chief Engineer's letter No. E/$\frac{1034}{872}$ dated 27th June 1898 reporting very fully on the question of Oscillation is forwarded herewith.

— " — 25. It is too early yet to say what coal will be transhipped at Bangalore City. A consign-ment is now being dealt with and if the traffic grows we shall have to apply for our line to be extended to the new yard.

— " — 26. The transfer of the land referred to has been agreed to by the Southern Mahratta Railway. Plan & schedule was sent with this Office letter No. $\frac{3410}{324}$ dated 15th April 1898.

"Unintelligible" The extra ships can carriages can be placed ready attached at the rear of the goods going on and all put on to the train in one Shunt

— " — 36. This delay, is, in my opinion, unavoid-able. In the first place 3rd class carriages must be placed behind Goods vehicles and in the 2nd place it is never known until passengers have been unloaded how many carriages have to be taken off the train.

When was this done since Inspection? Vide para 35 still applies

— " — 39 The two long sidings at Cuddapah referred to have been taken up and utilized elsewhere, and also as much of the Loco: sidings as could be spared.

MADRAS RAILWAY.

From

The Agent and Manager.

To

The Consulting Engineer
for Railways.

Dated

Rcd.

No.

Para 45. The Traffic Manager states that he does regard the English system as his model when it can be safely applied with existing signals &c. or when the money is available and the expenditure is considered justifiable. In the English rules issued in December 1897 siding signals are provided for in precisely the same manner as they were 15 years ago. Discs are also provided for as exit signals from sidings but they are not ground discs. However the Trivellore siding signal has answered the purpose for which it was erected for some years without confusing the Drivers and I think we might settle its correct position on the coming Inspection.

"Suits his argument"

D2.

Because Traffic Manager has Lady Engineer

See my Contention on para 45 of the Hall Main in what I attached

49. There seems to be no objection to the suggestion of the Government Inspector being carried out. If a night service of trains is introduced over the Ennur line at any time a signal would be required at Tangal as a guide to (Drivers.

This should be done. There is now night train. The Shi... [illegible] lamp [illegible] the drivers [illegible] guide

D2 Under [illegible] you are [illegible] sure if [illegible] ground [illegible] these points to be settled by me

Paras 53-54 should be discussed on next inspection.

Para. 57. We cannot do more than we are doing at present in respect of gas lighting. We are waiting to know whether the East Coast Railway Carriages are to be supplied with gas by the Madras Railway, before we enlarge our Gas Works at Central Station.

ECR has nothing to do with it

58. This will be rectified in due course.

D2 Please note what has been done

Para 60. The Chief Engineer states that this note has been carefully recorded in his Office and the roofs of the Engine sheds at Tirupatur, Renigunta and Cuddapah will be utilized elsewhere when an opportunity occurs of doing so.

—·— 63. The late running is not due to — inexperienced drivers but to the inferior tubes supplied from home with the new Engines and to the inferior coal we are compelled in this country to burn.

The why has The M.R. received no explanation as asked for re driver from Home!!!

A. Edmonds
for Agent & Manager.
30-6-98.

From The Agent and Manager.

To The Consulting Engineer for Railways.

Dated
Rcd.

No.

MADRAS RAILWAY.

From

The Agent and Manager.

To

The Consulting Engineer

for Railways.

Dated

Recd.

No.

ERO C.No. 3097/98
600 d 30-6-98

3

31st Dec. 97

At the end of the half-year ~~under review~~ the following is the number of miles of main line and branches laid with the different descriptions of rail :—

	Miles.	Half year 30-June-97 S.W.I.	N.W.I.	Total
84 lbs. iron rails 20 feet	23·64	26·04	·56	26·60
75 lbs. do.	311·42	108·75	199·94	308·69
65 lbs. do.	124·03	122·19	—	122·19
75 lbs. double-headed steel rails 30 feet	32·38	32·38	—	32·38
75 lbs. do. do. and other rails 20 feet...	309·72	207·76	103·54	311·30
75 lbs. 20 feet flat-footed steel rails on Bridges ...	5·69	1·46	4·24	5·70
76 lbs. 30 feet bull headed steel rails	69·75	74·77	—	74·77
	881·63	573.35	308.28	881.63
Kolar Gold Fields Railway.				
75 lbs. iron rails 20 feet	7·29			7.31
84 lbs. do.	·63			.69
75 lbs. double-headed steel rails 20 feet and others ...	2·08			2.08
	10·00			10.00
Ennur Section of B. M. Railway.				
75 lbs. flat-footed 30 feet steel rails	8·37			8.37
75 lbs. double-headed steel rails 30 feet	·08			.08
	8·45			8.45

Stone Covering

Section	Covered.	Not Covered
Madras to Mettupalleiyam	Mls. 327.33	Mls.
Padanur to Calicut including Palghat Branch	" 8.50	105.12
Jalarpet to Bangalore	" 45.27	42.15
Arkonam to Raichur	" 176.60	131.68
	Miles 557.70	278.95

Madras Railway Co.
Chief Engr's office
Madras 15th August 1898.

Chief Engineer

16/8/98

327.33
42.59
284.8

At the end of the half-year ~~under review~~ 31st Dec. 97 the following is the number of miles of main line and branches laid with the different descriptions of rail :—

	Miles.	Half year 30th June Steel.	N. Wk.	Total
84 lbs. iron rails 20 feet	23·64	26·04	·56	26.60
75 lbs. do.	311·42	108.75	199.94	308.69
65 lbs. do.	124·03	122.19	—	122.19
75 lbs. double-headed steel rails 30 feet	32·38	32.38	—	32.38
75 lbs. do. do. and other rails 20 feet...	309·72	207.76	103.54	311.30
75 lbs. 20 feet flat-footed steel rails on Bridges ...	5·69	1.46	4.24	5.70
76 lbs. 30 feet bull headed steel rails	69·75	74.77	-	74.77
	881·63	573.35	308.28	881.63

Kolar Gold Fields Railway.

75 lbs. iron rails 20 feet	7·29		7.31
84 lbs. do.	·63		.61
75 lbs. double-headed steel rails 20 feet and others ...	2·08		2.08
	10·00		10.00

Ennur Section of B. M. Railway.

75 lbs. flat-footed 30 feet steel rails	8·37		8.37
75 lbs. double-headed steel rails 30 feet	·08		.08
	8·45		8.45

Madras Railways

Renewals of Permanent Way during the Half year Ending 30th June 1898.

1766. Bull Headed 30 ft Steel rails ——— (=5.01 miles) laid
2,994. New & 2nd hand 20 ft & other Double Headed Steel rails (= 5.66 miles) "
8. " ——— do " ——— 20 ft flat Bottom Steel rails (= 0.01 ") "
3,552 - 2nd hand Double Headed Iron Rails 20 ft & other (= 6·70 ") "

8,320 — 17.38 miles.

6,081 Pot Sleepers renewed } — (= 1.92 miles) laid

Stone Covering

Section		Covered.	Not Covered.
Madras to Melturpalleiyam	Miles.	327.33	Mil.
Podanur to Calicut including Palghat Branch	"	8.50	105.12
Jalarpet to Bangalore.	"	45.27	42.15
Arkonam to Raichur	"	176.60	131.68
	Miles	557.70	278.95

Madras Railway Co
Chief Engr's office
Madras 15th August 1898.

Chief Engineer

16/8/98

327.33
42.50
284.83