Public Works (1899) Department.

RAILWAY BRANCH.

G.O., No. 1059 - 60 Ry

DATED 22nd Septr 1899.

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[Despatch Abstract.]

Inspection Report of the S.D.Ry.

Directing that the — for the half-year ending the 30/6/99 together with the remarks by the Senior Govt Inspr of Rys, be Comm'd to the Agent, for info & guidance & to the Govt of India with reference to remarks about Pakala & that a copy of the proc: be forwarded to the Govt of India. —

Forwarding a copy of the proc embodying the — for the half-year ending the 30/6/99, together with remarks by the Senior Govt Inspr of Rys.

[P. W. 16. 100-30-2-99.]

Indexed.

BACK PAPERS.

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RAILWAY.

Government {1899} of Madras.

PUBLIC WORKS.

Recd. }1899. *Enclosures*

Regd. *Spare copies*

G.O., Nos. 1059, 1060 Ry., 22nd September 1899.

SEPTEMBER.

Inspection Report of the South Indian Railway

Forwarding a copy of the Proceedings embodying the — for the half-year ending the 30th June 1899, together with the remarks by the Senior Government Inspector of Railways.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Railway.

Read the following paper:—

SOUTH INDIAN RAILWAY.

METRE GAUGE.

TOTAL MILEAGE OPEN FOR TRAFFIC, 1095·69 MILES.

Inspection Report for the half-year ending 30th June 1899.

The inspection was carried out between July 12th and 22nd in company with the Chief Engineer, heads of departments, district officers and their assistants. The Acting Agent was present during the inspection of the Mayavaram-Mutupet branch, and the Negapatam-Nagore extension.

1. *Formation.*—Cuttings are generally in good order. In mile 271, main line, ballast walls are required, and in mile 355 side drains want cleaning out. This is required also in the cuttings between Pakala and Tirupati which are in soft stuff and are scoring a good deal. The cuttings on the Dharmavaram branch are particularly well maintained and have neat ballast walls.

Banks are in good order and of standard width, except in mile 365, main line, and 303, Erode branch, and in places between Renigunta and Gudur where they are a good deal wasted. On the greater part of the Mayavaram-Mutupet branch, however, the banks are much wasted, and in some miles are not more than 12 feet wide. In some places on this branch, where repairs are going on, the top of the bank is being raised without widening the slopes correspondingly which will not make a lasting job.

2. *Ballast.*—The main line from Madras to a little south of Trichinopoly is ballasted with sand or moorum, with a blinding of broken stone or laterite on top. The ballast is hardly up to full section anywhere on this length; and in some miles the line is distinctly low. From Kolattur to Tuticorin and Tinnevelly the maintenance is neat, and also on the Erode branch. The Pondicherry branch is low in parts, and also the Arkonam branch, particularly in miles 37 to 39 and 52 to 55 which require lifting and more ballast throughout. Ballast is rather short between Renigunta and Gudur, and also on the Mayavaram-Mutupet branch. Some of the ballast on this branch is a good deal too big. The Villupuram-Dharmavaram section is ballasted with broken stone ballast which is of full section and very neatly maintained throughout.

3. *Permanent-way.*—The running is good throughout the main line, and on the Erode, Arkonam, Dharmavaram and Gudur branches. The best sections are from Trichinopoly southwards to Tuticorin, and the Erode, Dharmavaram and Tinnevelly

branches. On the Mayavaram-Mutupet line the running is very fair and has evidently been greatly improved in the last half-year. Joints are low in places between Madras and Chingleput, between Cuddalore and Mayavaram and between Nidamangalam and Negapatam. In mile 291 of the Dharmavaram line, and between miles 345 and 372, on the old iron rails there is a good deal of hammering at the joints. There are slight jumps at some of the bridges on this section, particularly at an arched bridge in mile 166, where the thickness of the earth cushion should be investigated. On the Pondicherry branch the road is rough, mile 103 being particularly noticeable; there is hammering at the joints throughout, the worst section is just west of the Gingee bridge; and there are jumps at the abutments of some of the small bridges. Some very loose keys were noticed on the Pulliyarpatti quarry siding, and on one or two bridges notably on the 1/20′ bridge near Manapparai station.

4. *Points and crossings.*—These require attention. A good many sets were gauged during the inspection, and it was very much the exception to find a set true to gauge. On the other hand some points and crossings on running lines were found which varied from $\frac{1}{4}''$ slack to $\frac{1}{4}''$ tight between the toe of the switch and the nose of the crossing, others varied from $\frac{3}{8}''$ slack at the toe to correct gauge at the crossing, while one was $\frac{3}{4}''$ slack at the wing of the crossing. At Mayavaram some crossings wheel marked on frog were noticed; the clearance was $1\frac{5}{16}''$.

5. *Large bridges.*—Fine hair cracks have developed on the upper surface of the wrought iron stirrups by which the cross girders are suspended from the main girders of the 150-foot and 120-foot pin-connected Whipple-Murphy girders. These cracks can only be detected by scraping off the paint and examining the surface of the iron with a magnifying glass. All the cracks hitherto discovered are in the centre of the stirrup, and parallel to the axis of the pin. Those now visible vary in length from $\frac{1}{8}''$ up to $3''$, but some longer ones are covered by the extra plates and hanging bolts which with these joints are being reinforced. Some of the longer cracks on the Gingee and Ponniar bridges were watched while the inspection train ran over at about 10 miles an hour, and the opening of the cracks as the engine passed was easily to be seen by the naked eye. The Chief Engineer tells me that a file cut through one of the worst cracked stirrups showed that the crack extended right through to the lower surface of the plate. There are over 90 spans of these girders on the line, and with the exception of six spans received from a different maker, all show this defect at some point in the span. A careful account is being kept of these cracks, to see if there is any tendency to increase in length, and the worst joints are being reinforced as described above. Meanwhile there is a restriction of 20 miles an hour over these bridges.

6. *Cross-sleepering of bridges.*—The longitudinal sleepers on girder bridges are being gradually replaced by cross sleepers. The work is being very well done, and results in a much improved road over the bridges. On some bridges the road is laid with bull-headed rails on chairs, and on others with flat-footed rails spiked directly to the sleepers. The latter plan seems preferable, and avoids all chance of loose keys which are occasionally to be met with in hot weather, but it requires the use of a special flat-footed rail to match the 50 lb. bull-headed rail, used on the pot-sleeper road of the main line. The Chief Engineer is experimenting with coiled steel keys for use on bridges.

Papaghni bridge, 8/60′.—The longitudinal sleepers are going at the ends. This bridge should have an early place in the programme of cross sleepering. The rail joints on this and some other bridges require re-spacing.

Rallayeru bridge, 7/100′, *and Yettul bridge*, 8/63′.—There are thin packing pieces under several of the cross sleepers on these bridges. Special attention should be paid to keeping the holding down bolts tight. (This is the original sleepering, and not new work.)

2/40′ bridge, mile 220, Mayavaram-Mutupet branch. The camber is taken out by long packing pieces on the top booms, extending from the ends to the centre cover plate.

7. *Bed timbers.*—Nearly all girders of less than 100′ span are laid on bed timbers. These vary greatly in section. At the 3/20′ bridge, mile 272, they vary from 3″ down to as little as 1″ in thickness. These are too small to make a sound job and should be removed.

8. *Minor bridges and culverts.*—Several of these, taken quite at random, were examined, and were found to be in thorough good order. The 10′ and 20′ girder bridges at mile 220, Mayavaram-Mutupet line, the abutments of which cracked badly, have been strengthened with a frame work of old rails which has entirely stopped the movement of the abutments, and does not obstruct the waterway.

9. *Paint.*—The larger bridges on the system are painted with red oxide, and the smaller with tar. Both are said to require renewal about once in three years. Painting is now being carried out carefully and systematically by a departmental gang of painters, the date of finishing each bridge being marked upon it. The Tirunji and Cheyair bridges, painted eight months ago with red oxide, are covered with a black mildew. This may be the result of painting during the monsoon—a practice which might well be given up, as it must be impossible to prevent rust from forming on the newly scraped metal in damp weather, before the new coat is applied. The smaller bridges are tarred, and those examined were free from blisters and rust marks.

10. *Level crossings.*—Many of the approaches to field crossings for wheeled traffic are very steep. They are said to be 1 in 15, but they look far steeper than this, and the railway authorities have, I think, neglected to keep the surface made up to its original section. The effort required to get up this stiff grade may cause a cart to stick dangerously at the summit, especially as the approaches are not continued out level from the edge of formation, but descend at once. The Chief Engineer points out that the toes of approach ramps lying outside railway land are allowed to fall out of repair, and that the ryots drag down earth from the railway ramp above, when they want to make the road up for use after the monsoon. If the railway regrade and repair the ramps the attention of the civil authorities might be directed to the upkeep of the part outside railway land, and the prosecution of any one causing damage thereto. On the Erode branch some footpath crossings are provided with gatekeepers, while others in the same miles have proper quadrant gates. This seems an unnecessary expense.

11. *Fencing.*—The substitution of wire for aloe fencing is proceeding. It is being worked in and out of the aloes just as is found most convenient at the particular spot—sometimes at the top of the bank, sometimes at the toe of the slope, and sometimes out near the boundary. When the aloes die out altogether, the railway will be left with a desperately crooked wire fence which will have to be refixed. I suggest that it would be better to run the fence along the boundary of the permanent land, as far as possible, and thus get rid at once of the encroachments which are giving so much trouble. On the Erode branch the fence is being undercut in places by the ryots cultivating up against it. There cannot be any difficulty in identifying and prosecuting those responsible for the damage.

12. *Stations* are well kept, the platform surfaces are good everywhere. Station compounds and in many cases, the platforms as well, are shaded with trees, and well looked after. Time and fare tables are properly posted, and weighing machines provided with test cards. Latrines are kept clean, but the type, an open brick court-yard with a drain round it, is certainly out of date. It is a great pity that the use of tar has been allowed to spread from the walls of latrines to the stations generally. An ordinary brick station building looks gloomy enough when it is tarred all over the outside, but it is much worse when good granite ashlar, as at Dindigul, and carefully cut granite verandah pillars as at Madura are decorated with a 9-foot dado of tar.

13. *Particular stations—Chingleput.*—A new refreshment-room is nearly finished; the tile dado and stencilling of the walls and roof look very well and the kitchen lined with white glazed tiles is a very superior one. *Mayavaram.*—The old station building is still in use, it is awkwardly placed for the new junction station, the bath-rooms are dark, and the third-class waiting accommodation is insufficient. The over-bridge leading from the island platform to the station building, and forming the only

means of exit and entrance, is blocked on the lower landing by a large sentry box for the ticket collector. This should certainly be removed as the passage round it is very cramped, but it would be much better to collect tickets inwards at the platform end of the bridge, and so avoid crowding the bridge with passengers waiting to pass the ticket barrier. A new station building suitable to the requirements of the junction seems to be required. *Tiruvallur.*—Third-class waiting accommodation seems insufficient. *Kondacheri.*—No name on lamps. This is also the case at some of the small stations on the Mayavaram-Mutupet line. *Dindigul.*—No complaint book in the refreshment-room, the khansamah had not heard of such a thing in his two years of tenure. I hope this points to the uniformly high standard of the meals supplied. *Madura.*—The Locomotive department ask for more room inside their starting signal. The yard is about to be entirely remodelled when no doubt this point will be considered. *Maniyachi.*—The platform is obstructed by two old carriage bodies used as a mail office. A separate room in the station might be provided. *Tuticorin.*—The question of providing additional sidings on the wharf with a passenger platform and goods godowns has been under consideration for some time. A scheme has been drawn out and is expected to be approved shortly. The slip siding protecting the exit from the locomotive sidings has an iron buffer stop about two rail lengths beyond the crossing. An engine running into the siding might be derailed foul of the main line by this buffer stop, which should be removed, and the siding slewed further from the main line. *Kumbakonam.*—The goods-shed floor is undermined by rats, nothing but relaying throughout will do any good. *Pakala.*—The railway colony here continues to grow; the staff quarters are neat, and well placed. New running rooms for guards and drivers have just been finished, they are well built and conveniently planned, but do not appear to be large enough. More accommodation was certainly required at the time of inspection as the living room was being used for sleeping purposes, and traffic on this section of the line is certainly not heavy just now. The refusal of the District Board to take over the road constructed by the railway in order to be able to divert the existing public road from between their staff quarters was alluded to in the last inspection report. I inspected the road diversion which is in excellent order, and am unable to see on what grounds the District Board persist in refusing to take it over. The attention of the President of the District Board might be drawn to the matter. Raised and bridged paths to the different bungalows are required, and more attention might well be paid to tree planting, as the place is white and glaring. *Gudur.*—This new terminal station is now in thorough working order, and the accommodation seems to be ample for the present traffic. No steps have yet been taken towards putting in the coal transhipping siding alluded to in the last report. The station building appears to have been designed on the minimum scale. The front verandah gives little or no protection from rain, the waiting-room and bath-rooms are very small, the former has no sun-shades and no ceiling to a single tiled roof and would be found intolerably hot by any one who was obliged to pass the day there.

In view of the accommodation now provided at the East Coast station opposite, the waiting-rooms might well be done away with.

14. *Signals.*—Several small stations on the main line have only two so-called distant signals. A two-armed platform or home signal has been added to some, and it is proposed to add it to all of these. There are two complete installations of distant and bracketed home signals by Messrs. Dutton & Co. and some special interlocking arrangements at junction stations, all of which have been previously reported on. It is contemplated, I believe, to introduce an uniform system of signalling for the whole line as soon as the system to be adopted is finally agreed upon. One arm of the old pattern of two-armed platform signal does not fly to danger on the release of the lever, and in some cases falls to the "off" position. Extra counterweights are required for these arms. The new pattern of platform signal on the Villupuram-Dharmavaram section, in which the spectacles are on the back of the arm, is correct in this respect.

Villupuram Junction.—There is interlocking at the junction of the main line and Pondicherry branches at the south end of the station on a system by Messrs. Saxby and Farmer. The home and distant signals protecting the junction are worked by levers grouped in a fenced enclosure on the station platform. From this enclosure no

view of the signals is to be had, and the length of the wire to the distant signals makes the working of them hard and uncertain. On the occasion of the inspection the main line distant signal remained "off" after the lever had been returned to the normal position. The counterweight, no doubt, had been altered in order to diminish the pull of the lever, which even so was excessive. I recommend that the levers be removed to the south end of the platform so as to shorten the wires, and give the man operating the signals a clear view of the position of the arms. This will give the stationmaster a walk, no doubt, but the danger of the present state of things need hardly be pointed out. *Kondacheri* signal arms require painting. *Cuddalore Old Town.*—There is no signal controlling the exit from the locomotive lines.

15. *Watering arrangements.*—At *Pakala* the well is subject to great and sudden variations of water level, the present pump cannot draw from the bottom of the well in dry weather, and cannot be fixed lower permanently. A proposal for new pumps to meet this difficulty is about to be submitted. The stand-pipe which now encumbers the present system of supply should be got rid of at the same time. *Vayalpad.*—The well requires deepening. *Gudur.*—A new tank high enough for washing out is being erected by the East Coast Railway for the use of the South Indian Railway. It will be supplied from the joint pumping station now in course of construction to the north of the station.

16. *Locomotive Workshops—Negapatam.*—These are in good order and the accommodation appears to be ample at present, except in the carriage shop which is a little cramped. A comprehensive scheme for the enlargement of these works to meet all possible requirements of the system has been approved and will be worked to in future extensions.

17. *Rolling-stock.*—Complaints continue to be received of the unsteady running of the four wheeled coaching stock. I can speak from my own experience which is that the oscillation in some of these carriages at anything over 20 miles an hour is excessive. Others run steadily enough, these, probably, are not long out from the shops, and the stiffness in the guards and hangers neutralises the tendency to violent swaying. The Locomotive Superintendent showed me a new method of hanging these springs by which they can be adjusted in place. It remains to be seen if the vehicles so fitted will run steadily after a few months wear.

The old pattern of third-class carriage with no sunshade over the door must be very uncomfortable in wet weather when the rain must drive in at the top of the carriage. These are, I believe, being remodelled as fast as they come in to the shops. The carriages generally are well kept and I have not noticed any cases of overcrowding.

18. *Break down trains.*—These were inspected at Trichinopoly and Madura and were found very complete with the exception of medical stores with which the Madura train was not equipped. At Trichinopoly the crane was not attached to the train, but kept in a siding at the opposite side of the yard. This would lead to considerable loss of time in an emergency.

19. *New works.*—The work on the new harbour station, Madras, is making satisfactory progress. I hardly think it necessary to retain the present line with its awkward road crossing behind the Lighthouse battery for use on the very rare occasions on which target practice is carried out from this battery. Arrangements for stopping the firing during the passage of trains would give very little trouble, similar to those which have always to be made for the safety of passing ships.

Mile 206, *Mayavaram-Mutupet line.*—A new trial station is being put in the earthwork is nearly finished. *Tuticorin Salt Siding.*—This was inspected with a view to opening for passenger traffic, it is in good order and fenced throughout. A separate report on it has been submitted.

20. *Negapatam-Nagore Extension.*—This short extension was inspected on the 15th July in company with the Acting Agent, the Chief Engineer and the Assistant Engineer in charge of the work. Formation is nearly complete throughout except where delay has occurred in the handing over of land. The line is practically a surface one and the earthwork is everywhere extremely light, and will easily be finished before the north-east monsoon. There are a few small culverts on the line

which are in hand, and some more were asked for by the cultivators of the neighbouring gardens. I think it very doubtful owing to the sandy nature of the soil, if any more are really required, but the next north-east monsoon will show. The three stations on this length are being roofed in. The road is to be laid with 2nd class 68 lb. iron rails on chairs and wooden sleepers. A large number of new sâl sleepers have been received, they are of excellent quality. Fish plates, bolts and spikes are awaited from England, and on their arrival platelaying will be begun.

P. Ashworth, Capt., R.E.,
Government Inspector of Railways.

22nd August 1899.

Remarks by the Senior Government Inspector.

The report on the whole is a good one. The attention of the Agent is invited to the matters brought to notice as requiring attention; especially to the bad running of the older four-wheel carriages, to the gauge of the points and crossings, to the cross girder hangers of pin bridges, to the state of some of the level crossings, and to the condition of some of the signals. A report should be submitted, as usual, showing what action it is proposed to take in regard to each of the matters criticised by the Inspecting officer.

Francis J. E. Spring,
Senior Government Inspector.

Ootacamund,
23rd August 1899.

Order—No. 1059 Ry., dated 22nd September 1899.

Communicated to the Agent, South Indian Railway, for information and guidance, and to the Local and Municipal Department with reference to the remarks about level crossings in paragraph 10, and about Pakala in paragaph 13—a matter brought prominently to notice in G.O., No. 226 Ry., dated the 23rd February 1899, but apparently without effect.

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

[Here enter No. 1060 Ry., dated 22nd September 1899.]

(True Extract.)

Francis J. E. Spring,
Secretary.

To the Agent, South Indian Railway.
" Consulting Engineer for Railways.
" Local and Municipal Department.

Endorsement—No. 1060 Ry., dated 22nd September 1899.

Forwarded.

(By order.)

Francis J. E. Spring,
Secretary.

Exl. C. M. Thumbusawmy.

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PUBLIC WORKS DEPARTMENT.

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12. *Stations* are well kept, the platform surfaces are good everywhere. Station compounds and, in many cases, the platforms as well, are shaded with trees, and well looked after. Time and fare tables are properly posted, and weighing machines provided with test cards. Latrines are kept clean, but the type, an open brick courtyard with a drain round it, is certainly out of date. It is a great pity that the use of tar has been allowed to spread from the walls of latrines to the stations generally. An ordinary brick station building looks gloomy enough when it is tarred all over the outside, but it is much worse when good granite ashlar, as at Dindigul, and carefully cut granite verandah pillars as at Madura are decorated with a 9-foot dado of tar.

13. *Particular stations—Chingleput.*—A new refreshment-room is nearly finished; the tile dado and stencilling of the walls and roof look very well and the kitchen lined with white glazed tiles is a very superior one. *Mayavaram.*—The old station building is still in use, it is awkwardly placed for the new junction station, the bath-rooms are dark, and the third-class waiting accommodation is insufficient. The over-bridge leading from the island platform to the station building, and forming the only

means of exit and entrance, is blocked on the lower landing by a large sentry box for the ticket collector. This should certainly be removed as the passage round it is very cramped, but it would be much better to collect tickets inwards at the platform end of the bridge, and so avoid crowding the bridge with passengers waiting to pass the ticket barrier. A new station building suitable to the requirements of the junction seems to be required. *Tiruvallur.*—Third-class waiting accommodation seems insufficient. *Kondacheri.*—No name on lamps. This is also the case at some of the small stations on the Mayavaram-Mutupet line. *Dindigul.*—No complaint book in the refreshment-room, the khansamah had not heard of such a thing in his two years of tenure. I hope this points to the uniformly high standard of the meals supplied. *Madura.*—The Locomotive department ask for more room inside their starting signal. The yard is about to be entirely remodelled when no doubt this point will be considered. *Manyachi.*—The platform is obstructed by two old carriage bodies used as a mail office. A separate room in the station might be provided. *Tuticorin.*—The question of providing additional sidings on the wharf with a passenger platform and goods godowns has been under consideration for some time. A scheme has been drawn out and is expected to be approved shortly. The slip siding protecting the exit from the locomotive sidings has an iron buffer stop about two rail lengths beyond the this buffer stop, which should be removed, and the siding slewed further from the main line. *Kumbakonam.*—The goods-shed floor is undermined by rats, nothing but relaying throughout will do any good. *Pakala.*—The railway colony here continues to grow; the staff quarters are neat, and well placed. New running rooms for guards and drivers have just been finished, they are well built and conveniently planned, but do not appear to be large enough. More accommodation was certainly required at the time of inspection as the living room was being used for sleeping purposes, and traffic on this section of the line is certainly not heavy just now. The refusal of the District Board to take over the road constructed by the railway in order to be able to divert the existing public road from between their staff quarters was alluded to in the last inspection report. I inspected the road diversion which is in excellent order, and am unable to see on what grounds the District Board might be drawn to the matter. The attention of the President of the District Board might be drawn to the matter. Raised and bridged paths to the different bungalows are required, and more attention might well be paid to tree planting, as the place is white and glaring. *Gudur.*—This new terminal station is now in thorough working order, and the accommodation seems to be ample for the present traffic. No steps have yet been taken towards putting in the coal transhipping siding alluded to in the last report. The station building appears to have been designed on the minimum scale. The front verandah gives little or no protection from rain, the waiting-room and bath-rooms are very small, the former has no sun-shades and no ceiling to a single tiled roof and would be found intolerably hot by any one who was obliged to pass the day there.

In view of the accommodation now provided at the East Coast station opposite, the waiting-rooms might well be done away with.

14. *Signals.*—Several small stations on the main line have only two so-called distant signals. A two-armed platform or home signal has been added to some, and it is proposed to add it to all of these. There are two complete installations of distant and bracketed home signals by Messrs. Dutton & Co. and some special interlocking arrangements at junction stations, all of which have been previously reported on. It is contemplated, I believe, to introduce an uniform system of signalling for the whole line as soon as the system to be adopted is finally agreed upon. One arm of the old pattern of two-armed platform signal does not fly to danger on the release of the lever, and in some cases falls to the "off" position. Extra counterweights are required for these arms. The new pattern of platform signal on the Villupuram-Dharmavaram section, in which the spectacles are on the back of the arm, is correct in this respect.

Villupuram Junction.—There is interlocking at the junction of the main line and Pondicherry branches at the south end of the station on a system by Messrs. Saxby and Farmer. The home and distant signals protecting the junction are worked by levers grouped in a fenced enclosure on the station platform. From this enclosure no

view of the signals is to be had, and the length of the wire to the distant signals makes the working of them hard and uncertain. On the occasion of the inspection the main line distant signal remained "off" after the lever had been returned to the normal position. The counterweight, no doubt, had been altered in order to diminish the pull of the lever, which even so was excessive. I recommend that the levers be removed to the south end of the platform so as to shorten the wires, and give the man operating the signals a clear view of the position of the arms. This will give the stationmaster a walk, no doubt, but the danger of the present state of things need hardly be pointed out. *Kondacheri* signal arms require painting. *Cuddalore Old Town.*—There is no signal controlling the exit from the locomotive lines.

15. *Watering arrangements.*—At *Pakala* the well is subject to great and sudden variations of water level, the present pump cannot draw from the bottom of the well, in dry weather and cannot be fixed lower permanently. A proposal for new pumps to meet this difficulty is about to be submitted. The stand-pipe which now encumbers the present system of supply should be got rid of at the same time. *Vayalpad.*—The well requires deepening. *Gudur.*—A new tank high enough for washing out is being erected by the East Coast Railway for the use of the South Indian Railway. It will be supplied from the joint pumping station now in course of construction to the north of the station.

16. *Locomotive Workshops—Negapatam.*—These are in good order and the accommodation appears to be ample at present, except in the carriage shop which is a little cramped. A comprehensive scheme for the enlargement of these works to meet all possible requirements of the system has been approved and will be worked to in future extensions.

17. *Rolling-stock.*—Complaints continue to be received of the unsteady running of the four wheeled coaching stock. I can speak from my own experience which is that the oscillation in some of these carriages at anything over 20 miles an hour is excessive. Others run steadily enough, these, probably, are not long out from the shops, and the stiffness in the guards and hangers neutralises the tendency to violent swaying. The Locomotive Superintendent showed me a new method of hanging these springs by which they can be adjusted in place. It remains to be seen if the vehicles so fitted will run steadily after a few months wear.

The old pattern of third-class carriage with no sunshade over the door must be very uncomfortable in wet weather when the rain must drive in at the top of the carriage. These are, I believe, being remodelled as fast as they come in to the shops. The carriages generally are well kept and I have not noticed any cases of overcrowding.

18. *Break down trains.*—These were inspected at Trichinopoly and Madura and were found very complete with the exception of medical stores with which the Madura train was not equipped. At Trichinopoly the crane was not attached to the train, but kept in a siding at the opposite side of the yard. This would lead to considerable loss of time in an emergency.

19. *New works.*—The work on the new harbour station, Madras, is making satisfactory progress. I hardly think it necessary to retain the present line with its awkward road crossing behind the Lighth use battery for use on the very rare occasions on which target practice is carried out from this battery. Arrangements for stopping the firing during the passage of trains would give very little trouble, similar to those which have always to be made for the safety of passing ships.

Mile 206, *Mayavaram-Mutupet line.*—A new trial station is being put in the earth-work is nearly finished. *Tuticorin Salt Siding.*—This was inspected with a view to opening for passenger traffic, it is in good order and fenced throughout. A separate report on it has been submitted.

20. *Negapatam-Nagore Extension.*—This short extension was inspected on the 15th July in company with the Acting Agent, the Chief Engineer and the Assistant Engineer in charge of the work. Formation is nearly complete throughout except where delay has occurred in the handing over of land. The line is practically a surface one and the earthwork is everywhere extremely light, and will easily be finished before the north-east monsoon. There are a few small culverts on the line

which are in hand, and some more were asked for by the cultivators of the neighbouring gardens. I think it very doubtful owing to the sandy nature of the soil, if any more are really required, but the next north-east monsoon will show. The three stations on this length are being roofed in. The road is to be laid with 2nd class 68 lb. iron rails on ~~chairs~~ and wooden sleepers. A large number of new sâl sleepers have been received, they are of excellent quality. Fish plates, bolts and spikes are awaited from England, and on their arrival platelaying will be begun.

22nd August 1899.

P. Ashworth, Capt., R.E.,
Government Inspector of Railways.

Remarks by the Senior Government Inspector.

The report on the whole is a good one. The attention of the Agent is invited to the matters brought to notice as requiring attention; especially to the bad running of the older four-wheel carriages, to the gauge of the points and crossings, to the cross girder hangers of pin bridges, to the state of some of the level crossings, and to the condition of some of the signals. A report should be submitted, as usual, showing what action it is proposed to take in regard to each of the matters criticised by the Inspecting officer.

Ootacamund,
23rd August 1899.

Francis J. E. Spring,
Senior Government Inspector.

Order—No. 1059 Ry., dated 22nd September 1899.

Communicated to the Agent, South Indian Railway, for information and guidance, and to the Local and Municipal Department with reference to the remarks about Pakala in paragraph 13—a matter brought prominently to notice in G.O., No. 226 Ry., dated the 23rd February 1899, but apparently without effect.

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

[Here enter No. 1060 Ry., dated 22nd September 1899.]

(True Extract.)

Francis J. E. Spring,
~~Joint~~ Secretary.

To the Agent, South Indian Railway.
" Consulting Engineer for Railways.
" Local and Municipal Department.

Endorsement—No. 1060 Ry., dated 22nd September 1899.

Forwarded.

(By order.)

Joint Secretary.

Despatched on 5/10/99

Exd. C. M. Thumbusawmy.

RAILWAY.

Government {1899} of Madras.

PUBLIC WORKS.

Recd. } 1899. Enclosures
Regd. } Spare copies

G.O., No. 1059, 1060 Ry., 22 September 1899.

SEPTEMBER.

South Indian Railway

Metre Gauge

Total mileage open for traffic miles

Inspection report for the half year ending June 30th 1899

The inspection was carried out between July 12th and 22nd in company with the Chief Engineer, heads of departments, district officers and their assistants. The Acting Agent was present during the inspection of the Mayavaram - Mutupet branch, and the Negapatam - Nagore extension.

1. Formation. Cuttings are generally in good order. In mile 271, main line, ballast walls are required, and in mile 355 side drains want cleaning out. This is required also in the cuttings between Pakala and Renigunta Tirupati which are in soft stuff and are scoring a good deal. The cuttings on the Dharmavaram branch are particularly well maintained and have neat ballast walls.

and cement the joined lower

Banks are in good order and of standard width, except in mile 365 & main line, and 303 Erode branch, and in places between Renigunta and Gudur where they are a good deal washed. On the greater part of the Mayavaram-Mutupet branch however, the banks are much washed, and in some miles are not more than 12 feet wide. In some places on this branch, where repairs are going on, the toe of the bank is being raised without widening the slopes correspondingly which will not make a lasting job.

2

Ballast. The main line from Madras to a little south of Trichinopoly is ballasted with sand or murram, with a blinding of broken stone or laterite on top. The ballast is hardly up to full section anywhere on this length but and in some miles the line is distinctly so from Kolatur to Tuticorin and timewelly the maintenance is neat, and also on the Erode branch. The Pondicherry branch is low in parts, and also the Arkonam branch, especially in miles 37 to 39 and 52 to 55 which require lifting and more ballast throughout. Ballast is rather short between Renigunta and Gudur, and also on the Mayavaram Mutupet branch Some of the ballast on this branch is a good deal too big. The Villupuram-Dharmavaram section is ballasted throughout with broken stone ballast which is of full section and very badly maintained throughout.

3/ Permanent Way. The running is good throughout the main line, and on the Erode, Arkonam, Dharmavaram and Gudur branches. The best sections are from Trichinopoly southwards to Tuticorin, and the Erode and Dharmavaram branches. On the Mayavaram-Mutupet line the running is very fair and

2 0

and cannot be fixed lower

has evidently been greatly improved in the last half year. Joints are low in places between Madras and Chingleput between Cuddalore and Mayavaram and between Nidamangalam and Negapatam. In mile 291 of the Shannavaram line, and between miles 345 and 372 on the old iron rails there is a good deal of hammering at the joints. There are slight jumps at some of the bridges on this section, particularly at an arched bridge in mile 166 - where the thickness of the earth cushion should be investigated. On the Pondicherry branch the road is rough, mile 103 being particularly noticeable - there is hammering at the joints throughout, the worst section being just west of the Gingee bridge; and there are jumps at the abutments of some of the small bridges also. Some very loose keys were noticed on the Palliyarpatti Quarry siding - and on one or two bridges notably on the 1/20' bridge near Manaparai station.

4. **Points and Crossings.**

These require attention. A good many sets were gauged during the inspection, and

it was very much the exception to find a set true to gauge. On the other hand some points and crossings on running lines, were found which varied from 1/4" slack to 1/4" tight between the toe of the switch and the nose of the crossing, others varied from 3/8" slack at the toe to correct gauge at the crossing, while one was 3/4" slack at the wing of the crossing. At Mayavaram some crossings wheel marked on frog were noticed - the clearance was 1 5/16".

5/. **Large Bridges.** Fine hair cracks have developed on the upper surface of the W.I. stirrups by which the cross girders are suspended from the main girders of the 150 foot and 120 foot pin-connected Whipple-Murphy girders. These cracks can only be detected by scraping off the paint and examining the surface of the iron with a magnifying glass. All the cracks hitherto discovered are in the centre of the stirrup, and parallel to the axis of the pin. ~~They~~ and cannot be fixed lower

3

those now visible
vary in length from ½" up to 3"
here but some longer ones are
likewise covered by the extra
plates and hanging bolts with
which these joints are being
reinforced. Some of the longer
cracks on the Guages and
Pommian bridges were watched
while the inspection train was
over at about 10 miles an
hour, and the opening of the
cracks as the engine passed was
easily to be seen by the naked eye.
The Chief Engineer tells me that
a file cut through one of the
worst cracked stirrups showed
that the crack extended right
through to the lower surface of the
plate. There are nearly 100 spans
of these girders on the line, and
with the exception of 6 spans
received from a different makers,
all show this defect at some
point in the span. A careful
account is being kept of these
cracks, to see if there is any
tendency to spread, and
increase in length,

and the worst cracked joints are
being reinforced as described above.
Meanwhile there is a restriction of
20 miles an hour over these bridges.

6 Cross sleepering of bridges. The longi-
tudinal sleepers on girder
bridges are being gradually
replaced by cross sleepers. The
work is being very well done,
and results in a much improved
road over the bridges. On some
bridges the road is laid with
bull headed rails on chairs, and
on others with flat footed rails
spiked directly to the sleepers.
The latter plan seems preferable,
and avoids all chance of loose
keys which are occasionally to
be met with in hot weather.
On the main line
but it requires the use of a
special flat footed rail to match
the 80 lb bull headed rail used
on the rest-keeper road of the
main line. The Chief Engineer
is experimenting with coiled
steel keys for use on bridges.

40

Papaghini bridge 8/60. The
longitudinal sleepers are going
to any manner
and cannot be fixed lower

at the ends - This Bridge showed have an early place in the programme of cross-sleepering. The rail points on this, and some other bridges require respacing.

Rallayeram Bridge 7/@ 100'- and Vettal Bridge 8/63'. There are thin packing pieces under several of the cross sleepers on these Bridges - Special attention should be paid to keeping the holding down bolts tight. (This is the original sleepering, and not new work).

2/40 Bridge mile 220 Mayavaram-Mutupet branch. The camber is taken out by long packing pieces on the top booms, extending from the ends to the centre cover plate.

87 Bed timbers. Nearly all girders of less than 100' span are laid on bed timbers. These vary greatly in section. At the 3/20' Bridge mile 272- they vary from 3" down to as little as 1" in thickness. These are too small to make a sound job and should be removed.

88. Minor Bridges & Culverts. Several of those taken spalt at random, were examined, and were found to be in thoroughly good order. The 10' and 20' iron girder Bridges at mile 220 Mayavaram-Mutupet line, & the abutments of which cracked badly, have been strengthened with a framework of old rails which has entirely stopped the movement of the abutments, and does not obstruct the waterway.

9

84. Paint. The larger bridges on the system are painted with red oxide, and the smaller with lac. Both are said to require renewal about once in three years. Painting is now being carried out carefully and systematically by a gang departmental gang of painters - the date of finishing each bridge being shown upon it - Tiruvuji and Cheyair Bridges painted 2 months ago with red oxide are covered with a black mildew. This may be the result of painting during the monsoon - a practice which might well be given up, as it must be impossible to prevent rust from forming on the newly scraped metal in damp weather before the new coat is applied. The smaller bridges are tarred, and those examined were free from blisters and rust marks.

10

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70

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9 P

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16. Locomotive Workshops - Negapatam

These are in good order and the accommodation appears to be ample at present - except in the carriage shop which is a little cramped. A comprehensive scheme for the enlargement of these works to meet all possible requirements of the system has been approved and will be worked to in ~~all~~ future ~~cases of~~ extensions.

17. Rolling Stock. Complaints continue to be received of the unsteady running of the four-wheeled coaching stock. I can speak from my own experience which is that the oscillation in some of these carriages at anything over 20 miles an hour is excessive. Others ~~to~~ run steadily enough - ~~the difference is probably to be explained by the condition of the to brasses~~. These probably are not long out from the shops, and the stiffness ~~of~~ in the guards and hangers neutralises the tendency to violent swaying. The Locomotive Superintendent showed me a new method of hanging these springs by which they can be adjusted in place. ~~He is now exper~~ ~~It remains to be seen if these~~

It remains to be seen if the vehicles so fitted will run steadily after a few months wear.

The old pattern of third class carriage, with no sunshade over the door must be very uncomfortable in wet weather when the rain must

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drive in at the top of the carriage. These are, I believe, being remodelled as fast as they come in to the shops. The carriages generally are well kept and I have not noticed any cases of overcrowding. ~~The relief trains~~

13. Break down trains. These were inspected at Trichinopoly and Madura and were found very complete with the exception of medical stores with which the Madura train was not equipped. At Trichinopoly the crane was not attached to the train but kept in a siding at the opposite side of the yard. This would lead to considerable loss of time in an emergency.

19. New works. The work on the new harbour station, Madras, is making satisfactory progress. I hardly think it necessary to retain the present line with its awkward road-crossing behind the lighthouse battery for use on the very rare occasions on which target practice is carried out from this battery. Arrangements for stopping the firing during the passage of trains would give very little trouble, and similar ones have always to be made for the safety of passing ships.

Mile 206 - Nagavasam - Muttupet line. A new trial station is being put in - the earthwork is nearly finished. Tuticorin Salt Siding. This was inspected with a view to opening for passenger traffic - it is in good order and fenced throughout. A separate report on it has been submitted.

20 Negapatam - Nagore Extension. This short extension was inspected on the 15th July in company with the Acting Agent - the Chief Engineer and the Assistant Engineer in charge of the work. Formation is nearly complete throughout except where delay has occurred in the handing over of land. The line is practically a reproduction of the old one and the earthwork is everywhere extremely light, and will easily be finished before the N.E. monsoon. There are

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a few small culverts on the line which are in hand - and some more ~~have~~ were been asked for by the cultivators of the neighbouring gardens. I think it very doubtful owing to the sandy nature of the soil - if any more are really required - but the next N.E. Monsoon ~~it~~ will show. The three stations on this length are being roofed in. The road is to be laid with 2nd class 68 lb. iron rails on chairs and wooden sleepers. A large number of new Sál sleepers have been received ~~and as~~ they are of excellent quality. Fish plates, bolts and spikes are awaited from England and on their arrival platelaying will be begun.

Remarks of the Senior Govt. Inspector.

The report on the whole is a good one. The attention of the Agent is invited to the matters brought to notice as requiring attention; especially to the bad running of the older 4-wheel carriages, to the gauge of the points and crossings, to the cross girder hangers of some bridges, to the state of some of the level crossings, and to the condition of some of the engines. A report should be submitted, as usual, showing what action it is proposed to take in regard to each of the matters criticised by the Inspecting officer.

Ootacamund
23-8-99

F. V. S.
Senior Govt. Inspector

Order No. dated the . Aug. 99

Communicated to the Agent S.I.Ry. for information and guidance, and to the Local & Municipal Dept with reference to the remarks about Palcole in para 13, — a matter brought prominently to notice in G.O. No. 226.Ry. dated the 23rd Feb. 99, but apparently without effect.

2 A copy of these Proceedings will be forwarded for the information of the Govt of India.

H.E. No. Ry. dated August 1899
(Inspr. Report)

F. V. S.
Jt. Secy.

To Agent S.I.R.
E.R.
L & M.

Endt. — No. Ry. dated August 1899
Forwarded
(Disposals)

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Joint Secy