

Public Works (1894) Department.

RAILWAY BRANCH.

G.O.. No. 433. R

DATED 11th August

[Despatch Abstract.]

Accidents on Indian Railways.

Resolution of the Govt of India in regard to the returns of — for the twelve months ending the 31st December 1893 communicated to the Agents Madras and South Indian Railways.

BACK PAPERS.

G.O.	No.	Department.	Date.	G.O.	No.	Department.	Date.
	1822	R	8-8-91				
	473	R	20-2-92				
	1124	R	23-8-93				
	215	R	10-4-94				

FURTHER PAPERS.

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

11th August 1894, No. 433 R., Public Works.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Railway.

Read—the following paper:—

Resolution of the Government of India, Public Works Department (Railway Statistics), dated Simla, the 30th July 1894, No. 293 R. Stat.

(Returns of accidents on Indian Railways for the twelve months ending the 31st December 1893.)

Read again—

Public Works Department Resolution No. 402 R. Stat., dated the 31st August 1892.
Public Works Department Resolution No. 300 R. Stat., dated the 3rd August 1893.

Read also—

Note by the Director-General of Railways, No. 299 Stat., dated the 17th July 1894, with abstract returns of accidents to trains, &c., on the open lines of railways in India for the twelve months ending the 31st December 1893.

Observations.—The following summary gives the total number of accidents to trains, rolling stock, permanent-way, &c., for the twelve months ending the 31st December 1893, distributed under the classification adopted in abstract No. 4 of the returns:—

(c) Of these, three were not passengers.

(c) Not permitted (0).

• griping pains (colic)

3. The chief variations occurred under "Collisions between passenger trains and goods or mineral trains, engines and vehicles standing foul of the line," 29 against 54; "Passenger trains or parts of passenger trains leaving the rails," 83 against 98; "Goods trains or parts of goods trains leaving the rails," 296 against 362; "Trains running foul of the line," 104 against 107.

3. The chief variations occurred under "Collisions between passenger trains and goods or mineral trains, engines and vehicles standing foul of the line," 29 against 54; "Passenger trains or parts of passenger trains leaving the rails," 83 against 98; "Goods trains or parts of goods trains, engines, &c., leaving the rails," 296 against 362; "Trains running into stations or sidings at too high a speed," 19 against 4; "Trains running over cattle on the line," 1,998 against 1,830; "The bursting of tubes, &c., of engines," 183 against 120; "The failure of machinery, springs, &c., of engines," 480 against 444; "The failure of axles," 34 against 55; "The failure of couplings," 231 against 196; "The flooding of portions of permanent-way," 122 against 90; "Slips in cuttings or embankments," 36 against 54; "Fire in trains," 118 against 165; "Fire at stations or involving injury to bridges or viaducts," 38 against 58; and "Other accidents," 185 against 239.

4. "Collisions between passenger trains and goods or mineral trains, engines and vehicles standing foul of the line" showed a decrease of 25 accidents, viz., 16 under "Serious" and 9 under "Minor." The decrease under "Serious" was chiefly due to the numbers recorded on the East Indian, North-Western (State) and Great Indian Peninsula Railways having fallen from 7 to 2, 4 to 2 and 3 to nil, respectively, while under "Minor" the chief variations were an increase of 7 on the East Indian Railway and decreases of 8 on the Eastern Bengal (State) Railway and of 4 each on the Bengal and North-Western and the Burma (State) Railways.

5. Under "Passenger trains or parts of passenger trains leaving the rails," there was a decrease of 15 accidents, made up of 10 under "Serious" and 5 under "Minor." The decrease under "Serious" was chiefly due to there having been 6 accidents less on the East Indian Railway and 3 less on the South Indian Railway, while that under "Minor" was due chiefly to a decrease of 7 accidents on the Dibrugarh Railway.

6. There was a decrease of 66 accidents under "Goods trains or parts of goods trains, engines, &c., leaving the rails," of which 7 were under "Serious" and 59 under "Minor." Under "Serious" the only noticeable decrease occurred on the North-Western (State) Railway, viz., of 3 accidents. Under "Minor" there were decreases chiefly of 35 on the South Indian Railway, of 19 each on the Eastern Bengal (State) and Madras Railways, and of 15 on the East Indian Railway against increases of 11 on the North-Western (State) Railway, and of 12 on the Nizam's Guaranteed State Railway.

7. Of the increase of 15 accidents under "Trains running into stations or sidings at too high a speed," 4 each were contributed by the Eastern Bengal (State) and the Rajputana-Malwa Railways, and 2 by the North-Western (State) Railway. The increase on the Eastern Bengal (State) Railway was made up of 2 under "Serious" and of 2 under "Minor."

8. The number of cattle accidents was largest on the Southern Mahratta Railway, viz., 436; next to that line comes the South Indian Railway with 256; then the North-Western (State) and Eastern Bengal (State) Railways with 158 each; the Rajputana-Malwa Railway with 147; the East Indian Railway with 133; the Nizam's Guaranteed State Railway with 114; the Oudh and Rohilkhand (State) Railway with 108; the Great Indian Peninsula Railway with 91; and the Madras Railway with 81.

As compared with the average of 1891 and 1892, the chief increases were recorded by the Southern Mahratta, the Nizam's Guaranteed State, the Great Indian Peninsula and the Burma (Stat.) Railways and amounted to 45, 41, 32 and 30 accidents respectively.

In relation to train mileage run, the number was highest on the Nizam's Guaranteed State Railway, which gave an average of 1 accident in 5,951 train miles; the Dibru-Sadiya Railway coming next with an average of 1 in 6,393; then the Southern Mahratta, the South Indian, the Eastern Bengal (State) and the Bengal-Nágpur Railways with averages of 1 in 6,945, 1 in 12,500, 1 in 21,512 and 1 in 22,429 respectively.

The lowest number recorded relatively to train mileage run was on the Morvi Railway, viz., 1 in 157,982; the Bombay, Baroda and Central India Railway coming next with an average of 1 in 145,137; then the Great Indian Peninsula Railway with 1 in 105,259, the Gaekwar's Dabhoi Railway with 1 in 88,797, the East Indian Railway with 1 in 76,966 and the Darjeeling-Himalayan Railway with 1 in 70,512.

9. Under "The bursting of tubes, &c., of engines," there was an increase of 63 accidents, and of these 36 occurred on the Southern Mahratta Railway alone.

10. There was an increase of 36 accidents under "The failure of machinery, springs, &c., of engines." The largest increase took place on the Great Indian Peninsula Railway, which returned 107 against 19. This was, however, partially counter-balanced by decreases chiefly of 25 on the Bengal-Nágpur Railway and of 22 on the North-Western (State) Railway.

11. Under "The failure of axles," there was a decrease of 4 under "Serious" and of 17 under "Minor." The decrease under "Serious" was equally distributed over 4 railways, while that under "Minor" was due to a decrease of 6 each on the Bengal and North-Western, Dibru-Sadiya and Jorhát Railways.

12. "The failure of couplings" showed an increase of 35 accidents, of which the Dibru-Sadiya Railway was responsible for 20.

13. "The flooding of portions of permanent-way" showed an increase of 13 accidents under "Serious" and of 19 under "Minor." The increase under "Serious" was principally due to the number of accidents on the Bhávnagar-Gondal-Junágarh-Porbandar Railway having risen from 1 to 12, while under "Minor" the increase was contributed by the North-Western (State) and Southern Mahratta Railways, on which the accidents numbered 21 against 9 and 20 against 12 respectively.

14. The decrease of 18 accidents under "Slips in cuttings or embankments" was chiefly due to a falling off of 17 accidents on the Bengal-Nágpur Railway.

15. Under "Fire in trains," there was a decrease of 47 accidents, of which 2 were under "Serious" and 45 under "Minor." The decrease under "Minor" was chiefly due to the numbers recorded on the Great Indian Peninsula and Madras Railways having fallen from 49 to 19 and from 43 to 32 respectively.

16. The decrease under "Fire at stations or involving injury to bridges or viaducts" was accounted for by a falling off of 24 accidents on the Eastern Bengal (State) Railway.

17. Of the decrease of 54 accidents under the head "Other accidents," the East Indian Railway alone showed a reduction of 38.

18. The casualties to passengers and to servants in the employ of railways or of contractors from accidents not coming under the classification adopted in paragraph 1 were, as compared with the

average of 1891 and 1892, in the case of passengers, 63 killed and 184 injured against 60 killed and 176 injured, and in the case of servants, 162 killed and 525 injured against 174 killed and 559 injured. (For details, *vide* abstract No. 2.)

19. Compared with the average of the two previous years, the mean mileage open was 18,121 miles against 17,303 miles, the train mileage run amounted to

62,583,652 miles against 60,574,893 miles, and the number of passengers carried was 135,262,950 against 124,921,129. There were seven accidents for every 100,000 train miles run.

Statistical summary.

Out of a total of 135,262,950 passengers travelling, 51 passengers were killed and 84 injured by accidents to trains as classified in paragraph 1. This gives an average of one killed in 2,652,215 and of one injured in 1,610,273, or an average, on the total number of killed and injured, of one in 1,001,948 persons travelling and an average of one in 41,463,008 miles travelled.

Including casualties to passengers from causes other than accidents to trains, rolling stock, &c. (*vide* paragraph 18), the total numbers of passengers killed and injured were 114 and 268, respectively, giving an average of one killed in 1,186,517 and of one injured in 504,712, or an average, on the total number of killed and injured, of one in 354,091 passengers travelling.

20. The total casualties to persons from all causes including trespassers, cases of suicide, &c., were 626 killed and 979 injured against 634 killed and 1,007 injured, the average of the two previous years. (For details, *vide* abstract No. 2.)

Total casualties from all causes.

21. In addition to the above, 53 persons were reported to have been killed and 217 injured in yards, workshops, &c., and 750 persons to have died in carriages and at stations from causes unconnected with the working of trains.

Casualties in yards, workshops, &c.

22. Abstract No. 5 shows for the year 1893, as compared with the ten previous years, the proportion of passengers killed and injured while travelling on the several railways open for traffic in India from causes beyond their own control.

23. Abstract No. 6 shows the number of enquiries into train accidents on the several railways open for traffic in India, classified under certain heads, for the year 1893 as compared with the three previous years.

24. The accidents for the 4th quarter of 1893 are dealt with in the following note:—

Note on accidents for the 4th quarter of 1893.

The following table gives the number of accidents, as classified in paragraph 1 of the previous note, which resulted in loss of, or injury to, life and limb and shows the railways on which they occurred:—

Railway.	Number of accidents during the 4th quarter of 1893.	Passengers and others.		Servants.		Total.	
		Killed.	Injured.	Killed.	Injured.	Killed.	Injured.
East Indian	2	6	11	..	1	6	12
North-Western (State)	3	..	2	..	3	..	6
Madras	2	44	61	1	7	45	68
Bengal and North-Western	1	..	..	..	1	..	1
Rajputana-Malwa Railway	2	..	..	..	3	..	3
Total ..	..	50	64	1	15	51	79
Average of the two corresponding quarters of 1891 and 1892.	..	28	48	6	21	34	79

2. *East Indian Railway.*—On the 14th October 1893 as an up passenger train was about to leave Bariárpur station, 17 passengers were injured by the explosion of some fireworks which were being surreptitiously carried in a passenger's personal luggage. Six of the injured passengers, including the man who was alleged to have caused the accident, died of the injuries received.

The proportion of passengers killed and injured by train accidents from causes beyond their own control, as compared with the numbers travelling, was 1 killed out of 2,652,215 and 1 injured out of 1,610,261.

4. The casualties to servants in the employ of railways or of contractors from accidents to trains, &c., were 6 killed and 73 injured against 23 and 71 respectively, the average of the two preceding years. From causes other than accidents to trains, &c., the casualties were 162 killed and 525 injured against 174 killed and 559 injured.

5. With an increase of 4.73 per cent. in the mean mileage worked and of 3.32 per cent. in the train mileage run, it is observed that the total numbers of casualties from all causes over the whole of the Indian railway system, as compared with the average of two previous years, decreased under killed from 634 to 626 or by 1.26 per cent., and under injured from 1,007 to 979 or by 2.78 per cent.

Order.—Ordered, that this Resolution, with the abstract returns, be communi-

The Governments of Madras, Bombay, Bengal, North-Western Provinces and Oudh, and the Punjab.
The Chief Commissioners of the Central Provinces, Burma, and Assam.
The Resident at Hyderabad.
The Resident in Mysore.
The Agents to the Governor-General for Rajputana, Central India and Baluchistan.
The Director-General of Railways.
The Consulting Engineers to the Government of India for Railways, Calcutta, Central Division, Lucknow and Amara.
The Local Governments and Administrations and to the officers noted in the margin.

Ordered also, that copies be forwarded for the information of Her Majesty's Government.

Ordered further, that this Resolution, with the abstract returns, be published in the Supplement to the *Gazette of India*.

(Signed) L. G. PRICKETT,
Offg. Under Secretary.

ABSTRACT No. 1.

General Total.

NUMBER of persons reported, during the twelve months ending 31st December 1893, as killed or injured on all railways open for traffic in India, distinguishing between passengers, railway servants, and other persons and distinguishing also, in the case of the two former classes, between accidents caused by accidents to trains, rolling stock, permanent-way, &c., and accidents happening otherwise.

Passengers—		Killed.	Injured.
From accidents to trains, rolling stock, permanent-way, &c.	...	51	84
By accidents from other causes, including accidents from their own want of caution or misconduct	...	63	184
Servants—		6	73
From accidents to trains, rolling stock, permanent-way, &c.	...	162	525
By accidents from other causes, including accidents from their own want of caution or misconduct	...	12	8
Other persons—		255	95
Whilst passing over railways at level-crossings	...	70	5
Trespassers	...	7	5
Suicides	...		
Miscellaneous, not included in either of the above	...		
Total	...	626	979

ABSTRACT No. 2.

NUMBER of persons reported, during the twelve months ending 31st December 1893, as killed or injured in India by the travelling of trains or the movement of vehicles used exclusively upon railways, distinguishing between passengers, railway servants, and other persons, and classifying, as far as practicable, the nature and causes of the accidents occasioning the death or injury.

Serial Number.	Railways.	PASSENGERS.												SERVANTS.												OTHERS.												Serial Number.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
		From accidents to trains, &c.—see Abstracts Nos. 3 and 4.						From causes other than accidents to trains, &c.						From accidents to trains, &c.—see Abstracts Nos. 3 and 4.						From causes other than accidents to trains, &c.						From accidents to trains, &c.—see Abstracts Nos. 3 and 4.						From causes other than accidents to trains, &c.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
		Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	1. From falling between carriages and platforms.	2. Falling on to the platform, ballast, &c., when getting into or out of trains.	3. Whilst crossing the line at stations.	4. By the closing of carriage doors.	5. Falling out of carriages during the travelling of trains.	6. Other accidents.	Total.	Total passengers.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	1. During absenting operations.	2. Falling off engines, waggons, &c.	3. Coming in contact with overriders, &c., during the travelling of trains.	4. Coming in contact while shunting, with vehicles, &c., standing in adjoining lines.	5. Getting on or off trains, engines, &c.	6. Whilst loading, unloading of shunting.	7. Whilst breaking, spragging or chocking wheels.	8. Whilst working at cranes or capstans.	9. Whilst working on the permanent-way or in sidings.	10. Whilst walking along the line on the way to, or to work.	11. Whilst walking, crossing, or standing on the line.	12. Whilst passing between vehicles.	13. Whilst attending to the machinery of engines, &c.	14. Whilst attending to the machinery of trains, &c.		15. Whilst attending to gates at level crossings.	16. Falling or being caught between vehicles and platforms.	17. Falling off ladders, scaffolds, platforms, &c.	18. By falling of lamps, waggons, doors, timber, &c.	19. Whilst coupling or uncoupling waggons.	20. Miscellaneous.	Total.	Total servants.	Whilst passing over railways at level crossings.	Transports.	Sailors.	Miscellaneous.	Total others.	Total all classes.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
STANDARD GAUGE.		State lines worked by companies.		From accidents to trains, &c.—see Abstracts Nos. 3 and 4.		From falling between carriages and platforms.		From falling on to the platform, ballast, &c., when getting into or out of trains.		From falling over the line at stations.		From falling out of carriages during the travelling of trains.		Other accidents.		Total.		Total passengers.		From accidents to trains, &c.—see Abstracts Nos. 3 and 4.		From falling between carriages and platforms.		From falling on to the platform, ballast, &c., when getting into or out of trains.		From falling over the line at stations.		From falling out of carriages during the travelling of trains.		Other accidents.		Total.		Total servants.		Whilst passing over railways at level crossings.		Transports.		Sailors.		Miscellaneous.		Total others.		Total all classes.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
I	East Indian (a) ..	6	13	6	11	4	4	1	6	21	16	37	22	60	3	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

On the 19th December 1893, a trolley was run over between Rampore Haut and Nalhāti by a light engine which had only one red light on the buffer. The Inspector of Works who was using the trolley was seriously injured. The accident was due to the Inspector having mistaken the engine light for the Rampore Haut signal.

3. *North-Western (State) Railway.*—On the 3rd October 1893, an engine came in contact with a girder which was projecting from a truck standing in the Peebhāwar cantonment yard. Three coolies who were engaged in unloading the girder were slightly injured. The accident was due to the carelessness of the traffic staff.

On the 29th October 1893, the draw-bar hook of a third-class carriage attached to No 4 down mail was broken as the train was entering Ludhiāna station. The accident was caused by the guard of the train having suddenly applied the vacuum brake. A third-class passenger was slightly injured.

On the 14th November 1893, a horse, which was being carried in a horse wagon on a down goods train, jumped out of the train at mile 91½ between Ludhiāna and Sānahwāl, dragging with it the attendant who attempted to stop the animal. No injury was sustained by the horse, but the attendant was slightly hurt.

4. *Madras Railway.*—Owing to the sudden rise of the Periyapallam river, which runs close and parallel to the railway, a tributary stream, which crosses the railway through a 20-foot girder bridge at mile $\frac{320}{7}$ between Karaimadai and Periyannikanpalayam on the Nilgiri branch, was ponded back and washed away the ballast at mile $\frac{320}{10}$, leaving the rails suspended for a length of about 160 feet. A passenger train, which ran into the breach on the night of the 9th November 1893, was derailed and all but the three last carriages were telescoped. Forty-four passengers and one railway servant were killed and forty-seven passengers and three railway servants were injured. There was also considerable damage to rolling stock. A detailed report of this accident will be found in appendix A to the abstract returns of accidents.

On the 28th November 1893, No. 37 train, Madras to Raichur, which was awaiting the arrival of No 4 train from Raichur at Adoni station, was run into by the latter train owing to its having been turned into the platform line. Four passengers and four railway servants were injured.

5. *Bengal and North-Western Railway.*—On the 20th December 1893, an up mixed train ran through the gate at Uska bazar. A railway servant was injured.

6. *Rajputana-Malwa Railway.*—On the 2nd November 1893, an up mixed train parted between Farukhabad and Shamsabad stations. When the driver became aware of this, he brought the portion of the train attached to the engine to a stand and then backed, which resulted in a collision with the rear portion which was still in motion. Four wagons and the engine tender were derailed and considerably damaged, and the driver and the fireman were slightly injured. The collision was due to the driver not having taken the ordinary precautions to ascertain the position of the rear portion after the train had parted. The cause of the parting of the train could not be ascertained.

On the 22nd November 1893, a side collision took place at Brahmīvart station between the engine of an up passenger special train and a wagon standing foul of the crossing points. A railway servant was slightly injured.

7. In appendix B to the abstract returns of accidents will be found a report by the Government Inspector for Railways, Madras, on an averted collision on the South Indian Railway on the 3rd December 1893.

Resolution.—The Government of India notices that with an increase of 813 miles, or 4.73 per cent. in the mean mileage worked, and of 2,003,759 miles or 3.32 per cent. in the train mileage run, the number of accidents to trains, rolling stock, permanent-way, &c., on Indian railways shows an increase of 64 or 1.49 per cent. as compared with the average of 1891 and 1892.

2. The numbers of passengers killed and injured by accidents to trains, &c., were 51 and 64 respectively against 32 and 88, the average of the two previous years; while the numbers of passengers killed and injured from causes other than accidents to trains, &c., were 63 and 184 respectively against 60 and 176. It is observed that the increase in the casualties from train accidents was due to the serious accident which occurred at mile $\frac{320}{7}$ on the Nilgiri branch of the Madras Railway, a detailed report of which is given in appendix A.

3. Out of a total of 135,262,950 passengers travelling, there were 114 killed and 268 injured, or an average of 1 killed in 1,186,517 and of 1 injured in 504,712.

ABSTRACT No. 3.—Accidents to trains, rolling-stock, permanent-way, &c., reported during the twelve months ending 31st December 1893, as having occurred on the several railways open for traffic in India, distinguishing the different classes of accidents and the number of passengers and others and of railway servants killed or injured in each class of accident.

	I.—East Indian (a).										II.—Bengal-Nagpur.									
	No.		Accidents reported to Local Governments under section 83 of Act No. IX of 1890.		Number of passengers and others.		Number of railway servants.		Total all classes.		No.		Other accidents.		Total.		Killed.		Injured.	
1. Collisions between passenger trains or parts of passenger trains	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2. Collisions between passenger trains and goods or mineral trains	2	11	11	11	11	11	11	11	11	11	2	2	2	2	2	2	2	2	2	2
3. Collisions between passenger trains and parts of the line	3	9	9	9	9	9	9	9	9	9	1	1	1	1	1	1	1	1	1	1
4. Collisions between goods trains or parts of goods trains	4	17	17	17	17	17	17	17	17	17	1	1	1	1	1	1	1	1	1	1
5. Collisions between light engines	5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
6. Passenger trains or parts of passenger trains leaving the rails	6	10	10	10	10	10	10	10	10	10	1	1	1	1	1	1	1	1	1	1
7. Goods trains or parts of goods trains, engines, &c., leaving the rails	7	48	48	48	48	48	48	48	48	48	1	1	1	1	1	1	1	1	1	1
8. Trains or engines travelling in the wrong direction through points	8	7	7	7	7	7	7	7	7	7	1	1	1	1	1	1	1	1	1	1
9. Trains running into stations or sidings at too high a speed	9	13	13	13	13	13	13	13	13	13	1	1	1	1	1	1	1	1	1	1
10. Do. over cattle on the line	10	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
11. Do. over obstructions on the line	11	6	6	6	6	6	6	6	6	6	1	1	1	1	1	1	1	1	1	1
12. Do. through gates at level-crossings	12	32	32	32	32	32	32	32	32	32	1	1	1	1	1	1	1	1	1	1
13. The bursting of boilers of engines	13	2	2	2	2	2	2	2	2	2	1	1	1	1	1	1	1	1	1	1
14. The failure of tubes, &c., of engines	14	3	3	3	3	3	3	3	3	3	1	1	1	1	1	1	1	1	1	1
15. Do. of wheels	15	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
16. Do. of axle	16	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
17. Do. of brake apparatus	17	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
18. Do. of couplings	18	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
19. Do. of tunnels, bridges, viaducts, culverts, &c.	19	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
20. Broken rails	20	2	2	2	2	2	2	2	2	2	1	1	1	1	1	1	1	1	1	1
21. The flooding of portions of permanent-way	21	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
22. Slips in cutting or embankments	22	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
23. Fire in trains	23	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
24. Fire at stations or involving injury to bridges or viaducts	24	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
25. Fire at stations or involving injury to bridges or viaducts	25	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
26. Other accidents	26	14	14	14	14	14	14	14	14	14	1	1	1	1	1	1	1	1	1	1
Total all classes		341	341	341	341	341	341	341	341	341	16	16	16	16	16	16	16	16	16	16

(a) Includes the Delhi-Umballa-Kalka and Tarkapur railways. (b) Postal employé.

Abstract No. 3.—Accidents to trains, rolling-stock, permanent-way, &c., reported during the twelve months ending 31st December 1893, &c.—cont.

	III.—Indian Midland (e).						IX.—North Western (State) (d).					
	No.			Number of passengers and others.			No.			Number of passengers and others.		
	Accidents reported to the Indian Railways under section 83 of the Indian Railways Act, No. IX of 1890.	Other accidents.	Total.	Killed.	Injured.	Total all classes.	Accidents reported to the Indian Railways under section 83 of the Indian Railways Act, No. IX of 1890.	Other accidents.	Total.	Killed.	Injured.	Total all classes.
1. Collisions between passenger trains or parts of passenger trains	..	..	..	..	..	..	..	..	..	..	..	..
2. Collisions between passenger trains and goods or mineral trains, engines, and vehicles standing foul of the line ..	..	..	..	..	..	..	..	..	..	..	..	..
3. Collisions between goods trains or parts of goods trains ..	..	..	..	..	..	..	..	..	..	..	..	..
4. Collisions between light engines	..	..	..	..	..	..	..	..	..	..	..	..
5. Passenger trains or parts of passenger trains leaving the rails	..	..	..	..	..	..	..	..	..	..	..	..
6. Goods trains or parts of goods trains, engines, &c., leaving the rails	..	..	..	..	..	..	..	..	..	..	..	..
7. Trains or engines travelling in the wrong direction through points	..	..	..	..	..	..	..	..	..	..	..	..
8. Trains running into stations or sidings at too high a speed ..	..	..	..	..	..	..	..	..	..	..	..	..
9. Do. over obstructions on the line	..	..	..	..	..	..	..	..	..	..	..	..
10. Do. over obstructions on the line	..	..	..	..	..	..	..	..	..	..	..	..
11. Do. through gates on the level-crossings	..	..	..	..	..	..	..	..	..	..	..	..
12. The bursting of boilers, &c., of engines	..	..	..	..	..	..	..	..	..	..	..	..
12(a) Do. of tubes, &c., of engines	..	..	..	..	..	..	..	..	..	..	..	..
13. The failure of machinery, springs, &c., of engines ..	..	..	..	..	..	..	..	..	..	..	..	..
14. Do. of tyres	..	..	..	..	..	..	..	..	..	..	..	..
15. Do. of wheels	..	..	..	..	..	..	..	..	..	..	..	..
16. Do. of axle	..	..	..	..	..	..	..	..	..	..	..	..
17. Do. of brake apparatus	..	..	..	..	..	..	..	..	..	..	..	..
18. Do. of couplings	..	..	..	..	..	..	..	..	..	..	..	..
19. Do. of tunnels, bridges, viaducts, culverts, &c. ..	..	..	..	..	..	..	..	..	..	..	..	..
20. Broken rails	..	..	..	..	..	..	..	..	..	..	..	..
21. The flooding of portions of permanent-way	..	..	..	..	..	..	..	..	..	..	..	..
22. Slips in cuttings or embankments	..	..	..	..	..	..	..	..	..	..	..	..
23. Fire in trains	..	..	..	..	..	..	..	..	..	..	..	..
24. Fire at stations, or involving injury to bridges or viaducts ..	..	..	..	..	..	..	..	..	..	..	..	..
25. Other accidents	..	..	..	..	..	..	..	..	..	..	..	..
Total all classes	68	64	132	7	64	71	29	609	638	2	4	6

(e) Includes the Bhopal-Narai Railway. (d) Includes the Hyderabad-Umarkot, Rajpura-Bhatinda and Jammu and Kashmir railways. (c) Not passengers.

Abstract No. 3.—Accidents to trains, rolling-stock, permanent-way, &c., reported during the twelve months ending 31st December 1893, &c.—cont.

	XI.—Oudh and Rohilkhand (State)						XII.—Eastern Bengal (State) (e).					
	No.			Number of passengers and others.			No.			Number of passengers and others.		
	Accidents reported to the Indian Railways under section 83 of the Indian Railways Act, No. IX of 1890.	Other accidents.	Total.	Killed.	Injured.	Total all classes.	Accidents reported to the Indian Railways under section 83 of the Indian Railways Act, No. IX of 1890.	Other accidents.	Total.	Killed.	Injured.	Total all classes.
1. Collisions between passenger trains or parts of passenger trains	..	..	..	..	..	..	..	..	..	..	..	..
2. Collisions between passenger trains and goods or mineral trains, engines, and vehicles standing foul of the line ..	..	..	..	..	..	..	..	..	..	..	..	..
3. Collisions between goods trains or parts of goods trains ..	..	..	..	..	..	..	..	..	..	..	..	..
4. Collisions between light engines	..	..	..	..	..	..	..	..	..	..	..	..
5. Passenger trains or parts of passenger trains leaving the rails	..	..	..	..	..	..	..	..	..	..	..	..
6. Goods trains or parts of goods trains, engines, &c., leaving the rails	..	..	..	..	..	..	..	..	..	..	..	..
7. Trains or engines travelling in the wrong direction through points	..	..	..	..	..	..	..	..	..	..	..	..
8. Trains running into stations or sidings at too high a speed ..	..	..	..	..	..	..	..	..	..	..	..	..
9. Do. over obstructions on the line	..	..	..	..	..	..	..	..	..	..	..	..
10. Do. over obstructions on the line	..	..	..	..	..	..	..	..	..	..	..	..
11. Do. through gates on the level-crossings	..	..	..	..	..	..	..	..	..	..	..	..
12. The bursting of boilers, &c., of engines	..	..	..	..	..	..	..	..	..	..	..	..
12(a) Do. of tubes, &c., of engines	..	..	..	..	..	..	..	..	..	..	..	..
13. The failure of machinery, springs, &c., of engines ..	..	..	..	..	..	..	..	..	..	..	..	..
14. Do. of tyres	..	..	..	..	..	..	..	..	..	..	..	..
15. Do. of wheels	..	..	..	..	..	..	..	..	..	..	..	..
16. Do. of axle	..	..	..	..	..	..	..	..	..	..	..	..
17. Do. of brake apparatus	..	..	..	..	..	..	..	..	..	..	..	..
18. Do. of couplings	..	..	..	..	..	..	..	..	..	..	..	..
19. Do. of tunnels, bridges, viaducts, culverts, &c. ..	..	..	..	..	..	..	..	..	..	..	..	..
20. Broken rails	..	..	..	..	..	..	..	..	..	..	..	..
21. The flooding of portions of permanent-way	..	..	..	..	..	..	..	..	..	..	..	..
22. Slips in cuttings or embankments	..	..	..	..	..	..	..	..	..	..	..	..
23. Fire in trains	..	..	..	..	..	..	..	..	..	..	..	..
24. Fire at stations, or involving injury to bridges or viaducts ..	..	..	..	..	..	..	..	..	..	..	..	..
25. Other accidents	..	..	..	..	..	..	..	..	..	..	..	..
Total all classes	3	160	163	4	160	164	10	242	252	1	6	7

(e) Includes the narrow-gauge sections and the Bengal Central railways. (d) Not a passenger.

Abstract No. 3.—Accidents to trains, rolling-stock, permanent-way, &c., reported during the twelve months ending 31st December 1893, &c.—*cont.*

	XV.—East Coast (State).					XVIII.—Great Indian Peninsula (a).				
	No.		Number of passengers and others.		Total all classes.	No.		Number of passengers and others.		Total all classes.
	Local Government under section 83 of the Indian Railways Act, No. IX of 1890.	Other accidents.	Killed.	Injured.		Accidents reported to the Indian Railways under section 83 of the Indian Railways Act, No. IX of 1890.	Other accidents.	Killed.	Injured.	
1. Collision between passenger trains or parts of passenger trains ..	..	..	..	..	..	..	..	..	..	..
2. Collision between passenger trains and goods or mineral trains, engines, and vehicles standing foul of the line ..	..	..	..	..	..	..	..	..	..	..
3. Collision between goods trains or parts of goods trains ..	..	..	..	..	..	..	..	..	..	..
4. Collision between light engines ..	..	..	..	..	..	..	..	..	..	..
5. Passenger trains or parts of passenger trains leaving the rails ..	..	..	..	..	..	..	..	..	..	..
6. Goods trains or parts of goods trains, engines, &c., leaving the rails ..	..	..	..	..	..	..	..	..	..	..
7. Trains or engines travelling in the wrong direction through points ..	..	..	..	..	..	..	..	..	..	..
8. Trains running into stations or sidings at too high a speed ..	..	..	..	..	..	..	..	..	..	..
9. Do. over obstructions on the line ..	..	..	..	..	..	..	..	..	..	..
10. Do. through gates at level-crossings ..	..	..	..	..	..	..	..	..	..	..
11. The bursting of boilers of engines ..	..	..	..	..	..	..	..	..	..	..
12. The bursting of tubes, &c., of engines ..	..	..	..	..	..	..	..	..	..	..
13. The failure of machinery, springs, &c., of engines ..	..	..	..	..	..	..	..	..	..	..
14. Do. of tyres ..	..	..	..	..	..	..	..	..	..	..
15. Do. of wheels ..	..	..	..	..	..	..	..	..	..	..
16. Do. of axles ..	..	..	..	..	..	..	..	..	..	..
17. Do. of brake apparatus ..	..	..	..	..	..	..	..	..	..	..
18. Do. of couplings ..	..	..	..	..	..	..	..	..	..	..
19. Do. of tunnels, bridges, viaducts, culverts, &c., ..	..	..	..	..	..	..	..	..	..	..
20. Broken rails ..	..	..	..	..	..	..	..	..	..	..
21. The flooding of portions of permanent-way ..	..	..	..	..	..	..	..	..	..	..
22. Slips in cuttings or embankments ..	..	..	..	..	..	..	..	..	..	..
23. Fire in trains ..	..	..	..	..	..	..	..	..	..	..
24. Fire at stations, or involving injury to bridges or viaducts ..	..	..	..	..	..	..	..	..	..	..
25. Other accidents ..	..	..	..	..	..	..	..	..	..	..
Total all classes ..	2	16	18	..	..	2	360	363	..	47

(a) Includes the Wardha Coal, Dhond-Mannad, Khingou and Aurangabad railways.

Abstract No. 3.—Accidents to trains, rolling-stock, permanent-way, &c., reported during the twelve months ending 31st December 1893, &c.—*cont.*

	XIX.—Bombay, Baroda and Central India (a).					XX.—Madras.				
	No.		Number of passengers and others.		Total all classes.	No.		Number of passengers and others.		Total all classes.
	Local Government under section 83 of the Indian Railways Act, No. IX of 1890.	Other accidents.	Killed.	Injured.		Accidents reported to the Indian Railways under section 83 of the Indian Railways Act, No. IX of 1890.	Other accidents.	Killed.	Injured.	
1. Collision between passenger trains or parts of passenger trains ..	..	..	..	..	..	..	..	..	..	..
2. Collision between passenger trains and goods or mineral trains, engines, and vehicles standing foul of the line ..	..	..	..	..	..	..	..	..	..	..
3. Collision between goods trains or parts of goods trains ..	..	..	..	..	..	..	..	..	..	..
4. Collision between light engines ..	..	..	..	..	..	..	..	..	..	..
5. Passenger trains or parts of passenger trains leaving the rails ..	..	..	..	..	..	..	..	..	..	..
6. Goods trains or parts of goods trains, engines, &c., leaving the rails ..	..	..	..	..	..	..	..	..	..	..
7. Trains or engines travelling in the wrong direction through points ..	..	..	..	..	..	..	..	..	..	..
8. Trains running into stations or sidings at too high a speed ..	..	..	..	..	..	..	..	..	..	..
9. Do. over obstructions on the line ..	..	..	..	..	..	..	..	..	..	..
10. Do. through gates at level-crossings ..	..	..	..	..	..	..	..	..	..	..
11. The bursting of boilers of engines ..	..	..	..	..	..	..	..	..	..	..
12. The bursting of tubes, &c., of engines ..	..	..	..	..	..	..	..	..	..	..
13. The failure of machinery, springs, &c., of engines ..	..	..	..	..	..	..	..	..	..	..
14. Do. of tyres ..	..	..	..	..	..	..	..	..	..	..
15. Do. of wheels ..	..	..	..	..	..	..	..	..	..	..
16. Do. of axles ..	..	..	..	..	..	..	..	..	..	..
17. Do. of brake apparatus ..	..	..	..	..	..	..	..	..	..	..
18. Do. of couplings ..	..	..	..	..	..	..	..	..	..	..
19. Do. of tunnels, bridges, viaducts, culverts, &c., ..	..	..	..	..	..	..	..	..	..	..
20. Broken rails ..	..	..	..	..	..	..	..	..	..	..
21. The flooding of portions of permanent-way ..	..	..	..	..	..	..	..	..	..	..
22. Slips in cuttings or embankments ..	..	..	..	..	..	..	..	..	..	..
23. Fire in trains ..	..	..	..	..	..	..	..	..	..	..
24. Fire at stations, or involving injury to bridges or viaducts ..	..	..	..	..	..	..	..	..	..	..
25. Other accidents ..	..	..	..	..	..	..	..	..	..	..
Total all classes ..	1	92	94	..	..	3	137	140	..	59

(a) Includes the Gachwar's Petlad and the Goolbun-Ratham railways.

Abstract No. 3.—Accidents to trains, rolling-stock, permanent way, &c., reported during the twelve months ending 31st December 1893—cont.

XXVI.—Niam's Guaranteed State (a).										XXVIII.—Bengal and North-Western.			
No.	Number of passengers and others.		Number of servants.		Total all classes.		No.	Number of passengers and others.		Number of servants.		Total all classes.	
	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.		Killed.	Injured.	Killed.	Injured.		
Accidents reported to Local Government under section 43 of the Indian Railways Act, No. IX of 1900.	Other accidents.	Total.	Killed.	Injured.	Killed.	Injured.	Accidents reported to Local Government under section 43 of the Indian Railways Act, No. IX of 1890.	Other accidents.	Total.	Killed.	Injured.		
1. Collisions between passenger trains or parts of passenger trains ..	..	..	..	..	..	..	..	..	..	..	..		
2. Collisions between passenger trains and goods or mineral trains, engines, and vehicles standing foul of the line ..	..	..	..	..	..	..	..	..	..	..	..		
3. Collisions between goods trains or parts of goods trains ..	..	..	..	..	..	..	..	..	..	..	..		
4. Collisions between light engines ..	..	..	..	..	..	..	..	..	..	..	..		
5. Passenger trains or parts of passenger trains leaving the rails ..	3	3	..	..	..	..	..	3	3	..	..		
6. Goods trains or parts of goods trains, engines, &c., leaving the rails ..	11	13	24	..	..	..	..	8	8	..	..		
7. Trains or engines travelling in the wrong direction through points ..	..	4	4	..	..	..	..	41	41	..	..		
8. Trains running into stations or sidings at too high a speed ..	..	114	114	..	..	..	..	1	1	..	..		
9. Do. over cattle on the line ..	..	..	1	..	..	..	..	..	..	..	..		
10. Do. over obstructions on the line ..	..	..	..	..	..	..	..	..	..	..	..		
11. Do. through gates at level-crossings ..	..	..	..	..	..	..	..	..	..	..	..		
12. The bursting of boilers of engines ..	..	9	9	..	..	..	..	14	14	..	..		
13. Do. of tubes, &c., of engines ..	..	11	11	..	..	..	..	..	..	..	..		
14. The failure of machinery, springs, &c., of engines ..	..	..	..	..	..	..	..	..	..	..	..		
15. Do. of tyres ..	..	..	..	..	..	..	..	..	..	..	..		
16. Do. of wheels ..	..	..	..	..	..	..	..	..	..	..	..		
17. Do. of axle ..	..	..	..	..	..	..	..	..	..	..	..		
18. Do. of brake apparatus ..	..	..	..	..	..	..	..	..	..	..	..		
19. Do. of couplings ..	..	..	..	..	..	..	..	..	..	..	..		
20. Do. of funnels, bridges, viaducts, culverts, &c. ..	..	..	..	..	..	..	..	..	..	..	..		
21. Broken rails ..	13	1	12	..	..	..	..	..	..	..	..		
22. The flooding of portions of permanent-way ..	..	..	..	..	..	..	..	..	..	..	..		
23. Slip in cutting or embankments ..	..	1	1	..	..	..	..	..	..	..	..		
24. Fire in trains ..	..	..	..	..	..	..	..	..	..	..	..		
25. Fire at stations, or involving injury to bridges or viaducts ..	..	..	..	..	..	..	..	..	..	..	..		
26. Other accidents ..	3	3	4	..	..	..	..	6	6	..	..		
Total all classes ..	28	160	188	..	..	..	..	98	98	1	1		

Abstract No. 3.—Accidents to trains, rolling stock, &c., in the Province of the East Coast Railway.

(e) Includes the Deswada extension and the Berwada-Goddavari section of the East Coast Railway.

Abstract No. 3.—Accidents to trains, rolling-stock, permanent-way, &c., reported during the twelve months ending 31st December 1893, &c.—cont.

Abstract No. 3.—Accidents to trains, rolling-stock, permanent-way, &c., reported during the year 1900.

XXXV.—Rajputana-Malwa (a).										XXXVII.—Southern Mahratta (b).									
No.					Number of passengers and others.		Number of servants.			No.					Number of passengers and others.		Number of servants.		
Accidents reported to Local Government under section 83 of the Indian Railways Act, No. IX of 1900.					Total.		Killed.			Accidents reported to Local Government under section 83 of the Indian Railways Act, No. IX of 1900.					Total.		Killed.		
Other accidents.					Total.	Killed.	Injured.	Killed.	Injured.	Other accidents.					Total.	Killed.	Injured.	Killed.	Injured.
1. Collisions between passenger trains or parts of passenger trains ..	1	3	4	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
2. Collisions between passenger trains and goods or mineral trains, engines, and vehicles standing foul of the line ..	..	13	13	..	4	..	..	..	..	..	..	..	..	..	..	..	..	..	..
3. Collisions between goods trains or parts of goods trains ..	..	4	4	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
4. Collisions between light engines ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
5. Passenger trains or parts of passenger trains leaving the rails ..	..	2	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
6. Goods trains or parts of goods trains, engines, &c., leaving the rails ..	..	10	10	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
7. Trains or engines travelling in the wrong direction through points ..	..	6	6	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
8. Trains running into stations or sidings at too high a speed ..	..	147	147	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
9. Do. over cattle on the line ..	..	32	32	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
10. Do. over obstructions on the line ..	..	3	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
11. Do. through gates at level-crossings ..	..	12	12	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
12. The bursting of boilers of engines ..	..	28	28	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
13. Do. of tubes, &c., of engines ..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
14. The failure of machinery, springs, &c., of engines ..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
15. Do. of tyres ..	..	6	6	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
16. Do. of wheels ..	..	6	6	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
17. Do. of axle ..	..	51	51	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
18. Do. of brake apparatus ..	..	11	11	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
19. Do. of couplings ..	..	13	13	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
20. Do. of funnels, bridges, viaducts, culverts, &c. ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
21. Broken rails ..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
22. The flooding of portions of permanent-way ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
23. Slip in cutting or embankments ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
24. Fire in trains ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
25. Fire at stations, or involving injury to bridges or viaducts ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
26. Other accidents ..	..	10	10	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Total all classes ..	2	364	368	..	..	..	..	..	..	6	840	646	..	..	..	..	..	..	..

(a) Includes the Gachwar's Mchadna and the Palampur-Dera railways.

(b) Includes the Guntakal-Mysore frontier, the Southern Mahratta, Mysore section, Yeravapur-Mysore frontier, Mysore-Nanjangd and the Kodavar railways.

Abstract No. 3.—Accidents to trains, rolling-stock, permanent-way, &c., reported during the twelve months ending 31st December 1893, &c.—cont.

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11TH AUGUST 1894, No. 433 R., PUBLIC WORKS.

XLIV.—Burma (State).									
XL.—South India.					Total all classes.				
No.	Accidents reported to Local Government under section 83 of Act, No. IX of 1890.	Number of passengers and others.		Total.	No.	Number of passengers and others.		Total.	Injured.
		Killed.	Injured.			Killed.	Injured.		
1. Collisions between passenger trains or parts of passenger trains ..	..	..	..	..	..	..	..	..	..
2. Collisions between passenger trains and goods or mineral trains, engines, and vehicles standing foul of the line ..	..	..	..	..	..	..	..	..	..
3. Collisions between goods trains or parts of goods trains ..	..	..	..	..	..	..	..	..	..
4. Collisions between light engines ..	..	..	..	..	..	..	..	..	..
5. Passenger trains or parts of passenger trains leaving the rails ..	..	..	..	..	..	..	..	..	..
6. Goods trains or parts of goods trains, engines, &c., leaving the rails ..	..	..	..	..	..	..	..	..	..
7. Trains or engines travelling in the wrong direction through points ..	..	..	..	..	..	..	..	..	..
8. Trains running into stations or sidings at too high a speed ..	..	..	..	..	..	..	..	..	..
9. Do. over cattle on the line ..	..	..	..	..	..	..	..	..	..
10. Do. over obstructions on the line ..	..	..	..	..	..	..	..	..	..
11. Do. through gates at level-crossings ..	..	..	..	..	..	..	..	..	..
12. The bursting of boilers of engines ..	..	..	..	..	..	..	..	..	..
13. Do. of tubes, &c., of engines ..	..	..	..	..	..	..	..	..	..
14. The failure of machinery, springs, &c., of engines ..	..	..	..	..	..	..	..	..	..
15. Do. of tyres ..	..	..	..	..	..	..	..	..	..
16. Do. of wheels ..	..	..	..	..	..	..	..	..	..
17. Do. of axle ..	..	..	..	..	..	..	..	..	..
18. Do. of brake apparatus ..	..	..	..	..	..	..	..	..	..
19. Do. of couplings ..	..	..	..	..	..	..	..	..	..
20. Do. of tunnels, bridges, viaducts, culverts, &c. ..	..	..	..	..	..	..	..	..	..
21. Broken rails ..	..	..	..	..	..	..	..	..	..
22. The flooding of portions of permanent-way ..	..	..	..	..	..	..	..	..	..
23. Slips in cuttings or embankments ..	..	..	..	..	..	..	..	..	..
24. Fire in trains ..	..	..	..	..	..	..	..	..	..
25. Fire at stations, or involving injury to bridges or viaducts ..	..	..	..	..	..	..	..	..	..
26. Other accidents ..	..	..	..	..	..	..	..	..	..
Total all classes ..	7	346	353	1	1	131	132	7	2

Abstract No. 3.—Accidents to trains, rolling stock, permanent-way, &c., reported during the twelve months ending 31st December 1893, &c.—cont.

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XLV.—Deoghar.									
XLVI.—Dibrugarh.					XLVII.—Jorhat and Kumon (Company's section) (e).				
No.	Accidents reported to Local Government under section 83 of Act, No. IX of 1890.	Number of passengers and others.		Total.	No.	Accidents reported to Local Government under section 83 of Act, No. IX of 1890.	Number of passengers and others.		Total.
		Killed.	Injured.				Killed.	Injured.	
1. Collisions between passenger trains or parts of passenger trains ..	..	..	..	..	..	..	..	..	..
2. Collisions between passenger trains and goods or mineral trains, engines, and vehicles standing foul of the line ..	..	..	..	..	..	..	..	..	..
3. Collisions between goods trains or parts of goods trains ..	..	..	..	..	..	..	..	..	..
4. Collisions between light engines ..	..	..	..	..	..	..	..	..	..
5. Passenger trains or parts of passenger trains leaving the rails ..	..	..	..	..	..	..	..	..	..
6. Goods trains or parts of goods trains, engines, &c., leaving the rails ..	..	..	..	..	..	..	..	..	..
7. Trains or engines travelling in the wrong direction through points ..	..	..	..	..	..	..	..	..	..
8. Trains running into stations or sidings at too high a speed ..	..	..	..	..	..	..	..	..	..
9. Trains running over cattle on the line ..	..	..	..	..	..	..	..	..	..
10. Do. over obstructions on the line ..	..	..	..	..	..	..	..	..	..
11. Do. through gates at level-crossings ..	..	..	..	..	..	..	..	..	..
12. The bursting of boilers of engines ..	..	..	..	..	..	..	..	..	..
13. Do. of tubes, &c., of engines ..	..	..	..	..	..	..	..	..	..
14. The failure of machinery, springs, &c., of engines ..	..	..	..	..	..	..	..	..	..
15. Do. of tyres ..	..	..	..	..	..	..	..	..	..
16. Do. of wheels ..	..	..	..	..	..	..	..	..	..
17. Do. of axle ..	..	..	..	..	..	..	..	..	..
18. Do. of brake apparatus ..	..	..	..	..	..	..	..	..	..
19. Do. of couplings ..	..	..	..	..	..	..	..	..	..
20. Do. of tunnels, bridges, viaducts, culverts, &c. ..	..	..	..	..	..	..	..	..	..
21. Broken rails ..	..	..	..	..	..	..	..	..	..
22. The flooding of portions of permanent-way ..	..	..	..	..	..	..	..	..	..
23. Slips in cuttings or embankments ..	..	..	..	..	..	..	..	..	..
24. Fire in trains ..	..	..	..	..	..	..	..	..	..
25. Fire at stations, or involving injury to bridges or viaducts ..	..	..	..	..	..	..	..	..	..
26. Other accidents ..	..	..	..	..	..	..	..	..	..
Total all classes ..	..	..	..	..	..	..	..	..	..

(e) Includes the Rohilkhand and Kumon (Lucknow-Bareilly section).

Abstract No. 3.—Accidents to trains, rolling-stock, permanent-way, &c., reported during the twelve months ending 31st December 1893, &c.—cont.

	LV.—Jodhpore-Lichanpur.				LVII.—Bikaner-Godol-Jaipurab-Pothanar (a).				LXII.—Jorhat.			
	No.	Total.	Killed.	Injured.	Number of passengers and others.	Total all classes.	No.	Total.	Killed.	Injured.	Number of passengers and others.	Total.
1. Collisions between passenger trains or parts of passenger trains ..	1	1	1	1	1	1	1	1	1	1	1	1
2. Collisions between passenger trains and goods or mineral trains, engines, and vehicles standing foul of the line ..												
3. Collisions between goods trains or parts of goods trains ..												
4. Collisions between light engines ..												
5. Passenger trains or parts of passenger trains leaving the rails ..												
6. Goods trains or parts of goods trains, engines, &c., leaving the rails ..												
7. Trains or engines travelling in the wrong direction through points ..												
8. Trains running into stations or sidings at too high a speed ..												
9. Trains running over cattle on the line ..												
10. Do. over obstructions on the line ..												
11. Do. through gates at level-crossings ..												
12. The hauling of tubs, &c. of engines ..												
13. The failure of machinery, springs, &c., of engines ..												
14. Do. of tyres ..												
15. Do. of wheels ..												
16. Do. of axle ..												
17. Do. of brake apparatus ..												
18. Do. of couplings ..												
19. Do. of tunnels, bridges, viaducts, culverts, &c. ..												
20. Broken rails ..												
21. The flooding of portions of permanent-way ..												
22. Slips in cuttings or embankments ..												
23. Fire in trains ..												
24. Fire at stations, or involving injury to bridges or viaducts ..												
25. Other accidents ..												
Total, all classes ..	1	32	33	33	3	3	12	28	40	17	17	17

(a) Includes the Jodhpore-Bajkot railway.

Abstract No. 3.—Accidents to trains, rolling stock, permanent-way, &c., reported during the twelve months ending 31st December 1893, &c.—cont.

	LXIII.—Darjeeling-Himalayan.				LXVI.—Ocklaw's Dabhol.				LXVI.—Morvi.			
	No.	Total.	Killed.	Injured.	Number of passengers and others.	Total all classes.	No.	Total.	Killed.	Injured.	Number of passengers and others.	Total.
1. Collisions between passenger trains or parts of passenger trains ..												
2. Collisions between passenger trains and goods or mineral trains, engines and vehicles standing foul of the line ..												
3. Collisions between goods trains or parts of goods trains ..												
4. Collisions between light engines ..												
5. Passenger trains or parts of passenger trains leaving the rails ..												
6. Goods trains or parts of goods trains, engines, &c., leaving the rails ..												
7. Trains or engines travelling in the wrong direction through points ..												
8. Trains running into stations or sidings at too high a speed ..												
9. Trains running over cattle on the line ..												
10. Do. over obstructions on the line ..												
11. Do. through gates at level-crossings ..												
12. The bursting of boilers of engines ..												
13. The failure of machinery, springs, &c., of engines ..												
14. Do. of tyres ..												
15. Do. of wheels ..												
16. Do. of axle ..												
17. Do. of brake apparatus ..												
18. Do. of couplings ..												
19. Do. of tunnels, bridges, viaducts, culverts, &c. ..												
20. Broken rails ..												
21. The flooding of portions of permanent-way ..												
22. Slips in cuttings or embankments ..												
23. Fire in trains ..												
24. Fire at stations, or involving injury to bridges or viaducts ..												
25. Other accidents ..												
Total, all classes ..		7	7	7	2	2		7	7	7	1	13

ABSTRACT No. 4.

ACCIDENTS to trains, rolling stock, permanent-way, &c., on the several railways open for traffic in India reported during the twelve months ending 31st December 1893, distinguishing the different classes of accidents and the number of passengers and others and of railway servants killed or injured in each class of accident.

	Total.							
	Number.		Number of passengers and others.		Number of servants.		Total, all classes.	
	Accidents reported to Local Governments under section 83 of the Indian Railways Act, No. IX of 1890.	Other accidents.	Total.	Killed.	Injured.	Killed.	Injured.	Total.
1. Collisions between passenger trains or parts of passenger trains ..	4	1	5	..	9	..	5	14
2. Collisions between passenger trains and goods or mineral trains, engines, and vehicles standing foul of the line ..	6	23	29	..	..	(a) 2	..	2
3. Collisions between goods trains or parts of goods trains ..	7	80	87	..	4	..	3	7
4. Collisions between light engines ..	1	26	27	..	..	1	..	1
5. Passenger trains or parts of passenger trains leaving the rails ..	18	65	83	..	..	..	..	..
6. Goods trains or parts of goods trains, engines, &c., leaving the rails ..	15	281	296	..	..	..	..	..
7. Trains or engines travelling in the wrong direction through points ..	2	75	77	..	4	1	5	9
8. Trains running into stations or sidings at too high a speed ..	2	17	19	..	6	..	..	6
9. Trains running over cattle on the line ..	6	1,902	1,908	..	..	..	..	..
10. Do. over obstructions on the line ..	6	143	149	(b) 1	..	4	44	44
11. Do. through gates at level-crossings ..	..	48	48	..	..	3	..	3
12. The bursting of boilers of engines ..	1	182	183	..	..	..	..	..
12-a. Do. of tubes, &c., of engines ..	..	..	..	..	..	..	..	..
13. The failure of machinery, springs, &c., of engines ..	2	478	480	..	..	..	..	..
14. The failure of tyres ..	2	17	19	..	..	..	..	..
15. Do. of wheels ..	..	9	9	..	..	..	..	..
16. Do. of axles ..	1	23	24	..	..	..	..	..
17. Do. of brake apparatus ..	..	6	6	..	..	..	..	..
18. Do. of couplings ..	2	229	231	..	1	..	3	4
19. Do. of tunnels, bridges, viaducts, culverts, &c. ..	3	8	11	..	..	..	..	..
20. Broken rails ..	..	62	62	..	..	..	..	..
21. The flooding of portions of permanent-way ..	41	81	122	44	47	1	3	50
22. Slips in cuttings or embankments ..	8	28	36	..	..	..	..	..
23. Fire in trains ..	2	116	118	7	12	..	..	12
24. Fire at stations or involving injury to bridges or viaducts ..	1	27	28	(b) 2	..	..	3	2
25. Other accidents ..	9	178	187	..	1	..	..	4
Total, all classes ..	139	4,209	4,348	(c) 54	84	0	73	157

Mean mileage worked ..	..	..	..	..	18,121
Number of servants employed ..	..	..	..	..	190,953
Train mileage of all descriptions ..	..	..	..	..	62,583,682
Number of passengers carried ..	..	..	..	..	135,262,950
Passenger mileage ..	..	..	..	..	5,697,606,047
Per mile open—	..	..	..	..	..
Train mileage of all descriptions ..	..	..	..	..	3,454
Number of passengers carried ..	..	..	..	..	7,464
Passenger mileage ..	..	..	..	..	306,896
Total passengers—	..	..	..	..	0.377
Killed per million of passengers ..	..	..	..	..	0.621
Injured per do. ..	..	..	..	..	0.069
Killed per million of passenger miles ..	..	..	..	..	0.015
Injured per do. ..	..	..	..	..	..

(a) Includes one postal employé.

(b) Not passenger (a).

(c) Of these three were not passengers.

ABSTRACT No. 5.

PROPORTION of passengers killed and injured on the several Railways open for traffic in India from causes beyond their own control in passenger journeys for the years 1883 to 1893.

Year.	Number of passengers killed and injured from causes beyond their own control from accidents to trains.		Number of passenger journeys (inclusive of journeys by season ticket holders).	Proportion returned as killed and injured (from causes beyond their own control) to number carried.	
	Killed.	Injured.		Killed.	Injured.
1883 ..	2	46	85,098,953	1 in 22,449,476	1 in 1,415,193
1884 ..	11	60	73,815,119	1 in 6,710,465	1 in 1,476,302
1885 ..	4	33	80,864,779	1 in 20,216,194	1 in 2,450,447
1886 ..	4	43	84,416,318	1 in 29,478,773	1 in 2,056,659
1887 ..	3	62	94,411,779	1 in 23,852,444	1 in 1,638,900
1888 ..	4	26	101,156,013	1 in 61,678,008	1 in 3,967,639
1889 ..	2	155	110,402,393	1 in 4,089,977	1 in 712,273
1890 ..	27	135	113,828,810	1 in 4,189,448	1 in 4,743,700
1891 ..	1	24	122,611,345	1 in 113,828,810	1 in 908,232
1892 ..	56	42	127,330,914	1 in 2,189,448	1 in 3,029,307
1893 ..	8	84	135,262,950	1 in 15,903,964	1 in 1,810,261

ABSTRACT No. 6.

STATEMENT showing the number of enquiries into train accidents on the several Railways open for traffic in India, classified under certain heads, for the year 1893 as compared with three previous years.

Class of accident.	1890.	1891.	1892.	1893.
A.—From engines or vehicles meeting with obstructions or leaving the rails in consequence of obstructions or from defects in connection with the permanent-way or works ..	53	77	23	61
B.—From boiler explosions, failures of axle, wheels, or tyres, or from other defects in the rolling stock ..	47	99	58	54
C.—From trains entering stations at too great speed ..	..	..	..	2
D.—From collisions between engines and trains following one another on the same line of rails excepting at junctions, stations, or sidings ..	6	4	3	..
E.—From collisions at junctions ..	..	7	10	3
F.—From collisions within fixed signals at stations or sidings ..	23	16	..	..
G.—From collisions between engines or trains meeting in opposite directions ..	6	17	19	7
H.—From collisions at level-crossings of two railways ..	..	..	..	..
I.—From engines or trains being wrongly run or turned into sidings or otherwise through facing points ..	18	16	21	17
J.—On incline ..	..	6	1	3
K.—From trains on fire ..	16	21	7	17
L.—Miscellaneous ..	..	..	..	..
Total ..	170	262	142	154

APPENDIX A.

REPORT of the joint inquiry into an accident at 320/9 mile between Periyanaikanpalayam and Karaimadai on the Nilgiri branch of the Madras Railway held on the 10th November 1893.

Present.

F. R. Upcott, Esq., Government Inspector for Railways, Madras.
J. Sturrock, Esq., M.C.S., District Magistrate, Coimbatore.

Members of Committee.

H. R. P. Carter, Esq., Chief Engineer,—President.
F. W. Read, Esq., Traffic Manager.
A. Pilkington, Esq., Acting Locomotive Superintendent.

Description.

On the 9th November 1893, at 4 A.M., a lamentable accident occurred to the 6-45 No. 31 train at the 320/10 T.P. mile between Periyanaikanpalayam and Karaimadai on the Nilgiri branch of the Madras Railway, in which 39 third-class passengers were killed and 31 third-class passengers are known to have been injured; the under-guard of the train was also killed, but the driver, fireman, and the chief guard escaped with slight injuries.

2. This train leaves Madras at 6-45 one day and is due at Méttupálaiyam at 4-30 A.M. the following day. The train was within 7½ miles of its destination when the accident happened.

3. It was made up of seventeen vehicles in the order shown in the appendix (enclosure "E").

4. On reaching the 320th mile, while running at a speed of about 25 miles an hour, the train was suddenly derailed.

5. From the condition of the engine, the permanent-way, and the vehicles, also from the evidence of the staff, it is believed that for a short distance the engine kept the rails from under which the ballast had been washed for about 160 feet; that it was then derailed, sank into the ballast and came to a stand immediately. The sudden stop of the engine accounts for the manner in which the vehicles were telescoped and piled up, entirely blocking the line from fence to fence for a distance of 160 feet. All vehicles, except the last three, were derailed, and the greatest loss of life was in the three third-class carriages, which were the seventh, eighth, and twelfth vehicles on the train. There were no European or Eurasian passengers, and particulars regarding those killed will be obtained from the "finding" at the inquest held by the Sub-Magistrate not yet received (a).

Evidence.

The Resident Engineer, Mr. French, was an Assistant Engineer employed in the construction of the Nilgiri branch, and from 1891 he has from time to time been in charge of his present division. He states that he never saw a very high flood in the river Periyapallam, which runs parallel to the railway at the site of the accident, and he had never known any damage to the Nilgiri branch by floods since its construction.

His evidence shows that the highest previous flood mark was 6 feet at the bridge at 320/6, while there is a headway of 12 feet 6 inches. He was unable to give the height of the present flood pending investigation. Mr. French considered that the state of the weather did not render necessary any extra precautions for the protection of traffic.

2. The evidence of the Permanent-way Inspector Patton (a man with over 19 years' experience on the railway) was to the effect that he had never known a wash-away on the Nilgiri branch and that he did not consider it necessary to put on special men to patrol the line on the night of the 8th November.

3. The evidence of the gang maistry Armoogam and gangman Kooty is to the effect that they patrolled the line between the 318th and 321st miles between 9-30 P.M. and midnight. The statements of these men as to the time they were on the line are conflicting, but we believe that they did go over the line between 9-30 P.M. and 12 midnight. We do not believe that gang maistry Armoogam remained on the line all night at the 318th and 319th mile as stated by him, nor was it his duty to remain there.

The evidence of gangman Alagan was so contradictory and he was evidently so confused that we do not accept it as of any value.

4. The engine-driver and fireman gave evidence to the effect that the night was very dark and that there was a drizzling rain for a part of the journey. They noticed nothing unusual, and from the fact that at the time of the accident Fireman Leonard was standing on the buffer plank of the engine with his back in the direction in which the train was running, it was evident there was nothing to arouse suspicion in the minds of the train staff.

5. The evidence of the chief guard confirms that of the driver and his fireman.

6. Post office guard Ananthappa Mudali, who travelled in the post office van, stated that it was not raining when the accident happened and that no rain fell until daylight.

7. The evidence of Guard Gonsalves, who was in charge of the 21-25 train from Méttupálaiyam to Pódanúr on the night of the 8th November, and who passed over the railway at the 320th mile at about 10 P.M., is to the effect that his brake van ran smoothly throughout the journey. He also stated that a light rain was falling and that it was very dark. He did not observe the lights of any line watchmen.

Enclosure "D" of the appendix is a copy of the Chief Engineer's Circular No. 374 of 25th May 1880 regarding the employment of night watchmen during the monsoon, also copy of Circular No. E. 5/89, dated 3rd October 1891, issued by the Deputy Chief Engineer, and copy of Circular No. 1281, dated 2nd October 1893, from the Chief Engineer's office.

(a) It has been ascertained that 45 persons were killed and 60 injured in this accident.

Finding.

We find that the accident was due to the sudden rise of the water in the Periyapallam river. The water in this river, which runs close and parallel to the railway, dammed up the tributary stream which crosses the railway through a 20-foot opening at 320/6 mile, and the stream thus dammed ponded up on the eastern or up-stream side of the railway until the water rose sufficiently high to flow across the line at the lowest point, viz., at 320/9-10, washing away the ballast and leaving the rails suspended for a length of about 160 feet. The tributary stream is also used as a pathway.

The Periyapallam river takes its rise on the southern side of Karaimally hills many miles from the railway, and we are of opinion that this sudden flood unprecedented in the railway (and we believe other) records of the district was so rapid in its rise that had a line watchman been specially employed for the occasion he might have been at one end of his beat while the damage took place at the other end without his knowledge.

The police reported at the site of the accident that three persons had been drowned in the vicinity by this same flood before they could escape from a sheep pen. The local rainfall was small.

We find that no blame can be attached to any officer or servant of the railway in connection with this accident.

We recommend that steps be taken to so alter the condition of the line at this point as to make it absolutely safe in the event of a similar flood recurring.

(Signed) H. R. P. CARTER,
Chief Engineer.
(") F. W. READ,
Traffic Manager.
(") A. PILKINGTON,
Acting Loco. Suplt.

Evidence of George Arthur Fortescue French.

—I am a Resident Engineer of this division. I was an Assistant Engineer on the section on which the accident to the 6-45 occurred when the section was constructed. I never saw a very high flood in the river that runs parallel to the line at the scene of the accident, but it was notorious for rising quickly and flowing with great velocity. On the night of the 7th there was heavy rain at Pólanúr, and I believe it must have extended all over the adjacent country.

I did not think it necessary to take any extra precaution for the protection of the Nilgiri branch. I never heard of any damage by flood to the Nilgiri branch since the time of its construction. From 1891 I have been in charge of this division at intervals. I know of a circular issued by the Chief Engineer regarding night watchmen being employed during the monsoon. I received a reference to this circular from the Chief Engineer some time in October, and issued instructions with reference to it to all Inspectors in my division including the Nilgiri branch. The highest flood previously known is marked on the bridge and is about 6 feet above bed of stream; the headway of the bridge is about 12 feet. I believe the flood in the big stream flowing parallel to the line rose to such a height that the water backed up through the bridge at 320/6 and flowed back over the line at 320/9 to 11 washing ballast for that length. Had there been a night watchman, the accident might or might not have been averted. In this particular case I believe the damage was done so quickly and so shortly before the accident that the chances would be that the watchman, if employed, would not have averted the accident. I believe the water was

flowing over the line when the train rushed into the breach and that some of the passengers in the train were drowned. I don't think the water lay on the line, it merely flowed over. My first intimation that the accident had taken place was at about 6-40 on the morning of the 9th November 1893. I arranged for a special train to run to the scene of the accident with the least possible delay and it left Pólanúr at about 7-30. The injured passengers and as many as possible were put into it and taken to Coimbatore, where medical aid was waiting for them.

Question by the Consulting Engineer.—Since you have taken charge of the line have you ever considered it necessary to give personal instructions to put on night watchmen on the Nilgiri branch?

Answer.—No, I have not.

I should not know the night watchmen had been employed excepting through the pay sheets unless the inspector, as he generally would do, informed me verbally afterwards that he had employed them.

Question.—Has it been the custom to employ night watchmen on other divisions which you have had charge of?

Answer.—Yes; I have known them to be employed between Bangalore and Mallapuram from the 15th October to the 1st of December.

Question.—Would you recommend the permanent employment of night watchmen during the monsoon in place of its being left to the discretion of the Permanent-way Inspector to employ them?

Answer.—Personally I do not think that a night watchman is of much use.

Question.—Do you consider that a watchman temporarily employed on an emergency would be more likely to be vigilant than one so permanently employed?

Answer.—No; I consider the permanently employed man is better than a temporarily employed man.

Question.—By a temporary watchman do you mean a man taken from the gang?

Answer.—No.

Question.—Do you consider a man taken from the gang would do better than a temporarily employed man?

Answer.—No.

In answer to the question put by the Chief Engineer I am aware that the maistries are instructed to go on the line in suspicious weather, and that they in some cases do so; this refers to the Nilgiri branch as well as to the line generally; their assistance in protecting their own lengths is most valuable. I make a distinction between gang maistries and line watchmen.

Question by the Consulting Engineer.—Do you consider it was the gang maistry's duty under instructions given to him to have patrolled his length during the night of the accident?

Answer.—No; from the indications of the weather I did not think it was his duty to patrol the line that night.

James Fred. Patton, P. W. Inspector, gave evidence as follows:—I am Permanent-way Inspector in charge of Nilgiri branch and live at Pōdanūr. During the night of the 7th there was heavy rain extending from Pōdanūr to Coimbatore. Judging from the state of the line it extended to Tudiyalūr. On the day of the 8th there was slight rain at Coimbatore. I received a circular in the beginning of October ordering me to put on night watchmen in case of wet weather or heavy flood. I did not put on any night watchmen since the receipt of the circular. I issued orders to the section and gang maistries (verbal) to put on night watchmen whenever there was flood or wet weather. The watchmen are men from the gang, experienced.

Question by Consulting Engineer.—Did you consider the state of the weather or of the floods were such as to necessitate the employment of night watchmen from your previous experience of the line?

No.

Has there been formerly a wash-out on your section during your charge?

No.

Question.—Have you ever put on night watchmen before?

Yes.

I have been on the Nilgiri branch for this time nearly two years and before about three years, from 1881 to 1884.

Recalled.—Does this refer to the Nilgiri branch or the main line?

Answer.—On the branch once or twice and on the main line very often.

Armoogam, gang maistry, mile-stone 318 to 321.—I remember Wednesday, the day before, or of, the accident. There was no rain and no flood that day. I live at village of Gudalūr between the 317 and 318 stone and two telegraph posts away from the line. I have been gang maistry from three years since the branch was made, and I have never seen the streams in such flood as now. I have seen it as high as a man in some of the streams. I had no fear of any flood that day. I have received orders in case of heavy rain or flood to put on a watchman. I got these orders before this monsoon. I have before this often put on night watchmen.

On the night before the accident I left work at 6 o'clock in the evening with my gang, having been working at the 319th mile.

After leaving work I returned again at half past nine with two men, walked over my length, met the passenger train from Mēttupālaiyam. There was a slight drizzle and dark. I had a lantern. I walked on the bridge. I saw no water. I know that I have full power to put on a watchman without asking the Inspector. On coming back to the 318th/13 and 319th/2 mile I stayed there till daylight with two men, having some fear of this place. There was no rain during that night. I was at these places till the trains to west passed and I then went home for food. The two men with me were Kooty and Alagan. We had fog signals.

Cross-examination.—Although he had no fear of the place when the accident occurred, he thought the two places pointed out (318/13 and 319/2) were weak.

I have been in the habit of staying out myself but never drew extra pay for it. After taking food I returned again and walking along saw the accident. I met no person.

Re-examined and he adheres to his statement that he stayed on the line all night and that he sent both the men away.

Evidence of Gangman Kooty.—I am engaged in this branch since its opening. I live in the village of Gudalūr. Maistry left me at 6 o'clock at the 318th mile. I was returning to my house when it was raining. The maistry told me that, as it was drizzling, you had better go home, take your meals and return soon. After that myself, the maistry, and Alagan came over the line. After we went through our length we returned to our homes; it was at 12 o'clock. When the train was coming from Mēttupālaiyam I was at my house taking my meals. After going over the line with the maistry I and Alagan went home, and I slept and did not hear the train to Mēttupālaiyam passing. At about 6 in the morning, when I was going over the line with Alagan, I met a Muhammadan, and he told me that there was an accident and many were killed and injured and I only escaped. The maistry lives at the village of Naikanere, which is one-and-half miles distant from my house.

Evidence of Gangman Alagan.—I am a gangman and have been on the line for ten years. I live near the village of Periyanaikanpalayam at the 316th mile. On Wednesday I was working at the 319th mile. I stopped work at 6 o'clock, after that it commenced to rain from 6 to 1 o'clock. As it was raining, and seeing that ditches getting filled with water, I came on the line with the maistry at 1 o'clock in the night with a cooly. I never went for my food. I was on the line near a garden when the Mēttupālaiyam train passed. I was alone at the 319th mile. Maistry told me stay. The maistry and cooly were with me all night.

Re-examined and stated that the maistry and cooly were at the 319th mile all night.

Evidence of J. Ramasamy Naidu, Engine-driver.—I drove the engine of the 6-45 train from Pōdanūr on the morning of the 9th November. After leaving Periyanaikanpalayam, while coming to the 320-8 T.P. mile, I felt a severe jerk. Within a few seconds I was dashed up to the right side of the fire-box of my engine. The night was dark with drizzling rain. My head light was burning, but I could not see beyond 8 or 10 feet from where I stood. I heard no noise of running water, and there was nothing to lead me to suppose that the line was out of order.

Question by Consulting Engineer.—Did you drive the train from Mēttupālaiyam?

Question by Consulting Engineer.—What speed were you running?

I was running with steam off.

Question by Consulting Engineer.—When did you shut off steam?

I pulled the train out of the station and then shut off steam. After lighting my lamp and looking at my watch I found it was 4-5 o'clock. I was going at the rate of 22 to 25 miles an hour. I saw no lights exhibited by line watchman.

Evidence of Fireman Samuel Reardon.—I was fireman of the engine of 6-45 train which met with an accident at 320/8 mile on the morning of 9th November. I noticed nothing unusual on the journey, the night was dark and there was a drizzling rain I think from Coimbatore. After leaving Periyanaikanpalayam a short distance we shut off steam. My driver Ramasamy asked me to look at the motion bars of the engine. I walked along the splashers on the right hand side of the engine. I stopped between the driving and leading wheels to look at the motion bars and glands and then went up to the buffer beam. I looked at the head lamp which was burning. It was very dark at the time while I stood with my face to the head lamp. I felt two or three shocks when the accident happened. I had a lamp in my hand, and while using it I noticed water at the side of the line, but there was nothing in this to lead me to suppose there was anything

wrong with the line, nor did I feel anything until the accident happened. I had to hold on to the engine, but the shock threw me into a pool of water. Shortly before the shock I looked at the engine watch; it was nearly 4 o'clock.

Evidence of Guard Syed Ibrahim.—I was guard of the 6-45 train on the morning of 9th November. We left Pōdanūr four minutes late at 2-35. I observed that the night was a very dark one and there was a drizzling rain. I noticed nothing unusual with the line. We were four minutes late in leaving Periyanaikanpalayam. We left at 3-45.

At about 4 o'clock while running near 320th mile I felt a very heavy shock and was thrown from the caboose on the left hand side of the van to the brake which is on the other side of the vehicle. We were running at the usual speed, about 25 miles an hour. I could not see the next carriage to my van owing to the darkness. I saw no lights of line watchman and had no reason to suppose the line had been damaged by a flood.

After being thrown on to the brake I put it on "hard" as I thought the train had parted. After this I felt no subsequent shock. My under-guard had been killed and I could not communicate with the driver who was on the Karaimadai side. I therefore did my best to help the passengers. I protected my train by going back about three-quarters of a mile, where I placed a side lamp on the ground exhibiting a red light. I did not place any fog signals on the line.

I have worked trains as a guard for 29 years. I know that the rule states fog signals should be placed on the line, but no other train was on the branch.

Evidence of Ananthappa Mulali.—I was post office mail guard of the 6-45 train on the morning of the 9th November. I was sitting in the mail van in charge of the closed bags. I suddenly felt a shock and went to the side of the carriage. I opened the door and immediately a third-class carriage fell on to the side of the mail van, crushing in the side of the van; up to that time I had noticed nothing unusual about the line or the weather, except that it was a very dark night. After the mail van had turned over I scrambled out and remained there, guarding the mails until daylight. There was no rain when the accident occurred or until daylight.

Evidence of Chief Guard Ignatius John Gnanasekara.—I have been in the service of the Madras Railway as a guard for six years. I was chief guard of the 21-25 up train from Mēttupālaiyam to Pōdanūr on the night of the 8th November 1893. Throughout the whole journey there was light rain, and it was a very dark night. I did not see or hear any water near the railway, and I did not feel any slack in the road. My van ran smoothly. I did not see any watchmen's lights.

(APPENDICES A TO C.—Not printed)

APPENDIX D.—Abolition of night watchmen.

It has been decided to gradually abolish the existing staff of permanent night watchmen throughout the line, and to employ, during monsoon and stormy weather only, selected men from the permanent-way gangs, who will be paid the additional sum of two annas and eight pice (As. 2-8) for every night on which they remain on duty.

2. Engineers are therefore requested in future not to fill up any vacancies among night watchmen caused by death, transfer, resignation or dismissal; the length on which such vacancy occurs, being provided for by the Inspector, who will, on the approach of wet weather, arrange for a special gang cooly to perform the duties of the night watchman for as many nights as he considers necessary. In the dry season and in fair weather there will be no night watchman on such length.

3. Every effort should also be made to absorb the night watchmen among the gangs as rapidly as circumstances will permit, care being taken that the watchmen chosen to fill vacancies among gang coolies are physically fit and otherwise competent for the post.

4. Inspectors will take care that the cooly selected for the temporary watchman is duly instructed in his duties, and the nearest maistry to the length will be held responsible for the safe custody of the belt, pouch, fog signals, &c., which are in the possession of the existing watchman on this mile.

5. The additional payment for night duty will be included in the pay sheet for daily wages, but a remark should be entered stating the number of nights the man was retained as watchman, and this should be certified by the Inspector's signature.

25th May 1880.

(Signed) HENRY C. WEST,
for Chief Engineer.

No. E. 6/89.

Circular.

As the north-east monsoon is now imminent, I am desired by the Acting Chief Engineer to call your attention to paragraph 2 of Circular No. 374 of 25th May 1880, with reference to the employment of temporary night watchmen wherever necessary on your division.

You are requested to satisfy yourself that the several Inspectors are fully conversant with the provisions of the circular. I have to add that section maistries and gang maistries should be warned that they have full powers to put on a watchman, or keep out the whole gang if necessary, and that every available precaution should be taken to ensure the safety of trains.

MADRAS,
3rd October 1881.(Signed) HENRY C. WEST,
Acting Deputy Chief Engineer.

No. 1281.

Circular.

As the north-east monsoon is now imminent, the attention of Resident Engineers is called to Deputy Chief Engineer's Circular No. E. 5/89 of 3rd October 1881.

2nd October 1893.

(Signed) JOHN B. DUNCAN,
for Chief Engineer.

APPENDIX E.—Correct formation of train before accident happened.

Engine.	
W.C.G. 786.	C. 40.
" 991.	A. 20.
" 880.	D. 367.
" 782.	" 362.
I.C.G. 148.	" 246.
B. V. 133.	" 92.
D. 350.	" 56.
" 197.	B.V. 125.
L.M. 257.	

APPENDIX F.—Formation of train and particulars of damages to rolling stock.

Description of stock.	Nature of damage.	Estimated cost.
Six wheels coupled engine No. 77	... Slight damages	Rs. 1,000
" " " " " " " " " " " "	... Not damaged.	...
Wooden covered goods wagon No. 786	... Slightly damaged	50
" " " " " " " " " " " "	... Completely smashed	1,420
" " " " " " " " " " " "	...	1,420
" " " " " " " " " " " "	...	1,360
Iron " " " " " " " " " " " "	...	1,030
Six-wheeled brake van	...	2,750
Third-class carriage	...	2,580
" " " " " " " " " " " "	...	1,730
Composite mail van and third-class carriage.	...	1,980
Second-class carriage	...	2,680
First-class saloon	...	4,400
Third-class carriage	...	2,690
" " " " " " " " " " " "	... Body of vehicle completely destroyed.	1,500
" " " " " " " " " " " "	... Not damaged	...
" " " " " " " " " " " "	... Not derailed	...
" " " " " " " " " " " "	...	...
Four-wheeled brake van	...	...
Total ...		26,610

Finding by the Government Inspector for Railways.

The cause of the accident was the sudden and unprecedented rise of the Periyapallam river due to heavy rain in the adjacent hills which ponded back the waters flowing down the stream which crosses the line at 320/7 under a 20' girder. This stream being in flood at the same time from local rain, its waters were unable to discharge through the 20' bridge, and flowing along parallel to the embankment, flooded the valley between it and the high ground, and, between 320/9 and 320/10 where the bank is 4½ feet high, rose above the level of the top of the bank and flowed over it across the line, washing away the ballast from under the pot sleepers for about 160 feet.

3. The gradient was a falling one of 1 in 176 for 1,400' following a falling grade of 1 in 102, and the engine and train running at about 25 miles per hour derailed at or near 320/10, the engine stopping dead and sinking into the bank up to the axles. The pot sleeper road being ballasted with sand with a thin coating of stone is very liable to damage from water crossing the line, and, moreover, this type of road does not afford any support for a derailed train to run forward. This sudden stop accounts for the telescoping and extraordinary wreckage of the coaches. The time, as given in evidence of about 2 or 3 seconds between the first jolt and the dead stop, would not have been sufficient for any application of an automatic brake had there been one—not that this is any argument against its early introduction.

4. The documents show that since 1860 the patrolling of the line at night in cases of heavy rain and floods is left to the discretion of the Permanent-way Inspector and the headman of the permanent-way gang, and that these orders were duly received and understood by these men, extra men being employed for this duty.

5. I am of opinion that there was nothing in the local weather, or the state of the Periyapallam river, at the time to lead them to suppose there was any probability of the line being damaged, and this is supported by the fact that at no former period had there been any breach of the branch line, or such a high flood in the Periyapallam river. From the evidence given, I believe that the gang maistry with one other man at least, named Kooty, did go over the whole or part of his length some time between 1½ hours and midnight, although I agree with the railway officers that he did not remain out all night, Kooty's evidence being in my view the true version.

6. I find that no blame or criminal negligence can be imputed to any of the railway servants for this lamentable accident.

7. I recommend, instead of the present rule referred to in paragraph 4, that during heavy rain or floods at such places as the Chief Engineer may consider necessary, the head ganger should be instructed personally to inspect his length at night and be paid extra for this work. I entirely agree with Mr. French that the gang maistry is the only reliable man for this duty, as he knows his length and the places that require watching. He would of course have authority to turn out the whole gang if necessary.

8. To render this particular place safe against another wash-out, the line will require to be raised well above the present level between mile-posts 320 and 321, and provision made for carrying off any flood waters ponded up between the bank and high ground either by crossing it under the line or carrying it in an open cut into the Periyapallam river below where it now crosses the line.

9. Although I consider that the greatest promptitude was exhibited in affording relief by every department, orders appear necessary for the senior officer of any department to have the power to order out a relief train in the absence of the Traffic officer.

MADRAS,
15th November 1893.

(Signed) F. R. UPCOTT,
Senior Government Inspector for Railways.

APPENDIX B.

Report by C. T. R. SCOVILL, Esq., Government Inspector for Railways, on an averted collision on 3rd December 1893, between Pallavaram and Vandalur, on the South Indian Railway.

I have the honour to report that I attended the joint inquiry which was held on the 6th December at Pallavaram, South Indian Railway, to investigate the circumstances under which, on the 3rd instant, the 6-45 mail (No. 15) from Madras to Tuticorin met in the section between Pallavaram (mile 12-4) and Vandalur (mile 13-4) stations a special train approaching in the opposite direction. The trains were stopped some 2,000 feet from each other; no damage was consequently done.

The special, an empty train of new bogie vacuum brake stock, had left Cuddalore at 22-30 the previous night for Madras. The section of line where the two trains sighted each other is fortunately straight, and to this fact, as well as its being daylight, must be attributed the averted of a terrible disaster.

Description.

Trains are worked on the South Indian Railway on the *line-clear and ticket system*. The stations where scheduled trains are timed to cross or pass one another are noted in the working time-table, and no alteration from such meeting place is allowed except by the special orders of the District Traffic Managers. In the case of special or untimed trains such orders are passed for each crossing. The following telegrams were sent affecting the meeting of the trains in question:—

From the Assistant Traffic Manager, to all stations, Vandalur to Madras, dated 3rd December 1893, No. 121.

"The 22-30 special will follow No. 14 mail from Vandalur to Madras."

From the Assistant Traffic Manager, to Vandalur Stationmaster, dated 3rd December 1893, No. 121.

"The 22-30 special from Cuddalore Old Town will stop at your station to meet Nos. 13 and 15 trains to-day."

It will be noticed, therefore, that the special, on arrival at Vandalur, had to cross No. 13 (6 o'clock from Madras), allow No. 14 mail (1-11 from Cuddalore) to precede, and, after the arrival of No. 15 (6-15 from Madras), to follow No. 14 to Madras, Pallavaram being the usual meeting station for Nos. 14 and 15.

Owing to telegram No. 124 having been transmitted to the driver and guard of the special by a through wire and No. 121 by a local wire, No. 124 was delivered before No. 121.

The following are extracts from the Company's rules which bear on the occurrence:—

"4 (14) *Train following and caution ticket*.—Trains may follow one another between stations in the same direction under the following rules and in accordance with rule 339 (general rules).

(a) No train or engine shall be allowed to follow any other train or engine on the same line of rails within 10 minutes unless "line clear" has been received.

(b)

(16) In carrying out the orders in paragraphs 14 and 15, the "line clear" cannot, of course, be given for the second train that leaves before the arrival of the preceding one in the same direction at the next station, and therefore, in the event of a train following under the rules above quoted, the "train-out" message for the second train must be given to the next station in the direction in which the train is proceeding by using the following Forms Nos. 510 C and 510 D.

(18) *Train-signal message*.—As it is understood that signallers are in the habit of transmitting and receiving carelessly messages on Forms 427 A, B, C and D, they are warned that due care is required in writing all train messages in order to make them, as they should be always clear and legible.

(19) The sending station will give the station from and to with addressees in the form of a message and will then give clearly what is printed and written in the form of the sending station. These must be fully entered, just as sent, in the inwards book at the receiving station.

(20) All messages must be distinctly written out. It is not allowable for a signaller or a stationmaster to seek "line clear" or "answer" or give "train-out" report without having previously written and fully filled up the spaces provided for the purpose.

7. *Issue of alterations of meeting notices*.—The power of altering the meeting stations of trains is deputed to the Traffic Manager, District Traffic Superintendents and Train Inspectors.

(14) *Passing messages*.—It has been noticed that clerks-in-charge deal very carelessly with passing messages, viz., that, instead of writing them out themselves and only allowing the signallers to send them away, the signallers frequently write out the messages for the clerks-in-charge and trust to verbal intimation to the clerk-in-charge as to what they have done.

(15) This practice is very dangerous and renders it liable for a message to be received or forwarded without the knowledge of the clerk-in-charge and the danger of an accident being caused thereby.

(16) It is hereby notified that clerk-in-charge or (in the absence of a clerk-in-charge from his station) his deputy must receive and write out all messages relating to trains and signallers, must have nothing whatever to do with such messages beyond receiving or transmitting them on or from the wire and handing them over to, or receiving them from, the clerk-in-charge.

(17) It is also hereby notified that, in the event of any accident or risk of accident, if it is discovered that any other course but that described in paragraph 16 has been adopted, the clerk-in-charge or signaller or both will not only be dismissed but will render themselves liable to prosecution—*rule* paragraph 41 of this rule (No. 7).

Evidence.

Stationmaster K. Subroya Pillay of Vandalur.

—My service is about 7 years and 6 months. I have been at Vandalur about a year as a stationmaster. In connection with the meeting of No. 13 train and 22-30 o'clock special, and No. 15 train and the 22-30 o'clock special, I did not receive the meeting messages. All that I received are the two messages that I now produce marked A and B.

As my station being the usual meeting station for Nos. 13 and 14 trains, and as I received a message that 22-30 o'clock special will follow No. 14, I thought a meeting message for Nos. 13 and 22-30 o'clock special was not necessary. I started the 22-30 o'clock special at 7-24 on obtaining the usual line-clear message from Pallavaram, which I now produce marked C. The signaller, at about 7-36, informed me that No. 15 mail left Pallavaram at right time, i.e., 7-35. Then he showed me the meeting message marked E at about 7-37, stating that the meeting for Nos. 13, 15 and

22-30 o'clock special would pass at my station. The 22-30 o'clock special returned back to my station at 8-10 and No. 15 arrived at 8-15; 22-30 o'clock special then left my station for Pallavaram at 8-22.

Re-examined.—With reference to the guard's statement I handed over the line-clear ticket to the driver in the presence of the guard, I know it is against the rule; because the guard asked me to hand it over to the driver, I did.

Cross-examined.—No. 14 mail passed my station at 7-14. I wrote out the train-following message, Exhibit C, in my room. I personally handed the book to the signaller in the Telegraph office. I saw the signaller despatch it. I am quite sure about it. I was in the Telegraph office when the answer was received. I knew No. 14 had not arrived at Pallavaram when I started the 22-30 special. After No. 14 train had left my station I asked Pallavaram for line-clear for 22-30 special. Exhibit C is

the only form on which I asked line clear. When Pallavaram asks me line clear for any train, the signaller fills in the message as received in the train-signal message book. I fill in the part saying that the line is clear. The signaller fills in the train-out message. On the 3rd instant the signaller did not bring me any message from Pallavaram asking him line clear for No. 15. In Exhibit D the black-ink writing is the signaller's and the red mine. In No. 119 message received from Assistant Traffic Manager, Madras, it was stated that three trains would meet at my station. Next to this I received a message that the 22-30 o'clock special would follow No. 14. If I received notice that one train follows another, I understand that to mean that I should start the second train 10 minutes after the first. I know the mail train should have precedence over the special. I thought the mail train (No. 15) would be late, as I received the message ordering the special to follow No. 14. I wrote the red endorsement on Exhibit D at 7-36 before the train-out message was written by the signaller.

Signaller C. Muthusami Raju of Vandalur.—My service is about 9 months as a signaller, at Vandalur about 2 months. I came to duty at about 6 o'clock on the 3rd instant. I received the meeting message from Pallavaram for Nos. 13, 15 and 22-30 special at 6-20, and then I gave acknowledgment at 6-22. As soon as I received this message, I received another message from Pallavaram stating that the 22-30 o'clock special would follow No. 14 mail. Then I asked Pallavaram line clear for 22-30 o'clock special. He replied "Yes." At that time my assistant stationmaster was standing near me. The special was started under train following rules. After the special had left my station the signaller at Pallavaram gave me the train-out message for No. 15. I wrote that portion of the train-signal return as referring only to the train out from Pallavaram and not the portion concerning line-clear inquiry.

The 22-30 o'clock special then came back to my station, No. 15 followed it, and, after asking line clear, the special was started for the second time. I did not hand over the meeting message marked E to the stationmaster at the time I received it. After No. 15 mail had left Pallavaram station, I showed the message to him. It was I that acknowledged the meeting message—rule message marked F, now produced. It is in my hand-writing. I asked Pallavaram line clear for 22-30 special. Ten minutes after No. 14 had left me, i.e., at about 7-19, I asked Pallavaram line clear. He said "Yes." I filled up the return marked C and gave it to the stationmaster, who returned the return back to me with the entry on it that the train left at 7-24. I gave train out message to Pallavaram at 7-25. I am quite sure I did not give Pallavaram line clear for No. 15 mail. I do not know that the meeting messages should be handed over to stationmaster, and I did not think it a mistake to send the

acknowledgment in the name of the stationmaster written by me. I am not acquainted with this rule.

Cross-examined.—I swear I actually despatched the train-following message, Exhibit C, and received the reply from Pallavaram. I received no application for line clear for No. 15, but only received the train-out message. I wrote the train-out message for No. 15. When I wrote down the train-out message, the stationmaster had already written remarks in red ink. I began a new book that morning because the old one was finished. I have never received the train-out message before line clear was asked for previous to this. I was surprised to receive the train-out message before the inquiry for line clear.

Assistant stationmaster T. Veeraragava Chetty of Vandalur.—My service is 7 years, at Vandalur as assistant stationmaster 5 months. I was on night duty from 6 p.m. to 6 a.m. on the 2nd and 3rd instant. I was present at the station after I was relieved from 7-15 to 11 o'clock. The signaller brought a message No. 121 regarding the special to follow No. 14 mail; as soon as I came to the station after I was relieved I asked him what the message was. He told me it was to be delivered to the guard and driver of No. 14 mail. Accordingly the stationmaster delivered it to the guard and driver and started No. 14 right time and asked the signaller to ask Pallavaram line clear for the 22-30 o'clock special to start her under the train-following system. The signaller at once obtained line clear from Pallavaram at about 7-21 or 22. The stationmaster started the special at 7-24 under train-following rules. The stationmaster filled in his portion of the return asking Pallavaram for line clear for the special in my presence.

The signaller sent this message to Pallavaram and obtained line clear in my hearing. After the departure of the special, when I was issuing tickets for No. 15 mail, the signaller, at about 7-40, brought a message to the stationmaster telling that the mail No. 15 and the 22-30 special were to meet at Vandalur.

I saw the message. It was marked therein 6-20, as being the time received at Vandalur. I was on duty up to 6 o'clock and I did not receive the meeting message.

The stationmaster did not give the line-clear ticket to the guard of 22-30 o'clock special. But, when he was going to deliver the ticket to the driver, the guard came quick from the spot where he stood, which was about 12 yards distant. The ticket was given to the driver by the stationmaster.

I did not see or hear the guard asking the stationmaster to hand over the ticket to the driver.

Cross-examined.—I generally come back to the station after I am relieved to see the trains. Between 7-20 and 7-40 I was in the Telegraph office. I myself saw the station-

master write the train following message, Exhibit C. I heard the instrument working and the signaller was at it all the time. I mean the Pallavaram instrument. I did not hear Pallavaram ask for line clear for No. 15. I am quite sure that Pallavaram did not ask for line clear. I heard the instrument working when the train following message was being transmitted, but I did not hear it work at any other time.

Driver H. E. Goddard.—My service is 2 years. While working 22-30 o'clock special from Cuddalore Old Town to Egmore on 3rd December 1893, at Chingleput, I received a passing order to pass Nos. 13 and 15 trains at Vandalur. When at Guduvancheri station, I got a message to follow No. 14 mail train from Vandalur. Coming into Vandalur I shunted into the siding to let No. 13 train, also in siding, to pass No. 14 mail train.

After No. 13 train had cleared away, the stationmaster and guard both came to me with line-clear ticket, and, getting all right from both, I started away to follow No. 14 mail train to Pallavaram.

Nearing mile 15-12, I saw in front of me a train which I found to be No. 15 train. I at once whistled out for brakes and brought my train to a stop as soon as possible at mile 15-7. Stopped 7-38 o'clock, backed 7-42 o'clock, got into Vandalur at 8-10 o'clock, reported and started away again with a now-line clear ticket at 8-22 o'clock.

Cross-examined.—At Chingleput I received notice to pass Nos. 13 and 15 at Vandalur and at Guduvancheri I received message No. 121. Having received this message No. 121, I was not surprised when the stationmaster, Vandalur, brought me the line-clear ticket with a caution message on it. It was about 10 minutes after the departure of No. 14 that I started. The time I actually started is 7-24.

Guard B. Manikam.—I received the first order to pass Nos. 13 and 15 at Vandalur at Chingleput. On arrival at Vandalur, after having finished what I had to do there, I ordered my train to be brought to the siding to pass No. 13 mail. No. 13 mail arrived and it was also brought to the siding in order to clear the line for No. 14 mail. No. 14 mail, being a non-stopping train, went through; it was on or after the departure of No. 14 mail I received the order to follow No. 14 mail from Vandalur. The stationmaster of Vandalur delivered the line-clear ticket to the driver of my train without my knowledge and started the train. It did not strike me then that I had to pass No. 15 mail also at Vandalur.

Cross-examined.—I received copy of message No. 121 at Vandalur. Having received No. 121 message previous to 121, I thought that the latter cancelled the former.

Stationmaster M. Subbarami Naidu of Pallavaram.—My service is 18 years, at Pallavaram 1 year and 7 months as stationmaster. At 6 o'clock I came on duty on the 3rd instant. As soon as I came on duty, I received the running order of the 22-30 o'clock special from my assistant stationmaster. At the same time I saw the passing messages for 22-30 special and Nos. 13 and 15 trains meeting at Vandalur being sent to that station. It was about 6-10 when I examined these messages on the file. The message under reference, i.e., meeting message No. 124, was one of those that were filed after being transmitted with the times entered on them. The message now produced is the original marked G. Next to this message I saw on the file message marked H, which is an acknowledgment to the meeting message marked G. After starting No. 13 on the usual line clear, attended to Nos. 15 and 14. Previous to this I received Assistant Traffic Manager's No. 121 regarding the 22-30 o'clock special following No. 14 from Vandalur. I prepared the line clear required for No. 15 after the arrival of No. 14 and sent to the signaller's office, who returned the same that the line was clear. Train signal book here produced marked I. I then started No. 15 at 7-33 and sent the train signal book to the signaller's office to give train-out message. About 2 or 3 minutes after, my signaller came running to me and informed me that Vandalur says that the 22-30 o'clock special had left his station. I exhibited at once danger signals to stop No. 15 mail, but it was of no use as the train advanced about a mile from the station. Yet I sent my men along the line to stop the train, if possible, by exhibiting signals. At the same time the driver of No. 56 train was standing there, and when informed of this gave danger whistles. Afterwards I secured all line clear books and used new ones and advised the occurrence by telegrams.

I gave Vandalur line clear for 22-30 o'clock special at 8-21, exhibit marked J. The first intimation I knew of the 22-30 o'clock special was when the signaller came running to me and told me that the special had left Vandalur after I had started No. 15 mail. No line clear was asked for and given to 22-30 o'clock special until 8-21.

Signaller K. V. Narasimma Aiyar of Pallavaram.—Service 2 years 3 months, at Pallavaram 10 months. At 6 o'clock I came on duty on the 3rd. When I came on duty I examined all messages that were in the file. I saw the meeting message for 13, 15 and 22-30 special, also the acknowledgment. After the arrival of No. 14 mail I, as usual, received the train-signal message as book filled in by the stationmaster to ask Vandalur line clear for No. 15 mail. I asked Vandalur line clear. He gave "Yes. Line is clear." About 7-34 it was. I sent it to the stationmaster who returned it back to me at about 7-36. I gave train out at 7-36. When I gave the train-out message

Vandalur asked line clear for 22-30 special. I said "No." After I gave out time Vandalur gave special-out message. Vandalur first asked me if the line was clear and said the special left him. About 7-48 Vandalur signalled the special-out message. Immediately I went and reported to the stationmaster. I am quite sure Vandalur did give me line clear at about 7-34 for No. 15 mail. About 8-20 Vandalur asked me line clear for 22-30 o'clock special. I then asked him to give the time of arrival of No. 15 mail. He gave me 8-15. Then I gave line clear after getting the return marked J from the stationmaster at 8-21 and I received the special-out message at 8-22.

Cross-examined.—After No. 14 train had left Vandalur, I received no following message for the special train. After I signalled No. 15 out, the signaller at Vandalur told me that the special had already left; at once I told the stationmaster. When I signalled the train-out message, Vandalur signaller asked me "Is line clear for 22-30 special?" I said "No." See the train-out message.

M. Mahomed Batcha, Porter of Pallavaram.—Service about 6 years. About 3 years at this station as a pointsman. I remember carrying the train-signal message book from the stationmaster to the Telegraph office on the morning in question.

Conclusion.

On inspecting the train-signal books, of which there are no less than 12 at each station, six of these being in constant use, I found in the Vandalur books that the train-following message for the special, its acknowledgment [according to rule 4 (16) repetition from Pallavaram] and the train-out message were correctly written out with times, &c., as having been transmitted, but that no entries of any kind whatsoever were to be found in the corresponding book at Pallavaram, nor was there any indication of a leaf having been torn out of this latter book. It is therefore evident that the train-following notice was not sent from Vandalur to Pallavaram. Similarly, on examination of the Pallavaram "line-clear" message book, the message asking for "line-clear," its acknowledgment (or grant of "line-clear") from Vandalur and the "train-out" message for No. 15 mail were duly entered with times of transmission and receipt, but no entries were to be found in the corresponding book at Vandalur, except the "train-out" message; the upper part of the page on which the request and grant of "line-clear" should have been entered being blank, but with a remark in red ink signed by the stationmaster of Vandalur to the effect that these messages had not passed. The times of transmission and receipt of these messages as entered in the Pallavaram book were as follows:—

"Line-clear" asked at 7-34 (the correct time of arrival of No. 14 mail from Vandalur). "Line-clear" received 7-35. Train started at 7-35 (correct time) signalled at 7-36.

I had the request for and grant of "line-clear" signalled in my presence and giving no time for the stationmaster to write his reply as required by rule, the operation occupied 2 minutes and 10 seconds. Now allowing 2 minutes for the person to carry the book from the platform to the signal office and back to the stationmaster (as stated by him in evidence) and after the stationmaster had written or signed the driver's ticket, to carry the latter to the driver, it is evident 4 or even 5 minutes is the least time that is required between the arrival and departure of two crossing trains if the "line-clear" ticket is to be genuine instead of 1 minute as in this case.

Although the special left Vandalur at 7-24, the out-message was not signalled till 7-34. It is impossible to believe that had it been intimated to the stationmaster, Pallavaram, a man of 18 years' experience, that the special had been started, he would have despatched No. 15 mail.

I am therefore of opinion that the stationmaster, Vandalur, relying on telegram No. 121, and not having received No. 124, thought it was understood by Pallavaram that the special would follow No. 14 mail at 10 minutes' interval and started the train on a false ticket; that the stationmaster, Pallavaram, relying on telegram No. 124, thought No. 15 mail was to start as usual immediately No. 14 mail had cleared the section, and that after he had despatched the train and was giving the out-message, which I believe to be the only message usually transmitted and which is mutually understood to be the signal to fill up the whole page referring to the particular trains signalled, he was immediately informed by Vandalur that the special had started. I therefore find the station masters of Pallavaram and Vandalur are both criminally responsible for starting each train on a false ticket and should be prosecuted. I further consider the signaller of Vandalur guilty of neglect of rule 7 (17) quoted above, and also, together with the signaller of Pallavaram, guilty of making false entries in their respective books.

The station staff generally do not recognize that it is their duty to delay trains rather than start them to time on false tickets, and I am of opinion that any reasonable delay arising from this cause should not be regarded as an offence and should always be passed over. I consider that with the line-clear and ticket system as worked on the South Indian Railway 4 minutes is the minimum time that should be allowed at crossing stations between the arrival and departure of trains from and to the same section. I absolve the running staff of both trains from blame, that of the special being evidently completely misled by, I consider, the unnecessary telegram No. 121.

This occurrence, coming so soon after the similar case at Vaiyampati and which formed the subject of a special report to Government, would seem to demonstrate the unreliability of the "line-clear and ticket" system.

MADRAS,
15th January 1894.

(Signed) C. T. R. SCOVELL,
Government Inspector of Railways.

I agree with the above. Sufficient time must be allowed to work the line-clear system if it is to be relied on.

MADRAS,
1st February 1894.

(Signed) F. R. UPCOTT,
Senior Government Inspector of Railways.

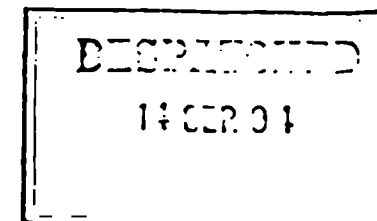
ORDER—dated 11th August 1894, No. 433 R., Public Works.

Communicated to the Agents, Madras and South Indian Railways, for information.

(True Extract.)

Captain, R.F.,
Under Secy. to Govt., P.W.D.,
Railway Branch.

To the Agent and Manager, Madras Railway.
" Agent, South Indian Railway.
Editors' Table.



Ed. C. A. Maniawamy.
Bpare Copies

RAILWAY.

Gobt. of {1894} Madras.
PUBLIC WORKS.

Dated August, 11th.

Recd.

Encl.

G.O., 11th Aug. 1894, No. 433 R.

AUGUST.

Accidents on Indian Railways

Resolution of the Government of India in regard to the returns of — for the twelve months ending the 31st December 1893, communicated to the Agents, Madras and South Indian Railways.

No. 293 R. Stat.

GOVERNMENT OF INDIA.

PUBLIC WORKS DEPARTMENT.

RAILWAY STATISTICS.

Simla, the 30th July 1894.

Returns of Accidents on Indian Railways for the twelve months ending
the 31st December 1893.

Read again—

Public Works Department Resolution No. 402 R. Stat., dated the 31st August 1892.

Public Works Department Resolution No. 300 R. Stat., dated the 3rd August 1893.

Read also—

Note by the Director General of Railways, No. 299 Stat., dated the 17th July 1894, with abstract returns of accidents to trains, &c., on the open lines of railways in India for the twelve months ending the 31st December 1893.

OBSERVATIONS.—The following summary gives the total number of accidents
Summary of accidents to to trains, rolling stock, permanent-way, &c., for the
trains, rolling stock, &c. twelve months ending the 31st December 1893, dis-
tributed under the classification adopted in Abstract No. 4 of the returns :

Serial No.	CLASSES OF ACCIDENTS.	AVERAGE NUMBER OF ACCIDENTS DURING 1901 AND 1902.			TWELVE MONTHS ENDING THE 31st DECEMBER 1893.								
					NUMBER.			NUMBER OF PASSENGERS AND OTHERS.		NUMBER OF SUBJECTS.		TOTAL ALL CLASSES.	
		Accidents reported to Local Govern- ments under section 43 of the In- dian Rail- ways Act (IX of 1900).	Other acci- dents.	Total.	Accidents reported to Local Govern- ments under section 43 of the In- dian Rail- ways Act (IX of 1900).	Other acci- dents.	Total.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.
1	Collisions between passenger trains or parts of passenger trains	5	6	11	4	1	5	...	9	...	5	...	14
2	Collisions between passenger trains and goods or mineral trains, engines and vehicles standing foul of the line	22	32	54	6	23	29	...	...	...	(a) 3	...	3
3	Collisions between goods trains or parts of goods trains	12	80	92	7	80	87	...	4	...	3	...	7
4	Collisions between light engines	2	29	31	1	26	27	...	...	...	1	...	1
5	Passenger trains or parts of passenger trains leaving the rails	29	70	99	18	65	83	...	...	...	...	...	...
6	Goods trains or parts of goods trains, engines, &c., leaving the rails	22	210	332	13	281	296	...	...	...	...	...	...
7	Trains or engines travelling in the wrong direction through points	5	63	68	2	75	77	...	4	1	5	1	9
8	Trains running into stations or sidings at too high a speed	...	4	4	2	17	19	...	6	...	...	...	6
9	Trains running over cattle on the line	6	1,824	1,830	6	1,822	1,828	...	...	...	...	...	...
10	Trains running over obstructions on the line	8	117	125	6	142	148	(b) 1	...	4	44	5	46
11	Trains running through gates at level-crossings	2	37	39	...	48	49	...	...	...	3	...	3
12	The bursting of boilers of engines	...	...	...	...	...	...	...	...	...	...	...	...
12 (a)	The bursting of tubes, &c., of engines	...	120	120	1	182	183	...	...	...	...	...	...
13	The failure of machinery, springs, &c., of engines	...	444	444	2	478	480	...	...	...	...	...	...
14	The failure of tyres	1	13	13	2	17	19	...	...	...	...	...	...
15	" " of wheels	...	5	5	...	9	9	...	...	...	...	...	...
16	" " of axles	5	50	55	1	33	34	...	...	...	...	...	...
17	" " of brake apparatus	...	5	5	...	5	5	...	...	...	...	...	...
18	" " of couplings	2	194	196	2	229	231	...	1	...	3	...	4
19	" " of tunnels, bridges, viaducts, culverts, &c.	5	3	8	3	5	8	...	...	...	...	...	...
20	Broken rails	...	67	67	...	62	62	...	...	...	...	...	...
21	The flooding of portions of permanent-way	29	62	91	41	81	122	41	47	1	3	45	50
22	Slips in cuttings or embankments	9	45	54	...	24	36	...	...	...	...	...	...
23	Fire in trains	4	161	165	2	116	118	7	12	...	...	7	12
24	Fire at stations, or involving injury to bridges or viaducts	2	58	60	1	37	38	(b) 2	...	...	...	2	...
25	Other accidents	10	229	239	9	176	185	...	1	...	3	...	4
TOTAL FOR THE TWELVE MONTHS ENDING THE 31st DECEMBER 1893		...	...	...	139	4,209	4,348	(c) 54	84	6	73	60	157
AVERAGE OF 1901 AND 1902		...	...	...	178	4,108	4,254	37	95	23	71	60	168

(a) Includes one postal employé.

(b) Not passenger(s).

(c) Of these, three were not passengers.

2. As compared with the average of 1901 and 1902, the number of accidents to trains, rolling stock, permanent-way, &c., during the year 1903 shows an increase of 64, or of 1.49 per cent., with an increase of 818 miles or of 4.73 per cent. in the mean mileage worked, and of 2,008,750 miles or of 3.32 per cent. in the train-mileage run.

3. The chief variations occurred under "Collisions between passenger trains and goods or mineral trains, engines and vehicles standing foul of the line," 20 against 54; "Passenger trains or parts of passenger trains leaving the rails," 83 against 98; "Goods trains or parts of goods trains, engines, &c., leaving the rails," 296 against 362; "Trains running into stations or sidings at too high a speed," 19 against 4; "Trains running over cattle on the line," 1,998 against 1,830; "The bursting of tubes, &c., of engines," 183 against 120; "The failure of machinery, springs, &c., of engines," 450 against 444; "The failure of axles," 34 against 55; "The failure of couplings," 231 against 196; "The flooding of portions of permanent-way," 122 against 90; "Slips in cuttings or embankments," 38 against 54; "Fire in trains," 118 against 105; "Fire at stations, or involving injury to bridges or viaducts," 38 against 58; and "Other accidents," 185 against 259.

4. "Collisions between passenger trains and goods or mineral trains, engines and vehicles standing foul of the line" showed a decrease of 23 accidents, viz., 16 under "Serious" and 9 under "Minor." The decrease under "Serious" was chiefly due to the numbers recorded on the East Indian, North Western (state) and Great Indian Peninsula railways having fallen from 7 to 2, 4 to 2 and 3 to nil, respectively, while under "Minor" the chief variations were an increase of 7 on the East Indian railway and decreases of 8 on the Eastern Bengal (state) railway and of 4 each on the Bengal and North-Western and the Burma (state) railways.

5. Under "Passenger trains or parts of passenger trains leaving the rails," there was a decrease of 15 accidents, made up of 10 under "Serious" and 5 under "Minor." The decrease under "Serious" was chiefly due to there having been 6 accidents less on the East Indian railway and 3 less on the South Indian railway, while that under "Minor" was due chiefly to a decrease of 7 accidents on the Dibru-Sadiya railway.

6. There was a decrease of 66 accidents under "Goods trains or parts of goods trains, engines, &c., leaving the rails," of which 7 were under "Serious" and 59 under "Minor." Under "Serious" the only noticeable decrease occurred on the North Western (state) railway, viz., of 3 accidents. Under "Minor" there were decreases chiefly of 25 on the South Indian railway, of 19 each on the Eastern Bengal (state) and Madras railways, and of 15 on the East Indian railway against increases of 14 on the North Western (state) railway, and of 12 on the Nizam's Guaranteed State railway.

7. Of the increase of 15 accidents under "Trains running into stations or sidings at too high a speed," 4 each were contributed by the Eastern Bengal (state) and the Rajputana-Malwa railways, and 2 by the North Western (state) railway. The increase on the Eastern Bengal (state) railway was made up of 2 under "Serious" and of 2 under "Minor."

8. The number of cattle accidents was largest on the Southern Mahratta railway, viz., 436; next to that line comes the South Indian railway with 256; then the North Western (state) and Eastern Bengal (state) railways with 158 each; the Rajputana-Malwa railway with 147; the East Indian railway with 123; the Nizam's Guaranteed State railway with 114; the Oudh and Rohilkhand (state) railway with 108; the Great Indian Peninsula railway with 94; and the Madras railway with 81.

As compared with the average of 1901 and 1902, the chief increases were recorded by the Southern Mahratta, the Nizam's Guaranteed State, the Great Indian Peninsula and the Burma (state) railways, and amounted to 45, 41, 33 and 30 accidents, respectively.

In relation to train-mileage run, the number was highest on the Nizam's Guaranteed State railway, which gave an average of 1 accident in 5,951 train-miles, the Dibru-Sadiya railway coming next with an average of 1 in 6,393; then

the Southern Mahratta, the South Indian, the Eastern Bengal (state) and the Bengal-Nagpur railways with averages of 1 in 6,945, 1 in 12,500, 1 in 21,512, and 1 in 22,129, respectively.

The lowest number recorded relatively to train-mileage run was on the Morvi railway, viz., 1 in 157,982; the Bombay, Baroda and Central India railway coming next with an average of 1 in 145,137; then the Great Indian Peninsula railway with 1 in 105,259, the Gackwar's Dabhoi railway with 1 in 88,797, the East Indian railway with 1 in 76,966 and the Darjeeling-Himalayan railway with 1 in 70,512.

9. Under "The bursting of tubes, &c., of engines," there was an increase of 63 accidents, and of these 36 occurred on the Southern Mahratta railway alone.

10. There was an increase of 36 accidents under "The failure of machinery, springs, &c., of engines." The largest increase took place on the Great Indian Peninsula railway, which returned 107 against 19. This was, however, partially counterbalanced by decreases chiefly of 25 on the Bengal-Nagpur railway and of 22 on the North Western (state) railway.

11. Under "The failure of axles," there was a decrease of 4 under "Serious" and of 17 under "Minor." The decrease under "Serious" was equally distributed over four railways, while that under "Minor" was due to a decrease of 6 each on the Bengal and North-Western, Dibru-Sadiya and Jorhat railways.

12. "The failure of couplings" showed an increase of 35 accidents, of which the Dibru-Sadiya railway was responsible for 20.

13. "The flooding of portions of permanent-way" showed an increase of 13 accidents under "Serious" and of 19 under "Minor." The increase under "Serious" was principally due to the number of accidents on the Bhavnagar-Gondal-Junagarh-Porbandar railway having risen from 1 to 12, while under "Minor" the increase was contributed by the North Western (state) and Southern Mahratta railways, on which the accidents numbered 21 against 9 and 20 against 12, respectively.

14. The decrease of 18 accidents under "Slips in cuttings or embankments" was chiefly due to a falling off of 17 accidents on the Bengal-Nagpur railway.

15. Under "Fire in trains," there was a decrease of 47 accidents, of which 2 were under "Serious" and 45 under "Minor." The decrease under "Minor" was chiefly due to the numbers recorded on the Great Indian Peninsula and Madras railways having fallen from 49 to 19 and from 43 to 32, respectively.

16. The decrease under "Fire at stations, or involving injury to bridges or viaducts" was accounted for by a falling off of 24 accidents on the Eastern Bengal (state) railway.

17. Of the decrease of 54 accidents under the head "Other accidents," the East Indian railway alone showed a reduction of 38.

18. The casualties to passengers, and to servants in the employ of railways or of contractors from accidents not coming under the classification adopted in paragraph 1 were, as compared with the average of 1901 and 1902, in the case of passengers, 63 killed and 184 injured against 60 killed and 176 injured, and in the case of servants, 162 killed and 525 injured against 174 killed and 559 injured. (For details, vide abstract No. 2.)

19. Compared with the average of the two previous years, the mean mileage open was 18,121 miles against 17,303 miles, the train-mileage run amounted to 62,583,652 miles against 60,571,893 miles, and the number of passengers carried was 135,262,950 against 121,921,129. There were seven accidents for every 100,000 train-miles run.

Out of a total of 135,262,950 passengers travelling, 51 passengers were killed and 84 injured by accidents to trains as classified in paragraph 1. This gives an average of one killed in 2,652,215 and of one injured in 1,610,273, or an average, on the total number of killed and injured, of one in 1,001,949 persons travelling, and an average of one in 41,463,093 miles travelled.

Including casualties to passengers from causes other than accidents to trains, rolling stock, &c. (vide paragraph 18), the total numbers of passengers killed and injured were 114 and 263, respectively, giving an average of one killed in 1,186,517, and of one injured in 591,712, or an average, on the total number of killed and injured, of one in 351,091 passengers travelling.

20. The total casualties to persons from all causes including trespassers, Total casualties from all causes of suicide, &c., were 626 killed and 979 injured against 634 killed and 1,007 injured, the average of the two previous years. (For details, vide abstract No. 2.)

21. In addition to the above, 33 persons were reported to have been killed Casualties in yards, work- and 217 injured in yards, workshops, &c., and 750 persons to have died in carriages and at stations from causes unconnected with the working of trains.

22. Abstract No. 5 shows for the year 1893, as compared with the ten previous years, the proportion of passengers killed and injured while travelling on the several railways open for traffic in India from causes beyond their own control.

23. Abstract No. 6 shows the number of enquiries into train accidents on the several railways open for traffic in India, classified under certain heads, for the year 1893 as compared with the three previous years.

24. The accidents for the 4th quarter of 1892 are dealt with in the following note:

Note on accidents for the 4th quarter of 1893.

The following table gives the number of accidents, as classified in paragraph 1 of the previous note, which resulted in loss of, or injury to, life and limb, and shows the railways on which they occurred:

RAILWAY.	Number of accidents during the 4th quarter of 1893.	Passengers and others.		Servants.		Total.	
		Killed.	Injured.	Killed.	Injured.	Killed.	Injured.
East Indian ...	2	6	11	...	1	6	13
North Western (state) ...	1	...	2	...	3	...	6
Malwa ...	1	44	51	1	7	45	69
Bengal and North-Western ...	1	...	...	...	1	...	1
Rajputana-Malwa railway ...	2	...	...	...	3	...	3
TOTAL ...	...	60	64	1	15	61	79
Average of the two corresponding quarters of 1891 and 1892 ...	...	23	43	6	31	31	79

2. East Indian railway ...

2. *East Indian railway.*—On the 11th October 1893, as an up passenger train was about to leave Bariarpur station, 17 passengers were injured by the explosion of some fireworks which were being surreptitiously carried in a passenger's personal luggage. Six of the injured passengers, including the man who was alleged to have caused the accident, died of the injuries received.

On the 19th December 1893, a trolly was run over between Rampore Haut and Nalhati by a light engine which had only one red light on the buffer. The Inspector of Works who was using the trolly was seriously injured. The accident was due to the Inspector having mistaken the engine light for the Rampore Haut signal.

3. *North Western (state) railway.*—On the 3rd October 1893, an engine came in contact with a girder which was projecting from a truck standing in the Peshawar cantonment yard. Three coolies who were engaged in unloading the girder were slightly injured. The accident was due to the carelessness of the traffic staff.

On the 29th October 1893, the draw-bar hook of a third class carriage attached to No. 4 down mail was broken as the train was entering Ludhiana station. The accident was caused by the guard of the train having suddenly applied the vacuum brake. A third class passenger was slightly injured.

On the 11th November 1893, a horse, which was being carried in a horse-wagon on a down goods train, jumped out of the train at mile 94½ between Ludhiana and Saraiwal, dragging with it the attendant who attempted to stop the animal. No injury was sustained by the horse, but the attendant was slightly hurt.

4. *Madras railway.*—Owing to the sudden rise of the Periyapallam river, which runs close and parallel to the railway, a tributary stream, which crosses the railway through a 20-foot girder bridge at mile 2½ between Karaimadai and Periyanaikanpalayam on the Nilgiri branch, was ponded back and washed away the ballast at mile 2½, leaving the rails suspended for a length of about 160 feet. A passenger train, which ran into the breach on the night of the 9th November 1893, was derailed and all but the three last carriages were telescoped. Forty-four passengers and one railway servant were killed and forty-seven passengers and three railway servants were injured. There was also considerable damage to rolling stock. A detailed report of this accident will be found in appendix A to the abstract returns of accidents.

On the 26th November 1893, No. 37 train, Madras to Raichur, which was awaiting the arrival of No. 4 train from Raichur at Adoni station, was run into by the latter train owing to its having been turned into the platform line. Four passengers and four railway servants were injured.

5. *Bengal and North-Western railway.*—On the 20th December 1893, an up mixed train ran through the gate at Uska bazar. A railway servant was injured.

6. *Rajputana-Malwa railway.*—On the 2nd November 1893, an up mixed train parted between Farukhabad and Shamsabad stations. When the driver became aware of this, he brought the portion of the train attached to the engine to a stand and then backed, which resulted in a collision with the rear portion which was still in motion. Four wagons and the engine tender were derailed and considerably damaged, and the driver and the fireman were slightly injured. The collision was due to the driver not having taken the ordinary precautions to ascertain the position of the rear portion after the train had parted. The cause of the parting of the train could not be ascertained.

On the 22nd November 1893, a side collision took place at Brahmavart station between the engine of an up passenger special train and a wagon standing foul of the crossing points. A railway servant was slightly injured.

7. In Appendix B to the abstract returns of accidents will be found a report by the Government Inspector for Railways, Madras, on an averted collision on the South Indian railway on the 3rd December 1893.

RESOLUTION.—The Government of India notices that with an increase of 818 miles, or 1.73 per cent. in the mean mileage worked, and of 2,008,759 miles or 3.32 per cent. in the train-mileage run, the number of accidents to trains, rolling stock, permanent-way, &c., on Indian railways shows an increase of 61 or 1.49 per cent. as compared with the average of 1891 and 1892.

2. The numbers of passengers killed and injured by accidents to trains, &c., were 51 and 84 respectively against 32 and 89, the average of the two previous years; while the numbers of passengers killed and injured from causes other than accidents to trains, &c., were 63 and 181 respectively against 60 and 176. It is observed that the increase in the casualties from train accidents was due to the serious accident which occurred at mile 23⁰ on the Nilgiri branch of the Madras railway, a detailed report of which is given in appendix A.

3. Out of a total of 135,262,950 passengers travelling, there were 114 killed and 268 injured, or an average of 1 killed in 1,180,517 and of 1 injured in 504,712.

The proportion of passengers killed and injured by train accidents from causes beyond their own control, as compared with the numbers travelling, was 1 killed out of 2,652,215 and 1 injured out of 1,610,261.

4. The casualties to servants in the employ of railways or of contractors from accidents to trains, &c., were 6 killed and 73 injured against 23 and 71 respectively, the average of the two preceding years. From causes other than accidents to trains, &c., the casualties were 112 killed and 525 injured against 174 killed and 559 injured.

5. With an increase of 4.73 per cent. in the mean mileage worked and of 3.32 per cent. in the train-mileage run, it is observed that the total numbers of casualties from all causes over the whole of the Indian railway system, as compared with the average of two previous years, decreased under killed from 634 to 626 or by 1.26 per cent., and under injured from 1,007 to 979 or by 2.78 per cent.

ORDER.—Ordered, that this Resolution, with the abstract returns, be

The Governments of Madras, Bombay, Bengal, North-Western Provinces and Oudh, and the Punjab.
The Chief Commissioners of the Central Provinces, Burma and Assam.
The Resident at Hyderabad.
The Resident in Mysore.
The Agents to the Governor General for Rajputana, Central India and Baluchistan.
The Director General of Railways.
The Consulting Engineers to the Government of India for Railways, Calcutta, Central Division, Lucknow and Assam.

communicated for information to the Local Governments and Administrations, and to the officers noted in the margin.

Ordered also, that copies be forwarded for the information of Her Majesty's Government.

Ordered further, that this Resolution, with the abstract returns, be published in the Supplement to the *Gazette of India*.

W. L. ...

Offg. Under Secretary.

Documents accompanying.

Abstract returns of accidents for the twelve months ending the 31st December 1893.

G. C. Press, Simla—No. 724 P. W. D.—1-5-94.—25.

*The Joint-Secretary to the Government of Madras,
Public Works Department,
(Railway Branch).*

Enclosure to P. W. D. No. 293E. Stat., dated the 30th July 1894.

INDIAN RAILWAYS.

ABSTRACT RETURNS OF ACCIDENTS DURING THE TWELVE MONTHS ENDING 31ST DECEMBER 1893.

G. I. C. P. O.—No. 33 D. O. R.—3-4-94.—71A.

ABSTRACT No. 1.

GENERAL TOTAL.

NUMBERS of PERSONS reported, during the TWELVE months ending 31st December 1893, as KILLED or INJURED ON ALL RAILWAYS open for TRAFFIC in INDIA, distinguishing between PASSENGERS, RAILWAY SERVANTS, and OTHER PERSONS; and distinguishing also, in the case of the two former classes, between ACCIDENTS caused by ACCIDENTS to TRAINS, ROLLING-STOCK, PERMANENT-WAY, etc., and ACCIDENTS happening otherwise.

	Killed.	Injured.
PASSENGERS:—		
From accidents to trains, rolling-stock, permanent-way, etc.	51	84
By accidents from other causes, including accidents from their own want of caution or misconduct	63	194
SERVANTS:—		
From accidents to trains, rolling-stock, permanent-way, etc.	6	73
By accidents from other causes, including accidents from their own want of caution or misconduct	162	525
OTHER PERSONS:—		
Whilst passing over railways at level-crossings	12	8
Trespassers	255	95
Suicides	70	5
Miscellaneous, not included in either of the above	7	5
TOTAL .	626	979

No. 2.

the TRAVELLING of TRAINS or the MOVEMENT of VEHICLES used exclusively upon RAILWAYS, distinguishing between the nature and causes of the accidents occasioning the death or injury.

[illegible]

(d) includes the narrow gauge sections and the Integral Central railways.
(e) " the Warcho (col, hand-Manned, Khomson and Amraoti railways-
(f) " the Gakhar's Potted and the Gokhale-Matam railways.

(g) Includes the Prerwadi extension and the Beswadi-Gudavari section East Coast railway.

(c) Includes the Guntakal-Mysore Frontier, the Southern Mahratta, Mysore section
Yavatpur-Mysore frontier, Mysore-Nanjangud and the Koltapur railways.
(g) Includes the Rohitard and Karmoon (Lucknow-Bareilly section).
(h) Includes the Jetelewar-Hajek railway.

ABSTRACT No. 3.

ACCIDENTS TO TRAINS, ROLLING STOCK, PERMANENT-WAY, ETC., reported during the twelve months ending 31st December 1893, as having occurred on the several railways open for traffic in INDIA, distinguishing the different classes of accidents and the number of passengers and others and of railway servants killed or injured in each class of accident.

	I.—East India Co.				II.—Nasik-Madras.				III.—Indian Railway.				IX.—North Western (N.W.)			
	No.	Number of persons and others.		Total all classes.	No.	Number of persons and others.		Total all classes.	No.	Number of persons and others.		Total all classes.	No.	Number of persons and others.		Total all classes.
		Killed.	Injured.			Killed.	Injured.			Killed.	Injured.			Killed.	Injured.	
1. Collisions between passenger trains or parts of passenger trains.	1	1	2	3	1	1	2	3	1	1	2	3	1	1	2	3
2. Collisions between passenger trains and goods or mineral trains, engines, and vehicles standing foul of the line.	2	9	11	20	1	1	2	3	1	1	2	3	1	1	2	3
3. Collisions between goods trains or parts of goods trains.	4	19	23	42	1	1	2	3	1	1	2	3	1	1	2	3
4. Collisions between light engines.	1	7	8	15	1	1	2	3	1	1	2	3	1	1	2	3
5. Passenger trains or parts of passenger trains leaving the rails.	2	10	12	22	1	1	2	3	1	1	2	3	1	1	2	3
6. Goods trains or parts of goods trains, engines, etc., leaving the rails.	48	49	97	146	1	1	2	3	1	1	2	3	1	1	2	3
7. Trains or engines travelling in the wrong direction through points.	1	7	8	15	1	1	2	3	1	1	2	3	1	1	2	3
8. Trains running into stations or sidings at too high a speed.	1	132	133	265	1	1	2	3	1	1	2	3	1	1	2	3
9. Trains running over cattle on the line.	1	13	14	27	1	1	2	3	1	1	2	3	1	1	2	3
10. Ditto through gates at level-crossings.	1	6	6	12	1	1	2	3	1	1	2	3	1	1	2	3
11. The bursting of boilers of engines.	1	6	6	12	1	1	2	3	1	1	2	3	1	1	2	3
12. The bursting of tubes, etc., of engines.	6	6	6	12	1	1	2	3	1	1	2	3	1	1	2	3
13. The failure of machinery, springs, etc., of engines.	32	32	32	64	1	1	2	3	1	1	2	3	1	1	2	3
14. The failure of tyres.	2	2	2	4	1	1	2	3	1	1	2	3	1	1	2	3
15. Ditto of wheels.	2	2	2	4	1	1	2	3	1	1	2	3	1	1	2	3
16. Ditto of axles.	4	4	4	8	1	1	2	3	1	1	2	3	1	1	2	3
17. Ditto of brake apparatus.	1	1	1	2	1	1	2	3	1	1	2	3	1	1	2	3
18. Ditto of couplings.	12	12	12	24	1	1	2	3	1	1	2	3	1	1	2	3
19. Ditto of tucks, bridges, viaducts, culverts, etc.	1	1	1	2	1	1	2	3	1	1	2	3	1	1	2	3
20. Broken rails.	1	1	1	2	1	1	2	3	1	1	2	3	1	1	2	3
21. The flooding of portions of permanent-way.	1	1	1	2	1	1	2	3	1	1	2	3	1	1	2	3
22. Slips in cuttings or embankments.	2	2	2	4	1	1	2	3	1	1	2	3	1	1	2	3
23. Fire in trains.	1	13	14	27	1	1	2	3	1	1	2	3	1	1	2	3
24. Fire at stations, or involving injury to bridges or viaducts.	4	4	4	8	1	1	2	3	1	1	2	3	1	1	2	3
25. Other accidents.	11	11	11	22	1	1	2	3	1	1	2	3	1	1	2	3
TOTAL ALL CLASSES	14	311	355	666	13	150	163	313	68	69	137	205	29	699	728	1027

(a) Includes the Delhi-Mathura-Kanpur and Tughlakpur railways.

(b) Partial employees.

(c) Includes the Bhupat-Nasik railway.

(d) Includes the Hyderabad-Tumkur, Mysore-Divulga and Jammu and Kashmir railways.

(e) Not passengers.

ABSTRACT No. 3.—ACCIDENTS TO TRAINS, ROLLING STOCK, PERMANENT-WAY, ETC., reported during the twelve months ending 31st December 1893, as having occurred on the several railways open for traffic in INDIA, distinguishing the different classes of accidents and the number of passengers and others, and of railway servants killed or injured in each class of accident.—continued.

	XI.—Oude and Benares (N.W.)				XII.—Eastern Bengal (N.W.)				XIII.—East Coast (N.W.)				XIV.—Gangetic Indian Peninsula (G.)			
	No.	Number of persons and others.		Total all classes.	No.	Number of persons and others.		Total all classes.	No.	Number of persons and others.		Total all classes.	No.	Number of persons and others.		Total all classes.
		Killed.	Injured.			Killed.	Injured.			Killed.	Injured.			Killed.	Injured.	
1. Collisions between passenger trains or parts of passenger trains.	1	1	2	3	1	1	2	3	1	1	2	3	1	1	2	3
2. Collisions between passenger trains and goods or mineral trains, engines, and vehicles standing foul of the line.	3	3	3	6	1	1	2	3	1	1	2	3	1	1	2	3
3. Collisions between goods trains or parts of goods trains.	2	2	2	4	1	1	2	3	1	1	2	3	1	1	2	3
4. Collisions between light engines.	1	1	1	2	1	1	2	3	1	1	2	3	1	1	2	3
5. Passenger trains or parts of passenger trains leaving the rails.	2	2	2	4	1	1	2	3	1	1	2	3	1	1	2	3
6. Goods trains or parts of goods trains, engines, etc., leaving the rails.	1	1	1	2	1	1	2	3	1	1	2	3	1	1	2	3
7. Trains or engines travelling in the wrong direction through points.	1	1	1	2	1	1	2	3	1	1	2	3	1	1	2	3
8. Trains running into stations or sidings at too high a speed.	1	1	1	2	1	1	2	3	1	1	2	3	1	1	2	3
9. Trains running over cattle on the line.	1	1	1	2	1	1	2	3	1	1	2	3	1	1	2	3
10. Ditto through gates at level-crossings.	1	1	1	2	1	1	2	3	1	1	2	3	1	1	2	3
11. The bursting of boilers of engines.	1	1	1	2	1	1	2	3	1	1	2	3	1	1	2	3
12. The bursting of tubes, etc., of engines.	1	1	1	2	1	1	2	3	1	1	2	3	1	1	2	3
13. The failure of machinery, springs, etc., of engines.	1	1	1	2	1	1	2	3	1	1	2	3	1	1	2	3
14. The failure of tyres.	1	1	1	2	1	1	2	3	1	1	2	3	1	1	2	3
15. Ditto of wheels.	1	1	1	2	1	1	2	3	1	1	2	3	1	1	2	3
16. Ditto of axles.	1	1	1	2	1	1	2	3	1	1	2	3	1	1	2	3
17. Ditto of brake apparatus.	1	1	1	2	1	1	2	3	1	1	2	3	1	1	2	3
18. Ditto of couplings.	1	1	1	2	1	1	2	3	1	1	2	3	1	1	2	3
19. Ditto of tucks, bridges, viaducts, culverts, etc.	1	1	1	2	1	1	2	3	1	1	2	3	1	1	2	3
20. Broken rails.	1	1	1	2	1	1	2	3	1	1	2	3	1	1	2	3
21. The flooding of portions of permanent-way.	1	1	1	2	1	1	2	3	1	1	2	3	1	1	2	3
22. Slips in cuttings or embankments.	1	1	1	2	1	1	2	3	1	1	2	3	1	1	2	3
23. Fire in trains.	1	1	1	2	1	1	2	3	1	1	2	3	1	1	2	3
24. Fire at stations, or involving injury to bridges or viaducts.	1	1	1	2	1	1	2	3	1	1	2	3	1	1	2	3
25. Other accidents.	1	1	1	2	1	1	2	3	1	1	2	3	1	1	2	3
TOTAL ALL CLASSES	3	150	159	309	10	113	123	236	1	6	7	13	8	300	303	603

(a) Includes the Barrow-Ganges services and the Barrow Central railway.

(b) Not a passenger.

(c) Includes the Wardsa Coal, Doodh-Matani, Rampur, and Amritsar railways.

[illegible]

ABSTRACT NO. 3.—ACCIDENTS TO TRAINS, ROLLING-STOCK, PERMANENT-WAY, &c., reported during the twelve months ending 31st December 1893, as having occurred on the several railways open for traffic in India, distinguishing the different classes of accidents and the number of passengers and others, and of railway servants killed or injured in each class of accident—continued.

	XXXV.—RAJPUTANA RAILWAY (c).						XXXVII.—GODHARA RAILWAY (d).						XL—GOUDA ISSUES.						XLIV.—BRASS (e) (f).								
	No.			Number of passengers and others.			Total all classes.			No.			Number of passengers and others.			Total all classes.			No.			Number of passengers and others.			Total all classes.		
	Other accidents.	Total.	Killed.	Injured.	Killed.	Injured.	Other accidents.	Total.	Killed.	Injured.	Killed.	Injured.	Other accidents.	Total.	Killed.	Injured.	Killed.	Injured.	Other accidents.	Total.	Killed.	Injured.	Killed.	Injured.			
1. Collisions between passenger trains or parts of passenger train.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			
2. Collisions between passenger trains and goods or mineral trains, engines, and vehicles standing foul of the line.	1	3	4	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			
3. Collisions between goods trains or parts of goods trains.	..	13	13	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			
4. Collisions between light engines.	..	4	4	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			
5. Passenger trains or parts of passenger trains leaving the rails.	..	2	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			
6. Goods trains or parts of goods trains, engines, etc., leaving the rails.	..	10	10	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			
7. Trains or engines travelling in the wrong direction through points.	..	6	6	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			
8. Trains running into stations or sidings at too high a speed.	..	5	5	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			
9. Trains running over cattle on the line.	..	117	117	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			
10. Ditto over obstructions on the line.	..	32	32	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			
11. Ditto through gates at level-crossings.	..	3	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			
12. The bursting of boilers of engines.	..	12	12	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			
12(a). Ditto of tubes, &c., of engines.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			
13. The failure of machinery, springs, &c., of engines.	..	29	29	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			
14. The failure of tyres.	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			
15. Ditto of wheels.	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			
16. Ditto of axle.	..	6	6	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			
17. Ditto of brake apparatus.	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			
18. Ditto of couplings.	..	53	53	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			
19. Ditto of tanks, bridges, viaducts, culverts, &c.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			
20. Broken rails.	..	11	11	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			
21. The flooding of portions of permanent-way.	..	13	13	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			
22. Slips in cuttings or embankments.	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			
23. Fire in trains.	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			
24. Fire at stations, or involving injury to bridges or viaducts.	..	5	5	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			
25. Other accidents.	..	10	10	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			
	2	361	368	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			
TOTAL ALL CLASSES.	2	361	368	1	6	1	6	6	610	616	..	..	7	340	353	..	..	1	1	131	133	..	..	9			

(a) Includes the following: Machine and the Laboratory

(b) Includes the Gumbah-Majore frontier, the Southern Marhatta, Mysore section, Mysore-Nanjangud and the Kullam railway.

ABSTRACT No. 3.—ACCIDENTS TO TRAINS, ROLLING-STOCK, PERMANENT-WAY, ETC., reported during the twelve months ending 31st December 1893, as having occurred on the several railways open for traffic in India, distinguishing the different classes of accidents and the number of passengers and others, and of railway servants killed or injured in each class of accident—continued.

LXIII.—DANDELIN-HIMALAYAS.									
No.	Number of passengers and others.	Total all classes.	Killed.	Injured.	Total.	No.	Number of passengers and others.	Total all classes.	Killed.
1.	Collisions between passenger trains or parts of passenger trains.	4	1	5	...	9	...	5	...
2.	Collisions between passenger trains and goods or mineral trains, engines, and vehicles standing foul of the line.	6	23	29	...	(a) 3	...	3	...
3.	Collisions between goods trains or parts of goods trains.	7	80	87	...	4	...	3	...
4.	Collisions between light engines.	1	26	27	...	1	...	1	...
5.	Passenger trains or parts of passenger trains leaving the rails.	18	65	83	...	...	...	...	...
6.	Goods trains, or parts of goods trains, engines, etc., leaving the rails.	15	231	296	...	...	...	...	...
7.	Trains or engines travelling in the wrong direction through points.	2	75	77	...	4	1	5	1
8.	Trains running into stations or sidings at too high a speed.	2	17	19	...	6	...	...	6
9.	Trains running over cattle on the line.	6	1,902	1,998	...	...	...	...	...
10.	Ditto over obstructions on the line.	6	143	149	(b) 1	...	4	44	5
11.	Ditto through gates at level-crossings.	...	49	49	...	...	3	...	3
12.	The bursting of boilers of engines.	...	...	...	...	...	...	...	...
12(a).	The bursting of tubes, etc., of engines.	1	182	183	...	...	...	...	...
13.	The failure of machinery, springs, etc., of engines.	2	478	460	...	...	...	...	...
14.	The failure of tyres.	2	17	19	...	...	...	...	...
15.	Ditto of wheels.	...	9	9	...	...	...	...	...
16.	Ditto of axles.	1	33	34	...	...	...	...	...
17.	Ditto of brake apparatus.	...	5	5	...	...	...	...	...
18.	Ditto of couplings.	2	229	231	...	1	...	3	...
19.	Ditto of tunnels, bridges, viaducts, culverts, etc.	3	5	8	...	...	...	...	...
20.	Broken rails.	...	62	62	...	...	...	...	...
21.	The flooding of portions of permanent-way.	41	81	122	44	47	1	3	45
22.	Slips in cuttings or embankments.	8	28	30	...	...	...	...	...
23.	Fire in trains.	2	116	118	7	12	...	...	7
24.	Fire at stations, or involving injury to bridges or viaducts.	1	37	38	(b) 2	...	...	...	2
25.	Other accidents.	9	170	185	...	1	...	3	...
TOTAL ALL CLASSES		139	4,209	4,349	(c) 54	84	6	73	60

ABSTRACT No. 4.

ACCIDENTS TO TRAINS, ROLLING-STOCK, PERMANENT-WAY, ETC., on the several railways open for traffic in India, reported during the twelve months ending 31st December 1893, distinguishing the different classes of accidents and the number of PASSENGERS and OTHERS, and of RAILWAY SERVANTS KILLED or INJURED in each class of accident.

	Number.		Number of passengers and others.		Number of servants.		Total all classes.	
	Accidents reported to Local Governments under section 30 of the Indian Railways Act No. IX of 1900.	Other accidents.	Total.	Killed.	Injured.	Killed.	Injured.	Total.
1. Collisions between passenger trains or parts of passenger trains.	4	1	5	...	9	...	5	14
2. Collisions between passenger trains and goods or mineral trains, engines, and vehicles standing foul of the line.	6	23	29	...	...	(a) 3	...	3
3. Collisions between goods trains or parts of goods trains.	7	80	87	...	4	...	3	7
4. Collisions between light engines.	1	26	27	...	...	1	...	1
5. Passenger trains or parts of passenger trains leaving the rails.	18	65	83	...	...	...	...	...
6. Goods trains, or parts of goods trains, engines, etc., leaving the rails.	15	231	296	...	...	...	...	...
7. Trains or engines travelling in the wrong direction through points.	2	75	77	...	4	1	5	1
8. Trains running into stations or sidings at too high a speed.	2	17	19	...	6	...	...	6
9. Trains running over cattle on the line.	6	1,902	1,998	...	...	...	...	...
10. Ditto over obstructions on the line.	6	143	149	(b) 1	...	4	44	5
11. Ditto through gates at level-crossings.	...	49	49	...	...	3	...	3
12. The bursting of boilers of engines.	...	...	...	...	...	...	...	...
12(a). The bursting of tubes, etc., of engines.	1	182	183	...	...	...	...	...
13. The failure of machinery, springs, etc., of engines.	2	478	460	...	...	...	...	...
14. The failure of tyres.	2	17	19	...	...	...	...	...
15. Ditto of wheels.	...	9	9	...	...	...	...	...
16. Ditto of axles.	1	33	34	...	...	...	...	...
17. Ditto of brake apparatus.	...	5	5	...	...	...	...	...
18. Ditto of couplings.	2	229	231	...	1	...	3	...
19. Ditto of tunnels, bridges, viaducts, culverts, etc.	3	5	8	...	...	...	...	...
20. Broken rails.	...	62	62	...	...	...	...	...
21. The flooding of portions of permanent-way.	41	81	122	44	47	1	3	45
22. Slips in cuttings or embankments.	8	28	30	...	...	...	...	...
23. Fire in trains.	2	116	118	7	12	...	...	7
24. Fire at stations, or involving injury to bridges or viaducts.	1	37	38	(b) 2	...	...	...	2
25. Other accidents.	9	170	185	...	1	...	3	...
TOTAL ALL CLASSES	139	4,209	4,349	(c) 54	84	6	73	60

Mean mileage worked 18,121
 Number of servants employed 190,953
 Train-mileage of all descriptions 62,593,652
 Number of passengers carried 135,262,930
 Passenger-mileage 5,597,506,047

Per mile open—
 Train-mileage of all descriptions 3,454
 Number of passengers carried 7,464
 Passenger-mileage 308,896

Total passengers—
 Killed per million of passengers 0.377
 Injured per ditto ditto 0.621
 Killed per million of passenger-miles 0.009
 Injured per ditto ditto 0.015

(a) Includes one postal employee.
 (b) Not passenger(s).
 (c) Of these three were not passengers.

ABSTRACT No. 5.

PROPORTION OF PASSENGERS KILLED AND INJURED ON THE SEVERAL RAILWAYS OPEN FOR TRAFFIC IN INDIA FROM CAUSES BEYOND THEIR OWN CONTROL IN PASSENGER-JOURNEYS FOR THE YEARS 1883 TO 1893.

YEAR.	NUMBER OF PASSENGERS KILLED AND INJURED FROM CAUSES BEYOND THEIR OWN CONTROL, FROM ACCIDENTS TO TRAINS.		Number of Passenger-journeys (inclusive of journeys by season ticket holders).	PROPORTION RETURNED AS KILLED AND INJURED (FROM CAUSES BEYOND THEIR OWN CONTROL) TO NUMBER CARRIED.	
	Killed.	Injured.		Killed.	Injured.
1883	2	46	65,098,953	1 in 32,549,476	1 in 1,415,195
1884	11	50	73,815,119	1 in 6,710,465	1 in 1,476,302
1885	4	33	80,864,779	1 in 20,216,194	1 in 2,450,417
1886	3	43	68,436,318	1 in 29,478,773	1 in 2,056,659
1887	4	62	95,411,779	1 in 23,852,945	1 in 1,539,600
1888	2	26	103,156,013	1 in 51,578,006	1 in 3,967,539
1889	27	156	110,402,383	1 in 4,083,977	1 in 712,273
1890	1	24	113,829,810	1 in 113,828,810	1 in 4,743,700
1891	56	135	122,611,345	1 in 2,189,488	1 in 908,232
1892	8	42	127,230,914	1 in 15,903,564	1 in 3,029,307
1893	51	84	135,262,950	1 in 2,652,215	1 in 1,610,261

ABSTRACT No. 6.

STATEMENT showing the NUMBER of enquiries into TRAIN ACCIDENTS on the SEVERAL RAILWAYS open for TRAFFIC in INDIA, classified under certain heads, for the year 1893, as compared with three previous years.

Class of accident.	1890.	1891.	1892.	1893.
A.—From engines or vehicles meeting with obstructions, or leaving the rails in consequence of obstructions, or from defects in connection with the permanent-way or works	53	77	23	51
B.—From boiler explosions, failures of axles, wheels, or tyres, or from other defects in the rolling-stock	47	99	58	54
C.—From trains entering stations at too great speed	...	...	...	2
D.—From collisions between engines and trains following one another on the same line of rails, excepting at junctions, stations, or sidings	6	4	...	...
E.—From collisions at junctions	...	7	3	...
F.—From collisions within fixed signals at stations or sidings.	23	16	10	3
G.—From collisions between engines or trains meeting in opposite directions	6	17	19	7
H.—From collisions at level-crossings of two railways	...	...	...	...
I.—From engines or trains being wrongly run or turned into sidings, or otherwise through facing points	18	16	21	17
J.—On inclines	...	...	...	...
K.—From trains on fire	1	5	1	...
L.—Miscellaneous	16	21	7	17
TOTAL	170	262	142	154

APPENDIX A.

Report of the joint inquiry, into an accident at 320/9 mile between Periyanaikanpalayam and Karaimadai on the Nilgiri branch of the Madras Railway, held on the 10th November 1893.

PRESENT:

F. R. UFFCOTT, Esq., Government Inspector for Railways, Madras.
J. STURROCK, Esq., M.C.S. District Magistrate, Coimbatore.

MEMBERS OF COMMITTEE.

H. R. P. CARTER, Esq., Chief Engineer,—President.
F. W. READ, Esq., Traffic Manager.
A. PILKINGTON, Esq., Acting Locomotive Superintendent.

DESCRIPTION.

On the 9th November 1893, at 4 A.M., a lamentable accident occurred to the 6-45 No. 31 train at the 320/10 T. P. mile between Periyanaikanpalayam and Karaimadai on the Nilgiri branch of the Madras Railway, in which 39 third class passengers were killed and 31 third class passengers are known to have been injured; the under-guard of the train was also killed, but the driver, fireman, and the chief guard escaped with slight injuries.

2. This train leaves Madras at 6-45 one day and is due at Méttupálaiyam at 4-30 A.M. the following day. The train was within 7½ miles of its destination when the accident happened.

3. It was made up of seventeen vehicles in the order shown in the appendix (enclosure "E").

4. On reaching the 320th mile, while running at a speed of about 25 miles an hour, the train was suddenly derailed.

5. From the condition of the engine, the permanent-way, and the vehicles, also from the evidence of the staff, it is believed that for a short distance the engine kept the rails, from under which the ballast had been washed for about 160 feet; that it was then derailed, sank into the ballast, and came to a stand immediately. The sudden stop of the engine accounts for the manner in which the vehicles were telescoped and piled up, entirely blocking the line from fence to fence for a distance of 160 feet. All vehicles, except the last three, were derailed, and the greatest loss of life was in the three third-class carriages, which were the seventh, eighth, and twelfth vehicles on the train. There were no European or Eurasian passengers, and particulars regarding those killed will be obtained from the "finding" at the inquest held by the Sub-Magistrate not yet received †

EVIDENCE.

The Resident Engineer, Mr. French, was an Assistant Engineer employed in the construction of the Nilgiri branch, and from 1891 he has from time to time been in charge of his present division. He states that he never saw a very high flood in the river Periyapollum, which runs parallel to the railway at the site of the accident, and he had never known any damage to the Nilgiri branch by floods since its construction.

His evidence shows that the highest previous flood-mark was six feet at the bridge at 320/6, while there is a headway of 12 feet 6 inches. He was unable to give the height of the present flood, pending investigation. Mr. French considered that the state of the weather did not render necessary any extra precautions for the protection of traffic.

2. The evidence of the Permanent-way Inspector Patton (a man with over 19 years' experience on the railway) was to the effect that he had never known a wash-away on the Nilgiri branch, and that he did not consider it necessary to put on special men to patrol the line on the night of the 8th November.

3. The evidence of the gang maistry Armoogam and gangman Kooty is to the effect that they patrolled the line between the 318th and 321st miles between 9-30 P.M. and midnight. The statements of these men as to the time they were on the line are conflicting, but we believe that they did go over the line between 9-30 P.M. and 12 midnight. We do not believe that gang maistry Armoogam remained on the line all night at the 318th and 319th mile as stated by him, nor was it his duty to remain there.

The evidence of gangman Alagan was so contradictory, and he was evidently so confused that we do not accept it as of any value.

4. The engine-driver and fireman gave evidence to the effect that the night was very dark and that there was a drizzling rain for a part of the journey. They noticed nothing unusual, and, from the fact that at the time of the accident Fireman Reardon was standing on the buffer plank of the engine with his back in the direction in which the train was running, it was evident there was nothing to arouse suspicion in the minds of the train staff.

† It has been ascertained that 45 persons were killed and 60 injured in this accident.

5. The evidence of the chief guard confirms that of the driver and his fireman.
 6. Post office guard Ananthappa Mudali, who travelled in the post office van, stated that it was not raining when the accident happened and that no rain fell until daylight.
 7. The evidence of Guard Gonsalves, who was in charge of the 21-25 train from Méttupálaiyam to Pódanúr on the night of the 8th November, and who passed over the railway at the 320th mile at about 10 p.m., is to the effect that his brake van ran smoothly throughout the journey. He also stated that a light rain was falling, and that it was very dark. He did not observe the lights of any line watchmen.
- Enclosure "D" of the appendix is a copy of the Chief Engineer's Circular No. 374 of 25th May 1890 regarding the employment of night watchmen during the monsoon, also copy of Circular No. E. 5/89, dated 3rd October 1881, issued by the Deputy Chief Engineer, and copy of Circular No. 1281, dated 2nd October 1893, from the Chief Engineer's office.

FINDING.

We find that the accident was due to the sudden rise of the water in the Periyapollum river. The water in this river, which runs close and parallel to the railway, dammed up the tributary stream which crosses the railway through a 20-foot opening at 320/6 mile, and the stream thus dammed poured up on the eastern or up-stream side of the railway until the water rose sufficiently high to flow across the line at the lowest point, viz., at 320/9-10, washing away the ballast and leaving the rails suspended for a length of about 150 feet. The tributary stream is also used as a pathway.

The Periyapollum river takes its rise on the southern side of the Karamally hills many miles from the railway, and we are of opinion that this sudden flood unprecedented in the railway (and we believe other) records of the district was so rapid in its rise that had a line watchman been specially employed for the occasion he might have been at one end of his beat while the damage took place at the other end without his knowledge.

The police reported at the site of the accident that three persons had been drowned in the vicinity by this same flood before they could escape from a sheep pen. The local rainfall was small.

We find that no blame can be attached to any officer or servant of the railway in connection with this accident.

We recommend that steps be taken to so alter the condition of the line at this point as to make it absolutely safe in the event of a similar flood recurring.

H. R. P. CARTER,
Chief Engineer.

F. W. READ,
Traffic Manager.

A. PILKINGTON,
Acting loco. Supdt.

Evidence of George Arthur Fortescue French.
—I am a Resident Engineer of this division. I was an Assistant Engineer on the section on which the accident to the 6-45 occurred when the section was constructed. I never saw a very high flood in the river that runs parallel to the line at the scene of the accident, but it was notorious for rising quickly and flowing with great velocity. On the night of the 7th there was heavy rain at Pódanúr, and I believe it must have extended all over the adjacent country.

I did not think it necessary to take any extra precaution for the protection of the Nilgiri branch. I never heard of any damage by flood to the Nilgiri branch since the time of its construction. From 1891 I have been in charge of this division at intervals. I know of a circular issued by the Chief Engineer regarding night watchmen being employed during the monsoon. I received a reference to this circular from the Chief Engineer some time in October, and issued instructions with reference to it to all Inspectors in my division including

the Nilgiri branch. The highest flood previously known is marked on the bridge, and is about 6 feet above bed of stream; the headway of the bridge is about 12 feet. I believe the flood in the big stream flowing parallel to the line rose to such a height that the water backed up through the bridge at 320/6 and flowed back over the line at 320/9 to 11 washing ballast for that length. Had there been a night watchman, the accident might or might not have been averted. In this particular case I believe the damage was done so quickly and so shortly before the accident that the chances would be that the watchman, if employed, would not have averted the accident. I believe the water was flowing over the line when the train rushed into the breach and that some of the passengers in the train were drowned. I don't think the water lay on the line, it merely flowed over. My first intimation that the accident had taken place was at about 6-40 on the morning of the (9th November 1893). I arranged for a special train to run to the scene of the accident with the least possible delay and it left

Pódanúr at about 7-30. The injured passengers and as many as possible were put into it and taken to Coimbatore, where medical aid was waiting for them.

Question by the Consulting Engineer.—Since you have taken charge of the line have you ever considered it necessary to give personal instructions to put on night watchmen on the Nilgiri branch?

Answer.—No, I have not.

I should not know the night watchmen had been employed excepting through the pay sheets unless the inspector, as he generally would do, informed me verbally afterwards that he had employed them.

Question.—Has it been the custom to employ night watchmen on other divisions which you have had charge of?

Answer.—Yes; I have known them to be employed between Bangalore and Mallápuram from the 15th October to the 1st of December.

Question.—Would you recommend the permanent employment of night watchmen during the monsoon in place of its being left to the discretion of the Permanent-way Inspector to employ them.

Answer.—Personally I do not think that a night watchman is of much use.

Question.—Do you consider that a watchman temporarily employed on an emergency would be more likely to be vigilant than one so permanently employed?

Answer.—No; I consider the permanently employed man is better than a temporarily-employed man.

Question.—By a temporary watchman do you mean a man taken from the gang?

Answer.—No.

Question.—Do you consider a man taken from the gang would do better than a temporarily employed man?

Answer.—No.

In answer to the question put by the Chief Engineer I am aware that the maistries are instructed to go on the line in suspicious weather, and that they in some cases do so; this refers to the Nilgiri branch as well as to the line generally; their assistance in protecting their own lengths is most valuable. I make a distinction between gang maistries and line watchmen.

Question by the Consulting Engineer.—Do you consider it was the gang maistry's duty under instructions given to him to have patrolled his length during the night of the accident?

Answer.—No; from the indications of the weather I did not think it was his duty to patrol the line that night.

James Fred. Patton, P. W. Inspector, gave evidence as follows:—I am Permanent-way Inspector in charge of Nilgiri branch and live at Pódanúr. During the night of the 7th there was heavy rain extending from Pódanúr to Coimbatore. Judging from the state of the line it extended to Tudiyalúr. On the day of the 8th there was slight rain at Coimbatore. I received a circular in the beginning of October ordering me to put on night watchmen in case

of wet weather or heavy flood. I did on any night watchmen since the receipt of the circular. I issued orders to the gang maistries (verbal) to put on watchmen whenever there was flood weather. The watchmen are men from the gang, experienced.

Question by Consulting Engineer.—Do you consider the state of the weather or floods were such as to necessitate the employment of night watchmen from your personal experience of the line?

No.

Has there been formerly a wash-out of your section during your charge?

No.

Question.—Have you ever put on watchmen before?

Yes.

I have been on the Nilgiri branch for a time nearly two years and before about 1881, from 1881 to 1894.

Recalled.—Does this refer to the Nilgiri branch or the main line?

Answer.—On the branch once or twice and on the main line very often.

Armogam, gang maistry, mile-stone 321.—I remember Wednesday, the day before or of, the accident. There was no rain at flood that day. I live at village of Gudal between the 317 and 318 stone and two telegraph posts away from the line. I have been maistry from three years since the branch was made, and I have never seen the streams in flood as now. I have seen it as high as in some of the streams. I had no fear of flood that day. I have received orders in of heavy rain or flood to put on a watchman. I got these orders before this monsoon have before this often put on night watchmen.

On the night before the accident I left at 6 o'clock in the evening with my gang having been working at the 319th mile.

After leaving work I returned again half past nine with two men, walked over the length, met the passenger train from Méttupálaiyam. There was a slight drizzle and I had a lantern. I walked on the bridge and saw no water. I know that I have full power put on a watchman without asking the Inspector. On coming back to the 316th/13 and 318th mile I stayed there till daylight with two men having some fear of this place. There was rain during that night. I was at these points till the trains to west passed and I then went home for food. The two men with me were Kooty and Alagan. We had fog signals.

Cross-examination.—Although he had no idea of the place when the accident occurred thought the two places pointed out (318/13 and 319/2) were weak.

I have been in the habit of staying myself but never drew extra pay for it.

After taking food I returned again walking along saw the accident. I met persons.

Re-examined and he adheres to his statement that he stayed on the line all night and that he sent both the men away.

Evidence of Gangman Kooty.—I am engaged in this branch since its opening. I live in the village of Gudalur. Maistry left me at 6 o'clock at the 318th mile. I was returning to my house when it was raining. The maistry told me that, as it was drizzling, you had better go home, take your meals and return soon. After that myself, the maistry, and Alagan came over the line. After we went through our length we returned to our homes; it was at 12 o'clock. When the train was coming from Méttupálaiyam I was at my house taking my meals. After going over the line with the maistry I and Alagan went home, and I slept and did not hear the train to Méttupálaiyam passing. At about 6 in the morning, when I was going over the line with Alagan, I met a Muhammadan, and he told me that there was an accident and many were killed and injured and I only escaped. The maistry lives at the village of Naikanore, which is one-and-half miles distant from my house.

Evidence of Gangman Alagan.—I am a gangman and have been on the line for ten years. I live near the village of Periyanaikanpalayam at the 316th mile. On Wednesday I was working at the 319th mile. I stopped work at 6 o'clock, after that it commenced to rain from 6 to 1 o'clock. As it was raining, and seeing that ditches getting filled with water, I came on the line with the maistry at 1 o'clock in the night with a cooly. I never went for my food. I was on the line near a garden when the Méttupálaiyam train passed. I was alone at the 319th mile. Maistry told me stay. The maistry and cooly were with me all night.

Re-examined and stated that the maistry and cooly were at the 319th mile all night.

Evidence of J. Ramaswamy Naidu, Engine-driver.—I drove the engine of the 6-45 train from Pólanúr on the morning of the 9th November. After leaving Periyanaikanpalayam, while coming to the 320-8 T.P. mile, I felt a severe jerk. Within a few seconds I was dashed up to the right side of the fire-box of my engine. The night was dark with drizzling rain. My head light was burning, but I could not see beyond 8 or 10 feet from where I stood. I heard no noise of running water, and there was nothing to lead me to suppose that the line was out of order.

Question by Consulting Engineer.—Did you drive the train from Méttupálaiyam?

Question by Consulting Engineer.—What speed were you running?

I was running with steam off.

Question by Consulting Engineer.—When did you shut off steam?

I pulled the train out of the station and then shut off steam. After lighting my lamp and looking at my watch I found it was 4-5 o'clock. I was going at the rate of 22 to 25 miles an hour. I saw no lights exhibited by line watchman.

Evidence of Fireman Samuel Reardon.—I was fireman of the engine of 6-45 train which met with an accident at 320/3 mile on the morning

of 9th November. I noticed nothing unusual on the journey, the night was dark and there was a drizzling rain I think from Coimbatore. After leaving Periyanaikanpalayam a short distance we shut off steam. My driver Ramaswamy asked me to look at the motion bars of the engine. I walked along the splashers on the right hand side of the engine. I stopped between the driving and leading wheels to look at the motion bars and glands and then went up to the buffer beam. I looked at the head lamp which was burning. It was very dark at the time while I stood with my face to the head lamp. I felt two or three shocks when the accident happened. I had a lamp in my hand, and while using it I noticed water at the side of the line, but there was nothing in this to lead me to suppose there was anything wrong with the line, nor did I feel anything until the accident happened. I had to hold on to the engine, but the shock threw me into a pool of water. Shortly before the shock I looked at the engine watch; it was nearly 4 o'clock.

Evidence of Guard Syel Ibrahim.—I was guard of the 6-45 train on the morning of 9th November. We left Pólanúr four minutes late at 2-35. I observed that the night was a very dark one and there was a drizzling rain. I noticed nothing unusual with the line. We were four minutes late in leaving Periyanaikanpalayam. We left at 3-45.

At about 4 o'clock while running near 320th mile I felt a very heavy shock and was thrown from the caboose on the left hand side of the van to the brake which is on the other side of the vehicle. We were running at the usual speed, about 25 miles an hour. I could not see the next carriage to my van owing to the darkness. I saw no lights of line watchman and had no reason to suppose the line had been damaged by a flood.

After being thrown on to the brake I put it on "hard" as I thought the train had parted. After this I felt no subsequent shock. My under-guard had been killed and I could not communicate with the driver who was on the Karaimalai side. I therefore did my best to help the passengers. I protected my train by going back about three-quarters of a mile, where I placed a side lamp on the ground exhibiting a red light. I did not place any fog signals on the line.

I have worked trains as a guard for 29 years. I know that the rule states fog signals should be placed on the line, but no other train was on the branch.

Evidence of Ananthappa Muttali.—I was post office mail guard of the 6-45 train on the morning of the 9th November. I was sitting in the mail van in charge of the closed bags. I suddenly felt a shock and went to the side of the carriage. I opened the door and immediately a third-class carriage fell on to the side of the mail van, crushing in the side of the van; up to that time I had noticed nothing unusual about the line or the weather, except that it was a very dark night. After the mail van had turned over I scrambled out and remained there, guarding the mails until daylight. There was no rain when the accident occurred or until daylight.

Evidence of Chief Guard Ignatius John Gonsalves.—I have been in the service of the Madras Railway as a guard for six years. I was chief guard of the 21-25 up-train from Méttupálaiyam to Pólanúr on the night of the 8th November 1893. Throughout the whole journey

there was light rain, and it was a very dark night. I did not see or hear any water near the railway, and I did not feel any slack in the road. My van ran smoothly. I did not see any watchmen's lights.

(APPENDICES A TO C.—Not printed.)

APPENDIX D.—Abolition of night watchmen.

It has been decided to gradually abolish the existing staff of permanent night watchmen throughout the line, and to employ, during monsoon and stormy weather only, selected men from the permanent-way gangs, who will be paid the additional sum of two annas and eight pies (As. 2-8) for every night on which they remain on duty.

2. Engineers are therefore requested in future not to fill up any vacancies among night watchmen caused by death, transfer, resignation or dismissal; the length, on which such vacancy occurs, being provided for by the Inspector, who will, on the approach of wet weather, arrange for a special gang cooly to perform the duties of the night watchman for as many nights as he considers necessary. In the dry season and in fair weather there will be no night watchman on such length.

3. Every effort should also be made to absorb the night watchmen among the gangs as rapidly as circumstances will permit, care being taken that the watchmen chosen to fill vacancies among gang coolies are physically fit and otherwise competent for the post.

4. Inspectors will take care that the cooly selected for the temporary watchman is duly instructed in his duties, and the nearest maistry to the length will be held responsible for the safe custody of the belt, pouch, fog signals, etc., which are in the possession of the existing watchman on this mile.

5. The additional payment for night duty will be included in the pay sheet for daily wages, but a remark should be entered stating the number of nights the man was retained as watchman, and this should be certified by the Inspector's signature.

(Signed) HENRY C. WEST,
for Chief Engineer.

The 25th May 1880.

No. E. 5/80.

Circular.

As the north-east monsoon is now imminent, I am desired by the Acting Chief Engineer to call your attention to paragraph 2 of Circular No. 374 of 25th May 1880, with reference to the employment of temporary night watchmen wherever necessary on your division.

You are requested to satisfy yourself that the several Inspectors are fully conversant with the provisions of the circular. I have to add that section maistries and gang maistries should be warned that they have full powers to put on a watchman, or keep out the whole gang if necessary, and that every available precaution should be taken to ensure the safety of trains.

MADRAS,

The 3rd October 1891.

(Signed) HENRY C. WEST,
Acting Deputy Chief Engineer.

No. 1281.

Circular.

As the north-east monsoon is now imminent, the attention of Resident Engineers is called to Deputy Chief Engineer's Circular No. E. 5/89 of 3rd October 1891.

(Signed) JOHN B. DUNCAN,
for Chief Engineer.

The 2nd October 1903.

APPENDIX E.—Correct formation of train before accident happened.

	Enging.	
W.C.G. 786.		C. 40.
" 991.		A. 20.
" 890.		D. 367.
" 782.		" 362.
I.C.G. 149.		" 216.
B.V. 133.		" 92.
D. 350.		" 56.
" 197.		B.V. 125.
D.M. 257.		

APPENDIX F.—Formation of train and particulars of damages to rolling-stock.

Description of stock.	Nature of damage.	Estimated cost.
		Rs.
Six wheels coupled engine No. 77	... Slight damages.	1,000
" " tender	... Not damaged.	
Wooden covered goods wagon No. 736	... Slightly damaged	50
" " " " " 791	... Completely smashed.	1,420
" " " " " 880	...	1,420
" " " " " 782	...	1,360
Iron " " " " " 143	...	1,030
Six-wheeled brake van " " 133	...	2,750
Third class carriage " " 350	...	2,560
" " " " " 197	...	1,730
Composite mail van and third class carriage. " 257	...	1,950
Second class carriage " 40	...	2,500
First class saloon " 20	...	4,420
Third class carriage " 367	...	2,690
" " " " 302	Body of vehicle completely destroyed.	1,500
" " " " 248	Not damaged.	
" " " " 92	Not derailed.	
" " " " 56	"	
Four-wheeled brake van " 125	"	
Total ...		26,610

Finding by the Government Inspector for Railways.

The cause of the accident was the sudden and unprecedented rise of the Periyapollum river due to heavy rain in the adjacent hills which ponded back the waters flowing down the stream which crosses the line at 320/7 under a 20' girder. This stream being in flood at the same time from local rain, its waters were unable to discharge through the 20' bridge, and flowing along parallel to the embankment, flooded the valley between it and the high ground, and, between 320/9 and 320/10 where the bank is 4½ feet high, rose above the level of the top of the bank and flowed over it across the line, washing away the ballast from under the pot sleepers for about 160 feet.

3. The gradient was a falling one of 1 in 176 for 1,400' following a falling grade of 1 in 102, and the engine and train running at about 25 miles per hour derailed at or near 320/10, the engine stopping dead and sinking into the bank up to the axles. The pot sleeper road being ballasted with sand with a thin coating of stone is very liable to damage from water crossing the line, and, moreover, this type of road does not afford any support for a derailed train to run forward. This sudden stop accounts for the telescoping and extraordinary wreckage of the coaches. The time, as given in evidence of about 2 or 3 seconds between the first jolt and the dead stop, would not have been sufficient for any application of an automatic brake had there been one—not that this is any argument against its early introduction.

4. The documents show that since 1890 the patrolling of the line at night in cases of heavy rain and floods is left to the discretion of the Permanent-way Inspector and the headman of the permanent-way gang, and that these orders were duly received and understood by these men, extra men being employed for this duty.

5. I am of opinion that there was nothing in the local weather, or the state of the Periyapollum river, at the time to lead them to suppose there was any probability of the line being damaged, and this is supported by the fact that at no former period had there been any breach of the branch line, or such a high flood in the Periyapollum river. From the evidence given, I believe that the gang maistry with one other man at least, named Kooty, did go over the whole or part of his length some time between 18 hours and midnight, although I agree with the

railway officers that he did not remain out all night, Kooty's evidence being in my view the true version.

6. I find that no blame or criminal negligence can be imputed to any of the railway servants for this lamentable accident.

7. I recommend, instead of the present rule referred to in paragraph 4, that during heavy rain or floods at such places as the Chief Engineer may consider necessary, the head ganger should be instructed personally to inspect his length at night and be paid extra for this work. I entirely agree with Mr. French that the gang maistry is the only reliable man for this duty, as he knows his length and the places that require watching. He would of course have authority to turn out the whole gang if necessary.

8. To render this particular place safe against another wash-out, the line will require to be raised well above the present level between mile-posts 320 and 321, and provision made for carrying off any flood waters ponded up between the bank and high ground either by crossing it under the line or carrying it in an open cut into the Periyapollum river below where it now crosses the line.

9. Although I consider that the greatest promptitude was exhibited in affording relief by every department, orders appear necessary for the senior officer of any department to have the power to order out a relief train in the absence of the Traffic officer.

F. R. UPCOTT,

Senior Government Inspector for Railways.

MADRAS,

The 15th November 1903.

APPENDIX B.

Report by C. T. R. Scovell, Esq., Government Inspector for Railways, on an averted collision on 3rd December 1893, between Pallavaram and Vandalur, on the South Indian Railway.

I have the honour to report that I attended the joint inquiry which was held on the 6th December at Pallavaram, South Indian Railway, to investigate the circumstances under which, on the 3rd instant, the 6-45 mail (No. 15) from Madras to Tuticorin met in the section between Pallavaram (mile 12-4) and Vandalur (mile 19-4) stations a special train approaching in the opposite direction. The trains were stopped some 2,000 feet from each other; no damage was consequently done.

The special, an empty train of new bogie vacuum brake stock, had left Cuddalore at 22-30 the previous night for Madras. The section of line where the two trains sighted each other is fortunately straight, and to this fact, as well as its being daylight, must be attributed the averted disaster.

Description.

Trains are worked on the South Indian Railway on the *line-clear and ticket system*. The stations where scheduled trains are timed to cross or pass one another are noted in the working time-table, and no alteration from such meeting place is allowed except by the special orders of the District Traffic Managers. In the case of special or untimed trains such orders are passed for each crossing. The following telegrams were sent affecting the meeting of the trains in question:—

"From the Assistant Traffic Manager, to all stations, Vandalur to Madras, dated 3rd December 1893, No. 121.

"The 22-30 special will follow No. 14 mail from Vandalur to Madras.

"From the Assistant Traffic Manager, to Vandalur Station-master, dated 3rd December 1893, No. 124.

"The 22-30 special from Cuddalore Old Town will stop at your station to meet Nos. 13 and 15 trains to-day."

It will be noticed, therefore, that the special, on arrival at Vandalur, had to cross No. 13 (6 o'clock from Madras), allow No. 14 mail (1-11 from Cuddalore) to precede, and, after the arrival of No. 15 (6-45 from Madras), to follow No. 14 to Madras, Pallavaram being the usual meeting station for Nos. 14 and 15.

Owing to telegram No. 124 having been transmitted to the driver and guard of the special by a through wire and No. 121 by a local wire, No. 124 was delivered before No. 121.

The following are extracts from the Company's rules which bear on the occurrence:—

"4 (14) *Train following and caution ticket*.—Trains may follow one another between stations in the same direction under the following rules and in accordance with rule 339 (general rules).

(a) No train or engine shall be allowed to follow any other train or engine on the same line of rails within 10 minutes unless "line clear" has been received.

(b) (16) In carrying out the orders in paras. 14 and 15, the "line clear" cannot, of course, be given for the second train that leaves before the arrival of the preceding one in the same direction at the next station, and therefore, in the event of a train following under the rules above quoted, the "train-out" message for the second train must be given to the next station in the direction in which the train is proceeding by using the following Forms Nos. 510 C and 510 D.

(18) *Train-signal message*.—As it is understood that signallers are in the habit of transmitting and receiving carelessly messages on Forms 427 A, B, C and D, they are warned that due care is required in writing all train messages in order to make them, as they should be always clear and legible.

(19) The sending station will give the station from and to with addressee in the form of a message and will then give clearly what is printed and written in the

form of the sending station. These must be fully entered, just as sent, in the inwards book at the receiving station.

- (20) All messages must be distinctly written out. It is not allowable for a signaller or a station-master to seek "line clear" or "answer" or give "train-out" report without having previously written and fully filled up the spaces provided for the purpose.

7. *Issue of alterations of meeting notices.*—The power of altering the meeting stations of trains is deputed to the Traffic Manager, District Traffic Superintendents and Train Inspectors.

- (14) *Passing messages.*—It has been noticed that clerks-in-charge deal very carelessly with passing messages, viz., that, instead of writing them out themselves and only allowing the signaller to send them away, the signallers frequently write out the messages for the clerks-in-charge and trust to verbal intimation to the clerk-in-charge as to what they have done.

- (15) This practice is very dangerous and renders it liable for a message to be received or forwarded without the knowledge of the clerk-in-charge and the danger of an accident being caused thereby.

- (16) It is hereby notified that clerk-in-charge or (in the absence of a clerk-in-charge from his station) his deputy must receive and write out all messages relating to trains and signallers, must have nothing whatever to do with such messages beyond receiving or transmitting them on or from the wire and handing them over to, or receiving them from, the clerk-in-charge.

- (17) It is also hereby notified that, in the event of any accident or risk of accident, if it is discovered that any other course but that described in para. 16 has been adopted, the clerk-in-charge or signaller or both will not only be dismissed but will render themselves liable to prosecution—vide para. 41 of this rule (No. 7).

Evidence.

Station-master R. Subroya Pillay of Vandalur.
—My service is about 7 years and 6 months. I have been at Vandalur about a year as a station-master. In connection with the meeting of No. 13 train and 22-30 o'clock special and No. 15 train and the 22-30 o'clock special, I did not receive the meeting messages. All that I received are the two messages that I now produce marked A and B.

As my station being the usual meeting station for Nos. 13 and 14 trains, and as I received a message that 22-30 o'clock special will follow No. 14, I thought a meeting message for Nos. 13 and 22-30 o'clock special was not necessary. I started the 22-30 o'clock special at 7-24 on obtaining the usual line-clear message from Pallavaram, which I now produce marked C. The signaller, at about 7-36, informed me that No. 15 mail left Pallavaram at right time, i.e., 7-25. Then he showed me the meeting message marked E at about 7-37, 22-30 o'clock special would pass at my station. The 22-30 o'clock special returned back to my station at 8-10 and No. 15 arrived at 8-15; Pallavaram at 8-22.

Re-examined.—With reference to the guard's statement I handed over the line-clear ticket to the driver in the presence of the guard, I know it is against the rule; because the guard asked me to hand it over to the driver, I did.

Cross-examined.—No. 14 mail passed my station at 7-14. I wrote out the train-following message, Exhibit C, in my room. I personally handed the book to the signaller in the Telegraph office. I saw the signaller de-patch it. I am quite sure about it. I was in the Telegraph office when the answer was re-

ceived. I knew No. 14 had not arrived at Pallavaram when I started the 22-30 special. After No. 14 train had left my station I asked Pallavaram for line-clear for 22-30 special. Exhibit C is the only form on which I asked line clear. When Pallavaram asks me line clear for any train, the signaller fills in the message as received in the train-signal message book. I fill in the part saying that the line is clear. The signaller fills in the train-out message. On the 3rd instant the signaller did not bring me any message from Pallavaram asking him line clear for No. 15. In Exhibit D the black-ink writing is the signaller's and the red mine. In No. 119 message received from Assistant Traffic Manager, Madras, it was stated that three trains would meet at my station. Next to this I received a message that the 22-30 o'clock special would follow No. 14. If I received notice that one train follows another, I understand that to mean that I should start the second train 10 minutes after the first. I know the mail train should have precedence over the special. I thought the mail train (No. 15) would be late, as I received the message ordering the special to follow No. 14. I wrote the red endorsement on Exhibit D at 7-36 before the train-out message was written by the signaller.

Signaller C. Mathaswami Iyengar of Vandalur.
—My service is about 9 months as a signaller, at Vandalur about 2 months. I came to duty at about 6 o'clock on the 3rd instant. I received the meeting message from Pallavaram for Nos. 13, 15 and 22-30 special at 6-20, and then I gave acknowledgment at 6-22. As soon as I received this message, I received another message from Pallavaram

stating that the 22-30 o'clock special would follow No. 14 mail. Then I asked Pallavaram line clear for 22-30 o'clock special. He replied "Yes." At that time my assistant station-master was standing near me. The special was started under train-following rules. After the special had left my station the signaller at Pallavaram gave me the train-out message for No. 15. I wrote that portion of the train-signal return as referring only to the train out from Pallavaram and not the portion concerning line-clear inquiry. The 22-30 o'clock special then came back to my station, No. 15 followed it, and, after asking line clear, the special was started for the second time. I did not hand over the meeting message marked E to the station-master at the time I received it. After No. 15 mail had left Pallavaram station, I showed the message to him. It was I that acknowledged the meeting message—vide message marked F, now produced. It is in my hand-writing. I asked Pallavaram line clear for 22-30 special. Ten minutes after No. 14 had left me, i.e., at about 7-19, I asked Pallavaram line clear. He said "Yes." I filled up the return marked C and gave it to the station-master, who returned the return back to me with the entry on it that the train left at 7-24. I gave train-out message to Pallavaram at 7-25. I am quite sure I did not give Pallavaram line clear for No. 15. I do not know that the meeting message should be handed over to station-master, and I did not think it a mistake to send the acknowledgment in the name of the station-master written by me. I am not acquainted with this rule.

Cross-examined.—I swear I actually de-patched the train-following message, Exhibit C, and received the reply from Pallavaram. I received no application for line clear for No. 15, but only received the train-out message. When I wrote the train-out message, the station-master had already written remarks in red ink. I began a new book that morning because the old one was finished. I have never received the train-out message before line clear was asked for previous to this. I was surprised to receive the train-out message before the inquiry for line clear.

Assistant station-master T. Veeraragava Chetty of Vandalur.—My service is 7 years, at Vandalur as assistant station-master 5 months. I was on night duty from 6 p.m. to 6 a.m. on the 2nd and 3rd instant. I was present at the station after I was relieved from 7-15 to 11 o'clock. The signaller brought a message No. 121 regarding the special to follow No. 14 mail; as soon as I came to the station after I was relieved I asked him what the message was. He told me it was to be delivered to the guard and driver of No. 14 mail. Accordingly the station-master delivered it to the guard and driver and started No. 14 at right time and asked the signaller to ask the special to start her under the train-following system. The signaller at once obtained line clear from Pallavaram at about 7-21 or 22. The station-master started the special at 7-24 under train-following rules. The station-master filled in his portion of the return, asking

Pallavaram for line clear for the special in my presence.

The signaller sent this message to Pallavaram and obtained line clear in my hearing. After the departure of the special, when I was issuing tickets for No. 15 mail, the signaller, at about 7-40, brought a message to the station-master telling that the mail No. 15 and the 22-30 special were to meet at Vandalur.

I saw the message. It was marked therein 6-20, as being the time received at Vandalur. I was on duty up to 6 o'clock and I did not receive the meeting message.

The station-master did not give the line-clear ticket to the guard of 22-30 o'clock special, but, when he was going to deliver the ticket to the driver, the guard came quick from the spot where he stood, which was about 12 yards distant. The ticket was given to the driver by the station-master.

I did not see or hear the guard asking the station-master to hand over the ticket to the driver.

Cross-examined.—I generally come back to the station after I am relieved to see the trains. Between 7-20 and 7-40 I was in the Telegraph office. I myself saw the station-master write the train-following message, Exhibit C. I heard the instrument working and the signaller was at it all the time, I mean the Pallavaram instrument. I did not hear Pallavaram ask for line clear for No. 15. I am quite sure that Pallavaram did not ask for line clear. I heard the instrument working when the train-following message was being transmitted, but I did not hear it work at any other time.

Driver H. E. Goddard.—My service is 2 years. While working 22-30 o'clock special from Cuddalore Old Town to Egmore on 3rd December 1893, at Chingleput, I received a passing order to pass Nos. 13 and 15 trains at Vandalur. When at Guduvanchéri station, I got a message to follow No. 14 mail train from Vandalur. Coming into Vandalur I shunted into the siding to let No. 13 train, also in siding, to pass No. 14 mail train.

After No. 13 train had cleared away, the station-master and guard both came to me with line-clear ticket, and, getting all right from both, I started away to follow No. 14 mail train to Pallavaram.

Nearing mile 15-12, I saw in front of me a train which I found to be No. 15 train. I at once whistled out for brakes and brought my train to a stop as soon as possible at mile 15-7. Stopped 7-38 o'clock, backed 7-42 o'clock, got into Vandalur at 8-10 o'clock, reported and started away again with a new-line clear ticket at 8-22 o'clock.

Cross-examined.—At Chingleput I received notice to pass Nos. 13 and 15 at Vandalur and at Guduvanchéri I received message No. 121. Having received this message No. 121, I was not surprised when the

station-master, Vandalur, brought me the line-clear ticket with a caution message on it. It was about 10 minutes after the departure of No. 14 that I started. The time I actually started is 7-24.

Guard B. Alanikum.—I received the first order to pass Nos. 13 and 15 at Vandalur at Chingleput. On arrival at Vandalur, after having finished what I had to do there, I ordered my train to be brought to the siding to pass No. 13 mail. No. 13 mail arrived and it was also brought to the siding in order to clear the line for No. 14 mail. No. 14 mail, being a non-stopping train, went through; it was on or after the departure of No. 14 mail I received the order to follow No. 14 mail from Vandalur. The station-master of Vandalur delivered the line-clear ticket to the driver of my train without my knowledge and started the train. It did not strike me then that I had to pass No. 15 mail also at Vandalur.

Cross-examined.—I received copy of message No. 121 at Vandalur. Having received No. 124 message previous to 121, I thought that the latter cancelled the former.

Station-master M. Subbaswami Naidu of Pallavaram.—My service is 18 years, at Pallavaram 1 year and 7 months as station-master. At 6 o'clock I came on duty on the 3rd instant. As soon as I came on duty, I received the running order of the 22-30 o'clock special from my assistant station-master. At the same time I saw the passing messages for 22-30 special and Nos. 13 and 15 trains meeting at Vandalur being sent to that station. It was about 6-10 when I examined these messages on the file. The message under reference, i.e., meeting message No. 124, was one of those that were filed after being transmitted with the times entered on them. The message now produced is the original marked G. Next to this message I saw on the file message marked H, which is an acknowledgment to the meeting message marked G. After starting No. 13 on the usual line clear, attended to Nos. 15 and 14. Previous to this I received Assistant Traffic Manager's No. 121 regarding the 22-30 o'clock special following No. 14 from Vandalur. I prepared the line clear required for No. 15 after the arrival of No. 14 and sent to the signaller's office, who returned the same that the line was clear. Train signal book here produced marked I. I then started No. 15 at 7-35 and sent the train signal book to the signaller's office to give train-out message. About 2 or 3 minutes after, my signaller came running to me and informed me that Vandalur says that the 22-30 o'clock special had left his station. I exhibited at once danger signals to stop No. 15 mail, but it was of no use as the train advanced about a mile from the station. Yet I sent my men along the line to stop the train, if possible, by exhibit-

ing signals. At the same time the driver of No. 56 train was standing there, and when informed of this gave danger whistles. Afterwards I secured all line clear books and used new ones and advised the occurrence by telegrams.

I gave Vandalur line clear for 22-30 o'clock special at 8-21, Exhibit marked J. The first intimation I knew of the 22-30 o'clock special was when the signaller came running to me and told me that the special had left Vandalur after I had started No. 15 mail. No line clear was asked for and given to 22-30 o'clock special until 8-21.

Signaller K. V. Narasimma Aiyar of Pallavaram.—Service 2 years 3 months. At Pallavaram 10 months. At 6 o'clock I came on duty on the 3rd. When I came on duty I examined all messages that were in the file. I saw the meeting message for 13, 15 and 22-30 special, also the acknowledgment. After the arrival of No. 14 mail I, as usual, received the train-signal message book filled in by the station-master to ask Vandalur line clear for No. 15 mail. I asked Vandalur line clear. He gave "Yes, line is clear." About 7-34 it was. I sent it to the station-master, who returned it back to me at about 7-36. I gave train out at 7-36. When I gave the train-out message Vandalur asked line clear for 22-30 special. I said "No." After I gave out time Vandalur gave special-out message. Vandalur first asked me if the line was clear and said the special left him. About 7-43 Vandalur signalled the special-out message. Immediately I went and reported to the station-master. I am quite sure Vandalur did give me line clear at about 7-34 for No. 15 mail. About 8-20 Vandalur asked me line clear for 22-30 o'clock special. I then asked him to give the time of arrival of No. 15 mail. He gave me 8-15. Then I gave line clear after getting the return marked J from the station-master at 8-21 and I received the special-out message at 8-22.

Cross-examined.—After No. 14 train had left Vandalur, I received no following message for the special train. After I signalled No. 15 out, the signaller at Vandalur told me that the special had already left. At once I told the station-master. When I signalled the train-out message, Vandalur signaller asked me "Is line clear for 22-30 special?" I said "No." See the train-out message.

M. Mohamed Butcha, Porter of Pallavaram.—Service about 6 years. About 3 years at this station as a pointman. I remember carrying the train-signal message book from the station-master to the Telegraph office on the morning in question.

Conclusion.

On inspecting the train-signal books, of which there are no less than 12 at each station, six of these being in constant use, I found in the Vandalur

books that the train-following message for the special, its acknowledgment [according to rule 4 (16) repetition from Pallavaram] and the train-out message were correctly written out with times, etc., as having been transmitted, but that no entries of any kind whatsoever were to be found in the corresponding book at Pallavaram, nor was there any indication of a leaf having been torn out of this latter book. It is therefore evident that the train-following notice was not sent from Vandalur to Pallavaram. Similarly, on examination of the Pallavaram "line-clear" message book, the message asking for "line-clear," its acknowledgment (or grant of "line-clear") from Vandalur and the "train-out" message for No. 15 mail were duly entered with times of transmission and receipt, but no entries were to be found in the corresponding book at Vandalur, except the "train-out" message; the upper part of the page on which the request and grant of "line-clear" should have been entered being blank, but with a remark in red ink signed by the station-master of Vandalur to the effect that these messages had not passed. The times of transmission and receipt of these messages as entered in the Pallavaram book were as follows:—

"Line-clear" asked at 7-34 (the correct time of arrival of No. 14 mail from Vandalur). "Line-clear" received 7-35. Train started at 7-35 (correct time) signalled at 7-36.

I had the request for and grant of "line-clear" signalled in my presence, and giving no time for the station-master to write his reply as required by rule, the operation occupied 2 minutes and 10 seconds. Now allowing 2 minutes for the pool to carry the book from the platform to the signal office and back to the station-master (as stated by him in evidence) and after the station-master had written or signed the driver's ticket, to carry the latter to the driver, it is evident 4 or even 5 minutes is the least time that is required between the arrival and departure of two crossing trains if the "line-clear" ticket is to be genuine instead of 1 minute as in this case.

Although the special left Vandalur at 7-24, the out-message was not signalled till 7-34. It is impossible to believe that had it been intimated to the station-master, Pallavaram, a man of 18 years' experience, that the special had been started, he would have despatched No. 15 mail.

I am therefore of opinion that the station-master, Vandalur, relying on telegram No. 121, and not having received No. 124, thought it was understood by Pallavaram that the special would follow No. 14 mail at 10 minutes' interval and started the train on a false ticket; that the station-master, Pallavaram, relying on telegram No. 124, thought No. 15 mail was to start as usual immediately No. 14 mail had cleared the section, and that after he had despatched the train and was giving the out-message, which I believe to be the only message usually transmitted and which is mutually understood to be the signal to fill up the whole page referring to the particular trains signalled, he was immediately informed by Vandalur that the special had started. I therefore find the station masters of Pallavaram and Vandalur are both criminally responsible for starting each train on a false ticket and should be prosecuted. I further consider the signaller of Vandalur guilty of neglect of rule 7 (17) quoted above, and also, together with the signaller of Pallavaram, guilty of making false entries in their respective books.

The station staff generally do not recognize that it is their duty to delay trains rather than start them to time on false tickets, and I am of opinion that any reasonable delay arising from this cause should not be regarded as an offence and should always be passed over. I consider that with the line-clear and ticket system as worked on the South Indian Railway 4 minutes is the minimum time that should be allowed at crossing stations between the arrival and departure of trains from and to the same section. I absolve the running staff of both trains from blame, that of the special being evidently completely misled by, I consider, the unnecessary telegram No. 121.

This occurrence, coming so soon after the similar case at Vaiyampati and which formed the subject of a special report to Government, would seem to demonstrate the unreliability of the "line-clear and ticket" system.

(Signed) C. T. R. SCOVELL,

Government Inspector of Railways.

MADRAS,
15th January 1894.

I agree with the above. Sufficient time must be allowed to work the line-clear system if it is to be relied on.

(Signed) F. R. UPCOTT,

Senior Government Inspector of Railways.

MADRAS,
1st February 1894.

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As India publishes
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are sent to us, it is
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of India, P.W.D. }

Communicated to the
Agents Madras & Southern
Indian Railways for
information.

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To The Agent & Manager, M. Ry
S. I. Ry
Aditors Table

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