

Public Works (1899) Department.

RAILWAY BRANCH.

G.O., No. 787. Ry
DATED 17th July 1899.

[Despatch Abstract.]

Results of working Automatic
Vacuum Brakes on railways in India.

Coming: to the Agents, M. & S. L. Ry, Resolution
of the Govt. of India forwarding Tables I & II
showing progress in the introduction of,
and ——— during the six months ending
the 31st Decr 1898.

BACK PAPERS.

FURTHER PAPERS.

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

Public Works (1899) Department.

D.W. Ry
CURRENT No. 900

From The Gulf of India

Order

Laminated to the
Agguts, Measas and Santa
Indian Railways.

No. 404 R. Stat

Dated 1st July 1859

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W.R.
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SUBJECT.

Automatic Vacuum Brakes
on Railways in India

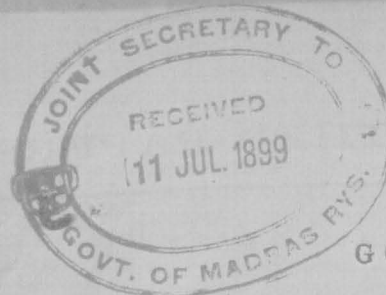
Forwarding tables nos I
+ II showing the progress
in the introduction of &
results of working
during the six months
ending with the 31/12/88

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FURTHER PAPERS.



GOVERNMENT OF INDIA.

PUBLIC WORKS DEPARTMENT.

RAILWAY STATISTICS.

Simla, the 1st July 1899.

Progress in the introduction of, and results of working, automatic vacuum brakes on railways in India during the six months ending with the 31st December 1898, tables Nos. I and II.

Read again—

Government of India letter No. 62 R. Stat., dated the 19th October 1891.
Government of India letter No. 354 R. Stat., dated the 4th September 1894.
Government of India letter No. 424 R. Stat., dated the 21st October 1896.

Read also—

also—
Government of India order No. 691 R. Stat., dated the 7th December 1898.

ORDER.—Ordered, that tables Nos. I and II be forwarded, for information,

ORDER.—Orders, that copies of the following be sent to the Local Governments and Administrations, and to the officers noted in the margin.

The Governments of Madras, Bombay, Bengal, the North-Western Provinces and Oudh, the Punjab and Burma.

The Chief Commissioners of the Central Provinces and Assam.

The Resident at Hyderabad.

The Resident in Mysore.

The Agents to the Governor General for Rajputana, Central India and Baluchistan.

The Consulting Engineers to the Government of India for Railways, Calcutta, Lucknow and Assam.

The Managers, North Western, Oudh and Rohilkhand, Eastern Bengal and East Coast State railways.

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

Further, that this order, with the tables, be published in the Supplement to the *Gazette of India*.

W. increasing

Captain, R.F.,

Offg. Under Secretary to the Government of India.

Ans.

Documents accompanying.

Tables Nos. I and II, showing the railways on which automatic vacuum brakes were in use, the number and proportion of rolling-stock fitted with the brakes, the progress made in fitting stock since the previous half-year, and the results of working the brakes during the six months ending with the 31st December 1898.

G. C. Press, Simla...No. 470 P. W. D.-3-7-99.-20.

To The Joint Secretary to the Govt. of Madras,
P. W. Dept. (Railway Branch).

TABLE No. I.

Statement showing, for the six months ending with the 31st December 1898, the railways on which automatic vacuum brakes were in use, the mileage run by trains fitted with the brakes, the number and proportion of rolling-stock fitted, and the progress made in fitting stock since the previous half-year.

Railways (including branch lines worked).	Period.	Loco-MOTIVES.		VEHICLES.*			Number of miles run by trains fitted.	Total number of instances in which the brakes failed to act or caused delay in the working of trains.	PROPORTION PER CENT.		Number of failures as compared with mileage run by trains fitted.
		Fitted.	Not fitted.	Braked.	Piped.	Not fitted.			Of vehicles braked or piped on total.	Of mileage run by trains fitted or partially fitted on total train-mileage.	
1	2	3	4	5	6	7	8	9	10	11	12
STANDARD GAUGE.											
<i>State lines worked by companies.</i>											
East Indian ...	1st-half, 1898 (a)	92	549	997	126	11,133	1,168,849	31	9.16	16.40	1 in 37,705
	2nd-half, 1898 (b)	94	549	1,092	111	11,118	1,188,779	32	9.76	17.39	1 in 37,149
Bengal-Nagpur ...	1st-half, 1898	...	118	18	23	3,788	...	...	1.07	...	...
	2nd-half, 1898	1	117	110	9	3,710	(c)	...	3.11	...	...
Indian Midland ...	1st-half, 1898	66	59	110	23	2,424	152,554	5	5.20	14.78	1 in 30,511
	2nd-half, 1898	66	59	112	23	2,422	200,108	3	5.28	23.15	1 in 66,936
<i>State lines worked by the State.</i>											
North Western ...	1st-half, 1898	446	194	1,974	193	11,013	1,181,391	15	16.44	20.65	1 in 78,759
	2nd-half, 1898	447	193	2,018	193	11,063	1,176,733	11	16.66	24.12	1 in 106,976
Oudh and Rohilkhand ...	1st-half, 1898	40	126	355	21	4,706	208,874	1	7.40	15.41	1 in 208,874
	2nd-half, 1898	43	126	353	20	4,700	241,189	3	7.53	18.49	1 in 80,396
Eastern Bengal ...	1st-half, 1898	51	53	214	85	2,410	413,710	6	11.04	44.17	1 in 68,932
	2nd-half, 1898	51	53	256	99	2,354	429,882	13	13.10	42.00	1 in 33,068
East Coast ...	1st-half, 1898	12	45	5	...	1,781	(c)	...	0.29	...	...
	2nd-half, 1898	12	59	5	...	1,758	(c)	...	0.28	...	...
<i>Lines worked by guaranteed companies.</i>											
Great Indian Peninsula ...	1st-half, 1898	188	417	1,316	...	8,286	1,838,923	29	13.71	35.67	1 in 63,411
	2nd-half, 1898	196	409	1,316	...	8,286	1,975,526	25	13.71	46.01	1 in 79,021
Bombay, Baroda and Central India ...	1st-half, 1898	86	77	421	54	4,291	461,722	12	9.97	30.96	1 in 38,477
	2nd-half, 1898	101	73	437	60	4,198	481,834	9	10.58	43.31	1 in 53,482
Madras ...	1st-half, 1898	36	132	261	40	3,518	166,008	12	7.68	12.79	1 in 13,834
	2nd-half, 1898	41	127	338	26	3,462	239,318	6	9.51	18.37	1 in 39,886
<i>Line owned by native state and worked by company.</i>											
The Nizam's Guaranteed state ...	1st-half, 1898	...	50	20	...	973	...	...	2.01	...	...
	2nd-half, 1898	...	50	20	...	973	...	...	2.01	...	...
TOTAL OF ALL RAILWAYS (STANDARD GAUGE) ...	1st-half, 1898 (a)	1,017	1,851	5,691	565	55,248	5,592,031	111	10.17	21.24	1 in 50,879
	2nd-half, 1898 (b)	1,052	1,845	6,057	551	55,014	5,933,569	102	10.72	24.97	1 in 58,172
METRE GAUGE.											
<i>State lines worked by companies.</i>											
South Indian ...	1st-half, 1898	25	183	107	41	4,099	255,097	6	8.48	14.94	1 in 42,516
	2nd-half, 1898	25	183	122	37	4,093	298,751	11	3.74	16.76	1 in 27,159
Assam-Bengal...	1st-half, 1898	44	9	149	...	1,107	(c)	...	11.86	...	...
	2nd-half, 1898	44	9	152	...	1,106	(c)	...	12.08	...	...
Burma ...	1st-half, 1898	...	148	...	...	4,247	...	...	...	...	...
	2nd-half, 1898	5	145	20	...	4,252	1,080	...	0.47	0.08	...
<i>State line worked by the State.</i>											
Eastern Bengal—Northern and Behar sections ...	1st-half, 1898	13	59	125	25	2,231	114,255	10	6.30	14.85	1 in 11,425
	2nd-half, 1898	13	59	163	25	2,419	115,959	3	7.21	15.87	1 in 38,653
TOTAL OF ALL RAILWAYS (METRE GAUGE) ...	1st-half, 1898	82	1,287	381	66	34,018	369,332	16	1.30	3.24	1 in 23,083
	2nd-half, 1898	87	1,308	457	62	34,471	415,730	14	1.48	4.09	1 in 29,639

* Excluding cranes.

(a) Excluding 10 locomotives and 310 vehicles used on lines under construction.

(b) Excluding 12 locomotives and 439 vehicles used on lines under construction.

(c) Brakes not brought into use.

N.B.—The detailed figures in columns 4 and 7 do not work up to the totals, as the latter represent the totals of all railways.

TABLE No. II.

Statement showing, for the six months ending with the 31st December 1898, all cases in which the automatic vacuum brakes failed to act, when required to be brought into action, or caused delay in the working of trains.

1	2	3	4	5
Railway.	Name or description of brakes which failed or caused delay in the instances specified in column 2.	Date of failure.	Instances under the three following heads separately, of: (i) Failure or partial failure to act when required in case of an accident to a train, or a collision between trains being imminent. (ii) Failure or partial failure to act under ordinary circumstances to stop a train when required. (iii) Delay in the working of trains in consequence of defects in, or improper action of, the brakes, distinguishing whether they arose from neglect or inexperience of servants, or failure of machinery or material.	Number of miles run by trains fitted with automatic vacuum brakes.
STANDARD GAUGE.			(i)—Nil.	
East Indian	Vacuum automatic	1st July 1898	(ii) The vacuum cylinder piston of the brake van attached to No. 3 up Bombay mail train became jammed at Chausa station and caused the brake blocks to bind against the wheels.	
		16th July 1898	(ii) No. 2 down Punjab mail train worked non-vacuum from Tundla to Cawnpore station, due to a hole in the tender vacuum hose pipe.	
		7th August 1898.	(ii) The brake blocks of a luggage van attached to No. 1 up Punjab mail train were binding against the wheels owing to the piston being jammed at Chausa station.	
		26th August 1898.	(ii) The piston of a bogie carriage attached to No. 25 up Howrah-Barákar passenger train was found defective at Burdwan station.	
		16th September 1898.	(ii) The relief valve spring of the engine attached to No. 4 down Bombay mail train was found weak at Dinapore station.	
		26th October 1898.	(ii) The vacuum brake piston of a composite bogie carriage attached to No. 1 up Punjab mail train was found jammed in cylinder at Allahabad station.	
		3rd July 1898	(iii) Failure of machinery.—No. 15 up Bombay mail train detained 5 minutes at Pora station, due to the brake blocks of a 3rd class carriage being hard on.	See page 3.
		29th July 1898	(iii) Neglect of servants.—No. 10 down loop mail train detained 20 minutes at Bhágapur station, due to the hose pipe washer of a second class carriage being deficient.	
		5th August 1898.	(iii) Neglect of servants.—No. 1 up Punjab mail train lost 25 minutes between Tundla and Háthras stations, due to the release valve spiral spring missing.	
		5th August 1898.	(iii) Failure of machinery.—No. 27 up local passenger train detained 10 minutes at Serampore station, due to the steam brake valve not releasing owing to a small ball valve sticking.	
		27th August 1898.	(iii) Failure of machinery.—No. 15 up Bombay mail train lost 15 minutes between Háthras and Páli stations, due to a leakage in the vacuum hose pipe of a horse-box.	
		4th September 1898.	(iii) Failure of machinery.—No. 24 down Barákar-Howrah passenger train detained 15 minutes at Asansol station, due to a leakage in the hose pipe of a carriage.	

TABLE No. II—contd.

Statement showing, for the six months ending with the 31st December 1898, all cases in which the automatic vacuum brakes failed to act, when required to be brought into action, or caused delay in the working of trains—contd.

1	2	3	4	5
Railway.	Name or description of brakes which failed or caused delay in the instances specified in column 4.	Date of failure.	Instances under the three following heads separately, of: (i) Failure or partial failure to act when required in case of an accident to a train, or a collision between trains being imminent. (ii) Failure or partial failure to act under ordinary circumstances to stop a train when required. (iii) Delay in the working of trains in consequence of defects in, or improper action of, the brakes, distinguishing whether they arose from neglect or inexperience of servants, or failure of machinery or material.	Number of miles run by trains fitted with automatic vacuum brakes.
STANDARD GAUGE—contd.				
East Indian—contd. ...	Vacuum automatic	14th September 1898.	(iii) Neglect of servants.—No. 10 down loop mail train detained 20 minutes at Mokameh station, due to the train hose pipe not being properly coupled.	See page 3.
		20th September 1898.	(iii) Neglect of servants.—No. 12 down Bombay mail train detained 18 minutes at Asansol station, due to the washers of a 3rd class carriage and a brake van being deficient.	
		21st September 1898.	(iii) Failure of material.—No. 1 up Punjab mail train detained 13 minutes at Mokameh station, due to the release valve spring of the engine being weak.	
		27th September 1898.	(iii) Failure of machinery.—No. 16 down Bombay mail train detained 5 minutes at Ghaziabad station, due to the indicator of a brake van being out of order.	
		27th September 1898.	(iii) Failure of machinery.—No. 4 down Bombay mail train lost 31 minutes between Deori and Jubbulpore stations, due to the release valve pipe of a luggage van being disconnected.	
		5th October 1898.	(iii) Failure of machinery.—No. 33 up local passenger train detained 7 minutes at Crow's Nest and lost 6 minutes between Howrah and Hooghly stations, due to the pipe leaking.	
		8th October 1898.	(iii) Failure of machinery.—No. 32 down local passenger train lost 8 minutes between Hooghly and Howrah stations, due to a leakage in the train pipe close to the ejector.	
		11th October 1898.	(iii) Neglect of servants.—No. 2 down Punjab mail train detained 30 minutes at Tundla station, due to the appliance for stopping the train in an officers' carriage being left open.	
		13th October 1898.	(iii) Failure of material.—No. 1 up Punjab mail train detained 3 minutes at Barh station and 5 minutes at Dinapore station, due to a defect in the pipe of a brake van.	
		17th October 1898.	(iii) Neglect of servants.—No. 3 up Bombay mail train detained 25 minutes at Bankipore station, due to two washers being deficient on the hose pipes of a second class carriage.	
		22nd October 1898.	(iii) Failure of material.—No. 1 up Punjab mail train detained 12 minutes at Bankipore and 25 minutes at Dinapore stations, due to the hose pipe of a second class carriage being damaged.	

TABLE No. II—contd.

Statement showing, for the six months ending with the 31st December 1898, all cases in which the automatic vacuum brakes failed to act, when required to be brought into action, or caused delay in the working of trains—contd.

1	2	3	4	5
Railway.	Name or description of brakes which failed or caused delay in the instances specified in column 4.	Date of failure.	Instances under the three following heads separately, of: (i) Failure or partial failure to act when required in case of an accident to a train, or a collision between trains being imminent. (ii) Failure or partial failure to act under ordinary circumstances to stop a train when required. (iii) Delay in the working of trains in consequence of defects in, or improper action of, the brakes, distinguishing whether they arose from neglect or inexperience of servants, or failure of machinery or material.	Number of miles run by trains fitted with automatic vacuum brakes.
STANDARD GAUGE—contd.				
East Indian—concl'd.	Vacuum auto-matic.	28th October 1898.	(iii) Failure of material.—No. 3 up Bombay mail train lost 4 minutes between Barh and Patna stations and 5 minutes between Behea and Buxar stations, due to defective washers on the hose couplings of the train.	1,188,779
		31st October 1898.	(iii) Failure of material.—No. 3 up Bombay mail train lost 5 minutes between Barh and Patna stations, due to defective washers on the hose couplings of the train.	
		7th November 1898.	(iii) Failure of machinery.—No. 1 up Punjab mail train detained 9 minutes at mile 786, between Jaswantnagar and Bhadrán stations, due to the hose pipes of two North Western railway carriages becoming disconnected.	
		24th November 1898.	(iii) Failure of material.—No. 2 down mail train lost 1 hour and 28 minutes between Ganaur and Sonapat stations, due to damage to the engine train pipe.	
		24th November 1898.	(iii) Failure of material.—No. 9 up loop mail train detained 10 minutes at Sahabgunge station due to a defect in the combination ejector of the engine.	
		26th November 1898.	(iii) Neglect of servants.—No. 12 down Bombay mail train detained 15 minutes at Ranee-gunge station, due to the vacuum pipe of a 3rd class carriage leaking, train hose pipes not being properly coupled up.	
		19th December 1898.	(iii) Failure of material.—No. 9 up loop mail train detained 10 minutes at Luckeesraï station, due to the universal hose coupling on a composite carriage being too short.	
		26th December 1898.	(iii) Failure of machinery.—No. 10 down loop mail train detained 25 minutes at mile 334½, near Burhee station, due to the breakage of the engine hose pipe.	
		28th December 1898.	(iii) Neglect of servants.—No. 23 up local passenger train detained 5 minutes at Howrah station, due to some dirt between the hose pipes of two carriages admitting air into the pipes.	

TABLE No. II—contd.

Statement showing, for the six months ending with the 31st December 1898, all cases in which the automatic vacuum brakes failed to act, when required to be brought into action, or caused delay in the working of trains—contd.

1	2	3	4	5
Railway.	Name or description of brakes which failed or caused delay in the instances specified in column 2.	Date of failure.	Instances under the three following heads separately, of: (i) Failure or partial failure to act when required in case of an accident to a train, or a collision between trains being imminent. (ii) Failure or partial failure to act under ordinary circumstances to stop a train when required. (iii) Delay in the working of trains in consequence of defects in, or improper action of, the brakes, distinguishing whether they arose from neglect or inexperience of servants, or failure of machinery or material.	Number of miles run by trains fitted with automatic vacuum brakes.
STANDARD GAUGE—contd.				
Indian Midland	Vacuum automatic.	...	(i)—Nil	200,808.
		13th October 1898.	(ii) No. 6 up mail train worked non-automatic between Lalpur and Jhānsi stations, due to the T joint train pipe of a brake van leaking.	
		2nd September 1898.	(iii) Failure of material.—No. 1 down mail train started 30 minutes late from Jhānsi station, due to the release valve diaphragms of a 2nd and a 3rd class carriage being defective and leaking.	
		22nd October 1898.	(iii) Failure of material.—No. 1 down mail train lost 23 minutes between Jhānsi and Tundla stations, due to a leak in the vacuum chamber base between the engine and tender.	
North Western State	Vacuum automatic		(i) and (ii)—Nil.	See page 5.
		7th July 1898	(iii) Inexperience of servants.—No. 1 up mail train detained 14 minutes at Thull station to let out brake gearing of a bogie composite carriage.	
		14th July 1898	(iii) Neglect of servants.—No. 3 up mail train detained 7 minutes at mile 1,157, near Ghāziabad station, due to the piston rod packing ring on a Great Indian Peninsula railway carriage drawing air.	
		14th July 1898	(iii) Neglect of servants.—No. 6 down passenger train lost 23 minutes between Jagādhri and Sahāranpur stations, due to the train pipe on a reserved carriage leaking.	
		23rd July 1898	(iii) Neglect of servants.—No. 6 down passenger train lost 10 minutes between Umballa Cantonment and Sahāranpur stations, due to the train pipe of an Oudh and Rohilkhand State railway reserved carriage leaking.	
		11th August 1898.	(iii) Neglect of servants.—No. 14 down passenger train detained 14 minutes at Lāla Mūsa station, due to the repairs which had to be done to the brake of the engine not having been properly attended to.	
		13th August 1898.	(iii) Failure of material.—No. 3 up passenger train detained 30 minutes at Beas station, due to the vacuum piston getting jammed as the rolling ring perished.	

TABLE No. II—contd.

Statement showing, for the six months ending with the 31st December 1898, all cases in which the automatic vacuum brakes failed to act, when required to be brought into action, or caused delay in the working of trains—contd.

1	2	3	4	5
Railway.	Name or description of brakes which failed or caused delay in the instances specified in column 2.	Date of failure.	Instances under the three following heads separately, of: (i) Failure or partial failure to act when required in case of an accident to a train, or a collision between trains being imminent. (ii) Failure or partial failure to act under ordinary circumstances to stop a train when required. (iii) Delay in the working of trains in consequence of defects in, or improper action of, the brakes, distinguishing whether they arose from neglect or inexperience of servants, or failure of machinery or material.	Number of miles run by trains fitted with automatic vacuum brakes.
STANDARD GAUGE—contd.				
North Western State— contd.	Vacuum automatic	23rd September 1898.	(iii) Neglect of servants.—No. 12 down mixed train lost 10 minutes between Phillour and Ludhiāna stations, due to a rubber washer on the hose coupling of an intermediate class carriage getting torn.	1,176,733.
		9th October 1898.	(iii) Neglect of servants.—No. 12 down passenger train detained 8 minutes at Rohāna station, due to the piston rod packing ring on a brake van drawing air through a leakage.	
		26th October 1898.	(iii) Neglect of servants.—No. 19 up mixed train detained 5 minutes at Gorāya station, due to the ball valve diaphragm on a 2nd class carriage drawing air through a leakage.	
		13th December 1898.	(iii) Failure of material.—No. 1 up Quetta mail train detained 22 minutes at Mābiota flag station, due to the tender vacuum piston of the engine getting jammed and the rolling ring having twisted.	
		13th December 1898.	(iii) Neglect of servants.—No. 1 up Quetta mail train detained 22 minutes at Naundero station, due to the hose pipe of a bogie carriage being left partly open and drawing air in consequence of a sudden application of the brake.	241,189.
Oudh and Rohilkhand State.	Vacuum automatic	...	(i) and (ii)—Nil.	
		20th July 1898	(iii) Failure of material.—No. 2 down mail train detained 5 minutes at Lhaksar station, due to the universal coupling of a composite carriage splitting.	
		1st September 1898.	(iii) Neglect of servants.—No. 2 down mail train detained 12 minutes at Lhaksar station, due to the universal coupling washer of a composite carriage being deficient.	
		19th October 1898.	(iii) Failure of material.—No. 1 up mail train detained 16 minutes at Ramganga bridge, due to the universal couplings between a third and an intermediate class carriage opening on account of the India rubber washer having become mis-shaped.	See page 7.
Eastern Bengal State	Vacuum automatic	6th July 1898	(i) and (ii)—Nil. (iii) Neglect of servants.—No. 106 down passenger train lost 11 minutes between Majherat and Budge Budge stations, due to the carriage brakes not releasing.	
		8th July 1898	(iii) Neglect of servants.—No. 106 down passenger train detained 7 minutes at Tolley's Nullah station and 3 minutes at Akra station, in releasing brakes owing to necessary repairs not being properly executed.	

TABLE No. II—contd.

Statement showing, for the six months ending with the 31st December 1898, all cases in which the automatic vacuum brakes failed to act, when required to be brought into action, or caused delay in the working of trains—contd.

1	2	3	4	5
Railway.	Name or description of brakes which failed or caused delay in the instances specified in column 4.	Date of failure.	Instances under the three following heads separately, of: (i) Failure or partial failure to act when required in case of an accident to a train, or a collision between trains being imminent. (ii) Failure or partial failure to act under ordinary circumstances to stop a train when required. (iii) Delay in the working of trains in consequence of defects in, or improper action of, the brakes, distinguishing whether they arose from neglect or inexperience of servants, or failure of machinery or material.	Number of miles run by trains fitted with automatic vacuum brakes.
STANDARD GAUGE—contd.				
Eastern Bengal State—contd.	Vacuum automatic	8th July 1898	(iii) Neglect of servants.—No. 107 up passenger train detained 7 minutes at Santoshpur station in releasing vacuum and 49 minutes at Majherat station for carriage brakes not releasing. The train worked without the vacuum brake from Majherat to Ballygunge station and lost 3 minutes on the road.	See page 7.
		8th July 1898	(iii) Neglect of servants.—No. 34 down passenger train detained 6 minutes at Há'sa station, due to the driver being unable to create vacuum in consequence of a pipe having been left uncoupled.	
		11th July 1898	(iii) Failure of machinery.—No. 4 down passenger train lost 11 minutes between Rajbári and Sealdah stations, due to a leakage in the train pipe.	
		28th July 1898	(iii) Failure of machinery.—No. 30 down passenger train lost 6 minutes at Chogdah station, 10 minutes between Chogdah and Madanpur stations and 8 minutes between Madanpur and Kánchrápára stations, due to the neck ring of the engine vacuum piston and the train pipe leaking.	
		10th August 1898.	(iii) Failure of material.—No. 30 down passenger train lost 6 minutes between Barrackpore and Sodepore stations, due to the vacuum brake pipe of a first class carriage having burst, necessitating the train being stopped to disconnect the pipe.	
		14th September 1898.	(iii) Failure of machinery.—No. 34 down passenger train lost 15 minutes between mile 54 and Sealdah station, due to a leakage in one of the coupling pipe flanges of a third class carriage.	
		10th October 1898.	(iii) Neglect of servants.—No. 22 down mail train lost 17 minutes at Ránaghat station in creating vacuum and 9 minutes between Ránaghat and Sealdah stations, due to the engine brake not releasing through the improper fitting of the engine vacuum piston.	
		14th November 1898.	(iii) Neglect of servants.—No. 8 down passenger train detained 23 minutes at Porádaha station in detaching a luggage van from the train, there being no rubber washers on both ends of the vacuum pipe.	
		16th November 1898.	(iii) Failure of material.—No. 34 down passenger train detained 19 minutes at Pángsa station, due to the driver being unable to create vacuum in consequence of leakages in several pipes, and 5 minutes at Belghurriah station, for coupling up vacuum pipe as the train pipe parted.	

TABLE No. II—contd.

Statement showing, for the six months ending with the 31st December 1898, all cases in which the automatic vacuum brakes failed to act, when required to be brought into action, or caused delay in the working of trains—contd.

1	2	3	4	5
Railway.	Name or description of brakes which failed or caused delay in the instances specified in column 4.	Date of failure.	Instances under the three following heads separately, of: (i) Failure or partial failure to act when required in case of an accident to a train, or a collision between trains being imminent. (ii) Failure or partial failure to act under ordinary circumstances to stop a train when required. (iii) Delay in the working of trains in consequence of defects in, or improper action of, the brakes, distinguishing whether they arose from neglect or inexperience of servants, or failure of machinery or material.	Number of miles run by trains fitted with automatic vacuum brakes.
STANDARD GAUGE—contd.				
Eastern Bengal State—contd.	Vacuum automatic	4th December 1898.	(iii) Failure of machinery.—No. 34 down passenger train lost 21 minutes between Ránaghat and Sealdah stations, due to a leakage in the train pipe and the vacuum chamber of the engine.	429,882.
		16th December 1898.	(iii) Failure of material.—No. 29 up passenger train detained 10 minutes at Barrackpore station, due to the train pipe having got off the plug at the rear of the train.	
Great Indian Peninsula...	Vacuum automatic	...	(i) and (ii) —Nil.	
		11th July 1898	(iii) Failure of material.—No. 176 up local train detained 10 minutes at Victoria Terminus station in replacing an India rubber hose pipe of a brake van which had perished and was drawing air.	
		16th July 1898	(iii) Failure of machinery.—No. 214 up local train detained 15 minutes at Dádar station in uncoupling the brake hanger of a 3rd class carriage, due to the pin having worked out as the cottar sheared.	
		17th July 1898	(iii) Neglect of servants.—No. 16 up passenger train detained 20 minutes at Sháhpura station in adjusting the tender brake blocks which had been fitted up too closely and were binding on the wheels.	
		21st July 1898	(iii) Failure of machinery.—No. 99 down passenger train lost 35 minutes between Harda and Narsinghpur stations, due to the pistons of two 3rd class carriages having jammed.	
		28th July 1898	(iii) Failure of machinery.—No. 133 down mail train detained 10 minutes at Dhond station, to fit a pin and cottar to the brake shaft arm of a Madras railway 3rd class carriage.	
		1st August 1898.	(iii) Failure of material.—No. 99 down passenger train detained 11 minutes at Itarsi station, as the driver was unable to create vacuum, due to the India rubber coupling washer of a carriage truck being defective.	
		16th August 1898.	(iii) Failure of machinery.—No. 43 down local train detained 8 minutes at Mazagaon station and 17 minutes at Byealla station, due to the ejector of the engine being out of order.	
		30th August 1898.	(iii) Failure of machinery.—No. 169 down passenger train detained 5 minutes at Harda station, due to the brake block hanger pin and cottar having dropped out on the journey.	

See page 9.

TABLE No. II—contd.

Statement showing, for the six months ending with the 31st December 1898, all cases in which the automatic vacuum brakes failed to act, when required to be brought into action, or caused delay in the working of trains—contd.

1	2	3	4	5
Railway.	Name or description of brakes which failed or caused delay in the instances specified in column 4.	Date of failure.	Instances under the three following heads separately, of: (i) Failure or partial failure to act when required in case of an accident to a train, or a collision between trains being imminent. (ii) Failure or partial failure to act under ordinary circumstances to stop a train when required. (iii) Delay in the working of trains in consequence of defects in, or improper action of, the brakes, distinguishing whether they arose from neglect or inexperience of servants, or failure of machinery or material.	Number of miles run by trains fitted with automatic vacuum brakes.
STANDARD GAUGE—contd. Great Indian Peninsula— contd.	Vacuum automatic	3rd September 1898.	(iii) Failure of material.—No. 113 down local train lost 17 minutes between Mazagaon and Thana stations, due to the ejector of the engine being out of order.	See page 9.
		3rd September 1898.	(iii) Failure of material.—No. 145 down passenger train detained 8 minutes at Poona station, in uncoupling the cylinder of a 3rd class carriage, the release valve lever of which was broken and could not be manipulated.	
		16th September 1898.	(iii) Neglect of servants.—No. 169 down passenger train detained 10 minutes at Bankhedi station, to fit a Clayton coupling washer to a horse box which was deficient.	
		23rd September 1898.	(iii) Failure of machinery.—No. 129 down mail train detained 10 minutes at mile 453, between Dharmkundi and Dulariya stations, to secure the brake gear of a third class carriage which had become disconnected through a pin working out.	
		29th September 1898.	(iii) Neglect of servants.—No. 22 up mail train lost 6 minutes between Bhusaval and Jalgaon stations, due to the neglect of the driver to create sufficient vacuum.	
		1st October 1898.	(iii) Neglect of servants.—Down express mail train detained 2 minutes at Hisvahal station, due to the hose coupling between two postal vans having been improperly coupled.	
		3rd October 1898.	(iii) Neglect of servants.—No. 76 up passenger train detained 5 minutes at Takli station, to release the train brakes and recreate vacuum, due to the driver having run with more vacuum than could be maintained.	
		4th October 1898.	(iii) Failure of machinery.—No. 28 up passenger train detained 10 minutes at Mhasavad station, to uncouple the cylinder of a brake van on which the brake could not be released.	
		11th October 1898.	(iii) Failure of material.—No. 137 down mail train detained 5 minutes at Igatpuri station, to exchange an India rubber washer on the hose coupling of an Indian Midland railway road van which was drawing air.	
		21st October 1898.	(iii) Neglect of servants.—No. 76 up passenger train lost 5 minutes between Man and Murtajapur stations and 2 minutes at Shergaon station, due to the flexible pipe having been improperly placed on the dummy plug of the rear brake which allowed it to draw air.	

TABLE No. II—contd.

Statement showing, for the six months ending with the 31st December 1898, all cases in which the automatic vacuum brakes failed to act, when required to be brought into action, or caused delay in the working of trains—contd.

1	2	3	4	5
Railway.	Name or description of brakes which failed or caused delay in the instances specified in column 4.	Date of failure.	Instances under the three following heads separately, of: (i) Failure or partial failure to act when required in case of an accident to a train, or a collision between trains being imminent. (ii) Failure or partial failure to act under ordinary circumstances to stop a train when required. (iii) Delay in the working of trains in consequence of defects in, or improper action of, the brakes, distinguishing whether they arose from neglect or inexperience of servants, or failure of machinery or material.	Number of miles run by trains fitted with automatic vacuum brakes.
STANDARD GAUGE—contd. Great Indian Peninsula— contd.	Vacuum automatic.	25th October 1898.	(iii) Neglect of servants.—No. 89 down passenger train lost 1 hour and 45 minutes between Reversing and Khandala stations, due to the driver allowing his engine to drop in steam and being unable to keep the brake blocks off the wheels.	1,975,526
		3rd November 1898.	(iii) Neglect of servants.—No. 102 up passenger train detained 25 minutes at Palasdhari station, to leak off the train and recreate vacuum as the driver allowed his engine to fall in steam.	
		21st November 1898.	(iii) Failure of machinery.—No. 28 up passenger train detained 11 minutes at Harda station in examining for a leakage in the train. At Palasner station the train was leaked off and worked non-automatic to Kirkee station where the defect was traced to a washer missing on a 2nd class carriage.	
		25th November 1898.	(iii) Failure of machinery.—No. 176 up local train was leaked off at Diva station and worked non-automatic to Bombay station, due to the lapping of the bottom nut of the ejector steam pipe having blown out.	
		28th November 1898.	(iii) Failure of machinery.—No. 141 down mail train detained 17 minutes at Lonavla station, to uncouple the brake gear of a Madras railway postal van which had jammed.	
		5th December 1898.	(iii) Failure of machinery.—No. 68 up passenger train detained 6 minutes at Byculla station, to tie up the brake gear of a brake van which had become uncoupled due to the push rod pin working out.	
		31st December 1898.	(iii) Neglect of servants.—No. 76 up passenger train detained 11 minutes at mile 395 $\frac{1}{2}$, between Kuram and Man stations, due to the sudden application of the brake caused by the hose pipe of a composite carriage becoming uncoupled.	
		...	(i)—Nil.	
Bombay, Baroda and Central India.	Vacuum automatic.	18th July 1898	(ii) No. 7 down passenger train worked with the hand brake from Amroli to Baroda station, due to a hole in the vacuum chamber of a 3rd class carriage and a defect in the train pipe of a bogie composite carriage.	

See page 10.

TABLE No. II—contd.

Statement showing, for the six months ending with the 31st December 1898, all cases in which the automatic vacuum brakes failed to act, when required to be brought into action, or caused delay in the working of trains—contd.

1	2	3	4	5
Railway.	Name or description of brakes which failed or caused delay in the instances specified in column 4.	Date of failure.	Instances under the three following heads separately, of: (i) Failure or partial failure to act when required in case of an accident to a train, or a collision between trains being imminent. (ii) Failure or partial failure to act under ordinary circumstances to stop a train when required. (iii) Delay in the working of trains in consequence of defects in, or improper action of, the brakes, distinguishing whether they arose from neglect or inexperience of servants, or failure of machinery or material.	Number of miles run by trains fitted with automatic vacuum brakes.
STANDARD GAUGE—contd.				
Bombay, Baroda and Central India—contd.	Vacuum automatic	12th August 1898.	(ii) No. 5 down ordinary train could not maintain sufficient vacuum on account of defects in the ball valve of a Great Indian Peninsula railway horse box which was attached at Dádar junction station. The horse box being next to rear brake, the pipe was detached and the remainder of the train was worked with automatic vacuum brake from Bándra station.	
		26th December 1898.	(ii) No. 7 down ordinary train was worked with hand brake between Amroli and Baroda stations, due to one of the hose couplings between carriages having burst.	
		17th July 1898	(iii) Failure of material.—No. 7 down mixed train detained 25 minutes at Virár station, in order to lower down the vacuum cylinder pistons as the brake blocks of 2 composite carriages got jammed, and lost 12 minutes between Navsári and Surat stations, as the brake blocks were rubbing against the wheels, and 23 minutes at Surat station to detach one composite carriage and to uncouple the pistons of the other composite.	
		21st July 1898	(iii) Neglect of servants.—No. 7 down mixed train lost 13 minutes between Bili-mora and Vedcha stations, due to the engine having run short of steam and the vacuum chamber leaking badly.	481,334.
		22nd August 1898.	(iii) Failure of material.—No. 14 up passenger train lost 8 minutes between Mar-wani and Raoti stations, due to the bottom horn of one of the hose couplings between two carriages having broken and the couplings become uncoupled.	
		25th December 1898.	(iii) Neglect of servants.—No. 1 down mail train detained 12 minutes at Grant Road station, due to the big ejector having been blocked with dirt.	
		25th December 1898.	(iii) Failure of material.—No. 7 down mixed train detained 10 minutes at Bul-sár station, due to the damaged hose coupling pipe on a third class carriage.	
		26th December 1898.	(iii) Neglect of servants.—No. 7 down ordinary train detained 5 minutes at Amroli station, due to there being no washers on two of the hose couplings.	

TABLE No. II—contd.

Statement showing, for the six months ending with the 31st December 1898, all cases in which the automatic vacuum brakes failed to act, when required to be brought into action, or caused delay in the working of trains—contd.

1	2	3	4	5
Railway.	Name or description of brakes which failed or caused delay in the instances specified in column 4.	Date of failure.	Instances under the three following heads separately, of: (i) Failure or partial failure to act when required in case of an accident to a train, or a collision between trains being imminent. (ii) Failure or partial failure to act under ordinary circumstances to stop a train when required. (iii) Delay in the working of trains in consequence of defects in, or improper action of, the brakes, distinguishing whether they arose from neglect or inexperience of servants, or failure of machinery or material.	Number of miles run by trains fitted with automatic vacuum brakes.
STANDARD GAUGE—contd.				
Madras ...	Vacuum automatic	...	(i) and (ii)—Nil.	
		8th August 1898.	(iii) Failure of machinery.—No. 81 down mail train detained 20 minutes at Tinnánur station, due to the connections on two foreign railway vehicles being defective.	
		14th October 1898.	(iii) Failure of machinery.—No. 14 up mail train detained 2 minutes at mile 346, due to a leakage in the coupling.	
		15th October 1898.	(iii) Failure of machinery.—No. 81 down mail train was brought to a stand and detained for 15 minutes at Nagari station, due to a leaky piston under a foreign railway vehicle.	239,318.
		19th October 1898.	(iii) Failure of machinery.—No. 81 down mail train detained 9 minutes at Nagari station, due to a defective release valve.	
		15th November 1898.	(iii) Neglect of servants.—No. 61 down mail train detained 27 minutes at mile 1,521—3, due to the dirty condition of the gearing under a carriage.	
		14th December 1898.	(iii) Failure of machinery.—No. 14 up mail train detained 10 minutes at Pádi station, due to the piston under a carriage drawing air.	
METRE GAUGE.				
South Indian ...	Vacuum automatic	...	(i)—Nil.	
		26th August 1898.	(ii) The brake blocks of a composite brake van attached to No. 19 mail train seized on the wheels between Tatapárai and Tuticorin stations, due to the piston rod being bent.	
		25th October 1898.	(ii) The release valve of a bogie 3rd class carriage attached to No. 38 mail train was leaking between Tuticorin and Madura stations.	
		26th October 1898.	(ii) The cast iron universal coupling in a composite brake van attached to No. 19 mail train broke at Kumbakónam station.	See page 12.
		28th October 1898.	(ii) The release valve of a bogie 3rd class carriage attached to No. 19 mail train was found leaking at Chingleput station.	
		29th October 1898.	(ii) The vacuum pipe of an inspection carriage attached to No. 38 mail train was found leaking at Villupuram station.	
		2nd November 1898.	(ii) A composite brake van attached to No. 38 mail train worked without vacuum from Koilpati to Madura station, due to the coupling pipes not being coupled properly.	

TABLE No. II—concl'd.

Statement showing, for the six months ending with the 31st December 1898, all cases in which the automatic vacuum brakes failed to act, when required to be brought into action, or caused delay in the working of trains—concl'd.

1	2	3	4	5
Railway.	Name or description of brakes which failed or caused delay in the instances specified in column 4.	Date of failure.	Instances under the three following heads separately, of: (i) Failure or partial failure to act when required in case of an accident to a train, or a collision between trains being imminent. (ii) Failure or partial failure to act under ordinary circumstances to stop a train when required. (iii) Delay in the working of trains in consequence of defects in, or improper action of, the brakes, distinguishing whether they arose from neglect or inexperience of servants, or failure of machinery or material.	Number of miles run by trains fitted with automatic vacuum brakes.
METRE GAUGE.—concl'd. South Indian.—concl'd. ...	Vacuum automatic	10th July 1898	(iii) Inexperience of servants.—No. 57 mail train detained 24 minutes at Cuddalore station, due to the staff not being able to release the brake of a composite brake van.	298,175.
		16th August 1898.	(iii) Inexperience of servants.—No. 24 mail train detained 20 minutes at Māyavaram station, due to the improper working of the ejector.	
		1st October 1898	(iii) Failure of machinery.—No. 38 mail train detained 10 minutes at mile 170—17, due to the flexible pipe between the engine and tender wearing through by rubbing against the flange of the feed pipe.	
		9th December 1898.	(iii) Failure of material.—No. 57 mail train detained 6 minutes at mile 344—4, due to the flexible pipe between the engine and tender bursting.	
		15th December 1898.	(iii) Failure of machinery.—No. 24 mail train detained 10 minutes at mile 317—6, due to the vacuum train pipes leaking.	115,959
Eastern Bengal State— Northern and Behar sections.	Vacuum automatic	...	(i) and (ii)—Nil.	
		6th July 1898	(iii) Neglect of servants.—No. 22 down mail train lost 15 minutes between Sili-guri and Jalpāiguri stations, due to the vacuum pipe coupling between two first class carriages blowing badly in consequence of the rubber washer of the coupling not having been fitted properly.	
		15th July 1898	(iii) Neglect and inexperience of servants.—No. 16 down Assam express train detained 15 minutes at Pārbatipur station, due to the driver being unable to create vacuum in consequence of the rubber washers of 3 carriages and the brake van having been improperly fitted in coupling.	
		17th September 1898.	(iii) Failure of material.—No. 16 down Assam express train detained 10 minutes at Rāninagar station, due to the rubber hose of the engine train pipe being broken in consequence of the inside wire coil eating through the hose.	