



Report to Secretary of State  
for India in Council on Railways in  
India for the Year  
1872-73  
(1873)



Juland Danvers ESQ



**REPORT**  
**TO**  
**THE SECRETARY OF STATE FOR INDIA IN COUNCIL**  
**ON**  
**RAILWAYS IN INDIA,**  
**FOR THE YEAR**  
**1872-73**

**BY JULAND DANVERS, ESQ.,**  
GOVERNMENT DIRECTOR OF THE INDIAN RAILWAY COMPANIES.

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

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# REPORT

To His Grace the DUKE of ARGYLL, K.T., Secretary of State for India.

MY LORD DUKE,

India Office, 1st July 1873.

I HAVE the honour to submit to your Grace the following Report on Railways in India for the year 1872-73. The revenue accounts and the statements relating to the traffic and working of the lines are made up to the end of 1872. The capital accounts are brought up to the 31st March 1873, so that the date may correspond with the end of the official financial year.

2. A length of  $304\frac{1}{2}$  miles was added, during the year 1872, to the  $5,079\frac{1}{2}$  miles of line which were open for traffic at its commencement, and during the present year 127 miles more have been completed, so that the railway system now open in India extends over  $5,511\frac{1}{2}$  miles. The greater portion of this new additional mileage belongs to the Oude and Rohilkund Railway, of which 354 miles have been opened since the 1st January 1872. Progress during 1872.

3. The following table furnishes particulars as to the length of each line sanctioned and the extent opened :—

	Railway.	Gauge.	Length of Line.	Length opened during 1872.	Length opened since Dec. 1872.	Total Length opened.	Portion laid with Double Line.	Length remaining to be finished.	
Guaranteed.	East Indian - { Main line	5' 6"	1,280	—	—	1,280	414½	—	
	- { Jubbulpore line		223½	—	—	223½	—	—	
	Great Indian Peninsula	5' 6"	1,278½	12½	—	1,278½	287	—	
	Madras	5' 6"	857½	—	3	835	—	22½	
	Bombay, Baroda, and Central India	5' 6"	389½	40	—	389½	23	—	
	Scinde, Punjab, and Delhi	5' 6"	676	—	—	676	—	—	
	Great Southern of India	5' 6"	383½	—	—	168	}	344½	
	Carnatic	5' 6"	147½	—	—	18½			
	Eastern Bengal	5' 6"	158½	—	—	156½			
	Oude and Rohilkund	5' 6"	693	252	102	396	—	299	
	Nulbartee	4' 0"	27½	—	—	27½	—	—	
	Calcutta and South-eastern	5' 6"	28	—	—	28	—	—	
	Punjab Northern	3' 3½"	329	—	—	—	—	329	
	Indus Valley	3' 3½"	493	—	—	—	—	493	
	Rajpootana	3' 3½"	396	—	—	—	—	396	
	State.	Indore to Khandwa (Holkar's)	3' 3½"	86½	—	—	—	—	86½
Pattee branch of Bombay, Baroda, and Central India Railway		5' 6"	22	—	22	22	—	—	
Wurda Valley		5' 6"	15	—	—	—	—	15	
BERAR.									
Khamgaon		5' 6"	7½	—	—	7½	—	—	
Oomrawuttee		5' 6"	5½	—	—	5½	—	—	
NIZAM'S GOVERNMENT.									
Goolburga to Hyderabad		5' 6"	121	—	—	—	—	121	
Total			7,621½	504½	127	5,511½	724½	2,109	

4. The following statement shows the state of progress since the railways were commenced, and the length which was open at the end of each year from 1853 to 1872 :—

Railways.	Length of Line open at the end of each Year.																			
	1853.	1854.	1855.	1856.	1857.	1858.	1859.	1860.	1861.	1862.	1863.	1864.	1865.	1866.	1867.	1868.	1869.	1870.	1871.	1872.
East Indian Railway (including Jubulpore) -	—	37½	126½	120½	120½	141	28½	367½	860½	885½	937	1,185½	1,129½	1,129½	1,252½	1,363½	1,333½	1,353½	1,500½	1,506½
Great Indian Peninsula	21½	34½	50½	53½	84½	104½	245½	207½	437½	40½	553	385½	70½	815½	853	876½	876½	1,223½	1,265½	1,278½
Madras - - -	—	—	—	55½	90½	95	95	136	207½	447	447	571	811	646	643	677½	707½	733	832	832
Bombay, Baroda, and Central India -	—	—	—	—	—	—	—	35	133	133	135	306½	365½	307½	305½	305½	305½	310½	349½	359½
Scinde - - -	—	—	—	—	—	—	—	—	105½	105½	105½	105½	105½	105½	105½	105½	105½	105½	105½	105½
Punjab - - -	—	—	—	—	—	—	—	—	—	33	45	45	233	253	240	246	240	509½	509½	509½
Delhi - - -	—	—	—	—	—	—	—	—	—	—	—	—	—	—	53	63	208½	509½	509½	509½
Great Southern of India	—	—	—	—	—	—	—	—	49	79	79	79	79	127	144	163	168	168	168	168
Eastern Bengal	—	—	—	—	—	—	—	—	—	110	110	110	110	110	113½	113½	113½	156½	156½	56½
Oude and Rohilkund -	—	—	—	—	—	—	—	—	—	—	—	—	—	—	42	42	42	42	42	204
Carnatic - - -	—	—	—	—	—	—	—	—	—	—	—	—	167	167	167	167	167	167	167	167
Calcutta & South-eastern	—	—	—	—	—	—	—	—	—	15	23	23	23	23	23	23	23	23	23	23
Nulhattee - - -	—	—	—	—	—	—	—	—	—	—	27½	27½	27½	27½	27½	27½	27½	27½	27½	27½
Khangsaon - - -	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	7½	7½	7½
Omrawuttie - - -	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	5½	5½	5½
Total - - -	21½	78	171	274½	280½	430½	634½	336½	1,531½	1,361½	1,516½	2,903½	3,368½	3,503	3,937½	4,017½	4,227½	4,633½	5,078½	5,385½

State lines.

5. Fair progress has been made with the works on the State lines, and during the present year between two and three hundred miles will probably be opened. The operations of the Oude and Rohilkund Company are being conducted with vigour, and it is expected that an additional length of 150 miles will be finished and opened before November next. The works on this line which give most trouble are the bridges, especially those over the Ganges at Cawnpore and at Rajghat, and over the Ramgunga at Bareilly. The importance of obtaining good foundations below where the scour can possibly reach them has been demonstrated by dearly bought experience. Hardly a season passes without bridges breaking down and embankments being cut through by the streams they were respectively constructed to cross over and to check. During the floods of last year the Sutlej bridge on the Punjab Railway gave way, and on the Northern State line the unfinished works on the Jhelum and Ravea bridges were damaged. Several spans of the Damaungunga and Orunga bridges on the Bombay, Baroda, and Central India Railway, and the whole of the bridge over the Par river on the same line were also carried away in September last. The fact is that, when railways were first proposed for India, although a great many difficulties were started which on near approach disappeared, the great difficulty of crossing the rivers and of withstanding the force of the floods was not apparently sufficiently considered or estimated. The rivers of India, which rise in the various mountain ranges some thousands of miles from the sea, cut their way through soils of so soft and shifting a character, that in many places a new channel sometimes miles away from its original course is frequently\* formed, and the old bed is left dry. It is hardly necessary to remark that the seasons in India have a very different effect upon the watercourses to that which we generally see in Europe. The rainfall is confined to certain months, and, in some places, to certain weeks and days, while the rest of the year is dry and hot. In many cases river beds which may be easily forded and even waded at one season become channels for wide and impetuous streams in another. It was, of course, a part of the engineer's duty to study this characteristic and to

Bridges.

\* A curious instance of a change of channel occurred last year, when a notification appeared in the Calcutta Gazette, transferring 13 villages from one district to another, in consequence of the Ganges having so changed its course as to leave them on the south instead of the north bank. The process of erosion is thus described by the late Captain Wood in his "Journey to the Source of the Oxus":—"When the waters of the Indus are low, the noise caused by the tumbling in of its banks occurs so frequently as to become a characteristic of the river. During the silence of night the ear is assailed by what at first might be mistaken for the continued discharge of artillery, two, three, and even four reports are often heard within the minute, and even 13 have been counted in that short space of time."

provide against the danger. His investigations were, however, thwarted by imperfect data, and what, from recorded information and from observation, was considered to be the maximum volume of water that ever passed through a certain channel in the height of the floods has been frequently exceeded. Major-General Beadle, who has just given up the post of agent to the Oude and Rohilkund Railway Company, writing very recently concerning the works on that line, points out that "in 1870 and 1871, the floods " were so excessive and so entirely unforeseen, that the estimates submitted " and the project prepared had to be reconsidered and altogether superseded; " the bank had to be raised and the designs of bridges to be revised, increasing " largely the waterway." These floods fortunately occurred before the works were much advanced. This, however, has not been the case in other places. Disasters have accordingly occurred and much damage has been inflicted on several railway bridges. Now that more is known, more will be done to avert mischief; but after taking every precaution, there will always be considerable difficulty where shifting streams have to be encountered, and where foundations have to be laid in soil subject to a scour of 50 and 60 feet in depth. The only approach in Europe to this condition of things is in the northern plains of Italy, and last year we had an example of how human ingenuity and skill have been unable to cope with the streams which rush down from the Alps in the autumn and early winter.

6. In consequence of the injury done to the bridges on the Punjab Railway, Mr. Leslie, the engineer who had earned distinction by his erection of the Goraie bridge in Bengal, was deputed to visit Lahore and confer with the company's chief engineer, Mr. Harrison, on the flood damage and the measures to be taken for avoiding similar disasters in future. These bridges consist of iron girders supported by brick piers or wells  $12\frac{1}{2}$  feet in diameter sunk to a minimum depth of 40 feet. On the 14th November last, Mr. Leslie, accompanied by Mr. Harrison, inspected those over the Sutlej, Jumna, and Beas rivers, and he again visited them in company with Colonel Rundall and Colonel Crofton of the Irrigation Department, and Mr. Molcsworth, Consulting Engineer for State Railways. After obtaining information with regard to the character of the rivers, and the treacherous nature of the earth composing the foundation, and after ascertaining the depth of the scour which had taken place, he came to the following conclusions, which were those to which Mr. Harrison had also arrived, viz.:—

Bridges on  
the Punjab  
Railway.

"1st. That the system of bridging, viz., iron girders carried on single wells with cylindrical piers above low-water level, is the most suitable style that can be adopted for these rivers.

"2nd. That the amount of waterway now given at the Jumna and the Sutlej, and which will be given at the Beas bridge, is sufficient to accommodate the maximum flood discharge, but not in excess of what is required.

"3rd. That the foundation is strong enough to sustain the normal pressure of the bridge, but is quite inadequate to sustain the increased strain to which it is liable to be subjected by the lateral pressure of the current upon the well when deep scour takes place, and that hitherto the damage which has occurred to the pier wells has been due to the yielding of the foundations.

"4th. That up to the present date none of the pier wells have actually been underscoured, but the scour has been very near the bottom; and had not the piers given way by the yielding of the foundation, and fallen down stream, it is possible the scour might have extended below the bottom, in which case it is probable they would have fallen against stream.

"5th. That the piers of all these bridges would be secure if the depth of the scour could be so limited as never to leave less than 25 feet of the well embedded in a material strong enough to sustain, without yielding, the lateral pressure caused by the force of the stream.

"6th. If this object can be secured the pressure at the base of the piers would be equally distributed over the foundation, and the worst that could happen would be a vertical settlement of the pier wells.

"7th. The system which is now being adopted by Mr. Harrison will, I believe, satisfactorily accomplish this object with more certainty and at a more moderate outlay than any other. It consists in excavating as much as possible of the river bed for a width of 20 feet all round the wells, and surrounding them with a layer or bank of large-sized rubble stone, which, by its weight and the action of the water, settles down vertically around the wells, and is not subject to be scoured out, leaving the well unsupported, as is the case with the loose silty deposit forming the natural bed of the river.

"8th. The quantity which it is proposed to deposit around each well in the first instance is from eight to twelve thousand cubic feet, according as the opportunity for depositing it is favourable, or otherwise, a quantity of stone being kept in reserve at each bridge to be thrown in around such piers as may be subjected to extraordinary scour during flood seasons."

The system thus described has been tested at the Jumna bridge since the damage done by the floods of 1871, and has been successful.

The gap made in the Sutlej bridge by last year's rains will be filled up by sinking three wells of 15 feet diameter 70 feet below low water, reducing the size above that level to 12½ feet, so as to correspond with the other piers. The new wells will also be protected by the loose stone bank. The same course will be adopted in regard to the new piers of the Beas bridge.

Mr. Leslie has strong faith in the efficacy of loose stone for the protection of foundations in these rivers. But, supposing that this plan could not have been applied for want of material, the alternative, in his opinion, would have been "to transfer the superstructure of these bridges to a new line of wells of 18 or 20 feet diameter at the base, sunk 70 feet below low-water mark, and tapering upwards to 13 at the low-water level, on the down stream side of the existing bridge."

#### SHIPMENTS TO INDIA IN 1872.

7. During the past year 66,534 tons of goods exclusive of fuel, and of the value of 655,822L., have been shipped to India for the purposes of the railways. Of these 18,949 tons were shipped by the Government, and 47,585 by the Railway Companies. One ship only met with any disaster, and she had on board railway material belonging to the Bombay, Baroda, and Central India Railway Company, valued at 498L. The freights appear to have been higher than usual, and this is in a great measure accounted for by the use of the Suez Canal route, in consequence of the number of urgent demands received from India for the immediate supply of materials. The quantities sent out were small, smaller than they have been in any previous year, but there is no reason why, as a rule, timely requisitions should not be made, so that the cheaper mode of sending goods by ship round the Cape may be adopted. This consideration should in future be borne in mind by those in India whose duty it is to prepare the indents. There were also sent out 116,223 tons of fuel, the cost of which, including the freight to India, amounted to 361,094L. The efforts which are now being made to ascertain what additional coal deposits are available for the railways in India, and the measures which have been taken for maintaining a supply of wood fuel, will, it is hoped, have the effect of reducing this large amount in future years.

SHIPPING OPERATIONS, exclusive of Fuel, during 1872 on Account of the Guaranteed and State Railways.

Railway.	Number of Ships employed in 1872.	Number of Tons of Goods shipped in 1872.	Value of Goods shipped in 1872.	Amount paid for Freight and Insurance in 1872.	Average Rate of Freight and Insurance per Ton.
		Tons.	£	£	£ s. d.
East Indian - - -	25	3,392	58,563	4,047	1 3 10
Great Indian Peninsula - - -	31	6,032	48,215	9,975	1 13 0
Madras - - -	48	17,853	91,381	21,281	1 3 10
Bombay, Baroda, and Central India - - -	*21	723	15,801	1,652	2 5 8
Scinde, Punjab, and Delhi - - -	26	1,588	35,093	4,671	2 18 9
Great Southern of India - - -	8	2,742	5,650	3,147	1 2 11
Eastern Bengal - - -	17	1,423	20,490	2,412	1 13 10
Oude and Rohilkund - - -	55	13,825	176,738	9,165	0 15 11†
Carnatic - - -	2	7	321	10	1 9 8
State Railways - - -	90	13,949	203,570	21,390	1 2 7
Total - - -	318	66,534	655,822	77,750	—

\* In the case of this line the high average rate is explained by six sevenths of the goods having been sent by steamer via the Suez Canal.

† 2,307 tons delivered by the contractors in Calcutta. The amount of freight not being known is not included in the figures above given.

**Amount and cost of fuel sent out from this Country during the year 1872.**

Railway Company.	No. of Tons.		Original Cost.		Cost of Freight and Insurance.	Average Cost per Ton in England.		Average Cost per Ton when used in India.	
	Coal.	Coke and Patent Fuel.	Coal.	Coke and Patent Fuel.		Coal.	Coke and Patent Fuel.	Coal.	Coke and Patent Fuel.
Great Indian Peninsula -	77,718	C. 9,423	£ 165,135	£ 25,853	£ 116,028	£ s. d. 0 16 3	£ s. d. 1 5 1	£ s. d. 2 2 6	£ s. d. C. 2 14 11
Madras -	7,728	P.F. 7,227	3,970	5,568	16,509	0 10 3	0 15 4	1 16 5	P.F. 1 19 3
Bombay, Baroda, & Central India	11,226	C. 106	*22,252	237	263	about 15 0	2 5 0	1 19 8	C. 4 15 1
Scinde, Punjab, and Delhi	—	C. 98	—	109	218	—	1 2 2	—	C. 3 6 10
Great Southern of India -	2,698	—	1,937	—	3,015	0 14 4	—	2 0 8	—
Totals -	99,370	C. 9,626 P.F. 7,227	193,294	31,767	136,038	—	—	—	—

Coal and fuel.

\* This price included freight, the delivery being made in Bombay.

**SHIPMENTS FROM THE COMMENCEMENT.**

Period.	Number of Ships employed.	Number of Ships lost.	Number of Tons of Goods shipped.	Value of Goods shipped.
Up to end of 1860	2,605	39	2,094,686	£ 10,431,976
In 1861	407	—	181,621	1,669,443
" 1862	280	1	138,013	1,487,582
" 1863	279	2	166,840	1,285,464
" 1864	233	—	102,318	1,018,164
" 1865	442	2	199,157	1,729,543
" 1866	581	7	312,227	2,527,757
" 1867	512	5	333,329	3,052,652
" 1868	364	3	188,858	1,849,554
" 1869	455	1	211,750	1,432,784
" 1870	461	1	263,449	1,698,209
" 1871	307	6	168,049	707,765
" 1872	318	1	66,534	655,822
Total	7,244	68	4,427,831	29,536,715

**FUTURE EXTENSIONS.**

( 8. No new undertakings were sanctioned during the past year. In the present circumstances of railway enterprise in India, it is not surprising that the policy of Government in regard to future extensions should be marked by caution. So long as industrial works in India must be undertaken by Government, or, what amounts to the same thing so far as financial risk is concerned, by guaranteed companies, and so long as the result of the working of existing lines involves a contribution from the revenue of the country to make up the amount due for interest on the outlay, the Government is right in requiring proof, or the strongest evidence in support of the belief, that future railways, whether undertaken by Government or companies, will turn out to be remunerative in one shape or another. Indirect as well as direct gains of course enter into the calculation. The improvement of the material prosperity of the country is the end aimed at through all such works. But if the revenue of the country will not be increased, *directly*, by remunerative profits from the new lines themselves, or *indirectly*, by augmented receipts from existing lines, by saving the national expenditure or by improving the national resources, the Government naturally pauses before encouraging fresh works. )

Future extensions.

The commencement of the Carwar Railway is for these reasons postponed, and hesitation is being felt respecting other projected undertakings.

**LEGISLATION.**

9. The only legislative enactments in connexion with Indian Railways which have to be noticed are those Bills which are either receiving or are about to receive the consideration of Parliament. The object of one is to empower all



railway companies, which cannot do so already, to establish registers for shares in India, and thus to enable the stock of deceased shareholders *in India* to be transferred without the necessity (which now exists) of taking out letters of administration *in this country*. The other Bill relates to the amalgamation of the Great Southern and the Carnatic Railway Companies, which in future will be styled the South Indian Railway Company.\* This amalgamation is just about to be effected. The old contracts between the Secretary of State in Council and the two Companies will be cancelled, and a new contract entered into with the amalgamated company embracing the principal terms and conditions of the former, and modifying others so as to suit the altered position of the two undertakings and to reconcile discrepancies.

#### PROPRIETORS OF RAILWAY SECURITIES IN 1872.

10. The total number of proprietors of Indian Railway securities on the 31st December 1872 was 61,940, being 626 more than the previous year. Of these, 56,127 consist of shareholders registered in England, and 842 registered in India, 388 of the latter being natives. The remaining 4,971 are holders of debentures and of debenture stock. The total amount of capital issued at the same date was 93,729,218*l.*, of which only 1,276,624*l.* had been subscribed in India. The number of shareholders residing in India has remained almost stationary for the last ten years. It has been thought by some persons that the necessity above referred to which has hitherto existed for taking out letters of administration in this country in order to realise the shares of a deceased holder may have been a discouragement to residents in India to hold shares.

Railway.	Number of Shareholders on 31st December 1872.						Number of Debenture Holders.		Total Number of Proprietors on the 31st December 1872.
	Registered in England.			In India.			Bond.	Stock.	
	With Stock or Shares to the Amount of 1,000 <i>l.</i> and upwards.	With Stock or Shares of less Amount than 1,000 <i>l.</i>	Total in England.	Europeans.	Natives.	Total in India.			
East Indian - - -	6,892	8,223	15,115	156	151	307	982	851	17,255
Great Indian Peninsula -	5,401	7,527	12,928	113	113	226	667	1,400	15,243
Madras - - -	3,003	4,200	7,203	—	—	—	207	—	7,410
Bombay, Baroda, and Central India - - -	2,214	3,849	6,063	9	60	69	394	—	6,526
Scinde, Punjab, and Delhi - - -	3,290	5,203	8,492	75	13	88	—	—	8,580
Great Southern of India - -	661	908	1,569	—	—	—	28	98	1,695
Eastern Bengal - - -	669	979	1,648	29	18	47	173	121	1,969
Oude and Rohilkund - - -	989	1,372	2,361	70	33	103	30	—	2,494
Carnatic - - -	232	516	748	—	—	—	—	—	748
Total - - -	23,351	32,776	56,127	454	388	842	2,501	2,470	61,940

#### PERSONS EMPLOYED ON THE RAILWAYS.

11. According to the following table, it would appear that on the 1st October 1872, the number of persons employed on the open lines of railway in India was 56,804, and in the Indus Flotilla 1,018, making 57,822 in all. Of these, 53,369 were natives and 4,453 Europeans and East Indians. There are, however, certain figures in the return which cannot easily be reconciled with what are known to be facts from other sources. On the Scinde, Punjab, and Delhi Railway, for instance, where considerable reductions have been going on during the year, the number given is 6,264 in excess of the previous year.

12. According to the casualty return, 90 Europeans and 22 East Indians died during the year, and 980 Europeans and 466 East Indians were discharged or dismissed.

13. The employment of natives and Eurasians as mechanics is every year carried out to a greater extent. They are trained as fitters, erectors, boiler smiths, &c., and also as drivers. On the Great Indian Peninsula Railway the Parsee drivers are pronounced to be as good as Europeans.

\* Since this was written it has been found necessary to withdraw the Bill, as, owing to unexpected delays and the consequent lateness of the period at which it was introduced, time did not admit of its passing this session.

Railways.	Agent's Department, including Medical and Barrack Departments.			Account Department.			Audit Department.			Printing and Stationery Department.			Stores Department.			Traffic Department, including Steam Ferry.			Engineers' Department.			Carriage and Wagon Department.			Locomotive Department.			Telegraph Department.			Grand Total.			No. of Miles open.	No. of Stations.	
	Europeans and East Indians	Natives.	Total.	Europeans and East Indians.	Natives.	Total.	Europeans and East Indians.	Natives.	Total.	Europeans and East Indians.	Natives.	Total.	Europeans and East Indians.	Natives.	Total.	Europeans and East Indians.	Natives.	Total.	Europeans and East Indians.	Natives.	Total.	Europeans and East Indians.	Natives.	Total.	Europeans and East Indians.	Natives.	Total.	Europeans and East Indians.	Natives.	Total.						
East Indian	23	178	201	—	—	—	302	519	820	6	236	242	24	570	593	403	4311	4773	97	7733	7870	129	2905	3031	372	2511	3033	48	1144	1192	1333	20165	51553	1508†	150	
Eastern Bengal	7	32	39	—	—	—	—	—	—	—	—	—	2	10	12	1013	1442	48	2463	2504	6	315	321	321	50	533	587	5	147	152	232	5084	5316	1681	32	
Calcutta & South-Eastern (State).	3	3	6	—	—	—	—	—	—	—	—	—	1	1	2	2	49	50	2	133	133	—	—	—	—	3	21	24	—	4	4	0	219	223	23	8
Nubatee State	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	39	39	—	77	77	16	16	16	1	40	41	—	2	2	1	179	180	27	6	
Oude and Rohilkund	20	45	65	—	—	—	—	—	—	—	—	—	—	—	—	0	1362	2062	16	233	233	—	—	—	51	403	544	2	24	26	112	1087	1199	133†	20	
Punjab and Delhi	16	34	50	—	—	—	61	201	262	—	—	—	—	—	—	137	1309	1340	30	3394	3424	—	—	—	155	2400	2545	0	0	0	393	7323	7721	507	49*	
Sindh	—	—	—	—	—	—	124	152	104	—	—	—	—	—	—	30	137	167	8	537	535	—	—	—	40	452	501	0	0	0	99	1208	1307	106	8	
Great Indian Peninsula	504	2903	3407	—	—	—	—	—	—	—	—	—	15	133	143	474	3457	3931	141	1363	1500	—	—	—	143	17	165	0	0	0	223	6230	6033	1594†	133	
Bombay, Baroda, and Central India.	234	1174	1408	—	—	—	—	—	—	—	—	—	8	20	28	77	1060	1163	40	111	151	—	—	—	186	1123	1300	0	0	0	337	5407	5794	3894	66	
Madras	31	38	69	—	—	—	14	202	216	—	—	—	7	51	58	206	1723	1931	97	3727	3824	—	—	—	803	2053	2454	61	126	167	906	7333	8739	833	79	
Great Southern of India	19	103	123	—	—	—	—	—	—	—	—	—	—	—	—	19	236	254	70	735	805	—	—	—	71	317	338	—	—	—	176	1397	1573	168	22	
Carnatic	4	22	26	—	—	—	—	—	—	—	—	—	3	3	6	16	16	16	29	29	—	—	—	—	3	6	10	—	—	—	6	74	10	4	—	
Indus Flotill	—	—	—	—	—	—	—	—	—	—	—	—	1	20	20	44	615	659	10	310	329	—	—	—	—	—	—	—	—	—	64	954	1018	—	—	

\* Audit Account and Cash.      † There are 21 Europeans and East Indians and 935 Natives employed in the Steam Boat Department.  
 ‡ Audit, Account, Stores and Printing and Stationery.      § Includes four persons employed in the Ticket Printing Department.  
 † This is exclusive of the Khammon and Comrooce Branches, 14 miles worked, but not maintained by the Great Indian Peninsula Railway.  
 ‡ Where the employees of the Carriage and Wagon Department are not shown separately they are understood to be included with those of the Locomotive Department.  
 The Departments of the Indus Flotilla do not correspond with those of the Railways, and are therefore shown separately.  
 The figures in the Returns for the Great Indian Peninsula and Bombay, Baroda, and Central India Railways differ considerably from the figures given in the Return for 1871, owing to a change made in the method of reckoning the numbers employed.

**GENERAL ABSTRACT OF CASUALTIES WHETHER BY DEATH, RESIGNATION AND DISCHARGE, OR DISMISSAL AMONGST THE EUROPEAN AND EAST INDIAN EMPLOYEES ON RAILWAYS IN INDIA during the year ending 31st December 1872.**

Railways.	Casualties in										Average Number of Servants.						Length in Miles.												
	General Department.		Traffic Department.		Locomotive Department.		Carriage and Wagon Department.		Engineer's Department.		Electric Telegraph Department.		Stores Department.		Total Casualties of all kinds.				Total Casualties by Death.		Traffic.		Locomotive.		All other Departments.		Total.		
	Europeans.	East Indians.	Europeans.	East Indians.	Europeans.	East Indians.	Europeans.	East Indians.	Europeans.	East Indians.	Europeans.	East Indians.	Europeans.	East Indians.	Europeans.	East Indians.	Europeans.	East Indians.	Europeans.	East Indians.	Europeans.	East Indians.	Europeans.	East Indians.	Europeans.	East Indians.	Open.	Under Construction.	
Madras	1	5	4	32	30	14	—	—	6	10	—	—	3	2	43	66	7	6	8	53	137	243	52	115	197	411	832	26	
Great Southern of India.	—	1	—	7	9	1	—	—	4	8	1	—	—	—	14	17	1	—	1	17	84	28	35	55	70	100	158	215	
Carnatic	—	—	—	—	—	—	—	—	—	2	—	—	—	—	—	3	—	—	—	—	1	1	11	9	12	10	19	—	
Total, Madras.	1	6	4	39	39	15	—	—	10	20	1	3	2	2	57	85	8	7	9	70	172	272	98	179	279	621	1,019	241	
Great Indian Peninsula.	1	—	37	35	146	20	—	—	32	18	—	—	—	1	1	267	74	24	4	319	175	523	87	136	44	978	306	1,260*	—
Bombay, Baroda, and Central India.	—	—	1	10	32	36	—	—	11	2	—	—	—	—	44	48	9	1	19	49	86	121	63	12	165	182	374	17	
Total, Bombay	1	—	38	45	178	56	—	—	43	20	—	—	—	1	1	311	122	33	5	338	224	609	208	199	56	1,146	488	1,640	17
East Indian	2	5	100	42	165	32	11	12	18	2	1	10	3	5	201	108	28	7	323	139	619	165	316	137	1,158	441	1,508†	—	
Eastern Bengal	3	—	40	23	16	2	—	—	17	10	—	1	1	—	77	36	5	2	53	27	78	13	49	22	180	62	156†	—	
Calcutta and South-Eastern (State).	—	—	3	—	—	1	—	—	—	—	—	—	—	—	2	1	1	—	2	—	—	5	1	1	3	6	26	—	
Nalhati (State).	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—	1	—	—	—	
Oudh and Rohilkhand.	6	—	—	—	—	3	—	—	56	23	—	—	4	—	74	32	6	—	9	3	33	20	126	71	168	94	145	449	
Punjab and Delhi	21	5	28	38	65	15	—	—	30	5	—	—	—	—	144	63	9	—	61	62	150	27	51	10	202	99	567†	—	
Sindh	—	—	2	5	5	10	—	—	—	8	—	—	—	—	7	18	—	1	9	24	20	29	6	5	35	59	106	—	
Indus Steam Flotilla	—	—	2	1	5	5	—	—	—	—	—	—	—	—	7	1	1	—	20	12	23	12	—	—	49	24	—	—	
Total, Bengal	32	16	174	109	265	63	11	12	121	43	1	11	8	5	612	209	50	10	477	267	930	271	449	247	1,856	785	3,582†	449	
Total, India	34	22	306	193	482	134	11	12	174	83	2	14	11	8	930	466	90	22	624	561	1,711	751	746	462	3,361	1,794	5,192†	707	

\* Exclusive of the Khamsaon and Oomroote Branches (13 miles), which are also worked by the Great Indian Peninsula Railway Company.

† Including the break of two miles at the Sutlej and the distances between Ghazeebad and Delhi, 13 miles.

## ACCIDENTS.

14. In the "observations" signed by Colonel H. Drummond, R.E., the officiating Deputy Secretary to the Government of India, in the Railway Department, which accompanied the following returns of accidents for the year 1872, it is stated that the rules for preparing these statements "are either not sufficiently understood, or are not sufficiently precise, and that it will therefore be unsafe to found any comparison upon the results exhibited." A great many trivial accidents appear to have been included in last year's returns which were not in 1871, and this explains how it is that the total number has swelled from 548 to 1,153. Of these, 655 happened to trains from the causes described in the following table. The rest were not connected with trains.

	East Indian Rail- way.	Eastern Bengal Rail- way.	Calcutta and South- Eastern Railway.	Nulhatee Railway.	Oudh and Rohil- khund Railway.	Punjab and Delhi Railway.	Scinde Railway.	Madras Railway.	Great Southern of India Railway.	Carnatic Railway.	Great Indian Penin- sula Railway.	Bombay, Baroda, and Central Indian Rail- way.	TOTAL.
Collisions	31	3	—	—	1	12	—	3	—	—	10	4	64
Getting off line	30	—	1	—	2	6	1	2	1	—	19	12	74
Fire	14	—	—	—	4	63	8	4	—	—	8	—	101
Running over cattle	114	1	—	1	4	5	9	42	—	—	66	25	267
Other causes	78	4	—	1	—	7	31	5	1	1	26	—	149
Total	262	8	1	2	11	98	49	56	2	1	129	41	655

15. The heading "other causes" includes defects in rolling stock, obstructions maliciously placed on the line (of which there were 30 cases), carelessness of workmen on the way and works, delays by gatemen in opening gates, slipping of embankments, &c.

16. The observations above referred to by Colonel Drummond conclude thus:

"The numbers of accidents to passengers in 1872, compare as follows with those in the three preceding years:—

	Killed.	Injured.
1869	48	92
1870	13	63
1871	9	29
1872	9	58

"These figures, however, are still inconclusive, as bearing no relationship to the number of passengers carried. The following table shows the number of passengers killed and injured per million of passenger journeys for 10 years:—

Number per Million carried of Passengers killed and injured from			
	Causes beyond their own Control.	Their own Misconduct or Incaution.	
1863	2.61	0.74	
1864	3.77	0.85	
1865	3.64	1.37	
1866	0.84	0.61	
1867	3.10	1.22	
1868	3.58	1.90	
1869	6.66	1.81	
1870	2.58	1.65	
1871	0.47	1.53	
1872	1.9	1.4	

"These figures are fairly satisfactory. In the United Kingdom in 1871 (the latest year, for which a Return has been prepared), 857 passengers, or 2.28 per million, were killed or injured, from causes beyond their own control, against 38 or 1.9 per million in India. In these 38, there is only one case of death, which



occurred on the Madras Railway, in an accident partly caused by a storm; and of the remaining 37, many injuries seem to have been of a trifling character.

### *Accidents to Railway Servants.*

"In the following table are exhibited the actual numbers of casualties to railway servants in the several years since 1863 :—

Year.	No. killed and injured			Train-mileage.	Reported number of Servants employed.
	From causes beyond their own control.	From their own Misconduct or want of Caution.	Total.		
1863	16	102	118	?	?
1864	20	127	147	?	?
1865	57	136	193	9,400,823	49,398
1866	48	152	200	11,073,968	54,034
1867	33	213	246	11,766,389	69,796
1868	60	239	299	11,431,656	68,398
1869	42	213	255	13,703,381	104,558*
1870	83	214	247	15,502,339	76,013
1871	24	222	246	13,844,840	74,650
1872	47	214	261	14,525,990	80,258

\* This is probably incorrect.

"The 261 casualties comprise 108 deaths and 153 injuries. One servant in 743 was killed, and one in 524 injured. In 1871, there were 84 deaths and 162 injuries. The accidents are mostly attributed to misconduct or want of caution, 96 deaths out of 108, and 118 injuries out of 153, being so classified in 1872. But it is not the less deplorable that such loss of life should occur, and the very earnest attention of the officers of all railway companies is invited to this subject.

"In one of the tables attached to this resolution will be found a complete analysis of these accidents. It is there shown that 23 deaths and 35 injuries arose from attempts to get on or off, or falls from, carriages in motion. It is, perhaps, impossible to stop this practice entirely, but it deserves consideration whether it could not be checked. The railway companies can hardly make an incautious man careful, but the fact that 39 men were killed and 24 injured from incautiously standing or walking on the line, makes it imperative that every possible step should be taken to reduce this annual record of loss.

### *Deaths in Trains or at Stations.*

"At the end of the Returns will be found a detailed schedule of all casualties unconnected with the working of trains. There were in all 149 deaths in carriages and at stations during the year 1872, of which 102 occurred on the East Indian Railway, 27 on the Great Indian Peninsula, 10 on the Punjab and Delhi, four on the Madras, three on the Bombay, Baroda, and Central India, two on the Oudh and Rohilkund, and one on the Eastern Bengal Railway. In most of these cases it seems that the deceased were too ill to travel by rail, and none of the deaths reported appear to require further notice, as each case was inquired into at the time of its occurrence."

TABLE No. I.

ABSTRACT of the NUMBER and NATURE of the ACCIDENTS and of the INJURIES to LIFE and LIMBS which have occurred on all Railways open for Traffic in India during the year 1872.

Presidency.	Mean Mileage open.	Railways.	Classification of Accidents to Trains, &c.					Passengers.				Servants of Companies or of Contractors.				Others.				Total Persons of all Classes.					
			Main Heads.					From Causes beyond their own Control.		From their own Misconduct or want of Caution.		From Causes beyond their own Control.		From their own Misconduct or want of Caution.		Whilst crossing at Level Crossings.		Whilst free-passing (including Suicide).					Miscellaneous.		
			I. Collisions.	II. Getting off proper Lane.	III. Fire.	IV. Running over Cattle.	V. Other Causes.	Total.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.				Injured.	Killed.	Injured.
Bengal.	1,503½	East Indian	111	238	15	128	204	691	—	15	3	16	4	11	30	36	1	—	48	5	—	89	85	174	
	1,503	Eastern Bengal	13	10	5	117	6	151	—	8	5	14	1	10	36	50	8	—	46	5	—	95	87	182	
	156½	Calcutta and South-eastern.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	7	9	16	
	28	Nulhaties	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	6	3	9	
	27	Oude and Rohilkund	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2	3	5	
	145	Funjab and Delhi	1	10	4	6	5	26	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
	42	Scinde	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
	534	Madras	16	14	2	—	1	4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	7	10	2
	554	Great Southern India.	2	18	54	4	9	87	—	2	4	1	4	3	13	16	—	—	7	—	—	1	1	22	53
	106	Carnatic	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	15	10	26	
Madras.	832	East Indian	4	4	4	42	6	51	—	8	—	—	—	2	9	4	—	—	4	—	—	3	3	5	31
	825	Eastern Bengal	3	1	1	62	1	69	—	—	—	—	—	—	8	11	4	—	3	—	—	15	16	29	
	168	Calcutta and South-eastern.	1	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	15	14	29	
	168	Nulhaties	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	1	3	
	168	Oude and Rohilkund	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
	19	Funjab and Delhi	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
	19	Scinde	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
	1,266	Madras	14	28	11	72	30	150	—	10	1	2	—	13	24	44	—	—	11	3	—	38	72	110	
	1,369	Great Southern India.	15	81	9	79	12	146	—	—	—	—	—	2	19	57	2	—	10	4	—	32	65	97	
	374	Carnatic	4	13	—	27	—	44	—	—	—	—	—	3	17	4	1	—	5	—	—	26	8	84	
Bombay	328	East Indian	1	5	—	28	2	36	—	—	—	—	—	6	6	11	—	—	2	—	—	9	20	39	
	—	Eastern Bengal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
India.	5,179½	East Indian	154	300	105	296	298	1,153	1	37	8	21	12	35	96	118	2	—	78	12	—	311	224	435	
	5,020½	Eastern Bengal	85	70	76	314	53	648	1	8	8	21	3	21	81	141	9	—	70	13	—	177	204	381	

TABLE NO. II.—NUMERICAL ABSTRACT OF ACCIDENTS OF ALL CLASSES ON ALL RAILWAYS OPEN FOR TRAFFIC IN INDIA DURING THE YEAR 1872.

	BENGAL, NORTH-WESTERN PROVINCES, OUDH, AND PUNJAB.												MADRAS.				BOMBAY.				Total.					
	East Indian.		Eastern Bengal.		Calcutta and South-Eastern.		Nulhatree.		Oude and Rohilkund.		Punjab and Delhi.		Scinde.		Madras.		Great Southern of India.		Carnatic.				Great Indian Peninsula.		Bombay, Baroda, & Central India.	
	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.
PASSENGERS.																										
From causes beyond their own control, viz. —																										
From accidents to trains	—	14	—	—	—	2	—	—	—	—	—	2	—	—	—	1	8	—	—	—	10	—	—	—	1	36
From other causes	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	1	8	—	—	—	10	—	—	—	1	1
Total	—	15	—	—	—	2	—	—	—	—	—	2	—	—	—	2	16	—	—	—	20	—	—	—	2	37
Per million of passengers	—	2.59	—	—	—	5.89	—	—	—	—	—	1.03	—	—	—	0.40	3.21	—	—	—	3.01	—	—	—	0.05	1.8
From their own misconduct or incitation	3	16	—	—	—	—	—	—	—	—	4	1	—	—	—	—	—	—	—	1	2	—	—	1	8	
Per million of passengers	0.53	2.77	—	—	—	—	—	—	—	—	3.07	0.52	—	—	—	—	—	—	—	0.30	0.60	—	—	0.34	0.4	
Total from all causes	3	31	—	—	—	2	—	—	—	—	4	3	—	—	—	1	8	—	—	1	12	—	—	1	9	
SERVANTS OF COMPANIES OR CONTRACTORS.																										
From causes beyond their own control	4	11	1	1	—	—	—	—	—	1	3	4	3	—	—	3	4	—	—	—	13	2	3	—	12	
From their own misconduct or incitation	30	36	2	7	1	1	—	—	—	1	5	12	16	—	—	9	4	—	—	—	24	44	17	4	96	
Total from all causes	34	47	3	8	1	1	—	—	—	2	7	16	19	—	—	9	6	—	—	—	24	57	19	7	108	
OTHER PERSONS.																										
Crossing at level crossings	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2	
Trespassers, including suicide	46	6	3	—	—	—	—	—	—	1	—	—	—	—	—	4	2	—	—	—	—	3	5	—	78	
Miscellaneous	5	1	—	—	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—	2	—	1	—	14	
Total from all causes	52	7	4	—	—	—	—	—	—	1	—	—	—	—	—	5	2	—	—	—	26	57	6	—	94	
Grand total of all classes from all causes	89	85	7	9	3	3	—	—	3	7	31	22	—	—	1	15	16	—	—	—	38	72	26	8	311	
Mean length of railway open during the year (miles)	1,503½	156½	28	389,597	34,278	27	53,542	16,095	145	649,894	1,935,418	73,885	106	832	2,495,454	1,738,770	1,024,276	244,718	168	91,166	1,266	374	2,972,939	5,179½		
Number of passengers carried	5,771,879	1,657,101	339,597	34,278	34,278	53,542	16,095	110,783	1,159,509	1,935,418	73,885	106	832	2,495,454	1,738,770	1,024,276	244,718	168	91,166	1,266	374	2,972,939	5,179½			
Train mileage (goods and passengers)	5,701,255	518,817	34,278	34,278	34,278	16,095	16,095	110,783	1,159,509	1,935,418	73,885	106	832	2,495,454	1,738,770	1,024,276	244,718	168	91,166	1,266	374	2,972,939	5,179½			

TABLE No. III.

Showing the TOTAL NUMBER OF ACCIDENTS TO PERSONS OF ALL KINDS, AND TO TRAINS, &amp;c., ON ALL RAILWAYS OPEN FOR TRAFFIC IN EACH PRESIDENCY OF INDIA, DURING THE YEAR 1872.

Presidencies.	Mean Length of Railway open.	Total Number of Train Miles.	Train Miles open per Mile.	Total Number of Accidents to Trains, &c. of all kinds.	Total Number of Passengers carried.	Average Number of Passengers per Mile opened.	Passengers.				Servants.				Firepassers, &c.				Total.	
							Killed.		Injured.		Beyond their own Control.		Within their own Control.		Killed.	Injured.	Killed.	Injured.	Killed.	Injured.
Bengal -	1872 { 2,520½	7,677,771	3,046	395	10,480,816	4,159	7	37	10	17	46	65	69	8	132	137	269	269	269	269
	1871 { 2,416½	6,811,043	2,819	296	9,714,494	4,020	9	25	2	13	47	61	62	5	120	104	224	224	224	224
Madras -	1872 { 1,010	1,937,776	1,361	64	2,610,896	3,544	1	6	—	2	9	5	5	2	15	17	32	32	32	32
	1871 { 1,013	1,963,294	1,346	70	2,169,156	3,151	—	2	—	—	9	12	7	1	16	15	31	31	31	31
Bombay -	1872 { 1,640	4,850,443	2,958	194	6,299,764	3,341	1	13	2	16	41	48	20	3	64	80	144	144	144	144
	1871 { 1,592	5,064,503	3,181	182	6,073,294	3,315	—	2	1	8	25	68	15	7	41	85	126	126	126	126
India -	1872 { 5,179½	14,825,990	2,805	1,153	20,891,476	3,937	9	53	12	35	96	118	94	13	211	224	435	435	435	435
	1871 { 5,020½	13,844,840	2,768	548	18,976,944	3,780	9	29	3	21	81	141	84	13	177	204	381	381	381	381



## CAPITAL EXPENDITURE.

Guaranteed  
capital.

17. The total amount of capital which, on the 31st March last, had been advanced for expenditure on the guaranteed railways was 91,686,025 $\frac{1}{2}$ l., of which 1,556,440 $\frac{1}{2}$ l. was expended during the past official year. The outlay in England for stores and materials was 822,994 $\frac{1}{2}$ l.; in India, for construction purposes, 679,446 $\frac{1}{2}$ l. A sum of 586,100 $\frac{1}{2}$ l. was taken from the balances at the credit of certain companies for paying off debentures.

18. A sum of 93,735,924 $\frac{1}{2}$ l. had been raised by the companies up to the 31st March, consisting of—

	£
Share Capital at 5 per cent.	79,983,494
Do. do. 4 $\frac{3}{4}$ „	1,349,970
Do. do. 4 $\frac{1}{2}$ „	500,000
Debentures 5 „	3,171,550
Do. do. 4 $\frac{1}{2}$ „	1,707,450
Do. do. 4 $\frac{1}{2}$ „	1,302,550
Do. do. 4 „	440,000
Debenture Stock 4 $\frac{1}{2}$ „	1,925,000
Do. do. 4 „ *3,086,013	2,825,589
Money not bearing Interest	530,321
	<u>93,735,924</u>

Expenditure  
on State  
lines.

19. The expenditure on the State lines is brought down only to the 31st December 1872. It had then amounted to 3,492,323 $\frac{1}{2}$ l., of which 708,827 $\frac{1}{2}$ l. had been expended in England. A sum of 3,371,218 $\frac{1}{2}$ l. had been advanced or appropriated to the various undertakings, leaving 121,105 $\frac{1}{2}$ l. out of the amount expended in this country on stores, &c. to be appropriated in India.

20. The amount appropriated to the State lines during the year 1872 was 1,558,836 $\frac{1}{2}$ l.

21. The whole capital expenditure on railways in India thus accounted for (which is exclusive of the land for the guaranteed lines, and the loss of exchange borne by Government) is in round numbers 94,500,000 $\frac{1}{2}$ l.

22. The following statement shows approximately how the expenditure has been applied :—

## Distribution of Capital expended.

Railway Company.	Works and Bridges.	Permanent Way and Stations.	Freight and Insurance.	Rolling Stock and Engines.	Establishments.	Miscellaneous, Electric Telegraph, Stores, &c.
	£	£	£	£	£	£
East Indian - - - - -	9,630,000	7,195,000	3,005,000	2,485,000	3,735,000	2,000,000
Great Indian Peninsula - - -	9,400,000	7,430,000	—	2,314,000	1,602,000	1,723,000
Madras - - - - -	3,370,000	3,825,000	—	1,081,000	872,000	441,000
Bombay, Baroda and Central India -	3,161,000	2,037,000	—	1,072,000	761,000	558,000
Scinde, Punjab, and Delhi - -	2,016,417	3,407,820	—	1,888,320 Steamers and Barges, 877,863 Workshops, 45,504	1,020,600	777,480
Great Southern of India - - -	514,000	445,000	—	102,000	213,000	202,000
Eastern Bengal - - - - -	—	2,021,385	—	314,000	323,000	213,000
Oude and Rohilkund - - - - -	814,500	1,659,000	—	857,000	382,000	708,000
Caruatic - - - - -	6,100	31,600	—	13,700	23,000	17,000

\* This was issued at an average discount of about 8 $\frac{1}{2}$  per cent.

23. It should be added that it is estimated that nearly 5,000,000L. of capital has been expended upon stores, a great portion of which will be paid back out of revenue, as they are used for purposes of maintaining and of working the railways. Amount paid for stores in hand.

24. The following gives approximately the amount locked up in stores by the several companies :—

	£
East Indian	1,190,000
Great Indian Peninsula	1,478,000
Madras	389,000
Bombay, Baroda, and Central India	486,000
Scinde, Punjab, and Delhi	596,000
Eastern Bengal	120,000
Great Southern	121,000
Oude and Rohilkund	511,000
Carnatic	5,000
	<hr/> 4,896,000 <hr/>

25. The following tables prepared in the Accountant's Department of this office furnish full particulars of the capital expenditure both in this country and in India :—

## STATEMENT No. 1.

STATEMENT OF EXPENDITURE IN ENGLAND AND INDIA ON INDIAN STATE RAILWAYS, appropriated to the various undertakings as shown in Statements to 31st December 1872, received from India.

State Railway.	Expenditure Appropriated.			Classification of Expenditure.											
	England.	India.	TOTAL.	Preliminary Expenses.	Land.	Construction of Line.	Ballast and Permanent Way.	Stations and Buildings.	Electric Telegraph.	Plant.	Rolling Stock.	Main-tenance.	Establishment.	Contingencies.	Suspense Accounts.
STATE RAILWAYS—EXTRAORDINARY.	£	£	£	£	£	£	£	£	£	£	£	£	£	£	£
Punjab, Northern	190,147	827,448	1,017,595	28,868	9,200	250,874	34,632	27,043	—	78,455	1,366	—	187,927	7,294	397,916
Indus Valley	2,424	336,498	338,922	58,503	1,343	42,049	8,493	14,508	—	8,404	—	—	82,393	4,974	23,255
Hooblee and Carwar	—	41,120	41,120	10,498	—	—	—	—	—	—	—	—	30,118	509	—
Wurdah Valley	889	79,331	79,720	7,214	12	10,173	12,141	804	—	75	—	—	2,999	184	46,168
Holkar	14,005	110,535	124,530	3,251	361	45,386	1,877	4,941	—	954	—	—	38,502	2,670	26,586
Neemuch	—	41,832	41,832	19,896	—	—	—	—	—	288	—	—	20,786	931	31
Agra District, Rajpootana	28,390	226,048	254,438	16,843	2,372	55,196	7,709	6,940	—	1,197	—	—	47,916	2,156	118,609
Delhi do.	40,668	201,315	241,983	8,799	12,830	34,011	80,553	18,489	—	2,354	2,426	—	34,834	1,789	50,904
Nulthate	30,000	—	30,000	—	—	*30,000	—	—	—	—	—	—	—	—	—
Calcutta and South-eastern	268,883	476,246	744,629	6,769	108,507	106,681	158,558	91,717	3,766	8,602	136,251	—	86,773	18,766	17,939
Northern Bengal	—	13,057	13,057	1,037	—	—	—	—	—	1,115	—	—	10,545	266	94
Gwalior (Survey)	—	356	356	26	—	—	—	—	—	81	—	—	267	7	35
Nagpore and Chateesghur	—	1,290	1,290	143	—	—	—	—	—	51	—	—	1,041	43	12
STATE RAILWAYS—ORDINARY.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Moradabad, Deobund, and Roorkee (Survey)	—	2,852	2,852	53	—	—	—	—	—	84	—	—	2,616	150	—
NATIVE STATES.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Nizam's	—	484,960	484,960	1,057	—	129,385	7,406	4,685	—	10,460	15	—	49,268	2,619	280,165
Khamgaum Branch	—	48,530	48,530	37	89	10,921	29,323	4,638	—	342	82	—	2,886	234	—
Omruttee Branch	18,316	30,414	48,730	112	245	9,415	25,359	4,944	110	801	15	—	3,806	123	—
Mysore	—	11,624	11,624	550	—	—	—	—	—	831	—	—	9,384	249	—
Total	587,722	2,783,496	3,371,218												

\* This amount was paid to the Oude and Rohilkand Railway Company for purchase of the Line.

\* This amount was paid to the Oute and Rohilkund Railway Company for purchase of the Line.

Note.—The total expenditure in England on State Railways to 31st December 1872 amounted to 708,827*l*. The above figures represent only that portion of such expenditure as had been appropriated in India to the several undertakings to the date of the last advices received.

India Office, 16th May 1873.

T. W. KEITH,  
Accountant.

## STATEMENT No. 2.

Showing the Amount of Capital estimated to be required for each Undertaking as now sanctioned, the Amount authorised to be raised, the Amount raised, and the Amount withdrawn, to 31st March 1873.

Railway.	Estimated Cost of Lines.	Amount authorised to be raised on 31st March 1873.						Amount raised in England to 31st March 1873.						Amount raised in India to Date of last Advances.		Total Amount withdrawn to 31st March 1873 (partly estimated).
		Share Capital.	Debtures.		Debture Stock.	Capital not bearing Interest.	Total.	Share Capital.	Debtures.		Debture Stock.		Capital not bearing Interest.	Share Capital.	Capital not bearing Interest.	
			Con-vertible into Shares.	Incon-vertible.					Con-vertible into Shares.	Incon-vertible.	Stock re-pre-sented.	Cash received.				
East Indian—Main Line	27,750,000	22,644,000	256,000	2,950,000	1,500,000	160,165	22,268,897	356,000	2,950,000	1,500,000	158,827	22,826,335	1,338	27,556,387	27,672,059	
" Jubbulpore Line	2,350,000	2,719,050	480,950	—	—	30,034	2,708,400	480,950	—	—	30,034	7,666	—	3,237,049	3,151,778	
Great Indian Peninsula	24,000,000	20,000,000	—	1,304,250	3,065,300	229,602	19,064,125	—	1,304,250	2,701,450	2,475,559	405,047	742	23,478,538	23,433,788	
Madras	10,500,000	10,106,800	195,500	500,000	—	9,759	9,457,482	195,500	500,000	—	9,759	—	—	10,162,841	10,156,460	
Bombay, Baroda, and Central India	8,000,000	7,476,300	495,800	—	—	34,832	7,175,762	495,800	—	—	34,832	21,572	—	7,738,066	7,786,405	
Scinde, Punjab, and Delhi	11,000,000	11,418,900	—	—	—	3,320	10,989,782	—	—	—	3,320	86,004	—	11,079,106	10,367,210	
Great Southern of India	3,000,000	2,864,700	55,200	—	425,000	36,000	2,351,787	55,200	—	425,000	435,000	1,221	—	2,869,208	1,778,581	
Eastern Bengal	3,200,000	2,255,520	—	237,050	384,563	2,288	2,238,996	—	237,050	384,563	2,288	16,486	—	2,844,850	3,019,238	
Oude and Rohilkund	6,000,000	3,953,300	46,700	—	—	2,121	3,538,878	46,700	—	—	2,121	415,998	—	3,998,592	4,264,879	
Carnatic	800,000	800,000	—	—	—	22,200	769,043	—	—	—	22,200	—	—	791,243	101,627	
Total	97,500,000	88,738,470	1,630,250	4,991,800	5,374,863	580,321	80,538,146	1,630,250	4,991,800	5,011,013	528,241	1,280,818	2,080	98,785,924	91,686,025	

† Advances as required, bearing interest at the rate of 5 per cent. per annum, were agreed to be made to the Oude and Rohilkund Railway Company during the official year 1872-73, to the extent of 500,000.

India Office, 10th April 1873.

T. W. KEITH,  
Accountant.

\* These amounts are subject to modifications, some of them including expenditure which will be appropriated to Revenue.—J. D.



## STATEMENT No. 3.

Showing the Amount received from and withdrawn by each Company during the Year ended 31st March 1873.

Railway.	Sums standing to the Credit of the Companies on the 31st March 1872.	Sums advanced to the Companies on the 31st March 1872.	Amount received				Amount withdrawn				Total received during the Year ended 31st March 1873.	Total withdrawn during the Year ended 31st March 1873.	
			In England, between 1st April 1872 and 31st March 1873.		In India, between 1st April 1872 and the Date to which Accounts have been received.	In England, between 1st April 1872 and 31st March 1873.		In India.					
			Share Capital.	Debt Stock.		Capital not bearing Interest.	On account of Stores, Establishment Charges, &c.	For Discharge of Debentures.	Date to which Accounts have been received.	Amount.			Estimated Withdrawals between Dates specified and 31st March 1873.
East Indian: Main Line	£ —	£ 24,000	£ 50,825	£ —	£ 4,267	£ 104,770	£ 54,000	31st January 1873	£ 142,006	£ —	£ 146,764		
" Jubbulpore Line	£ 75,106	—	—	—	—	—	—	"	£ 165	—	£ 165		
Great Indian Peninsula	£ 574,517	—	£ 100,654	—	£ 15,125	£ 273,022	£ 477,800	"	£ 1430,324	£ 30,000	£ 650,501		
Madras	£ 122,960	—	£ 7,461	—	£ 9,434	£ 98,265	—	"	£ 20,208	£ 15,000	£ 133,473		
Bombay, Baroda, and Central India	£ 103,398	—	£ 37,440	—	£ 16,832	£ 53,929	£ 106,800	"	£ 140,720	£ 10,000	£ 165,609		
Scinde, Punjab, and Delhi	£ 743,757	—	—	—	£ 3,320	£ 35,306	—	31st December 1872	£ 125	—	£ 35,181		
Great Southern of India	£ 1,142,432	—	£ 9,408	—	—	£ 7,993	£ 1,500	"	£ 37,440	£ 15,000	£ 61,233		
Eastern Bengal	—	£ 166,88	£ 64	£ 78,781	£ 323	£ 33,139	—	31st January 1873	£ 73,532	£ 10,000	£ 116,571		
Oude and Rohilkund	£ 78,836	—	£ 469,394	—	—	£ 212,141	—	"	£ 522,008	£ 90,000	£ 874,144		
Carnatic	£ 698,200	—	£ 1,144	—	—	£ 129	—	"	£ 8,100	£ 1,500	£ 9,729		
Total	£ 3,539,326	£ 16. 88	£ 676,330	£ 78,781	£ 49,301	£ 822,994	£ 640,100	—	£ 507,946	£ 171,500	£ 2,142,540		

\* These Balances are subject to adjustment in respect of Rolling Stock supplied by the Main line for the Jubbulpore line.

† Transfers of expenditure to Revenue Account, Sale proceeds of Stores, Refunds, &amp;c. crossed by these Sums the amount withdrawn in India on Capital Account during the year.

‡ A sum of 3,851, being proceeds of sale of engines, has been taken in reduction of expenditure.

India Office, 10th April 1873.

T. W. KEITH,  
Accountant.

26. It will be seen by the following statement of the annual expenditure on guaranteed railways since their commencement, that during the past year the amount was less than it has been for nearly twenty years. The largest expenditure occurred in the two years after the mutiny, that for 1859-60 being 7,171,464*l.*, and for 1860-61, 7,578,715*l.* The years 1866-67 and 1867-68 saw the next largest, 7,297,703*l.* and 7,297,703*l.* being the respective amounts.

STATEMENT OF WITHDRAWALS out of CAPITAL for EXPENDITURE; showing the Amount withdrawn in England and in India by all the Guaranteed Indian Railway Companies during each Financial Year from the commencement to 31st March 1873.

Year.	England.	India.	Total.
	£	£	£
1849-50	69,211	6,682	75,893
1850-51	61,164	38,099	99,263
1851-52	154,212	197,111	351,323
1852-53	174,920	252,640	427,560
1853-54	252,484	418,165	670,649
1854-55	960,878	769,278	1,730,156
1855-56	1,935,074	1,431,337	3,366,411
1856-57	1,752,818	1,762,287	3,515,100
1857-58	1,828,243	2,094,825	3,423,068
1858-59	1,941,033	3,551,075	5,492,108
1859-60	2,508,668	4,662,796	7,171,464
1860-61	2,388,315	5,190,400	7,578,715
1861-62	1,597,430	5,004,782	6,602,212
1862-63	1,852,393	4,010,951	5,863,344
1863-64	1,415,146	3,340,507	4,755,653
1864-65	1,396,821	2,725,419	4,122,240
1865-66	2,222,679	3,414,187	5,636,866
1866-67	3,958,357	3,339,346	7,297,703
1867-68	3,924,490	3,195,591	7,120,081
1868-69	1,969,814	2,512,084	4,481,893
1869-70	2,298,680	2,444,171	4,742,851
1870-71	1,899,054	1,877,216	3,776,270
1871-72	886,996	1,609,732	2,496,728
1872-73	822,994	*679,446	*1,502,440
	37,771,869	54,528,127	92,299,996
Deduct amount withdrawn by the Calcutta and South-eastern Railway Company, this Railway having subsequently become the property of the State	267,362	346,609	613,971
	37,504,507	54,181,518	91,686,025

\* These amounts are partly estimated.

India Office,  
10th April 1873.

T. W. KEITH,  
Accountant.

27. According to the following statement, the sum out on debenture loans on the 31st March last was 805,650*l.* less than at the end of the previous year, the respective amounts being 6,621,550*l.* and 7,427,200*l.*

STATE OF DEBENTURE LOANS on the 31st March 1873.

Railway.	Amount.			Rate of Interest.	Date at which Loan expires.
	Convertible.	Inconvertible.	Total.		
East Indian	£	£		4½	10th March 1875.
"	480,950	10,000		5	23d March 1875.
"	—	196,150		4½	10th August 1875.
"	—	1,024,000		4½	"
"	356,000	—		5	9th August 1876.
"	—	96,400		4½	10th August 1877.
"	—	183,450		4½	"
"	—	1,000,000		4½	22d August 1877.
"	—	440,000		4	19th March 1878.
	836,950	2,950,000	3,786,950		
Great Indian Peninsula	—	268,800		5	30th June 1873.
"	—	1,035,450		5	31st Dec. 1876.
	—	1,304,250	1,304,250		
Madras	—	500,000		4½	1st January 1876.
"	195,600	—		5	1st January 1877.
	195,600	500,000	695,600		
Bombay, Baroda, and Central India	262,000	—		5	1st January 1875.
"	238,800	—		5	1st July 1876.
	496,800	—	496,800		
Great Southern of India	2,000	—		5	1st January 1874.
"	53,200	—		5	1st July 1874.
	55,200	—	55,200		
Eastern Bengal	—	181,550		5	1st November 1874.
"	—	55,500		5	1st November 1876.
	—	237,050	237,050		
Oude and Rohilkund	46,500	—		5	15th April 1875.
"	100	—		5	28th July 1876.
"	100	—		3	18th February 1877.
	46,700	—	46,700		
			6,621,550		

India Office,  
10th April 1873

T. W. KEITH,  
Accountant.

## COST OF THE RAILWAYS.

28. It will have been remarked that the cost of lines recently constructed, irrespective of the reduced expenses consequent on the adoption of the metre gauge, has been much less than the average cost of those railways which form the original main system. Instead of 18,000*l.* and 20,000*l.* per mile, we now see lines constructed on the 5 feet 6 inches gauge for 4,000*l.*, 6,000*l.*, and 9,000*l.*

Cost of the  
railways.

29. The Wudwan branch of the Bombay, Baroda, and Central India Railway, completed last year, passing, it is true, through comparatively easy country, cost, for instance, under 6,000*l.* a mile. The Neilgherry branch of the Madras line, which traverses anything but a favourable district for railway works, will cost about 7,000*l.* a mile, exclusive of rolling stock. The Oude and Rohilkund Railway, with its extensive bridges, viaducts, and culverts, probably will not exceed 9,000*l.* a mile including everything. The Patree branch from the Bombay, Baroda, and Central India Railway to the Runn of Cutch has been constructed for less than 4,000*l.* a mile, but no rolling stock has been specially provided.

30. The questions naturally arise, how can this difference be accounted for? and why did the original lines cost so much? Some would attribute the greater portion of the excessive cost to the guarantee system. I do not share this opinion, which is in some measure disproved by the above facts, for while I consider the system to be far from perfect, and the principle of guarantee one which should only be applied in exceptional circumstances on grounds of necessity, it can, I think, be shown that other causes combined to produce the costliness of the trunk lines. Before proceeding to this investigation, I would first remark that, under the system in question, the Government was vested with absolute control over the expenditure of the companies, that to the Government was also left the alignment of the railways, and that if when carrying out the arrangements contemplated in the contracts between the Government and the companies, mistakes were made, the system itself cannot be wholly charged with the defects. The only other plan suggested for introducing railways into India, viz., direct Government agency, would, I apprehend, have involved a yet greater expense and a still less satisfactory result. It was not, indeed, available when the railways were commenced, as Lord Dalhousie emphatically declared. No Public Works Department existed in those days. All engineering works were carried on under the superintendence of a Military Board, none of whose members had any experience of railways. The instances of delay, suspension, stoppage, and failure which have not unfrequently occurred on other public works in India point also to what would have been the result if railways had been undertaken directly by the Government. Now, things are very different. The Public Works Department has been properly organised; experience has been gained, and a thorough and efficient railway executive will soon be established. As, moreover, capital can now be raised upon more favourable terms by the Government going direct into the market than by obtaining it through guaranteed shares, there are reasons which did not formerly exist in favour of the Government taking the construction of railways into their own hands.

31. To return to the question immediately under consideration, viz., that of cost, I would, in the first place, draw attention to the fact that of the 5,500 miles of trunk lines, the average cost of which has been 18,000*l.* a mile, about 1,860 miles have been made on an average of less than 12,000*l.* a mile, that of the remaining 3,640 miles, about 700 have cost between 15,000*l.* and 16,000*l.* a mile, and 2,940 on an average 20,000*l.* This last includes the East Indian, the Great Indian Peninsula, the Bombay, Baroda, and Central India, the Eastern Bengal and the Calcutta and South-eastern. The Bombay, Baroda, and Central India Railway, and the Eastern Bengal are lines which, in a comparatively short space, comprise several works of magnitude and expense, as bridges, flood openings and terminal stations, and are not therefore fair examples. The cost of the Great Indian Peninsula also has been increased by mistakes which were avoidable. But the East Indian Railway is a fair specimen of an expensive and well constructed line, and furnishes a good opportunity for analysis.

32. The length of the East Indian Railway is 1,505 miles, consisting of (1.) a main line of 1,130 miles along the valley of the Ganges with certain branches; (2.) a Chord line, constructed with the exception of the branch to Raneegunge, after the other had been finished, 150 miles in length, extending from Burdwan 67 miles from Calcutta to the main line at Luckeserai, and (3.) a line branching off from



the main line at Allahabad, and proceeding to Jubbulpore, a distance of 224 miles. The total capital expended, exclusive of stores in hand, the value of which is given in page 17, is 29,700,000*l*. The Jubbulpore line, the capital account of which has been kept separate, cost 3,200,000*l*. The 150 miles of the Chord line, lately completed, cost 2,300,000*l*. The expenditure on the 1,130 miles of the original main line and branches thus remains at 23,800,000*l*. The work of construction was commenced in the year 1851 on the section between Calcutta and Raneegunge, and the whole line was finished in 1864, having been gradually opened for traffic section by section. It was not constructed telescopically, but was carried on simultaneously at various places, the two main divisions being those of Bengal and of the North-West Provinces. This mode of procedure involved the necessity of conveying the materials from Calcutta by river and by road at a very high charge. So great was the difficulty, and so many native boats with large quantities of materials on board were lost on their way up, that it was considered advisable to build in this country a fleet of steamers and barges at a cost of 750,000*l*. to convey the permanent way to its destination. The first political disturbance that had any effect upon the cost of the line was the Sonthal rebellion. This occurred in 1855, and not only caused suspension of the works and consequent compensation to contractors, but positive damage and inconvenience likewise.\* Then came the mutiny. At the time it broke out, 166 miles had been opened in Bengal, and a section of 126 miles between Allahabad and Cawnpore in the Upper Division was on the eve of being completed, and was instrumental in conveying troops to the scene of the military operations in Oude. During the mutiny, the works on a large part of the line, which had been advancing towards completion, were totally suspended and greatly damaged. Portions of the open line were also injured and broken up. In some places large numbers of the railway staff were murdered, and in others, stations were turned into fortified posts, and gallantly defended. The amount of direct and indirect loss incurred by these calamities cannot be positively ascertained, but it was estimated at the time at 3,000,000*l*., and it cannot be reckoned at less, when the property destroyed, the time lost, the works that had to be reconstructed, the wages of unemployed establishments, the increased difficulty of transport, and the claims of contractors are considered.† When the suppression of the mutiny admitted of the recommencement of operations, great efforts were made to establish railway communication, almost regardless of cost. Prices for labour and materials had greatly risen, and the arrangements entered into involved charges hitherto unknown. The route of that portion of the line which extended from Cawnpore to Delhi, and upon which a considerable outlay had already been incurred before the mutiny, was altered. Instead of the line going along the south bank of the Jumna, through Agra to Delhi, its direction was changed to the north bank, and it was taken through the Doab to Ghazeeabad, where there is a branch to Delhi. Thus, the difficulties of transport, the Sonthal rebellion, and the mutiny, must have added at least 4,000,000*l*. to the capital expenditure of the East Indian Railway. Deducting this amount from the 23,800,000*l*. given above as, the cost of 1,130 miles, the average cost per mile would be 17,520*l*. We have then to consider the character of the works and the nature of the country through which the line passes.

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\* The following extract from a memorandum by Mr. Cecil Stephenson, the present head of the Indian Agency of the East Indian Railway Company, bears testimony to this point:—"The Sonthal rebellion was particularly mischievous in its effects. It began in July, and lasted to the end of the year, and its results were depopulation, pestilence, and famine. It extended from the experimental line about Raneegunge coalfields to the banks of the Ganges, and retarded the completion of the line to Rajmahal, at least for twelve months, whilst its effects were felt for years afterwards, and the early completion of that section of the line to Rajmahal happened to be most important to the company, because it tapped the water communication, for conveyance of its materials, for the next 500 miles of railway, and avoided the tremendously circuitous route by the Sunderbunds."

† Mr. Stephenson, referring to this matter, says:—"The enhanced cost for transport of material was one of the results of the mutiny, enormously increased by the wholesale destruction of river boats, not by insurgent troops only, but by the orders of Government, which enjoined on the civil authorities the duty of destroying all such means of communication for crossing the main rivers between the insurgent bodies, after which the company found itself face to face with the necessity for transporting three or four hundred thousand tons of material from the port of Calcutta to their place on the works, and that, too, at a time when the Government itself was also in the market for all the available tonnage on the river. Indeed, the company devoted some of its own boats, as soon as they were constructed, to meet the urgent needs of the Government at this time."

33. In the first place, there are 414 miles of double line, the additional cost of which has been about 1,680,000*l.*, or 4,000*l.* a mile; 700 miles have also been made with banks, masonry, and bridge foundations ready for a double line. The cost of this extra work is estimated at 2,000*l.* a mile, or 1,400,000*l.*, and the locomotives and rolling stock have cost 2,500*l.* a mile, or 2,875,000*l.* Deducting these sums from the 19,800,000*l.* already arrived at, after making allowance for the effects of the political disturbances and the conveyance of materials, 13,845,000*l.* remains, giving an average of 12,250*l.* per mile for the actual construction of a single line with sidings equal to 20 per cent. of the whole. In the second place, there occur in its course several formidable rivers and many streams, as well as land subject to inundation, which required large bridges and an extensive system of waterway almost unequalled by any line in the world. The three bridges over the Soane and Jumna are works of great magnitude, and those over the Adjai, More, Keeul, Hullohur, and Tonse are also of considerable size, spanning waterway which doubles that of all the bridges over the Thames in London. The superstructure of these bridges consisted of iron girders which were sent from this country. It has been estimated that the viaducts and bridges cost 1,725,000*l.*, being at an average of 1,500*l.* per mile of line. Lastly, the works throughout the line are of a substantial if not massive character, and have firmly withstood the rains and floods of many seasons. The permanent way answers the same description.

34. An endeavour has thus been made to explain the various causes which contributed to produce the large expenditure on the East Indian Railway. It will be observed that a great part of the outlay arose from causes which were unavoidable and of an extraordinary and unexpected character, that some of it was due to the novel character of the undertaking and to the plan adopted of commencing operations in the upper portions of the line before the lower could be used as a means of transport, as well as to those mistakes which invariably attend inexperience, and that the rest is represented by a firm and substantial line, comprising bridges and viaducts of great size and extent which have never yet failed, and laid with a permanent way, which enables it to be maintained and worked at 42 per cent. of the gross receipts.

35. It only remains to allude to the difference between the circumstances and conditions under which the East Indian line was constructed, and those which are applicable to present and future railway operations. While the cost of labour and the price of materials have increased, the difficulties which invariably attend the introduction of any important work into a country no longer exist. Experience now takes the place of ignorance, and positive facts are available instead of doubtful information. The conveyance of the permanent way materials from the ports at which they are received from England to the interior will now be conducted at a moderate cost by the sure and speedy means afforded by the railway, instead of by the expensive and uncertain methods which were alone available for the earlier lines. Now, also, it has become the practice to adopt lighter materials and lighter permanent way, and the science of bridge making has so advanced as to simplify construction and to reduce cost.

36. Lastly, the country is now free from political disturbances, and we have an improved administration, with an executive bent on economy and exercising an intelligent and efficient control.

## REVENUE.

36. The revenue derived from the railways during the past year was slightly in excess of the previous year, but the increase is not sufficient to reduce by any appreciable amount the difference between the net earnings and the sum paid for guaranteed interest, which is this year of course greater than last year.

37. In 1872 the net revenue was 2,869,223*l.* In 1871 it was 2,686,260*l.* In 1872 the gross receipts were 6,351,617*l.*, and the expenditure amounted to 3,482,394*l.* In the previous year the gross receipts were 6,146,130*l.*, and the expenditure 3,459,870*l.*

38. The passenger and miscellaneous receipts in 1872 were 2,387,003*l.*; compared with 2,120,821*l.* in 1871.

39. The goods receipts were 3,964,614*l.* in 1872, and 4,025,309*l.* in 1871.

40. It will be seen by a reference to the receipts and expenditure of each company given in the statement in page 27, that, with the exception of the Great Indian Peninsula and the Carnatic, all the lines show a small increase in their net earnings, and this improvement, it may be added, would have been greater in some cases if there had not been extraordinary expenses, as well as loss of traffic, in consequence of flood damages.

41. The guaranteed interest advanced by the Government during the year 1872 amounted to 4,600,883*l.*, and as the railway receipts were only 2,869,223*l.*, a sum of 1,731,660*l.* had to be charged upon the revenues of the country. Last year there was a similar charge of 1,740,720*l.*

42. Although such a result was expected at the commencement of the year, it is no less to be deplored. But it should be borne in mind that some of the guaranteed capital has been raised for, and expended upon, lines which are not completed or open for traffic. A sum of 6,000,000*l.* may in this way be regarded as unremunerative, so that about 300,000*l.* may be properly deducted from the deficit, when it is referred to as illustrating the deficiencies of the present railway system. The last few years are not, it is hoped, a fair criterion of the future. The fluctuations of trade will no doubt always produce corresponding effects upon the traffic, but a gradual development is taking place, which will become more rapid as new roads and feeders are made to the existing lines, and new districts are thus opened to the advantages of railway communication. It should be added, however, that sometimes scarcity produces traffic in India, the movements of seed and grain in large quantities from one part to another being necessary to provide food for famine-stricken districts. An example of this is given in the traffic returns of the Great Indian Peninsula Railway for the last two years, in the former of which a large traffic in grain took place in order to supply the wants of the population in certain places where food was deficient.

## GUARANTEED INTEREST.—INDIAN RAILWAYS.

Statement of the Total Amount of Interest advanced to each of the under mentioned Railway Companies to 31st December 1872.

Railway Company.	Interest advanced to 31st December 1871.	Interest advanced during 1872.			Total.
		England.	India.	Total.	
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
East Indian -	15,721,344 17 11	1,490,726 11 7	12,651 17 1	1,503,378 8 8	17,224,723 6 7
Great Indian Peninsula	8,976,822 0 2	1,148,611 15 11	20,242 19 7	1,168,854 15 6	10,145,676 15 8
Madras -	4,879,064 10 1	499,843 10 0	—	499,843 10 0	5,378,908 0 1
Bombay, Baroda and Central India -	3,151,255 2 9	385,425 5 7	1,083 12 4	386,508 17 11	3,537,764 0 8
Scinde, Punjab & Delhi	3,606,338 0 3	552,180 1 5	3,614 14 8	555,794 16 1	4,162,132 16 4
Great Southern of India	609,916 6 10	137,062 15 4	—	137,062 15 4	746,979 2 2
Eastern Bengal -	1,064,271 12 10	131,720 4 9	1,217 19 5	132,938 4 2	1,197,209 17 0
Oude and Rohilkund -	365,556 8 9	171,966 5 9	6,826 19 11	178,793 5 8	544,349 14 5
Carnatic -	43,506 10 7	37,709 1 8	—	37,709 1 8	81,215 12 3
Total -	£ 38,418,075 10	24,555,245 12 0	45,638 3 0	4,600,883 15 0	43,018,959 5 2

India Office, 10th April 1873.

T. W. KEITH,  
Accountant.

A STATEMENT showing approximately the AMOUNTS advanced on account of GUARANTEED INTEREST to the several under-mentioned Railway Companies to the 30th June 1872, beyond the amount of Net Revenue applied thereto.

Railway Company.	Total Amount advanced to 31st December 1872.*	Aggregate of Net Revenue Balances for the several half-years to 30th June 1872, inclusive.	Net Amount advanced.
	£	£	£
East Indian, Main Line -	15,820,402	11,336,083	4,484,319
" Jubbulpore Line -	1,404,321	145,584	1,258,737
Great Indian Peninsula -	10,145,677	5,105,216	5,040,461
Madras -	5,378,908	2,378,211	3,000,697
Bombay, Baroda and Central India -	3,537,764	1,392,910	2,144,854
Scinde, Punjab and Delhi -	4,162,133	377,992	3,784,141
Great Southern of India -	746,979	262,899	484,080
Eastern Bengal -	1,197,210	668,846	528,364
Oude and Rohilkund -	544,350	2,960†	547,310
Carnatic -	81,215	5,060	76,155
Total -	£ 43,018,959	21,669,841	21,349,118

\* The Interest for the half-year to 30th June 1872 not being paid until the succeeding half-year.

† Amount advanced on Revenue Account in excess of Receipts.

India Office, 10th April 1873.

T. W. KEITH,  
Accountant.

STATEMENT showing the REVENUE of the RAILWAYS in 1871 and 1872.

Railway.	Receipts.						Expenditure.						Percentage of Expenditure to Gross Receipts.		Net Receipts.	
	Passengers.		Goods.		Miscellaneous.		Maintenance.		Working.		Total.					
	1871.	1872.	1871.	1872.	1871.	1872.	1871.	1872.	1871.	1872.	1871.	1872.	1871.	1872.	1871.	1872.
	£	£	£	£	£	£	£	£	£	£	£	£	£	£	£	£
GUARANTEED.																
East Indian : Main Line	675,398	721,863	1,569,668	1,579,225	77,862	135,905	2,322,928	2,437,018	190,626	197,891	790,499	806,937	981,125	1,004,828	42-23	1,341,803
" Jubbulpore Line	66,634	73,287	69,749	79,759	9,564	67,598	145,947	220,644	20,503	19,406	86,867	80,127	107,370	99,583	73-56	38,977
Great Indian Peninsula	462,564	509,012	1,360,373	1,177,902	33,022	29,843	1,855,979	1,716,757	352,810*	194,146	817,092	908,788	1,169,911*	1,102,934	63-03	686,069*
Madras	202,851	218,164	325,891	328,091	20,383	22,597	549,125	568,852	88,875	92,246	192,642	204,659	281,517	296,905	51-26	287,608
Bombay, Baroda and Central India	187,531	198,551	298,042	304,510	16,219	14,793	501,792	517,854	77,739	103,069	221,742	207,485	299,481	310,554	59-68	202,311
Sind, Punjab and Delhi	189,335	189,571	186,756	228,177	12,229	12,727	388,290	425,475	100,567	63,686	283,316	301,230	383,883	364,916	98-86	4,407
Indus Steam Flotilla	4,159	4,306	56,262	65,065	†	1,754	60,421	71,115	†	†	50,325	53,034	50,325	53,084	88-29	10,096
Great Southern of India	41,332	40,154	28,194	82,295	1,817	1,554	71,343	74,003	9,222	10,395	30,144	31,886	39,366	41,781	55-17	31,977
Eastern Bengal	31,617	91,980	113,284	152,396	6,611	12,490	201,512	256,866	26,492	59,214	86,518	104,879	111,960	164,093	53-55	89,562
Oude and Rohilkand	15,013	26,012	9,749	15,344	652	920	25,614	42,276	5,875	5,565	11,879	23,427	17,764	28,992	69-31	7,860
Carnatic	3,282	3,001	257	397	21	80	3,560	3,473	452	878	1,859	1,437	2,311	2,315	64-91	1,249
STATE.																
Calcutta and South-eastern	5,090	5,180	1,884	2,562	271	649	7,945	8,391	1,716	2,079	5,834	5,551	7,650	7,630	96-28	295
Mulhatee (1 April to 31 Dec.)	4,926	3,911	2,158	1,609	704	124	7,788	5,644	762	603	3,759	2,622	4,521	3,225	58-05	3,267
BEAR.																
Oomrawooties	439	710	1,303	1,379	8	22	1,750	2,111	(Capital)	†	805	1,139	805	1,138	45-97	945
Khangann	358	220	1,769	913	9	5	2,186	1,138	651	†	1,250	516	1,901	516	88-99	235
Total	1,940,549	2,085,942	4,025,309	3,964,614	180,972	301,061	6,146,130	6,351,614	876,339	749,178	2,588,631	2,738,216	3,459,870	3,432,994	56-29	2,686,260
																2,684,448

\* These figures were, I regret to say, given incorrectly in last year's report, in consequence of a sum of 157,820/-, consisting of contributions to the Permanent Way Renewal Fund, the Extraordinary Casualty Fund, and Fire Insurance Fund, having been inadvertently omitted from the account for maintenance. They should, of course, have been deducted from the receipts of the railway for the year. The expenses for maintenance were given at 104,999/-, which represented simply the cost of maintenance for that period, instead of 252,819/-, as now stated.

† Not returned.

## TRAFFIC AND WORKING.

43. The passenger traffic last year produced 2,085,942*l.*, as compared with 1,940,549*l.* in the previous year. The difference of 144,369*l.* was principally made up by the increase in the receipts from third and fourth class passengers which amounted to 91,385*l.* These classes contributed 1,496,610*l.*, or 77 per cent. of the whole. The number of passengers increased from 18,940,585 to 20,332,823. The first and second classes slightly declined. The third class rose from 14,113,436 to 15,126,824, and the fourth, or coolie class, from 3,516,549 to 3,911,429. The increase in numbers, which took place chiefly on the East Indian, the Madras, and the Bombay, Baroda and Central India Railways, has partly been produced by a reduction in fares, which has not yet had time to yield a corresponding increase in the receipts. The third and fourth classes constituted 93·63 per cent. of the whole number.

Passenger  
traffic.

44. The receipts per mile in 1872 were 400*l.*, compared with 394*l.* of the previous year.

45. The receipts from the goods and mineral traffic were last year 3,964,614*l.*, compared with 4,022,615*l.* in 1871, shewing a decline of 58,000*l.* A larger amount of tonnage was however carried, 2,929,637 tons having been conveyed in 1872, against 2,615,966 in 1871. The falling off in receipts occurred on the Great Indian Peninsula Railway, which shews a decline of about 156,000*l.* in receipts and 82,143 tons in weight. In cotton and grain alone there was a falling off of 35,500 and 24,080 tons respectively. An examination of Table No. 6, p. 41, will shew how the quantities of the principal articles of merchandise conveyed on the railways have varied in the two last years.

Goods traffic.

46. The number of trains run was 155,594, compared with 131,360 in the previous year. The train mileage was 14,543,862, compared with 14,080,064.

47. The train mileage receipts averaged 8·63*s.*, being just about the same as last year. The highest receipts per train mile were on the Bombay, Baroda and Central India Railway, where they amounted to 12·51*s.* The mileage receipts on the Eastern Bengal were 9·90*s.*, and on the East Indian, 9·33*s.* The lowest were on the Calcutta and South-eastern, being 4·9*s.*

Train  
mileage.

48. Turning to the expenses, it will be seen that the total expenditure for maintaining and working the railways was 3,328,644*l.* in 1872, compared with 3,251,725*l.* in 1871. On the Indus Flotilla it was 53,034*l.* in 1872, compared with 50,325*l.* in the previous year. The expenses per train mile were the same in both years, viz., 4·50*s.* The proportion of working expenses to gross receipts was on the average 53 per cent. This varied, however, considerably on the different lines. On the East Indian main line the expenses were only 41 per cent. of the gross receipts; on the Great Indian Peninsula 58, on the Scinde, Punjab, and Delhi 86, and on the Calcutta and South-eastern they were as high as 91 per cent. The cost of maintenance has been exceptionally high on those lines which suffered from severe floods. The revenue accounts of the Madras, the Bombay, Baroda and Central India and the Eastern Bengal are injuriously affected by this cause.

Working  
expenditure.

49. The information given in the table relating to the expenditure on revenue account will enable a comparison to be made between the various lines, both in regard to the general results and to the different departments. In some cases it will be found that the cost of maintenance and of renewals formed a quarter of the whole expenses, in others that it was only 8 per cent.; that the locomotive expenses on some lines were 23*d.* per train mile, and on the East Indian main line as low as 12·7*d.*; that sometimes they formed 30 and 33 per cent. of the gross receipts; at others 11, 16, and 17. Similar variations occur in other departments, and it is useful where the differences are considerable and cannot be easily explained, to investigate the cause, in order that measures for ensuring economy may be applied where practicable.

50. The mileage rate has generally been the best available comparative test, but the unit which should supply the means of the most thorough insight into the working of a line is the more minute figure, shewing the cost of conveying a passenger and a ton of goods one mile, and the earnings from each respectively. This was worked out by Mr. Rendel in a table which appeared in the Appendix to the last Report, and which has caused just the discussion and the inquiry among those engaged in the management of the railways which was wanted. A similar table has been prepared by Mr. Rendel from the returns of last half-year's working, and is given in the Appendix; as is also a table prepared by Mr. J. A. Baynes, of the Bombay, Baroda and Central India Railway Company, containing particulars connected with the consumption of fuel on the different lines.

Best guide  
for judging  
of the work-  
ing of a line.



## RATES AND FARES.

51. The effect of charges upon the traffic has been already alluded to. Now that the chief railways have been at work for several years, the question of rates and fares may be considered as passing from the experimental stage to one in which well ascertained results should be the guide to correct conclusions.

Principle  
upon which  
fares should  
be regulated.

52. A suitable scale of railway charges depends upon various circumstances, but principally upon the cost of production, *i.e.*, of conveyance. There must necessarily be a margin between such cost and the sum paid by the customer, but it by no means follows that the greater the difference the more will be the aggregate profit. In a country like India, especially, where the population is large and poor, it would be unwise to attempt to impose such rates for the conveyance of passengers as would remove the power of travelling from the great majority of the people. The true policy would seem to be to fix a rate, which, while leaving a margin for profit upon the cost of conveyance, would tempt the largest number to travel. If this is the correct view, it can well be understood how, as is often asserted, the interests of railways and of the community coincide. The same remarks will apply to charges for goods, and often with greater force, as for example in those cases where water carriage can compete with the railway, and where large tracts of land are kept out of cultivation, or mineral districts are unworked, in consequence of the cost of conveyance to a market raising the price of commodities beyond the consumer's means. Allowance must of course be made for variableness of trade, as the average cost of conveyance will in some measure be regulated by the amount carried; but this may be covered in the long run by a moderate margin; and it cannot be doubted that a large traffic at low rates gives a safer and steadier revenue than a small traffic at high rates. The first point to be ascertained, therefore, is what is the cost of conveyance; and this can be arrived at only after a careful examination of the working expenses of a line for a sufficient period to cover different seasons, and to include those influences on traffic which would enable a fair average to be taken.

53. Enough has already been ascertained to justify the lowering of rates in several instances during the past year. It has before been hinted that the falling off in the receipts on some of the lines may be the immediate effect of this reduction. The lowering of fares will naturally produce a small loss at first, but an impulse is given to traffic which, before very long, probably converts the loss into a gain. On the Ceylon Railway the fares were reduced 36 per cent. from the 1st January 1872. Mr. Robinson, the Finance and Traffic Manager, reports in June of that year as follows: "In submitting my recommendation for so large a reduction, I quite anticipated that for the first year at least the revenue would suffer considerably. Taking, however, the first four months of 1872, I find that the receipts are slightly greater, whilst the number of passengers has increased at the rate of 63 per cent., the increase being, as anticipated, chiefly in short distances and third-class traffic."

54. But a suitable tariff, however important, is by no means all that is required to ensure success in railway enterprise. There is no commercial undertaking which requires more careful study, and more intelligent and energetic management than a railway. The Government as well as the railway companies are served by a body of very able officers, some of whom are well acquainted with, and some of whom are new to, the country. They are I believe doing their best to promote efficiency and economy in their several departments, but many of their subordinates are not always honest in their dealings with the passengers and customers of the railway. On one line the native station-masters have been accused of carrying on a system of black mail. This kind of extortion is rendered sometimes more easy by the European officers being ignorant of the native language. The power to converse with the natives, and to be ready to receive their appeals, is therefore a very necessary check against fraud and imposition; and it is to be hoped that a knowledge of the native language will be made a qualification for promotion and high office.

55. It is also very desirable to obtain uniformity of management. This may be promoted by periodical meetings of the railway officers employed on the different lines. At such meetings individual experiences might be communicated, and original proposals discussed with great advantage to all concerned.

STATEMENTS relating to the GROSS RECEIPTS and EXPENSES, the NET REVENUE,  
TRAIN MILEAGE, and GUARANTEED INTEREST for the Year ended 31st  
December 1872.

TABLE NO. 1.—STATEMENT OF TRAFFIC ON THE INDIAN

Railway.	Actual Number of Miles open on 31st December, and Average Number of Miles of Open Line during 1872.						Number of Miles of Sidings on 31st December 1872.	Passenger Traffic.						Number of Holders of Season and Periodical Tickets.
								Number of Passengers (exclusive of Holders of Season and Periodical Tickets).						
	Double.		Single.		Total.			By First Class.	By Second Class.	By Intermediate Class.	By Third Class.	By Fourth or Coolie Class.	Total by all the Classes.	
	Actual.	Average.	Actual.	Average.	Actual.	Average.								
GUARANTEED.														
East Indian, Main Line	414	414½	866	866	1,280	1,280½	284½	33,856	89,061	501,580	4,878,742	—	5,502,309	7,366
East Indian, Jubbalpore Line	—	—	223½	223½	223½	223½	31½	3,973	7,707	3,068	245,539	—	261,184	—
Great Indian Peninsula	292	292	974	978	*1,266	1,270	179	37,053	136,560	—	1,143,384	3,019,430	3,336,316	509
Madras	—	—	832	832	832	832	31½	9,775	112,610	—	2,022,978	850,032	2,406,290	154
Bombay, Baroda, and Central India	23	23	366½	350½	369½	378½	64	18,095	170,613	—	2,778,351	—	2,964,659	2,418
Scinde, Punjab, and Delhi	44	44	660½	665½	674	670½	110	12,750	32,577	12,364	1,961,210	—	2,006,891	—
Great Southern of India	—	—	168	168	168	168	15½	1,861	9,538	—	1,014,142	—	1,025,541	2
Eastern Bengal	—	—	156½	156½	156½	156½	—	32,260½	51,255½	—	804,004	1,155,211	1,542,781	2,890
Oude and Rohilkund	—	—	294	143	294	143	18½	169	9,512	—	640,363	—	640,864	—
Carnatic	—	—	19	19	19	19	1½	360	6,753	—	84,028	—	91,161	—
STATE.														
Calcutta and South-eastern	—	—	23	23	23	23	8½	—	4,058 Upper	—	—	394,934 Lower	340,003	—
Nulbari (1 April to 31 Dec. 1872)	—	—	27½	27½	27½	27½	1½	636	836	—	2,399	60,860	83,542	—
BEHAR.														
Oomrawatiee	—	—	64	64	64	64	½	841	2,366	—	47,939	—	51,046	—
Kamgaun	—	—	71	71	71	71	½	190	605	—	9,893	1,063	11,770	—
Total Railways	733½	734	4,637½	4,471	5,371	5,205	785	142,827½	633,944½	517,569	15,119,926	3,911,429	20,322,536	12,859
Indus Steam Flotilla	—	—	—	—	—	—	—	169	150	—	4,908	—	7,227	—
Railways and Indus Steam Flotilla	—	—	—	—	—	—	—	142,996½	633,994½	517,569	15,124,834	3,911,429	20,329,833	12,859

\* 15 additional miles of Mahpani Branch opened for coal traffic on 3rd September 1872.

## RAILWAYS during the Year ended 31st December 1872.

Goods Traffic.										Number of Trains.					
Number of Live Stock.	Number of Tons of Minerals.			Number of Tons of General Merchandise.						Passenger (including Special and Troop) Trains.	Goods Trains.	Mineral Trains.	Mixed Passenger and Goods Trains.	Total Number of Trains.	Number per open Mile.
	Number of Tons of Coal and Coke.	Number of Tons of all other Minerals.	Total Number of Tons of Minerals.	Of First or Lowest Class.	Of Second Class.	Of Third Class.	Of Fourth Class.	Of Fifth or Highest Class.	Special and Sundry.	Total of all Classes.					
3,407	501,391	2	501,393	Not returned.						317,203	14,569	4,323	1,888	16,076	37,525
86	—	2	2	Not returned.						705,197	1,374	237	—	732	3,343
237,037	738	—	738	352,010	133,349	33,968	31,266	17,180	130,876	607,697	19,754	33,428	—	7,307	50,489
2,549	—	—	—	131,576	43,679	23,782	11,760	7,132	145,427	363,346	485	3,327	—	6,360	12,673
105,296	2,560	12,720 Co's. own materials on Capital account. 154,075 Back pay earth.	170,355	59,364	39,344	50,206	2,751	1,167	63,136	215,708	9,671	4,181	—	3,180	19,088
347	—	—	—	106,231	47,051	16,120	15,980	2,361	57,240	245,698	3,421	3,421	214	475	8,231
860	—	—	—	51,693	7,825	3,903	630	493	31,775	66,340	—	—	—	2,546	2,546
2,112	5,395	3,005	14,460	26,259	41,410	3,335	1,775	267	137,304	210,390	4,154	692	—	1,356	6,202
5	328	130	558	9,084	2,763	4,117	1,714	438	53,717	78,291	43	—	—	2,004	2,063
4	—	—	—	1,914	151	46	84	80	1,565	3,700	—	—	—	752	752
111	164	19	153	—	70	—	65	—	20,747	20,861	—	—	—	1,763	1,763
—	2,070	—	2,070	2,200	873	900	343	10	56	4,444	—	—	—	501	501
—	—	—	—	9,576	18,660	1,513	98	501	—	30,363	—	166	—	1,087	1,253
—	—	—	—	4,005	3,006	500	44	63	—	18,228	—	4	—	437	443
302,184	513,323	175,014	480,087	2,907,031.						2,907,031	53,378	51,473	2,372	46,566	155,594
—	—	—	—	—						23,556	—	—	—	—	—
—	516,293	175,014	400,037	2,920,637						2,920,637	53,378	51,473	2,372	46,566	155,594

TABLE No. 2.—STATEMENT OF TRAFFIC ON THE INDIAN RAILWAYS

Railway.	Number of Engines and Vehicles used in conveying Traffic.												By Passenger Trains, including Special and Troop Trains.	By Goods (including Construction Materials for other Railways) Trains.	
	Engines.	Carriages.						Trucks.	Average Number of Vehicles in each Train.						
		First Class.	Second Class.	Intermediate Class.	Third Class.	Fourth Class.	Total Number.		Carriages in each Passenger Train.	Trucks in each Goods Train.	In each Mixed Passenger and Goods Train.				
											Carriages.	Trucks.			
<b>GUARANTEED.</b>															
East Indian (Main Line)	338	83	83	43	300	313 sundry	781	6,092	{ Not stated }	31	{ Not stated }	{ Not stated }	1,344,345	1,830,026	
.. (Jubbulpore Line)	37		13	4	68	24 sundry	110	1,082	{ Not stated }	Not stated	Not stated	Not stated	260,102	53,721	
Great Indian Peninsula	232	{ Not stated }	{ Not stated }	—	{ Not stated }	{ Not stated }	{ Not stated }	{ Not stated }	0	27	7	25	1,385,784	2,068,663	
Madras	113	{ Not stated }	{ Not stated }	—	{ Not stated }	{ Not stated }	{ Not stated }	{ Not stated }	13	25	8	17	23,858	378,061	
Bombay, Baroda, and Central India	56	13	22	7 composite	101	—	143	2,407	8.7	31	9	16	294,996	253,726	
Scinde, Punjab, and Delhi	66	57	43	8	229	—	337	1,905	{ Not stated }	Not stated	Not stated	Not stated	601,112	370,575	
Great Southern of India	21	—	—	—	—	—	—	—	—	—	{ Not stated }	{ Not stated }	—	—	
Eastern Bengal	43	19½	14½	—	30	65	172	747	18	40	5	27	235,686	161,431	
Oude and Rohilkund	60	13	—	6 composite	100	—	124	377	—	—	8	11	2,166	—	
Carnatic	4	3	10	4 composite	16	—	35	40	—	—	5	8	—	—	
<b>STATE.</b>															
Calcutta and South-eastern	7	—	6 upper	—	—	18 lower	24	210	—	—	8	26	—	—	
Nulhuttee (1 April to 31 Dec.)	4	2	1	—	1	4	6	20	—	—	5	6	—	—	
<b>BEAR.</b>															
Oomrawattoo	{ Not stated }	—	—	—	—	—	—	—	{ Not stated }	20	4	2	12	1,008	
Kamgaun	{ Not stated }	—	—	—	—	—	—	—	5	11	5	11	82	32	
Totals	—	—	—	—	—	—	—	—	—	—	—	—	4,758,623	6,151,012	

during the Year ended 31st December 1872—continued.

Number of Miles travelled by Trains (except in shunting, piloting, and assisting).						Number of Ton Miles (expressed in the Number of Tons moved One Mile).										
By Mineral Trains.	By Mixed Passenger and Goods Trains (the Numbers being divided proportionately).		By Trains conveying Materials for Revenue Purposes.	Total Number of Train Miles.	Number of Train Miles per open Mile.	Excess Luggage, Parcels, Carriages, Horses, Dogs, &c. conveyed in Passenger Trains.	Goods Traffic.									Total Mineral and General Merchandise.
	(P).	(G).					Minerals.	General Merchandise.						Total of all Classes.		
								First or Lowest Class.	Second Class.	Third Class.	Fourth Class.	Fifth Class.	Special and Sundry.			
104,808	720,827	720,827	—	5,222,227	4,078	Not stated	56,350,070	148,859,481	48,978,401	13,474,400	10,703,768	1,158,070	65,899,746	383,673,711	340,323,781	
—	81,608	81,608	—	479,029	3,141	Not stated	213,991	11,292,420	2,506,524	1,129,645	232,160	40,832	1,280,129	16,481,709	16,695,700	
—	194,301	344,129	39,025	4,023,012	3,178	Not stated	Not stated	97,033,237	38,334,391	11,057,998	5,315,736	5,139,063	1,258,675	158,537,290	—	
—	573,985	761,006	—	1,738,770	2,090	684,236	—	19,477,036	7,277,690	4,103,608	2,540,461	1,975,260	24,942,925	59,616,924	59,616,924	
—	104,423	174,216	—	827,481	2,214	{ 127,112 Luggage only }	{ 3,168,157 }	10,870,420	7,157,324	11,885,470	461,284	990,677	8,696,189	38,867,964	42,026,121	
—	14,263	42,790	177,522	1,290,562	1,934	416,457	—	13,826,521	3,554,054	3,932,367	2,170,415	339,949	3,626,979	36,472,385	36,472,285	
—	123,359	122,869	6,683	251,401	1,496	53,767	—	3,180,142	608,815	313,712	61,913	47,278	1,651,952	5,713,315	5,713,315	
—	40,860	40,860	—	518,327	3,315	55,974	1,675,205	2,136,776	5,642,730	348,526	215,586	20,963	19,297,633	27,602,164	29,277,309	
—	54,358	54,358	—	110,863	775	165,456	22,837	465,869	132,948	180,019	65,106	18,185	2,025,596	2,917,733	2,940,510	
—	8,930	5,358	—	14,339	762	Not stated	—	—	—	Not stated in the Agent's Return.				—	—	
—	17,139	17,139	—	34,278	1,234	Not stated	3,449	—	1,777	—	1,463	12	609,503	672,555	670,004	
—	8,047	8,047	—	16,065	591	Not stated	56,631	67,760	23,771	26,452	9,152	266	1,580	116,061	173,592	
—	3,584	2,638	—	7,542	1,371	Not stated	—	57,153	111,900	2,108	588	3,006	—	182,118	182,118	
—	1,791	1,063	—	3,528	470	Not stated	—	82,760	68,848	4,000	352	504	—	106,464	106,464	
104,808	1,997,400	2,377,930	224,130	14,543,982	2,794	—	—	—	—	—	—	—	—	—	—	



TABLE No. 3.—GROSS RECEIPTS during Year

Railway.	Passenger Traffic.													Receipts from Live Stock.
	Receipts from Passengers.							Total Receipts from Excess Luggage, Parcels, Carriages, Horses, Dogs, &c. conveyed in Passenger Trains.	Receipts for Mail Service.	Receipts from Special Trains.	Receipts from Troop Trains.	Total Receipts from Passenger Traffic—(P.)	Passenger Receipts per Passenger Train Mile.	
	First Class.	Second Class.	Intermediate Class.	Third Class.	Fourth or Coolie Class.	Holders of Season or Periodical Tickets.	Total Receipts from Passengers.							
GUARANTEED.	£	£	£	£	£	£	£	£	£	£	£	£	£	£
East Indian (Main Line) -	82,085	31,848	32,742	530,784	—	8,009	630,528	55,157	2,305	6,702	26,601	721,583	5'62	970
„ (Jubbulpore Line)	6,009	4,087	1,538	44,415	—	—	55,169	6,491	1,209	2,447	7,980	73,280	4'02	1
Great Indian Peninsula -	31,966	31,029	—	146,831	165,334	834	375,984	55,935	2,079	4,800	69,764	609,018	6'44	7,927
Madras - - -	12,291	14,474	—	152,186	12,712	346	192,011	17,303	—	1,756	6,534	214,164	7'29	1,771
Bombay, Baroda, and Central India - - -	4,765	10,132	—	157,962	—	2,324	175,123	14,609	171	4,302	4,346	193,651	9'04	8,652
Scinde, Punjab, and Delhi -	8,112	10,790	2,163	140,560	—	—	161,634	17,797	133	—	9,057	189,571	5'87	43
Great Southern of India -	733	944	—	36,456	—	24	38,127	1,816	3	115	68	40,154	6'56	23
Eastern Bengal - -	3,321	2,694	—	16,908	57,148	495	81,566	7,687	70	1,482	1,204	91,960	6'80	51
Oude and Rohilkund - -	68	1,754	—	21,178	—	—	23,000	2,042	—	224	686	26,012	9'20	1
Carnatic - - -	35	333	—	2,592	—	—	2,960	32	—	9	—	3,001	6'72	—
STATE.														
Calcutta and South-eastern -	— {	Upper 264 }	—	— {	Lower 4,753 }	—	5,017	142	—	20	—	5,179	6'04	8
Mulhutte (1 April to 31 Dec.)	306	130	—	245	2,781	—	3,460	374	30	—	41	3,911	4'86	—
BERAR.														
Oomrawattee - -	39	66	—	549	—	—	644	60	—	—	—	716	3'64	—
Kamran - - -	11	19	—	753	11	—	190	21	—	—	—	220	3'40	—
Total Receipts of Railways	98,741	108,565	36,503	1,250,812	242,730	8,092	1,745,432	180,052	7,036	21,418	127,076	3,081,634	6'20	19,364
„ Indus Steam Flotilla	1,001	156	—	3,059	—	—	4,206	—	—	—	—	4,206	—	138
Gross Receipts of Railways and Flotilla -	99,832	108,721	36,503	1,253,871	242,730	8,092	1,749,638	180,052	7,036	21,418	127,076	3,085,840	—	19,502

ended 31st December 1872.

Goods Traffic.												Total Receipts from Passenger and Goods Traffic—(P.)+(G.)	Passenger and Goods Receipts per Train Mile.	Total Miscellaneous Receipts—(M.)	Miscellaneous Receipts per Train Mile.	Total Receipts from Passenger, Goods, and Miscellaneous—(P.)+(G.)+(M.)	Total Receipts per Train Mile	
Receipts from Minerals.			Receipts from General Merchandise (exclusive of Live Stock and Minerals).							Total Receipts from Goods Traffic—(G.)	Goods Receipts per Goods Train Mile.							
From Coal and Coke.	From Other Minerals.	Total Receipts from Minerals.	From First or Lowest Class.	From Second Class.	From Third Class.	From Fourth Class.	From Fifth or Highest Class.	From Special and Sunday.	Total.									
£	£	£	£	£	£	£	£	£	£	£	£	£	£	£	£	£	£	
130,985	8	130,993	—	—	Not returned	—	—	—	1,457,854	1,579,226	11.58	2,301,108	8.81	186,346	0.52	2,487,013	9.33	
—	—	—	—	—	Not returned	—	—	—	79,756	79,756	11.61	123,948	6.38	67,698	2.02	230,048	9.21	
866	—	866	475,588	334,900	148,692	90,544	117,554	5,831	1,109,109	1,177,008	9.46	1,460,914	8.38	39,940	0.15	1,716,757	9.53	
—	—	—	99,612	48,650	34,175	29,298	21,781	92,804	326,320	328,001	5.76	546,253	6.26	22,597	0.20	678,851	6.94	
1,416	10,975	12,421	60,170	54,483	116,040	6,910	6,106	38,111	293,531	304,510	14.28	503,061	12.16	14,793	0.36	517,854	12.52	
—	—	—	60,230	64,722	28,582	29,284	4,785	35,519	223,129	228,177	10.79	412,748	7.37	13,787	0.22	426,475	7.60	
—	—	—	17,710	4,011	2,671	701	880	6,320	32,272	32,295	5.27	72,440	6.76	1,854	0.12	74,008	6.88	
8,485	2,725	9,910	9,622	37,716	3,106	2,881	560	92,350	146,135	152,306	18.71	244,376	9.42	12,490	0.48	266,866	9.90	
77	15	92	2,517	1,046	1,998	1,092	298	8,310	15,351	16,344	6.04	41,356	7.45	920	0.16	42,276	7.62	
—	—	—	172	31	13	14	41	120	397	397	1.48	3,398	4.75	80	0.11	3,478	4.97	
14	3	17	—	19	—	23	—	2,490	2,537	2,562	2.98	7,742	4.51	640	0.37	8,301	4.39	
452	—	452	346	249	336	204	9	13	1,167	1,609	4.00	5,520	6.36	124	0.15	5,644	7.01	
—	—	—	239	601	124	9	67	—	1,370	1,379	7.59	2,089	5.63	23	0.05	2,111	5.69	
—	—	—	139	654	53	6	11	—	913	913	10.78	1,133	6.42	5	0.02	1,138	6.46	
137,325	13,786	151,051	3,729,142							3,729,142	3,899,559	10.24	5,981,194	8.82	299,397	0.41	6,230,501	9.63
—	—	—	61,917							61,917	65,055	—	69,361	—	1,752	—	71,113	—
137,325	13,786	151,051	3,794,059							3,794,059	3,964,614	—	6,050,555	—	301,050	—	6,351,614	—

TABLE No. IV.—EXPENDITURE ON REVENUE ACCOUNT

[illegible]

during Year ended 31st December 1872.

Rates and Taxes.			Compensation for Personal Injury, &c. Damage and Loss of Goods.				Legal and Parliamentary Expenses.			Miscellaneous Working Expenditure, not included in the foregoing.			Total Working Expenditure.		
Gross.	Per Train Mile.	Per cent. of Gross Re- ceipts.	Gross.		Per Train Mile.	Per cent. of Gross Re- ceipts.	Gross.	Per Train Mile.	Per cent. of Gross Re- ceipts.	Gross.	Per Train Mile.	Per cent. of Gross Re- ceipts.	Gross.	Per Train Mile.	Per cent. of Gross Re- ceipts.
			Personal.	Goods.											
£	s.	d.	£	s.	d.		£	s.	d.	£	s.	d.	£	s.	d.
78,211	8	7	189	1,181	06	06	485	08	03	138,403	6	8	1,004,526	3	41
847	1	1	—	495	2	2	9	00	00	12,877	6	4	99,333	4	45
7,506	4	4	—	2,781	1	1	1,260	07	07	88,526	5	3	1,002,218	4	58
3,782	8	6	2,109	34	3	3	68	00	01	31,615	4	4	290,906	3	68
2,854	8	5	—	389	1	07	007	10	13	44,343	12	8	310,854	7	60
588	1	1	14	3,642	6	8	668	13	15	58,276	10	7	364,916	5	96
432	4	6	—	71	06	1	7	00	00	5,785	5	5	41,781	3	58
1,383	5	4	3	9,235	4	3	465	21	16	28,097	10	2	164,093	6	64
86	1	2	—	—	—	—	—	—	—	4,908	10	6	28,092	5	09
5	08	1	—	—	—	—	—	—	—	543	9	1	2,315	3	67
160	1	1	—	—	—	—	2	02	04	1,018	7	1	7,630	4	01
9	1	1	—	—	—	—	—	—	—	377	5	6	3,226	4	57
—	—	—	—	—	—	—	—	—	—	—	—	—	1,138	3	54
—	—	—	—	—	—	—	—	—	—	—	—	—	516	2	45
35,278	—	5	2,376	17,778	—	3	3,623	—	05	408,980	—	7	3,329,644	4	53
													53,034	—	74
													3,481,678	—	53

TABLE No. 5.—FARES and RATES in use on the INDIAN RAILWAYS.

Railway.	Passengers.					Goods.					
	Fare for travelling One Mile.					Rate for conveying One Ton One Mile.					
	By First Class.	By Second Class.	By Intermediate Class.	By Third Class.	By Fourth or Coolie Class.	Of First or Lowest Class.	Of Second Class.	Of Third Class.	Of Fourth Class.	Of Fifth or Highest Class.	Special.
<b>GUARANTEED.</b>	pics.	pics.	pics.	pics.	pics.	pics.	pics.	pics.	pics.	pics.	pics.
East Indian - - -	18	9	4½	8	—	9	14	18	23	27	—
Great Indian Peninsula - -	18	9	—	4	2½	10	14	24	34	48	—
Madras - - { Day	18	5	—	8	2	12	14	18	24	36	8
- - { Night	22	12	—	4	—						
Bombay, Baroda, and Central India - - -	15	7	—	4 mail 8	—	10	14	20	28	40	8
Scinde, Panjaub and Delhi:											
Scinde section - - -	9	5½	—	3½	—	10	14	18	28	42	—
Panjaub section - - -	18	9	4½	8	—	9	14	18	24	28	7
Great Southern of India - -	12	5	—	2	—	12	14	18	24	36	8
Eastern Bengal - - -	12	6	—	4½	3	9	12	16	24	48	10
Oude and Rohilkund - - -	18	9	—	—	2	{ 7 9 }	14	18	23	27	—
Carnatic - - -	12	6	—	4	—	{ 16 12 }	20 14	24 18	36 24	48 36	12 10
<b>STATE.</b>											
Calcutta and South-eastern - -	—	{ 9 Upper }	—	{ 8 Lower }	—	9	14	18	28	56	9
Nalhati - - -	27	13½	—	6½	3½	12	17	23	35	60	12
<b>BERAR.</b>											
Oomrawuttee - - -	18	9	—	4	2½	10	14	24	34	48	—
Kungaun - - -	18	9	—	4	2½	10	14	24	34	48	—
Indus Steam Flotilla - - -	50	8	—	4	—	7	9	12	16	24	—

Table No. 6.—STATEMENT showing the QUANTITIES of the principal Articles of MERCHANDISE, &amp;c., carried on the GUARANTEED INDIAN RAILWAYS in 1871 and 1872.

Articles.	East Indian.		Great Indian Peninsula.		Madras.		Bombay, Baroda and Central India.		Sind, Panjab and Delhi.		Great Southern of India.		Eastern Bengal.		Oude and Rohilkund.		Carnatic.	
	1872.	1871.	1872.	1871.	1872.	1871.	1872.	1871.	1872.	1871.	1872.	1871.	1872.	1871.	1872.	1871.	1872.	1871.
Cloth	—	—	1,890	1,188	4,661	4,171	Included in piece goods.	Tons.	11,754	9,954	Tons.	690	—	—	—	95	100	—
Coal	391,691	266,043	736	1,681	837	591	3,560	1,146	—	—	—	—	6,385	11,481	427	166	—	—
Cocon-nuts	—	—	12,606	9,378	1,620	988	Included in dried fruit.	—	—	—	—	—	—	—	—	25	1	—
Coffee	—	—	—	—	8,894	6,153	Included in grocery.	57	64	—	—	—	—	—	—	—	—	—
Cotton	65,346	72,855	63,515	99,048	16,450	17,518	42,325	38,721	12,772	14,907	21	21	251	365	738	202	—	—
Dried Fruits	9,059	6,563	13,110	9,040	—	—	8,937	7,664	6,786	5,721	—	—	—	—	—	—	—	—
Firewood	20,890	17,519	20,761	23,014	12,885	9,864	7,172	5,582	16,255	20,513	11	11	—	—	21	28	181	—
Grain	48,392	30,970	187,947	192,081	13,076	13,571	36,169	41,370	67,424	55,632	26,404	28,578	11,045	7,548	12,897	4,866	26	21
Green Fruits and Vegetables	1,360	1,361	10,632	10,777	3,320	2,594	6,371	5,526	1,517	1,338	4,558	2,464	—	—	618	414	—	—
Hides	32,435	24,333	8,162	1,811	7,443	4,142	Included in sundries in Co's. accounts.	5,119	5,119	2,318	852	650	4,709	4,312	925	776	1	—
Iron	See Metals, &c.	—	—	—	5,275	5,844	Included in Metal.	10,565	10,565	5,288	—	—	75	71	—	—	—	—
Jaggree and Sugar	39,774	78,898	20,494	21,506	12,119	12,260	24,705	26,796	20,926	21,652	—	432	6,783	5,831	607	96	32	11
Jute	—	—	—	—	—	—	—	—	—	—	—	—	103,690	62,407	31	34	—	—
Metal and Hardware	65,640	66,892	24,508	15,335	—	—	4,850	4,549	220	18	—	101	872	659	929	762	—	—
Military Stores	—	—	6,547	8,440	2,884	788	1,503	1,393	10,661	4,227	—	—	833	648	8,187	2,257	—	—
Oil	2,532	1,719	3,188	6,597	6,322	6,553	839	843	2,858	2,421	2,080	2,050	—	—	70	116	45	89
Opium	7,129	7,446	3,898	3,725	—	—	614	631	—	—	—	—	77	69	76	49	—	—
Piece Goods	46,520	53,436	13,739	14,605	—	—	6,179	6,023	12,286	9,954	—	—	—	—	460	340	—	—
Rice	97,771	113,914	—	—	84,450	64,461	Included in grain.	—	—	—	—	—	10,221	7,442	—	—	—	—
Salt	103,871	95,572	63,846	59,881	43,288	44,368	10,658	4,348	6,409	4,922	18,371	9,777	1,228	1,665	4,847	4,691	1,649	457
Seeds	83,815	87,649	18,011	7,918	15,345	10,489	4,568	3,967	7,873	15,388	4,386	4,016	1,423	3,182	720	972	1,074	848
Silk	638	648	238	266	—	—	Included in piece goods.	482	482	267	—	6	225	212	—	—	—	106
Timber	13,509	10,781	9,810	8,357	11,530	9,200	6,852	5,995	4,015	3,214	—	628	—	—	5,003	1,357	—	—
Tobacco	9,815	8,102	2,392	1,946	4,354	4,047	5,170	4,724	898	840	444	402	7,873	3,319	55	16	14	8
Twist	2,185	1,820	103	46	3,351	2,773	1,420	1,325	—	—	—	—	—	—	61	36	24	32
Wines, Spirits, &c.	19,857	16,003	5,479	6,471	1,319	2,909	2,332	1,045	2,778	3,603	—	11	227	337	571	986	1	2
Wool	—	—	158	43	—	—	1,441	984	5,969	5,742	—	—	—	—	—	—	—	—



TABLE No. 7.—NET EARNINGS of the INDIAN RAILWAYS during the Year 1872.

Railway.	Amount.	Per Train Mile.	Per-centage of Receipts.
GUARANTEED.			
	£		
East Indian, Main Line - - -	1,432,185	5.5	59
Jubbulpore Line - - -	121,111	5.	55
Great Indian Peninsula - - -	613,823	3.	36
Madras - - - - -	271,947	3.1	48
Bombay, Baroda, and Central India - -	207,300	4.5	40
Scinde, Punjab, and Delhi - - -	60,573	.9	14
Indus Steam Flotilla - - -	18,079	—	25
Great Southern of India - - -	32,222	2.6	44
Eastern Bengal - - - - -	92,773	3.5	36
Oude and Rohilkund - - - -	13,284	2.4	31
Carnatic - - - - -	1,163	1.6	33
STATE.			
Calcutta and South-eastern - - -	760	.4	9
Nuhutteo - - - - -	2,419	3.	42
BERAR.			
Oomrawatteo - - - - -	973	2.6	46
Kamgaun - - - - -	622	3.5	55

TABLE No. 8.—Cost and Consumption of FUEL.

Railway Company.	Coal.				Coke.				Patent Fuel.				Wood.				Total.				
	Quantity in Tons.	Total Cost.	Cost per Ton.	Con- sumption. Per Train Mile in lbs.	Per Vehicle Per Mile.	Quantity in Tons.	Total Cost.	Cost per Ton.	Con- sumption. Per Train Mile in lbs.	Per Vehicle Per Mile.	Quantity in Tons.	Total Cost.	Cost per Ton.	Con- sumption. Per Train Mile in lbs.	Per Vehicle Per Mile.	Quantity in Tons.	Total Cost.	Average Cost per Ton.	Con- sumption. Per Train Mile in lbs.	Per Vehicle Per Mile.	
GUARANTEED.																					
East Indian	130,082	51,004 2 11 0 7 9	—	—	—	8	6 15 7 0 5 24	—	—	—	23	5 6 10 0 8 3	—	—	—	—	131,018	51,070 5	—	55.0	0.0077
Great Indian Peninsula	72,661	132,492 2 6 1 10 4	40	1.7	5,803	15,979 12 1 2 14 6	8.26	0.14	—	—	2,831	1,552 8 0 1 13 0	1.33	0.07	81,265	150,024 2 7 1 16 11	45.21	1.98	—	—	
Madras	6,213	10,240 4 1 13 0	—	—	1,727	5,063 1 1 2 13 7	—	—	—	—	40,999	20,945 8 5 0 8 3	—	—	59,897	41,233 2 5 0 13 10	77.	5.	—	—	
Bombay, Baroda, and Central India.	16,907	27,519 13 3 1 10 8	46	1.9	336	703 7 7 1 16 9	0.03	0.04	—	—	405	217 13 10 0 10 9	0.09	0.04	19,007	33,445 17 7 1 19 0	43.14	1.93	—	—	
Scinde, Punjab, and Delhi	5,009	14,564 0 2 15 4	10	5	—	—	—	—	—	—	77	271 0 3 10 5	0.003	0.003	55,146	52,053 0	0.13 104	96.818	4.711	—	—
Great Southern of India	3,151	8,864 7 6 1 16 5	18	—	—	—	—	—	—	—	1,112	2,009 13 0 1 17 7	9.	—	2,666	6,172 2 10 1 13 8	81.	—	—	—	
Eastern Bengal	13,992	10,702 7 11 0 15 3	69	0.4	—	—	—	—	—	—	40	22 0 0 11 0	—	—	14,032	10,724 7 11	—	80.	0.4	—	
Oude and Rohilkund	421	1,233 17 6 2 13 7	8	4	—	—	—	—	—	—	4,715	1,972 13 1 0 8 4	95.25	5.17	5,136	3,206 10 7 0 12 8	103.75	5.03	—	—	
Carnatic	4	10 6 1 2 11 6	1	—	7	17 4 1 2 0 2	—	—	—	—	335	250 16 5 0 18 0	60.	7.	306	278 6 7 0 14 1	62.	7.	—	—	
STATE.																					
Calcutta and South-eastern	1,030	1,051 18 6 0 19 5	70	1.4	—	—	—	—	—	—	—	—	—	—	—	—	1,050	1,051 18 6	—	70.	1.44
Naluttie	303	339 13 0 1 1 5	43	1.5	—	—	—	—	—	—	—	—	—	—	—	—	308	339 13 0	—	43.	1.23
BENGAL.																					
Oomrawatie	170	321 16 5 1 17 10	50	4.4	—	—	—	—	—	—	—	—	—	—	—	—	170	321 16 5 1 17 10	5.49	4.43	—
Kanagum	80	151 8 11 1 17 10	51	3.5	—	—	—	—	—	—	—	—	—	—	—	—	80	151 8 11 1 17 10	61.08	3.54	—

## LOCOMOTIVES EMPLOYED IN TRAFFIC.

Railway.	Number.	No. of Miles of single line open to each engine.	Average No. of Miles run by each.
East Indian : Main Line	338	5	15,450
Jubbulpore Line	37	6	12,947
Great Indian Peninsula	252	6.17	15,964
Madras	118	7.05	14,735
Bombay, Baroda, and Central India	65	7.5	15,044
Scinde, Punjab, and Delhi	66	10.21	19,645
Great Southern of India	21	8.00	11,971
Eastern Bengal	43	3.64	12,065
Oude and Rohilkund	60	4.90	1,848
Carnatic	4	4.75	3,572

## Number of LOCOMOTIVES and VEHICLES owned by the Guaranteed Railway Companies.

Railway Company.	Locomotives.			Passenger Carriages.		Goods Trucks and Wagons.		Total Number of Vehicles on 31st December 1872.
	Former Number.	Added in 1872.	Total Number, 31st Dec. 1872.	Former Number.	Added in 1872.	Former Number.	Added in 1872.	
East Indian	535	—	535	923	—	6,844	—	7,767
Great Indian Peninsula	324	5	329	1,261	29	6,461	100	7,851
Madras	126	—	126	310	35	3,272	—	3,617
Bombay, Baroda, and Central India	72	—	72	183	34	2,857	less 6	3,068
Scinde, Punjab, and Delhi	133	—	133	340	—	1,888	—	2,228
Great Southern of India	20	1	21	43	—	341	6	390
Eastern Bengal	43	—	43	150	4	727	62	943
Oude and Rohilkund	28	32	60	95	99	387	34	615
Carnatic	4	—	4	33	—	43	—	76
Total	1,285	38	1,323	3,338	201	22,820	196	26,555

The following relates to each railway separately :—

## EAST INDIAN RAILWAY.

Length, 1,504 miles. { Main Line, 1,280 miles.  
Jubbulpore Line, 224 miles.

56. The works of construction on this line may now be regarded as practically at an end. A large increase of traffic may some day require additional stock, and perhaps a further extent of double line; but the time I apprehend is distant when any capital outlay on these objects will be called for. The expenditure during the past year on capital account was chiefly applied to the final payments for the chord line. It is possible, however, that an encroachment of the river Ganges with which the railway was threatened near Bhaugulpore, on the loop line, may necessitate an alteration which would involve considerable expense. After the heavy rains of last year, the river changed its course and approached from a distance of two miles to within a few feet of the railway. Here it fortunately stopped, and the danger was for the time averted, but there is nothing in the position of the ground or in the nature of the soil to prevent the water reaching the embankment should another heavy flood swell the new channel. It is impossible, however, to answer for the vagaries of Indian rivers, and the Ganges in this case may cut for

itself a new channel elsewhere. In the meantime the present threatened point is being watched.

57. The gross receipts during the year 1872 were 2,657,654*l.* and the expenses 1,104,361*l.*, being a net profit of 1,553,293*l.*, compared with 1,380,380*l.* of 1871.

58. The company were enabled in the first half year to declare an increased dividend by earning 150,69*l.* in excess of the five per cent. guaranteed interest.

#### GREAT INDIAN PENINSULA RAILWAY.

Length, 1,278½ miles. { North-east Line and Nagpore Branch, 860 miles.  
South-east Line, from Junction, 410 miles.

59. The capital expenditure on this line during the past year amounted to about 217,500*l.* The Kistna viaduct and the terminal station at Bombay are the only important works on the line which now remain to be finished.

60. The traffic during the year shews a falling off, compared with the previous year. In 1872 the gross receipts were 1,716,757*l.* and the expenses (including 100,716*l.* for special funds) 1,102,934*l.*, being a net profit of 613,823*l.* In 1871 the net receipts amounted to 686,068*l.* The decrease is principally in cotton, 39,550 tons less than last year having been conveyed and 172,681*l.* less received than in the previous year. The want of good roads to the stations in the interior is still mentioned as a reason why traffic does not improve.

#### MADRAS RAILWAY.

Length, 857¾ miles. Open, 835 miles. { South-west Line, 407 miles.  
Bangalore Branch, 85 miles.  
Neilgherry Branch, 3 miles.  
North-west Line, 340 miles.

61. The only work remaining to complete this line is the Neilgherry branch starting from Coimbatore. Satisfactory progress has been made in India, but there has been an unfortunate delay in obtaining the iron girders for the bridges on the line, owing to an untoward accident which obliged the ship laden with them to go on to Calcutta.

62. The revenue of the line has slightly improved. In 1872 the gross receipts were 568,852*l.* and the expenditure 296,905*l.*, leaving a net profit of 271,947*l.*, compared with 267,608*l.* in 1871.

#### EASTERN BENGAL RAILWAY.

Length, 158½ miles. Open 156½ miles.

63. The works of construction in this line have consisted principally of those undertaken for the protection of the Goalundo station from the encroachments of the river and of additional waterway where the embankments were injured by the floods of 1871. The Government has recently sanctioned a branch from the main line to Chitpore on the bank of the river. This will be a valuable addition to the undertaking.

64. The traffic is good and promising, but exceptional charges have fallen upon revenue during the past year in connexion with the repairs and restoration works which have reduced the net receipts.

65. The gross receipts for the year were 256,866*l.* and the expenses 164,093*l.*, the net returns being 92,773*l.*, compared with 89,562*l.* for the previous year.

#### BOMBAY, BARODA AND CENTRAL INDIA RAILWAY.

Length, 389½ miles.

66. This line suffered severely during the monsoon in September last. The bridge over the Par river was swept away by the floods and the bridges across the Orunga and Damaungunga rivers were very much damaged. The traffic was of course stopped, but by the energy and skill of the railway staff, temporary structures were erected by which communication was established within six weeks of the disaster, and all three bridges have since been restored and opened for traffic. The Harbour side terminus for the railway has at length been settled and is in course of being built. The Patree branch, which was constructed for the Government, was opened in May last for the salt traffic.

67. The result of the traffic for the first half of the past year placed the company in the encouraging position of earning an excess beyond the five per cent. guaranteed. The receipts exceeded that amount by 6,020%. The interruption of the traffic during the second half, and the cost of restoring some of the works, told disadvantageously against the receipts for that period.

68. The gross receipts for the whole year were 517,854*l.* and the expenses 310,554*l.*, the net receipts being 207,300*l.*, compared with 202,311*l.*, the previous year.

#### SCINDE, PUNJAB, AND DELHI RAILWAY.

Length, 676 miles { Scinde, 110 miles.  
Punjab and Delhi, 566 miles.

Distance traversed by steamers on the River Indus, 500 miles.

69. The floods which produced so damaging an effect upon the bridges over the Sutlej River on this line have been referred to in a former part of this Report. Although the foundations had been laid at a depth of 40 feet below the bed of the river, some of the piers were swept away. Measures were immediately taken to carry on the traffic by the best available means, but the interruption, of course, had a serious effect upon the receipts. The work of restoration has been rapidly going on, and the uninjured piers of the bridges have been strengthened in the manner already explained. The Government has recently expressed its satisfaction at the exertions made by the Company's staff in carrying out these works.

70. In connexion with the Scinde Railway, as well as the Indus Valley, and indeed the whole system of lines in the north-west of India, the capacity and usefulness of the Harbour of Kurrachee are matters of great interest. It is satisfactory therefore to have the following opinions of Mr. W. Parkes, C.E., the Engineer of the Works, and Mr. G. Robertson, Harbour Engineer, who went out specially to examine the harbours of India. Mr. Parkes says:—

“Capacity for number of vessels.—With no further preparation than some additional moorings, fifty-five to sixty vessels of 500 to 1,200 tons. The natural facilities for further extension are practically unlimited.”

And Mr. Robertson:—

“I believe that, when the works are complete, the Government of India may be congratulated upon having an excellent harbour at Kurrachee. It is 500 miles from the nearest good harbour; it is out of the track of cyclones; it is almost clear of the monsoon, with its attendant wear and tear of goods and ships during heavy rains; and the construction of the Indus Valley Railway will put Kurrachee into direct communication with the Punjab.”

71. The gross receipts for the year were 496,588*l.*, and the expenses 417,936*l.*, leaving a balance of 60,573*l.* as net receipts, compared with 14,503*l.* of the previous year. During both years, it should be mentioned, the circumstances have been exceptional in consequence of flood damages, and certain charges still remain in suspense until it is settled whether they are to be borne by capital or revenue.

#### GREAT SOUTHERN OF INDIA RAILWAY.

Length, 384 miles. 168 miles open.

72. No addition has been made to the length of this line, but the works on the extension southward are now being vigorously prosecuted. The estimates for a single track of the metre gauge come to little more than 4,000*l.* a mile, including rolling stock.

73. When the amalgamation of this company with the Carnatic is effected, a continuous line will be formed of 353 miles in length, extending from Madras via Belpur, Tanjore, Trichinopoly, Dindigul, Madura, to Tuticorin.

74. The receipts for the year amounted to 73,996*l.*, and the expenses to 41,772*l.*, leaving a net profit of 32,224*l.* A reduction in the passenger fares, in July last, from three to two pias for the third class produced a considerable increase in the numbers; but a slight decrease, which was to be expected at first, occurred in the receipts.

#### OUDE AND ROHILKUND RAILWAY.

Length, 706 miles. Open, 396 miles.

75. An additional length of 252 miles has been opened on this railway during the year, and 102 miles have been added since, making a total length of 396 miles

now open for traffic. The expenditure hitherto has averaged less than 7,000*l.* a mile, and it is expected that the whole line when completed will not, including the bridges, have cost 9,000*l.* a mile. With regard to the completion I cannot do better than quote the opinion of the late energetic Agent of the Company, Major-General Beadle, who has only recently left Oude:—

“Although we are not entirely out of the difficulties caused by the fallen wells at the Cawnpore Ganges Bridge, so much has been done in breaking through and bringing up the obstructing brickwork that much anxiety is not now felt about the ultimate success of the undersinking of the large and small wells through these obstructions at four piers, into the firm clay which underlies the sandy bed; and I see every reason to hope that even this bridge will be completed in 1875 before the floods season sets in.

“The Ramgunga Bridge and the Ganges Bridge on the Allyghur branch may be completed two or three months earlier.

“If the girders are received in good time, the Saie and Goomtee Bridges on the Benares side, which, taken together are nearly equal to a bridge across the Ganges, will be completed before the floods of 1874, although the revised designs for these bridges were not settled before the middle of 1872, so rapidly and successfully has the construction been pushed forward: we may then fairly expect that the whole system of 547 miles will be open to the public and completed before the end of 1875.”

76. The completion of the bridges will thus be seen to be the key of the opening of the whole line. The necessity for deeper foundations than were at first supposed to be necessary has delayed the execution of the Cawnpore Bridge. Its cost is estimated at 133,000*l.* Those over the Ganges, at Rajghat, and over the Ramgunga, at Bareilly, will cost about 57,000*l.* and 64,000*l.* respectively. It is probable that an arrangement will cost made for the extension by the company of the line from Moradabad to some point on the Delhi Railway.

77. The traffic is, of course, at present small and undeveloped, and that in connexion with the East Indian line will remain under great disadvantages while the bridges are unfinished; but taking into consideration the character of the country through which the line passes, its comparatively small cost and other advantages, great hopes may fairly be entertained of its remunerative capacity.

78. The receipts last year were 42,276*l.*, and the expenses 28,992*l.*, leaving a net profit of 13,284*l.*

### CARNATIC RAILWAY.

Length, 147 miles. Open, 18½ miles.

79. This railway will very shortly be merged into that of the “South India Railway,” which will include the lines committed to the Carnatic Company as well as those in the hands of the present Great Southern of India Railway Company. The amalgamation of the two companies, as before stated, will take place as soon as a Bill now before Parliament has become law.

80. This company has hitherto been engaged in making surveys for a line commencing at Madras, and proceeding to Cuddalore. The route has lately been decided on, and the works are being executed.

81. The short branch from Arconum Junction, on the Madras Railway, to Conjeeveram has been carrying traffic with hitherto only small results, the net earnings only amounting to 1,163*l.* for the year.

### STATE LINES.

82. I have now to refer to the railways undertaken by the Government and termed State Lines, and in doing so I feel that I am encroaching upon the domain of a fellow worker, Mr. Guilford Molesworth, Consulting Engineer to the Government of India for State Railways, who last year gave a full and interesting account of the position of these undertakings. Any attempt on my part to report upon the same subject might therefore appear unnecessary, were it not intended that the paper which I am called upon to prepare should contain a full account of all the proceedings of the Government in connexion with railway communication in India, and of the present position of the lines.

83. I cannot do better, however, than quote Mr. Molesworth's report as much as possible. The following observations, wherever inverted commas appear, are accordingly Mr. Molesworth's own words, and are only supplemented with any additional information which I am in a position to give. Very little, however, has been received during the last six months.

### PUNJAB NORTHERN RAILWAY

84. "The total length of the line will be about 280 miles, exclusive of the length of a branch to the Pindadan-Khan Salt Mines. The line is intended chiefly for political and strategical purposes, but there will be a considerable salt traffic, and Sir Robert Montgomery expressed his belief that it would draw out a trade from Afghanistan and Central Asia, which would in a few years become immensely developed.

"The salt traffic is estimated at about 100,000 tons annually. There will also be hill traffic from Kashmir,—sugar exports, potatoes, limestone, &c.; but almost all authorities agree that the traffic alone will be insufficient to justify the construction of this railway, but that the strategical advantages which it will afford render the construction of the line necessary.

"The country between Lahore and Jhelum is very level, and would present but few natural obstacles to the construction of a railway, were it not for the formidable rivers which have to be crossed. The only heavy earthworks are on the Kharian Pass, which is surmounted by gradients not exceeding 1 in 100. On this pass there are several heavy cuttings in indurated clay, which, though hard as rock, is affected by water. The large rivers of the Ravee, the Chenab, and the Jhelum, have to be crossed by bridges about 17,000 lineal feet in the aggregate. The cost of these bridges, including protective works, is estimated at 1,125,000*l*.

"The cost of the line between Lahore and Jhelum, exclusive of these large bridges and their protective works, will be about 6,400*l*. per mile.

"There are also some minor bridges and large flood openings which are dry except during heavy rains. The railway for the greater portion of its length between Lahore and Jhelum runs on the side of the trunk road, only diverging from it in a few places, the main points of divergence being between Lahore and the Ravee, and at the Kharian Pass.

"With the exception of the large bridges the railway is so far completed that it might have been opened for traffic between the large rivers had it not been for the difficulty of obtaining rails from England; and so many rails are required for sinking the well foundations that the idea of opening for traffic this year must be abandoned. All the minor bridges may be said to be practically finished, with the exception of the Palkoo, the Bhimber, and the special flood gaps which must await the arrival of the iron work from England.

"The country between Jhelum and Rawal Pindee is in parts broken and rugged, but as a very good road has been constructed between those towns, the cost of the railway will not be large, as the railway will, for nearly the whole of that distance, keep to the road. This will, however, involve very heavy gradients and curves. The plans and sections of this length have been sent in and are now under consideration; the steepest gradient is 1 in 27. But it remains to be seen whether a ruling gradient of 1 in 30 cannot be obtained throughout. These gradients are so scattered that it will be difficult to work them as an ordinary incline; special brake arrangements must be adopted on that railway, and the engines must all be fitted with the 'Le Chatelier' counter-pressure brake. Beyond Rawal Pindee there are no special difficulties except the crossing of the River Indus. Opinion is divided respecting the question of crossing this by bridge or tunnel, but surveys have lately been undertaken with the view of deciding this question.

"Two lines have been suggested for the branch to the salt mines at Pindadan-Khan, one from Lalla Moosah, about twelve miles beyond Goozerat, on which the work will be generally light, but which involves a crossing of the Jhelum River; the other alternative line leaves the town of Jhelum and skirts the north bank of the river. The works on this line will be heavy as it crosses some large water drainage. The surveys of the alternative line have not yet been submitted for decision."



### INDUS VALLEY RAILWAY.

85. "The Indus Valley Railway will be about 493 miles in length. It branches off from the Punjab and Delhi line between Mooltan and Shershab, but about 6 miles from the former, and having Mooltan as a terminus. It then passes through the fertile district of Shoorabad, near the River Chenab, and thence to Bhawalpoor, crossing the River Sutlej near that city; from thence it passes through Ainedpoor, Khanpoor, Dundhi, and Ghotki to Rhoree, where it crosses the River Indus to Sukkur; it then keeps near the right bank of the Indus until it reaches Kotree, the present terminus of the Scinde Railway.

"It is very doubtful whether the Indus Valley will prove to be remunerative as a commercial undertaking, but in a political point of view it is important, as it opens railway communications between the Punjab and the seaboard, being a saving of about 750 miles to Lahore when compared with the present railway communication via Bombay and Allahabad. At present, river communication between Kurrachee and Mooltan is so uncertain that when time is an object, it is better to go via Bombay rather than risk the delays and contingencies of river transit.

"The local traffic will consist chiefly of grain and agricultural produce. In the Sehwan District the country is extremely rich and well cultivated, and throughout the State of Bhawalpoor there has of late been a large development of the resources of the country by the restoration of irrigation channels; and wherever the influences of the Indus extend, the country is, as a rule, well cultivated, but beyond its influence it is barren and thinly populated: Moreover, the native boats in the river will compete for the traffic that might otherwise go to the railway.

"The works on the line are very light, if we except the bridge over the Sutlej, the bridge over the Indus at Sukkur, and the provision for the spill waters of the Indus. At Sehwan there are some sharp rocks of a shaken character which have to be passed; but with these exceptions the railway may be considered a surface line.

"The bridge over the Indus will be a formidable undertaking, as one of its spans will be about 600 feet in the clear; but on the other hand, the foundations will be rocky, so that there will be no difficulty in this respect."

### (RAJPOOTANA RAILWAY (Agra Division, 254 miles).

86. "The Agra Division of the Rajpootana Railway commences near the Agra Station of the East Indian Railway, crosses the Jumna to Agra, and passes through Bhurtpoor, Jeypoor, Ajmere, to Nusseerabad; it is of considerable political importance, opening the Rajpootana District and forming a link in the large system which will eventually give direct railway communication between the Bombay Presidency and the North-Western Provinces. The traffic will probably be small until the whole system is completed, but there is a considerable salt traffic at Sambhur and Bhurtpoor.

"The annual exports and imports of Jeypoor and Bhurtpoor are about 70,000 tons, and the custom duties 30,000*l.* per annum."

"The line generally is a light one; the only works of magnitude being the bridge over the Jumna at Agra, about 2,200 lineal feet, to connect the line with the East Indian Railway, and the crossing of some rivers near Jeypoor, in the aggregate about 2,600 lineal feet. The Amanishah, the most formidable of these, is a river subject to a scour of an extraordinary character, which requires special precautions.

"The line between Agra and Sambhur, a length of 185 miles, was let by contract to Messrs. Glover and Company in October 1871."

The earthworks of this portion have been finished. The works on the large bridges had not proceeded very satisfactorily, delay having been partly occasioned by the difficulty in getting country timber for the well curbs.

Permanent way had been delivered for several miles, and some miles have been laid.

The most important bridge is that over the Jumna, at Agra, which consists of 16 spans, 142 feet between centres of piers founded on three wells 12½ feet diameter, sunk 60 feet below the low water level of the river.

### RAJPOOTANA RAILWAY (Delhi Division).

87. "The Rajpootana (Delhi) Railway will run from Delhi through Rewarree and Ulwar, making a junction with the Agra Division of the Rajpootana Railway; it opens out the Furucknugger salt district, and will be an important link in the through route from Delhi and the Punjab to the Bombay Presidency. The work is very light on this line, the only works of any magnitude being the crossings of the River Sarubee which, however, will, for the present, be traversed by a temporary causeway. The ruling gradient of this line is 1 in 300, but that of the salt branch is 1 in 100. The plans and estimates for the extension to the junction have just been submitted; Major Stanton recommending Bandikuri instead of Bewai as the point of junction."

### (HOLKAR STATE RAILWAY.)

88. "The Holkar State Railway will be about 86½ miles in length: it commences at Khundwa, a station 352 miles from Bombay, on the main line of the Great Indian Peninsula Railway.

"The line for the first 42 miles is tolerably light, it then crosses the Nerbudda River, and, ascending the Vindhya range of hills by the Choral Pass, reaches Mhow and Indore. (There appears to be a greater probability of commercial success on this line than on the majority of the State Railways, especially if the extension be carried out via Neemach and Rajpootana to Agra and Delhi. There will be considerable traffic in opium and other agricultural produce, and the railway will open the rich districts of Jowra, Rutlam, and Mundesoor to the Port of Bombay; but in a political point of view it is very important, affording as it does railway communication with the States of Holkar and Scindia, and the important military station of Mhow.)

"The first 42 miles of the line from Khundwa to the Nerbudda are tolerably light and easy, with ruling gradients of 1 in 100; but the Nerbudda is a rapid river, rising in flood time 60 feet above its ordinary level; it has, however, the advantage of good foundations for its piers. It is to be spanned by 13 openings of 60 metres from centre to centre of pier, making a total of about 2,560 lineal feet of bridges. After crossing the Nerbudda, the line gradually becomes more and more heavy, until it ascends the Choral incline, with a gradient of 1 in 40 for 3½ miles. The work on this portion is extremely heavy, including tunnels and heavy rock cuttings, embankments with retaining walls, and viaducts over deep ravines. The cost of the third or ghât division will be about 16,200*l.* per mile, including rolling stock and stations. The average cost of the whole line will be about 11,000*l.* per mile, including the cost of the Nerbudda Bridge, or about 8,700*l.* per mile, excluding the cost of the bridge. The cost of the first division will average about 6,000*l.* per mile.

"The Maharaja Holkar has lent to the British Government 1,000,000*l.* at 4½ per cent. interest, for the construction of this railway.

"The tender of Messrs. Hood, Winton, Mills, and Cag, for the construction of this line was accepted on the 8th of January 1872, and the contractors have since commenced the work with energy."

89. It is expected that 50 miles of this line will be opened during the present year. In anticipation of this event an agreement has been entered into between the managers of the Holkar State Railway and the Great Indian Peninsula Railway Company for the interchange of traffic, and for the provision, maintenance, and working of the junction station at Khundwa, which is to be used in common for both railways.

### (NIZAM'S RAILWAY.)

90. "The Nizam's railway is not only important in a political point of view in affording railway communication to Hyderabad and Secundrabad, but it is expected to develop considerable traffic both in goods and passengers.) The value of imports to Hyderabad from British territory is estimated at 400,000*l.* per annum, and there is a large export trade of cotton, sugar, oil, seeds, and grain.

"The length of this railway will be about 120 miles, including a branch of six miles in length, and as it is desirable to work the traffic through the agency of the Great Indian Peninsula Railway Company without break of guage, the standard guage of five feet six inches has been adopted."

91. The permanent way has been obtained from the Great Southern Railway, which it was decided should be constructed with light rails on the gauge, after the materials for a standard gauge had been supplied.

#### MYSORE RAILWAY.

92. As regards railways in the Mysore territory, your Grace hesitated to approve a proposal to devote an expected surplus of almost half a million sterling during the minority of the present Rajah, to the construction of railways, while irrigation works were at the same time urgently required, and you came to the conclusion "that our first choice ought to fall upon irrigation rather than upon railways, and that so much as may be necessary of the funds at our present and prospective disposal should be devoted to the improvement and re-establishment of the ancient system of irrigation, before any outlay is applied to the construction of a railway."

#### WARDAH VALLEY RAILWAY.

93. "The Wardah Railway is a branch from the Nagpore section of the Great Indian Peninsula Railway, and as it will probably be worked by that company, it will be constructed for the standard gauge of 5 feet 6 inches.

"The object of this branch is two-fold,—1st. to afford railway communication to Hingunghat, a large cotton mart 18 miles distant from the railway, and 2ndly. to open the Chandah coalfields for the supply of the Great Indian Peninsula Railway. The general direction of the line beyond the first 15 miles has not been decided, but projects for alternative lines to the coalfields are under survey."

94. The construction of the line beyond the distance already sanctioned depends, however, upon the result of further investigations into the value and extent of the coal beds in the Wardah Valley, the existing information not being yet conclusive as to the existence of a sufficient supply of good coal to justify the expense of a railway.

#### PATREE BRANCH.

95. This line, 22 miles in length, is a branch from the Bombay, Baroda, and Central India Railway, and was opened for traffic in salt, (the chief object for which it was constructed) in May last. It is being worked by the railway company under an agreement which is terminable by Government at any time after the line has been opened one year by giving six months notice. The capital expenditure has not been officially reported to this office, but it is said the line has not cost 80,000*l.*, exclusive of rolling stock.

96. The CALCUTTA AND SOUTH EASTERN Railway, 28 miles, the NULHATTEE Railway, 27½ miles, the KAMGAUN Railway, 7½ miles, and the OOMRAWATTEE, 5½ miles in length, have been worked during the year with very moderate success. The first yielded a net revenue of 761*l.*, the second about 3,000*l.*, the next 622*l.*, and the last 973*l.* for the year.

#### SUMMARY.

97. It now only remains for me to recapitulate briefly the general results given above.

98. The extent of railway communication now open in India amounts to 5,512 miles, of which 305 miles were opened during the year 1872, and 127 since.

99. The quantity of materials sent out last year was small in comparison with previous years, being only 66,534 tons, exclusive of fuel, which however amounted to 116,223 tons. Since the commencement of railway operations in India upwards of 4,500,000 tons of materials, of the value of nearly 30,000,000*l.*, have been despatched from this country.

100. There are 61,940 proprietors of railway stock and debentures, of whom 61,098 are in England and 842 in India. The native holders amount only to 388.

101. As regards accidents, out of 20,332,000 passengers, only one was killed from causes over which they had no control. Eight others were killed and 21 injured in consequence of their own misconduct or want of caution.

102. The amount of guaranteed capital expended up to the 31st March last was 91,686,025*l.*, of which 1,556,440*l.* was used during the past year; 822,994*l.* in England and 679,446*l.* in India. In addition to this, 3,492,323*l.* has been expended on the State Lines, 1,558,836*l.* having been appropriated in the year ending the 31st December last. The whole expenditure thus accounted for is in round numbers 94,500,000*l.*

103. The net revenue for 1872 amounted to 2,869,223*l.*, being slightly in excess of the previous year. The gross receipts were 6,351,617*l.*, and the expenditure 3,482,394*l.* The guaranteed interest advanced by Government during the year was 4,600,883*l.*, being 1,731,600*l.* in excess of the receipts.

104. The passenger traffic produced 2,085,940*l.*, compared with 1,941,571*l.* in the previous year. The receipts from goods and minerals were 3,964,614*l.*, compared with 4,022,615*l.* The number of passengers increased from 18,940,585 to 20,332,823. The increase was entirely in the third and fourth classes, which constituted 93·63 of the whole number. The amount of tonnage conveyed was larger also, being 2,929,637, compared with 2,615,966 in 1871.

105. The expenses of maintaining the lines and working the traffic amounted to 3,482,394*l.*, being 54·66 per cent. of the gross receipts. The maintenance came to 749,178*l.*, and the working expenses to 2,733,216*l.* The expenditure on some of the lines comprised repairs of rain damages, and but for this the revenue would have been better. The working expenses, independently of this, varied

on the different railways. On the East Indian main line they were 1 per cent. of the gross receipts; on the Great Indian Peninsula they were 1·5; on the Madras 52·19; on the Bombay, Baroda and Central India 63·85; and on the Scinde and Punjab, 85·68.

The number of trains run was 155,594, compared with 131,360 in the previous year. The train mileage was 14,543,862, compared with 14,080,064 of 1871. The mileage receipts averaged 8·73*s.*, being just about the same as last year.

The receipts per train mile were on the Bombay, Baroda and Central India 12·51*s.*. The East Indian were 9·33*s.*, and the Scinde and Punjab 4·9*s.*. The lowest, viz., 4·9*s.*, were on the Calcutta and South-

107. An analysis of the cost of the East Indian Railway main line, the average of which was 21,100*l.* per mile, shows that a great part of the outlay arose from causes which were unavoidable and of an extraordinary character, such as the mutiny, which directly and indirectly, is estimated to have added 3,000,000*l.* to the capital outlay, the Sonthal rebellion, the plan of commencing operations at various parts of the line simultaneously, and the great difficulty consequent thereon of transporting materials by the road or river. The stupendous bridges, and the large extent of flood openings; the length of double line and of double way constructed, as well as the general firm and substantial character of the works, and the heavy rails and materials used, account also for the rest of the outlay upon what is often erroneously regarded as a single line. Deducting the exceptional expenses above described, which cannot be taken at less than 4,000,000*l.*, the cost per mile of single line would amount to 12,250*l.* A comparison between the circumstances of India now and twenty years ago, the greater knowledge and experience which has been gained in the interval, and the practice at present in vogue of carrying out railway works on a light system, will help to explain the difference between the cost of the lines originally undertaken and those now being executed. The recent examples of the Wudwan and Patree branches in Western India encourage the expectation that in districts tolerably easy for railway operations, even with the 5 ft. 6 in. gauge, single lines may be constructed at a cost of from 6,000*l.* to 3,500*l.* a mile.

I have the honour to be,

My Lord Duke,

Your Grace's very obedient humble servant,

JULAND DANVERS.

## APPENDIX BY MR. RENDEL.

These tables are prepared on the same basis as those published in the note by me, appended to Mr. Danvers' Annual Report for 1871.

Actual expenditure only during the half year is included in working expenses, no notice being taken of renewal funds or retentions to meet injuries suffered during the half year, not repaired.

The large item of 28,752*l.* in Jubbulpore, for hire of vehicles, is ignored as not belonging to the half year; and adjustments with Jubbulpore in East Indian main line expenditure and receipts are, for the same reason, expunged.

The Madras Railway Company are unable to supply passenger and goods train mileage separately, but they have returns of vehicle mileage, from which a near approximation can be made. This has been done by assuming 20 vehicles as a standard passenger train, and 30 vehicles as a standard goods train, determining the number of trains of each kind therefrom, and dividing the total traffic train mileage in the resulting proportions. This is the method adopted on the East Indian for dividing mixed trains between passenger and goods. I have omitted reconstruction of Cheyair Bridge from this line's expenses, as it seems likely to be a capital charge.

For the sake of comparison, I have corrected the tables given for Madras for the second half of 1871 on this principle. It is very much to be wished that the Government returns required goods and passenger mileage to be stated separately; and the principle on which mixed mileage is separated to be also stated.

## PASSENGER TRAFFIC.

	East Indian.				G. I. P.		Madras.		Bombay, Baroda, and Central India.	
	Main Line.		Jubbulpore Line.							
	Second half of 1871.	Second half of 1872.	Second half of 1871.	Second half of 1872.	Second half of 1871.	Second half of 1872.	Second half of 1871.	Second half of 1872.	Second half of 1871.	Second half of 1872.
Miles open	No. 1,281	No. 1,231	No. 223½	No. 223½	No. 1,274	No. 1,268	No. 838	No. 838	No. 349½	No. 389
	s. d. 6 6½	s. d. 6 3½	s. d. 5 5	s. d. 5 8½	s. d. 5 9	s. d. 6 4	s. d. 5 4½	s. d. 5 2	s. d. 9 0½	s. d. 9
(1.) Average receipts from each passenger train per mile.	d. 35	d. 37½	d. 39	d. 4	d. 44	d. 43	d. 378	d. 348	d. 468	d. 38
(2.) Average sum received for carrying a passenger (taking all classes together) one mile.	No. 206	No. 203	No. 166	No. 171	No. 187	No. 177	No. 170	No. 180	No. 268	No. 283
	s. d. 8 8½	s. d. 8 4	s. d. 4 1	s. d. 3 10½	s. d. 5 7	s. d. 5 3½	s. d. 3 9½	s. d. 2 10½	s. d. 6 11	s. d. 7 7½
(4.) Average cost of running a train one mile.	d. 215	d. 197	d. 205	d. 272	d. 427	d. 36	d. 107	d. 18	d. 31	d. 328
(5.) Average cost of carrying a passenger one mile.	d. 165	d. 174	d. 165	d. 128	d. 103	d. 97	d. 181	d. 138	d. 195	d. 167
(6.) Average profit on each passenger per mile.	No. 214	No. 232	No. 148	No. 151	No. 17	No. 173	No. 129	No. 138	No. 15	No. 136
(7.) Average number of passenger trains running over each mile of line, each way per diem, (supposing all trains to be through trains)	No. 893	No. 943	No. 478	No. 513	No. 534	No. 618	No. 437	No. 467	No. 804	No. 783
(8.) Average number of passengers passing over each mile of line both ways, per diem.										

## GOODS TRAFFIC.

	East Indian.				G. I. P.		Madras.		Bombay, Baroda, and Central India.	
	Main Line.		Jubbulpore Line.							
	Second half of 1871.	Second half of 1872.	Second half of 1871.	Second half of 1872.	Second half of 1871.	Second half of 1872.	Second half of 1871.	Second half of 1872.	Second half of 1871.	Second half of 1872.
Miles open	No. 1,281	No. 1,281	No. 223½	No. 223½	No. 1,274	No. 1,268	No. 838	No. 834	No. 349½	No. 389
	s. d. 11 4	s. d. 10 1½	s. d. 6 6	s. d. 6 10	s. d. 9 2	s. d. 9 0½	s. d. 6 7	s. d. 6 3	s. d. 10 3	s. d. 9 6
(1.) Average receipts from each goods train per mile.	d. 124	d. 115	d. 115	d. 119	d. 159	d. 175	d. 145	d. 128	d. 15	d. 162
(2.) Average sum received for carrying one ton of goods (taking all classes together) one mile.	Tons. 109	Tons. 105½	Tons. 68	Tons. 69	Tons. 69	Tons. 62	Tons. 54½	Tons. 59	Tons. 63	Tons. 7
(3.) Average load in tons in any goods train at any one time.	s. d. 3 8½	s. d. 3 4	s. d. 4 1	s. d. 3 10½	s. d. 5 7	s. d. 5 3½	s. d. 3 9½	s. d. 3 10½	s. d. 6 11	s. d. 7 7½
(4.) Average cost of running a train one mile.	d. 408	d. 38	d. 78	d. 67½	d. 97	d. 102	d. 635	d. 58	d. 10	d. 131
(5.) Average cost of carrying a ton of goods one mile.	d. 334	d. 77	d. 43	d. 816	d. 62	d. 73	d. 815	d. 7	d. 6	d. 81
(6.) Average profit on each ton per mile.	No. 266	No. 292	No. 138	No. 109	No. 252	No. 184	No. 176	No. 167	No. 154	No. 103
(7.) Average number of goods trains running over each mile of line, each way per diem, (supposing all trains to be through trains.)	Tons. 580	Tons. 616	Tons. 154	Tons. 160	Tons. 349	Tons. 223	Tons. 182	Tons. 190	Tons. 252	Tons. 144½
(8.) Average number of tons passing over each mile of line both ways, per diem.										

NOTE.—I should observe that the returns for the first half of the year are more favourable in every particular to all the companies. I have given the second half because I cannot get at the necessary particulars of the Madras Railway for the first half.

The following Table compiled by Mr. Baynes of the Bombay, Baroda, and Central India Railway, contains some interesting particulars connected with the consumption of coal on the various Indian lines, and bears upon the cost of working.

COMPARATIVE STATEMENT OF COST AND CONSUMPTION OF FUEL, &c. for the Half-year ending 31st December 1872.

	English Coal.			Native Coal.			Wood.			Coke.			Patent Fuel.			Total Fuel.			Fuel consumption per Train Mile.	Train Miles per open Mile.	Gross Receipts per open Mile.	No. of Passengers per open Mile.	Tonnage of Goods per open Mile.
	Quantity.	Cost.	Price per Ton.	Quantity.	Cost.	Price per Ton.	Quantity.	Cost.	Price per Ton.	Quantity.	Cost.	Price per Ton.	Quantity.	Cost.	Price per Ton.	Quantity.	Cost.	Average price per Ton.					
East Indian Railway	—	—	—	22	24	0 2 3	—	—	—	—	—	—	—	—	—	—	—	0 7 0	53 38	1,977	883	2,090	380
" Jabulpore	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1 7 11	46 56	966	† 483	580	127
Great Indian Peninsula Railway	20,463	20,380	1 19 8½	1,046	876	0 13 11	1,574	4,308	2 14 9	—	—	—	—	—	—	—	—	1 16 5	44 2	1,260	809	1,357	227
Madras Railway	2,880	4,968	1 15 0	26,971	10,255	0 8 24	851†	2,791	2 16 8	1,355	2,897	2 2 2	—	—	—	—	—	0 13 0	70 47	1,155	835	1,403	224
Bombay, Baroda, and Central India Railway	7,535	*14,793	*1 19 1½	167	90	0 10 9	179	319	1 17 1	—	—	—	—	—	—	—	—	1 18 6	46 4	970	420	3,643	221
Scinde, Punjab, and Delhi Railway	4,504	12,938	2 14 0	20,225	14,363	0 13 94	—	—	—	3	0	3 3 4	—	—	—	—	—	1 1 1	91 06	923	835	1,342	126
Eastern Bengal Railway	—	—	—	26	13	0 10 5	—	—	—	—	—	—	—	—	—	—	—	0 13 6	62 08	1,693	907	4,704	823

\* This includes the cost of carriage over the G.I.P. Railway to Dadar Junction.

† This includes a large special credit from adjustment of accounts.