

(1) Number of pages _____

(2) Date of repair _____

(3) Initials of the Referencer _____

MADRAS RECORD OFFICE.

Government of Madras.

DEPARTMENT.

G.O. No.	1927	Press
		Mis.
Dated	22/2/18	1871.

Not to be folded or roughly handled

*Proceedings of the Madras Government, Public Works Department,
22nd July 1871.*

No. 367. Read the following Proceedings of the Government of India in the Public Works Department, (Railway,) dated Simla, 22nd June 1871, No. 1,067-R.:—

Sindh Railway Revenue Account for second half of 1870.

Read—

Letter from the Government of Bombay, No. 387, dated 4th April 1871.

Read also the following Office Note comparing the working charges of the Great Southern of India and Sindh Railways.

The following brief comparison exhibits some of the working charges of the Sindh Railway in contrast with similar charges on the Great Southern of India Railway. To apprehend correctly these charges a statement of the traffic carried on these lines is necessary, and this is furnished in the following table:—

Proceedings of the Madras Government, Public Works Department,
22nd July 1871.

	GREAT SOUTHERN OF INDIA RAILWAY.						SINDH RAILWAY.					
	First half of 1869.			Second half of 1869.			First half of 1869.			Second half of 1869.		
	Receipts.			Receipts.			Receipts.			Receipts.		
	No.	Rs.	Tons.	No.	Rs.	Tons.	No.	Rs.	Tons.	No.	Rs.	Tons.
Open mileage...	...	163	...	...	163	...	...	108½	...	...	108½	...
Miles maintained by Revenue	...	123	...	...	144	...	...	108½	...	...	109½	...
Train-mileage	...	131,086	...	...	144,371	...	...	56,899	...	...	79,626	...
Ton-mileage	...	15,539,190	...	...	17,347,497	...	...	16,472,879	...	...	20,345,819	...
Passengers	430,558	2,10,329	426,203	2,30,159	425,929	2,03,510	386,269	2,02,993	52,898	74,457	46,349	63,437
Miscellaneous (Coaching)	...	...	...	...	12,579	...	...	10,054	...	...	7,198	...
Goods	27,043	1,28,842	31,478	1,33,995	35,035	1,65,722	35,773	1,61,570	58,918	3,76,224	30,679	2,47,449
Government Stores	...	...	...	...	...	...	...	...	...	...	...	...
Railway materials	2,687	9,261	1,791	14,418	242	1,582	363	1,193	2,761	1,623	9,230	6,875
Miscellaneous (goods)	...	...	...	...	...	...	...	...	...	...	...	...
Electric Telegraph	...	...	...	...	...	...	...	...	...	...	...	...
Sundries	...	...	...	...	...	...	...	...	...	...	...	...
Total Receipts...	...	3,67,927	...	3,96,654	...	3,88,357	...	3,85,776	...	4,69,103	...	3,48,726

Proceedings of the Madras Government, Public Works Department,
22nd July 1871.

Maintenance of Way and Works.—The charges for supervision should be measured not only by the amount expended per mile maintained, but also by the proportion borne by such supervising charges to the total cost of maintenance.

Supervising Expenses, maintenance of Way and Works.

	TOTAL COST.		PER MILE MAINTAINED.		PER CENT. OF TOTAL DEPARTMENTAL EXPENDITURE.	
	Great Southern of India.	Sindh.	Great Southern of India.	Sindh.	Great Southern of India.	Sindh.
	RS.	RS.	RS.	RS.		
1st half, 1869	10,164	6,183	79.4	57.0	17.0	9.7
2nd ,,	12,114	15,151	84.1	130.0	13.6	13.1
1st half, 1870	10,262	14,991	61.1	136.6	16.3	13.0
2nd ,,	10,510	16,223	62.5	147.8	17.2	13.3

The supervising expenses per mile maintained on the Sindh Railway are much higher than on the Great Southern of India Railway, but the per-centage cost is not so unfavourable.

If the cost of extraordinary repairs for the restoration of the Muller Viaduct be deducted, the per-centages would rise from 13.0 to 15.6 during the 1st half of 1870, and from 13.3 to 22.7 during the 2nd half of 1870. But, in comparing the cost of supervision with the work supervised, such extraordinary charges can hardly be entirely excluded.

Again, the whole of the Sindh Railway has a timber sub-way, while 90 miles of the Great Southern of India are laid with iron sleepers, which are cheaper to maintain than the former, and any comparison of supervision with work supervised should not lose sight of these and other differences in the circumstances of the lines.

The comparative cost per ton-mile of maintenance and renewal of permanent way, and of repairs of bridges, etc., is shown in the following table:—

Half-years.	TOTAL COST.				PER TON-MILE.			
	Great Southern of India.		Sindh.		Great Southern of India.		Sindh.	
	Way and Works.	Bridges, etc.	Way and Works.	Bridges, etc.	Way and Works.	Bridges, etc.	Way and Works.	Bridges, etc.
	RS.	RS.	RS.	RS.	PIES.	PIES.	PIES.	PIES.
1st half, 1869	34,233	8,265	30,053	...	0.42	0.10	0.42	...
2nd ,,	68,062	6,305	88,861	...	0.75	0.07	1.22	...
1st half, 1870	44,980	1,912	51,432	33,436	...	...	0.48	0.32

(The information is not complete for all half years, as some of the reviews have not yet come to hand.)

*Proceedings of the Madras Government, Public Works Department,
22nd July 1871.*

The ton-mileage can hardly be taken as a perfectly satisfactory measure of the expenditure under this head, as the rails, sleepers, ballast, bridges, etc., are affected not only by the weight of the loads passing over them, but some of them mainly decay from age or climatic and atmospheric influences; but viewed solely from the ton-mileage point of view, it would appear that the cost of maintenance, etc., on the Sindh Railway, during the 2nd half of 1869 and the 1st half of 1870, was comparatively high. This was partly owing to the extraordinary repairs done to the Mulleer Viaduct and other flood-damages.

The cost per mile maintained of repairs of bridges, culverts, and other miscellaneous works, such as roads, fencing, etc., is exhibited in the following statement:—

Half-years.	Great Southern of India.	Sindh.
	RS.	RS.
1st half, 1869	64	} Not shown separately. 304 486
2nd „ „	44	
1st half, 1870	11	
2nd „ „	19	

If the charges for repairing the Mulleer Viaduct are deducted, the cost on the Sindh Railway will be reduced from Rupees 304 to Rupees 127, and from Rupees 486 to Rupees 22. It may be observed here that no fair comparison of the cost per mile maintained of this item of expenditure can be instituted, unless regard is had to the length and number of culverts and bridges on each line.

The cost of repairing stations and buildings, including staff quarters, was as follows:—

Half-years.	GREAT SOUTHERN OF INDIA.		SINDH.	
	Total Cost.	Cost per Station.	Total Cost.	Cost per Station.
	RS.	RS.	RS.	RS.
1st half, 1869	7,032	391	19,446	2,161
2nd „ „	2,074	104	9,576	1,064
1st half, 1870	4,196	200	12,505	1,389
2nd „ „	2,459	117	8,209	912

(It has not been found possible to separate the cost of repairing staff quarters for all four half years.)

The cost per station, it will be observed, is very much higher on the Sindh Railway, but it is not known whether the amount of house accommodation afforded to Railway employes was similar in extent on both Railways, or whether the stations and buildings were similar in character. These considerations must influence any

*Proceedings of the Madras Government, Public Works Department,
22nd July 1871.*

conclusion that may be drawn from the figures given in the foregoing statement, but the far higher cost per station on the Sindh line suggests scrutiny.

It is observed that the expenditure under this head fluctuates very considerably on both Railways, and is larger in the first than in the second-half of each year, so that repairs on both lines are probably carried out at the same season of the year.

Locomotive Department.—The proportion which the cost of supervision bears to the total locomotive department expenditure (with the exception of fuel and loss on stores, etc.) was as follows for the two Railways:—

Supervising Expenses, Locomotive Department.

Half-years.	TOTAL COST.		COST PER TRAIN-MILE.		PER CENT. OF TOTAL DEPARTMENTAL EXPENDITURE.	
	Great Southern of India.	Sindh.	Great Southern of India.	Sindh.	Great Southern of India.	Sindh.
	RS.	RS.	AS. P.	AS. P.		
1st half, 1869	10,740	12,029	1 3·7	3 4·6	22·2	17·2
2nd „ „	8,477	14,942	0 11·3	4 0·8	20·2	18·9
1st half, 1870	11,845	15,341	1 6·9	3 1·0	26·4	15·9
2nd „ „	13,982	12,492	1 10·5	3 10·1	28·0	16·5

The cost of supervision on the Sindh Railway viewed absolutely is higher than that on the Great Southern of India Railway, though the mileage open and run is much less. The per-centage borne by supervising expenses to the total expenditure is generally less on the Sindh Railway, but this point of view is illusory in the present case, as the cost of repairs to locomotives has during these four half-years, been very high on the Sindh Railway (about three to four times the cost on the Great Southern of India Railway), and has contributed to reduce the per-centage.

The running expenses (all wages connected with the working of locomotive engines) were—

Half-years.	TOTAL COST.		PER TRAIN-MILE.	
	Great Southern of India.	Sindh.	Great Southern of India.	Sindh.
	RS.	RS.	AS. P.	AS. P.
1st half, 1869	23,127	23,836	2 9·9	6 8·4
2nd „ „	23,479	21,616	2 7·2	5 10·7
1st half, 1870	19,646	24,529	2 7·3	4 11·1
2nd „ „	18,027	16,120	2 5·0	4 11·6

*Proceedings of the Madras Government, Public Works Department,
22nd July 1871.*

and the cost of oil, tallow, etc., expended on engines in work was—

Half-years.	TOTAL COST.		PER TRAIN-MILE.	
	Great Southern of India.	Sindh.	Great Southern of India.	Sindh.
	RS.	RS.	AS. P.	AS. P.
1st half of 1869	1,923	4,042	0 2·8	1 1·6
2nd „ of „	2,156	3,812	0 2·8	1 0·5
1st „ of 1870	1,945	4,292	0 3·1	0 10·3
2nd „ of „	1,796	3,766	0 2·9	1 1·9

From the above it will be seen that though the running expenses on the Sindh Railway were reduced from Annas 6-3 per train-mile in the year 1869 to Annas 5 per train-mile in 1870, they are still double the corresponding cost on the Great Southern of India Railway. The cost of oil and other stores on the former line is also nearly four times that on the Great Southern of India Railway. With regard to the running expenses, it may be noted that the employment by the Great Southern of India Railway of natives to a greater extent than on the Sindh Railway gives them an advantage in the comparison. But there is no apparent reason for the higher charge under oil, tallow, etc., on the Sindh Railway. It seems hardly possible that any difference in the price of the oil, etc., can account for such a difference in the cost. Perhaps climatic differences can account for a part of the higher cost on the Sindh Railway.

The cost of maintenance and renewals of locomotive engines, etc., was—

Half-years.	TOTAL COST.		PER-TRAIN MILE.	
	Great Southern of India.	Sindh.	Great Southern of India.	Sindh.
	RS.	RS.	AS. P.	AS. P.
1st half, 1869	12,505	29,725	1 6·3	8 4·3
2nd „ „	7,744	38,600	0 10·3	10 5·9
1st half 1870	9,638	48,203	1 3·3	9 8·2
2nd „ „	14,929	40,258	2 0	12 4·8

The cost of repairs on the Sindh Railway has of late years been abnormally high, and the matter has been commented on in the reviews of the revenue accounts. The difference in the cost of labour in the two provinces may, to a certain degree, account for the difference in the charges, and it is also known that European labour is more extensively employed on the Sindh Railway.

Further, the Sindh Railway engines were, it is believed, neglected in previous half-years, and the water-supply is bad.

*Proceedings of the Madras Government, Public Works Department,
22nd July 1871.*

The quantity of coal consumed per ton-mile can hardly be compared, as it depends on the respective amounts of both coal and wood burnt on each line. The Sindh line used coal chiefly, while the Great Southern of India burnt 1,144 tons of coal and 2,151 tons of wood in the 1st half of 1869, and 1,731 of coal and 662 of wood during the following half-year.

The cost of fuel consumed per ton-mile is shown in the following table :—

Half-years.	TOTAL COST.		PER TON-MILE.	
	Great Southern of India.	Sindh.	Great Southern of India.	Sindh.
	RS.	RS.	Pies.	Pies.
1st half 1869	40,161	39,818	0·49	0·46
2nd „ „	42,083	40,599	0·46	0·56
1st half 1870	39,724	49,972		0·47

Carriage Department.—The following figures show the relative per-centages of cost of general superintendence to the total expenditure of the Carriage and Waggon Departments :—

Half-years.	GREAT SOUTHERN OF INDIA.		SINDH.	
	Cost of superintendence.	Per-centage of total departmental cost.	Cost of superintendence.	Per-centage of total departmental cost.
	RS.		RS.	
1st half, 1870	1,063	8·9	2,111	11·1
2nd „ „	2,436	10·7	2,474	10·5

The cost of repairs of vehicles is exhibited in the following statement :—

Half-years.	TOTAL COST.		PER TRAIN-MILE.	
	Great Southern of India.	Sindh.	Great Southern of India.	Sindh.
	RS.	RS.	AS. P.	AS. P.
1st half, 1869	19,002	14,156	2 3·8	3 11·7
2nd „ „	7,837	13,000	0 10·4	3 6·5
1st „ 1870	8,200	13,894	1 1·1	2 9·5
2nd „ „	9,453	17,352	1 3·2	5 4·1

The comparison is against the Sindh Railway. The vehicle-mileage is, however, a better measure for this expenditure. The reviews do not enable the cost

*Proceedings of the Madras Government, Public Works Department,
22nd July 1871.*

per vehicle-mile to be given for all the half-years under comparison, but as much as can be gleaned from them is shown below:—

Cost of repairs of vehicle per vehicle-mile.

Half-years.	Great Southern of India.	Sindh.
1st half, 1869	Pies. 2-27	Pies. 1-61
2nd " " " " " " " "	0-82	2-03
1st " 1870		1-23

The charges for cleaning carriages and waggons, etc., were—

Half-years.	GREAT SOUTHERN OF INDIA.		SINDH.	
	Total Cost.	Per Train-mile.	Total Cost.	Per Train-mile.
1st half, 1870	RS. 2,665	Pies. 4-2	RS. 2,799	Pies. 6-7
2nd " " " " " " " "	1,871	3-0	3,758	13-9

The remarks made on the cost of repairing vehicles, etc., also apply to the above.
Traffic Department.—The per-centage of cost of supervision to the total expenditure of this department amounted to—

Half-years.	COST OF SUPERVISION.		PER-CENTAGE COST OF SUPERVISION TO TOTAL DEPARTMENTAL EXPENDITURE.	
	Great Southern of India.	Sindh.	Great Southern of India.	Sindh.
1st half, 1870	RS. 3,584	RS. 7,441	10-3	14-0
2nd " " " " " " " "	4,049	7,497	11-8	15-9

Viewed with reference to receipts which provided that the rates and fares do not vary largely, may be taken to represent the nature and extent of the traffic, the cost of supervision amounted to—

Half-years.	Great Southern of India.	Sindh.
1st half of 1870	Per cent. of receipts. 0-9	Per cent. of receipts. 1-5
2nd " of " " " " " " " "	1-0	2-1

*Proceedings of the Madras Government, Public Works Department,
22nd July 1871.*

From both points of view the comparison is against the Sindh Railway.

The following statement shows the average cost of establishment per station on each line, and the proportion it bears to the average earnings at each station:—

Half-years.	GREAT SOUTHERN OF INDIA.		Sindh.	
	Average cost of establishment per station.	Proportion of establishment to average earnings at each station.	Average cost of establishment per station.	Proportion of cost of establishment to average earnings at each station.
1st half, 1870	RS. 699	3-8	RS. 2,732	5-1
2nd " " " " " " " "	695	3-9	2,725	7-3

It will be perceived that the average cost of station establishment on the Sindh Railway was nearly four times that on the Great Southern of India Railway. The circumstances of the traffic do not seem to justify this. In the 2nd half of 1869 the average mileages travelled were as follow:—

	Great Southern of India.	Sindh.
Passengers, 1st class	54	91
" 2nd " " " " " " " "	51	76
" 3rd " " " " " " " "	31	64
Goods, 1st " " " " " " " "	56	90
" 2nd " " " " " " " "		84
" 3rd " " " " " " " "		100
" 4th " " " " " " " "		104
" 5th " " " " " " " "		104

From the greater preponderance of through traffic on the Sindh line, it might have been expected that the intermediate station establishments would have been far less costly than on a line with a shorter average mileage.

It will also be observed that this item of expenditure absorbed two per cent. more of the earnings during the 2nd half than during the 1st half of 1870.

The expenses under the head "train staff" were as follow:—

Half-years.	TOTAL COST.		PER TRAIN-MILE.	
	Great Southern of India.	Sindh.	Great Southern of India.	Sindh.
1st half, 1870	RS. 2,807	RS. 6,298	Pies. 4-5	AS. P. 1 3-2
2nd " " " " " " " "	2,859	4,849	4-6	1 5-9

*Proceedings of the Madras Government, Public Works Department,
22nd July 1871.*

The cost of fuel, lighting, etc., was—

Half-years.	TOTAL COST.		PER TRAIN-MILE.	
	Great Southern of India.	Sindh.	Great Southern of India.	Sindh.
	RS.	RS.	PIES.	A. P.
1st half, 1869 ...	2,139	12,813*	3.1	3* 7.2
2nd half, ,, ...	2,258	9,673*	3.0	2* 7.6
1st half, 1870 ...	2,938	11,354	4.7	2 3.4
2nd half, ,, ...	4,028	6,993	6.4	2 1.8

* These two include the cost of tallow and grease; but if Rupees 3,300, which is the average half-yearly cost of grease, etc., during 1870, be deducted from the expenditure shown under fuel, lighting, etc., the train-mileage cost will be reduced to 2 annas 8.1 pie, and 1 anna 8.8 pies, respectively.

The above figures speak for themselves.

General Management.

The following figures exhibit the proportion per cent. which the cost of the Indian management, including offices, rents, contingencies, stationery, and medicine bears to the gross earnings and expenditure:—

Half-years.	COST OF INDIAN MANAGEMENT.		GREAT SOUTHERN OF INDIA.			SINDH.		
	Great Southern of India.	Sindh.	PER-CENTAGE OF COST OF GENERAL MANAGEMENT TO			PER-CENTAGE OF COST OF GENERAL MANAGEMENT TO		
	RS.	RS.	Earnings.	Expenditure.	Earnings plus expenditure.	Earnings.	Expenditure.	Earnings plus expenditure.
1st half, 1869 ...	12,477	18,924	3.4	5.4	2.1	4.0	6.1	2.4
2nd half, ,, ...	11,472	25,155	2.9	4.5	1.8	7.5	6.9	3.6
1st half, 1870 ...	14,282	28,836	3.7	6.0	2.3	5.8	7.4	3.2
2nd half, ,, ...	12,755	27,918	3.3	5.6	2.0	8.0	7.7	3.9

It would appear that while, on the Great Southern of India Railway, the minimum and maximum cost of Indian management during the four half-years under comparison formed only 1.8 and 2.3 per cent. of the earnings and expenditure, the minimum and maximum on the Sindh Railway formed 2.4 and 3.9 per cent.

*Proceedings of the Madras Government, Public Works Department,
22nd July 1871.*

Electric Telegraph.

The expenditure is not shown in sufficient detail to admit of a satisfactory comparison being made.

RESOLUTION.—Any comparison between the working of Railways, of which the circumstances are different, must be made with caution, as the causes of variation in the scale of expenditure on similar services may not be fully apprehended. It seems probable that some of the points mentioned in the Office Note now read may thus be capable of explanation; but, on the other hand, a contrast of the kind serves to direct attention to comparatively high charges which might otherwise be accepted as normal without further enquiry. The note should, therefore, be forwarded to the Government of Bombay for communication to the Consulting Engineer's Department, and to the Agent of the Company in Sindh, in order that such action in the direction of increased economy may be taken as may seem to be called for.

2. It is noticed that a sub-head, "Loading and Unloading Goods," was introduced in the abstract of expenditure in the Traffic Department; that the rent of lands was shown under Abstract G., "Special and Miscellaneous Expenditure," instead of under Abstract E., "General Charges," as prescribed; and that the telegraph expenditure is not given in the form required. The forms of account laid down for general guidance should be rigidly adhered to in future.

3. Under Abstract K., "Sundries," an item for "materials returned into stock" is shown. In the Review the nature of this credit should be explained.

4. The general balance sheet shows that a large number of obsolete and, apparently, unnecessary accounts are kept open. These should be thoroughly investigated and reduced as much as possible.

5. Captain Wood states that much of the saving in the Locomotive Department has been obtained at the expense of the efficiency of the engines, and that it will take 21 months to get the 17 engines which are crippled ready for service, if six are always in course of repair. The prescribed certificate as to the efficient maintenance of the rolling stock is not given, and it is only certified that so much of this as was required for traffic was properly maintained. This partial maintenance is contrary to the terms of the contract and cannot be permitted. If, during any half-year, the whole rolling stock may not be properly maintained, the Consulting Engineer should be instructed, before accepting the revenue account on behalf of Government, to ascertain the amount required to place the whole in thorough repair, and to deduct this sum from the net profits of the half-year. It is observed that, in the two preceding half-years, unqualified certificates as to the maintenance of the rolling stock were given.

ORDER.—Ordered that this Resolution and the Office Note be communicated to the Government of Bombay for information and guidance, also to the Governments of Madras and the Punjab for information.

(Signed) E. C. S. WILLIAMS, Major, R.E.,
Dy. Secy. to the Govt. of India.

*Proceedings of the Madras Government, Public Works Department,
22nd July 1871.*

No. 368.

ORDER THEREON, 22nd July 1871, No. 1,927.

RAILWAY, No. 42.

COMMUNICATED to the Consulting
Engineer for Railways.

(True Extract.)

Colonel, R.E.,
Secretary to Government.

To the Acting Consulting Engineer for
s.

Exd. E. C. Shunker.

GOVERNMENT OF INDIA.
PUBLIC WORKS DEPARTMENT.
RAILWAY.

To

No. R.

Dated Simla, 22nd June 1871.

Received 4th July

Comparison between the working charges of the
Great Southern of India and Sindh Railways.

No. 1927-22nd July 1871.

With an

Communicated to the Consulting Engineer for

No. 1927

Railways.

22nd July 1871

for the Railway.

22nd July 1871

3155.

3/55

Govt. of 1871 Madras.

PUBLIC WORKS.

2. *Chief Consulting Eng^r
for Railways*

Date

Refd.

G. O. 22 July 1871, No. 1927.

Nos. 2671268

Working Charges (Contd.)
Letter from
the Govt of India forwarding
statement exhibiting con-
parison between the working
charges of the Great Southern of
India & South Railways; com?
to the C. Eng^r for Railways.