

the experimental section must be from Calcutta in the direction of Burdwan, or from Allahabad to Cawnpore: we will take them separately. But, before we do so, let us consider on what principles the traffic returns on such small sections of lines must be calculated, as contradistinguished from the entire lines from Calcutta to Delhi, either by the direct or the Rajmahal route.

In calculating the traffic returns for a complete line from Calcutta to Delhi direct, or by two sections from Calcutta to Rajmahal, and Mirzapore to Delhi, connected by powerful steamers on the Ganges, it is fair to regard the entire through traffic, both by the road and the river, as available to be diverted to the railroad, and doubtless, by speed and cheapness, developed beyond its present extent. If the railway can carry more passengers and goods in a few hours, and at a less price, than the river or road can in weeks, the railway, when completed, must draw to itself the greater part of the traffic, not only on its own line, but from various points at some distance from it, but capable of communicating with it either by roads, rivers, or branch railways; and, therefore, calculations based on the entire traffic attracted either to the present roads or rivers between Calcutta and Delhi are fair criterions for the profits of a *through* line. The contrary is the case with a section of the through line, unless under very peculiar circumstances. Even supposing the experimental section to strike the Ganges at a navigable point, one hundred miles or so thus saved would hardly compensate for the danger and expense of trans-shipment; and little, if any, of the through traffic would be attracted to it even in such a case. The not unfounded objection of the risks and dangers of trans-shipment urged against the extensive lines from Calcutta to Rajmahal, and from Mirzapore to Delhi, would tell with tenfold force against a shorter section of one hundred miles, or even less. And if in such case the through traffic could not be depended on, how much less would it be available in the event of the experimental section ending many miles from the great water-road of India—the Ganges. It follows, then, that in calculating the probable profits of the experimental sections the road traffic between the termini can alone be surely depended on.

To commence, then, with the proposed section from Calcutta through Hoogly to the coal-fields of Burdwan; in length seventy miles, and at an estimated cost of 1,190,000*l*. Starting from Calcutta, this section would run along the eastern bank of the Hoogly, as far as Sooksagur, passing by or through Barrackpoore and Hoogly, then crossing the river almost at right angles to the previous line of railway, and ending at Balkishun, about ten miles to the north of Burdwan. The traffic on the road from Burdwan to Hoogly is thus given by Mr. J. Erskine:—

“Passengers are innumerable during the dry season, and even during the rains—pilgrims, merchants, and travellers of all sorts.

“From Sulkea to Hoogly there is a road which people from Burdwan often avail themselves of, especially when boats are scarce at Muggrah Ghaut, and also when articles are wanted in return from Calcutta, the troubles of boating, unloading, and uncertainty of finding carts at Muggrah, induce many to adopt this road during the dry season.

“The produce of Burdwan, and much of Bheerbloom and Bancoorah is exported chiefly from Culna and Muggrah Ghaut; some of the Bheerbloom produce used formerly to be exported from Cutwa, but the scantiness of water has made the navigation more dangerous, and, whenever it can be managed, people prefer getting on the great road, and going *via* Burdwan also. A bag of sugar, two maunds, goes from Burdwan to Muggrah for four annas, but other goods pay nearly double that; last year sugar also paid double from the scarcity of carts; boat hire thence is very little; one anna per maund, and less.

“I do not believe much of the interior produce comes down by Burdwan, but a great deal of merchandize goes up to Cawnpore and beyond it. The quickness of the route makes up for the greater expense going up; but in coming down boats are still resorted to.

“The return carts from Culna and Hoogly bring salt, and some boats also bring a little during the rains. The expense of carriage cannot be above three annas per maund.”

“A great deal of grain used to come down the Damooda, and still the quantity is considerable. It is brought down and sold in general at Rajbullnot, or near that place, and Ompta grain seldom goes by land, a large quantity used also to come down the Adjye to Cutwa, but the tedious navigation of the Adjye has changed the route; Sheergur grain is carried to the banks of the Damooda, and any that is below Sheergur is carried on bullocks to Loopore from Manly ghat. There the Adjye is generally accessible for boats of 400 maunds during the whole of the rains.”\*

Further evidence is given confirming Mr. Erskine's account by Mr. Shaw, p. 62, but more particularly in a further page, from which we extract the following results:—

#### TRAFFIC BETWEEN HOOGLY AND BURDWAN.

“About 73,000 foot passengers in all; hackeries, 7,360; laden bullocks, 3,650; private palankeens, 730; public daks, from Hoogly along the great Trunk road 335, during the past year.

“About ten days before and after Doorga Pooja holidays, about 300 persons and 30 palkees, daily travel this road to and fro. In December and January, one or two, sometimes three, gangs of 50, 100, and 150 pilgrims pass daily Gunga Saugor, to both, &c., about twenty days are occupied in the going and returning of these men.

“Perhaps half the foot passengers may be able to afford one or two rupees passage money for the trips.

“From the first answer given, it will be seen palankeens are the conveyances generally, it may be said alone, used; other conveyances are

\* Report on Indian Railways. By R. M. Stephenson, 1845. P. 60.

scarcely in use. The expense of a trip in a private palankeen from Hoogly to Burdwan, is from seventeen to twenty rupees, and about two days, more or less, will be occupied. The public daks, from the Hoogly to and through Burdwan, have been shown to be in the past year, 335 in number; the rate of travelling being four miles an hour, and expense eight annas a mile.

“Grain is seldom, if ever, imported from Burdwan, or the districts of the Damooda or Adjyc. A considerable quantity of gour and sugar, estimated at 500,000 maunds, and cotton valued at 10,000 rupees, is yearly sent to market from those districts by land, if from the neighbourhood of Burdwan; but if from the district of Bheerbhoom and the adjoining parts, by the river from Cutwa.”

The result of the goods traffic between Burdwan and Calcutta is thus summed up in the first report of the East India Railway Company:—\*

TRAFFIC ON THE MIRZAPOORE ROAD AND DAMOODA RIVER.

Between Calcutta and Burdwan 2,000,000 maunds  
of Coals are carried ... .. 74,074 tons.

On the road leading through Burdwan, the yearly traffic is 7,360 hackeries, and 3,650 laden bullocks. A hackery load is twelve maunds; but as the whole number of hackeries would not probably be fully laden, we may take the load at 10 maunds each, which gives 73,600 maunds as the weight carried ... .. say 2,726 “

Twelve bullocks will carry about a ton; there are, therefore, annually carried by bullocks ... .. 304 “

Besides this, we have carried along the road—

Of Sugar and Goor, maunds	500,000
; Salt	350,000
Cotton	1,000
Rice	50,000

901,000, or 33,370 “

Making a total of Goods carried along Mirzapooore Road and Damooda River ... .. 110,474 tons

The passenger traffic, it will be seen from the above evidence, does not exceed, under the most favourable circumstances, 100,000 persons, likely to avail themselves of the saving of time afforded by the railway. The railway company assume the passenger traffic over the Annabad bridge, near Benares, as representing the average traffic at every part of the great road from Calcutta to Hoogly, and thus set down the passengers at 500,000. In our following calculations we shall give the result on both statements. The results at present arrived at are, that the goods traffic on the proposed section equals 110,474 tons, and that the passengers may be certainly estimated at 100,000, and are calcu-

\* First Report of Directors of East Indian Railway Company, 12th April, 1847. P. 13.

lated by the railway company at 500,000. Supposing, then, that all these goods and passengers will be attracted to the railway when made, what revenue will result? The calculations of the directors are based on a charge of *one penny per ton* per mile for goods, and *one halfpenny* per mile for passengers. Assuming that every ton of goods and every passenger will be carried for sixty miles over the line on the average, every ton of goods will earn *five shillings* and every passenger *half-a-crown*. The revenue account will stand thus:—

110,474 tons of goods, at 5s. per ton .. .. .	£27,618
500,000 passengers, at 2s. 6d. . . . .	62,500
	£90,118

or, if the passengers be reduced to 100,000, the revenue will be reduced to about £30,000; assuming, then, the larger, let us calculate the expenditure side of the account:—

The working expenses of the line may be approximated to in the following manner:—according to the tables given in the first Report of the East India Railway Company, and as far as we know, from printed papers not since amended or overthrown, the working expenses of the lower portion of the line from Calcutta to Mirzapooore are calculated at £1,836,102. These figures represent the working expenses and depreciation for 448 miles of a double railway, and are, therefore, at the rate of £4,100 per mile or thereabouts. Assuming the smaller sum of £4,000 per mile, to simplify calculation, the seventy miles from Calcutta to Burdwan will require an annual expenditure of £280,000. The balance sheet under the Company's own figures will stand thus:—

REVENUE.		
110,472 tons of goods at 5s. per ton .. .. .	£27,618	Working expenses of seventy miles of line at £4,000 per mile, and depreciation ..
500,000 passengers, at 2s. 6d.	62,500	£280,000
Contribution of 5 per cent. on capital expended, say £1,200,000. . . . .	60,000	
	£150,118	
Loss on experimental line	129,382	
	£280,000	£280,000

But we are far from believing that the mere working expenses, unless economy is entirely discarded, need amount to such a sum as 4000*l.* per mile. The latest returns of the working of English lines give, for locomotive power, an expense not exceeding one-eighth of a penny per ton for carrying power, and one shilling per mile for passenger trains. The maintenance of way, stations, and general charges, come to about *one-seventh* of the receipts; in addition, the haulage of empty waggons would add a couple of thousand pounds or so, and the depreciation of 10*l.* per cent., com-

plete the working expenses. These calculations will give a pure working expenditure of 450% per mile, exclusive of the depreciation. This, for seventy miles, gives 31,500%, add thereto 120,000% for the ten per cent. depreciation, and the total expenditure reaches 151,500%, against a revenue inclusive of the five per cent. guarantee of 150,118%. A very small saving on this will save the shareholders from loss, but nothing short of a reduction of the annual depreciation to four per cent. will enable them to receive the promised five per cent. supposed to be guaranteed on their shares.

The other experimental section, suggested by the company's engineers in their first report is, that from Allahabad to Cawnpore. Commencing at that point of the Ganges where increasing difficulties bring the river navigation to a practical conclusion it would run over fair ground direct towards Delhi. This section would probably fare better than that to Burdwan, as it might attract to itself a small portion, though we fear but a small one, of the through traffic from Calcutta to Delhi. As touching the river at the very point where a change of trans-shipment is required under the present system, it would offer the bonus of being able in a few hours, to carry goods over a distance that would otherwise consume days, against the cost, trouble, and danger of another trans-shipment at Cawnpore for the through goods. The objections to the Rajmahal line would only be transferred to the upper provinces. The traffic in the upper provinces, we know, is enormous, both in passengers and goods, and for the sake of argument we will assume that one half of the through passengers and goods would pass over this section.\* In length it will run 125 miles, and its estimated expense is put down at 1,875,000%. The average length travelled over by each passenger and ton of goods cannot be estimated at more than 120 miles. The accounts will then stand thus:—

SECTION FROM ALLAHABAD TO CAWNPOORE,  
125 MILES.—£1,875,000.

REVENUE.		EXPENDITURE.	
100,000 passengers, 120 miles, ½d. per mile . . . . .	£25,000	125 miles of line, at £450 per mile, working, &c. . . . .	£56,250
375,000 tons of goods, 120 miles, at 1d. per ton . . . . .	187,500	10 per cent. depreciation on £1,875,000 . . . . .	187,500
			243,750
Total revenue earned	212,500	Balance applicable to dividend	62,500
5 per cent. guarantee on £1,875,000 . . . . .	93,750		
	£306,250		

Thus, under the most favourable assumptions both as to ex-

\* The average number of passengers estimated for the line from Allahabad to Delhi, is 200,000. See first report, p. 14.