Public Works (1890) Department.

RAILWAY BRANCH.

G.O., No. 261 Ry

DATED / 8th February.

[Despatch Abstract.]

East Coast Railway. — Proceedings Revenue Department forwarding to the Government of India Proceedings Board of Revenue Reviewing the prospects of the — as a famine protective requirements and as a commercial project: communicated to the Engineer-in-Chief East Coast Railway Survey.

Indexed.

BACK PAPERS.

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

FURTHER PAPERS.

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

PROCEEDINGS OF THE BOARD OF REVENUE
(REVENUE SETTLEMENT, LAND RECORDS AND AGRICULTURE).

MR. CLOGSTOUN.

READ—again Board's Proceedings, dated 6th July 1889, Mis. No. 2613.

ABSTRACT.—Communicating to certain Collectors, for early report, the following Government Order. Revenue Department, communicating letter from the Government of India regarding the financial aspects of the East Coast Railway project as a famine protective requirement and as a commercial project.

G.O., dated 3rd July 1889, Mis. No. 4110, Revenue :—

Read—the following letter from Sir E. C. BUCK, *Kt.*, Secretary to the Government of India, Revenue and Agricultural Department (Statistics), to the Secretary to the Government of Madras, dated Simla, the 24th June 1889, No. 285—51-1 Stats. :—

In continuation of this department endorsement, No. 280—3-2 S., dated 18th September 1888, and the Public Works Department No. 326 R. C., dated 24th April last, addressed to the Government of Madras, Public Works Department, Railway Branch, regarding the projected railway from Bezváda along the East Coast to Cuttack, I am directed to request that an early report may be called for on the financial aspects of the undertaking (i) as a famine protective requirement and (ii) as a commercial project. The Government of India will also be glad to be favored with the opinion of His Excellency the Governor in Council on these points when forwarding the Director's report.

2. The information particularly desired by the Government of India should consist of useful statistics or facts which would indicate the value of the projected line in a commercial aspect. The line when completed would apparently tap the districts of Nellore, Kistna, Godávari, Vizagapatam and Ganjam in the Madras Presidency and Orissa in Bengal. The trade by coast and sea to and from the Madras ports is registered and tabulated. The canal traffic of Bezváda with Cocanada and Masulipatam is also registered (*vide* correspondence ending with this department's letter, No. 112—66-2 S., dated 1st March 1889). As regards the road traffic of the Madras Presidency, both external and internal, arrangements for its registration have been recently made. The programmes furnished by the local Board of Revenue with your endorsements noted on the margin

No. 754-A, dated 1st November 1888.
„ 139-A, „ 2nd March 1889.

indicate what registration was undertaken during 1888-89 and will be undertaken during the current year 1889-90. The work for the current year includes the registration of the road traffic in the Kistna, Godávari, Vizagapatam and Ganjam districts.

3. As the survey of the project takes place next cold season, the Government of India desires that as much information as can be made available should be supplied before the 15th October so that it may be in the hands of the Engineer-in-Chief of the Survey before he takes the field. Statistics of the road traffic during the present year could not therefore be furnished for more than six months, but the Government of

India leaves it to His Excellency to arrange for the early collection of all the useful and relevant statistics available. But it will be desirable that further information should continue to be collected after the above date.

Order—dated 3rd July 1889, Mis. No. 4110, Revenue.

Communicated to the Board of Revenue for *very early* report.

(True Extract.)

(Signed) C. A. GALTON,
Secretary.

To the Commissioner of Revenue Settlement,
Land Records and Agriculture.

Read—the following letter from J. G. HORSFALL, Esq., Collector of Ganjam, to the Secretary to the Commissioner of Revenue Settlement and Director of the Department of Land Records and Agriculture, dated Chatrapur, 11th October 1889, No. 7952 :—

I have the honor to submit the following report in reply to Board's Proceedings, Mis. No. 2613, dated 6th July 1889, regarding the East Coast of India Railway. I am afraid that I cannot add much to the information which is already before the Board in the shape of returns of traffic by road and canal in this district and returns of imports and exports by sea from the four ports—Gopálpur, Barwa, Pundi and Calingapatam.

2. All that I will therefore endeavour to do is to draw the attention of the Board briefly to some chief points in connection with the proposed East Coast of India Railway in this district and the probable traffic thereon.

3. First, I beg to point out, as I have pointed out before in my weekly famine reports, the great utility of such a railway to the district. We had a famine 23 years ago, and then, though grain was brought almost within a stone's throw of land, it could not be brought to shore because of the surf. Very fortunately the waves have been more propitious in the famine months which have just passed, and in only one instance had a few bags of paddy to be over-carried to Calcutta, because the steamer could not wait till the surf should subside. But in another year of distress we might not be so favored, and it is not difficult to imagine what the result would be if stocks were low and no grain could be landed, to replenish them, for a few weeks. The Government have made an attempt to obviate the difficulty by the construction of the pier at Gopálpur, but this attempt has proved abortive, and it is now in contemplation to dismantle the pier. With a railway running through the length of the district and connecting it with the rich grain-producing districts south and north, there would never be any danger of failure of external supplies, even if the crops in the district should again fail; and the certainty of such supplies would go far to keep prices within reasonable limits.

4. It may be a question whether the district would benefit most by such a line of railway as is now proposed, or by a line which should run from Gopálpur to Sambulpur in the Central Provinces. But as long as the district is connected with the Madras Presidency, it must be to its advantage to have direct communication with the capital, and by either line communication more or less direct would be opened up between this district and Calcutta and Bombay.

5. Coming now to the question of probable traffic on the proposed line, it may be noted that, according to the census of 1881, the population of this district below the Maliahs * was 1,490,272, which gives an average of over 300 persons per square mile. This is a far denser population than

* *Note*.—Area below Maliahs 4,839 square miles.

that along the greater part of the Madras Railway, and it may be assumed that here, as elsewhere in India, large numbers of the people would avail themselves of the facilities for travel afforded by a railway. There is a constant stream of pilgrims pouring along the trunk road to the Jaggernat temple in Puri, and most of such pilgrims would go by rail. Some idea of the numbers passing along the trunk road may be gathered from the following table taken from the long distance traffic returns for five months April to August 1889.

A.—South to North.

Traffic station.	Total passengers for five months.	Average per month.
Rambha	13,812	*2,762
Naupada	2,570	514
Pundi	†5,736	2,868
Narsannapet—		
(*a*) From Chicacole	84,812	16,962
(*b*) Do. Calingapatam	34,239	6,847

* Many pilgrims also come by boat along the Chilka canal and escape registration.
† Two months only.

B.—North to South.

Rambha	13,491	2,698
Naupada	3,605	721
Pundi	‡5,539	2,769
Narsannapet—	83,628	16,726
(*a*) To Chicacole	2,505	501
(*b*) Do. Calingapatam		

‡ Two months only.

There is always, of course, a certain percentage of error in such figures as these, but if they are only approximately correct, they indicate the possibility of a very considerable third-class coaching traffic.

6. In ordinary years, the district, including importations from Orissa and the Central Provinces, produces a large quantity of grain (chiefly rice) in excess of its requirements, and there is a considerable export trade in rice; for example, in 1887-88 62,335 cwts. of rice were exported from Gopálpur and Calingapatam. There is always a considerable export also of hides and skins, sugar and rum manufactured by Messrs. Minchin and Co. at Aska. These articles, for the most part, now leave the district by sea and, perhaps, even if a railway were built would, to some extent, continue to be exported in this way, but no doubt the railway would take its share in bringing them to the various ports. The following table shows the value of the principal articles of export removed by sea from the four ports of this district from April to August 1889; as the quantities given in the returns are of various descriptions, the value has been taken instead of the quantity. It will be noticed that no rice has been exported this year, and, on the contrary, as will appear below, large quantities of grain have been imported to supply the deficiency in the stocks in the district :—

Names of articles.	Value of exports per month (1889).						
	April.	May.	June.	July.	August.	Total.	Average.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Hides and skins ..	31,992	19,164	27,870	17,908	17,194	1,14,128	22,826
Rum	6,478	9,875	1,232	7,100	4,175	28,860	5,772
Rape seeds	5,913	6,697	1,016	369	1,050	15,045	3,009
Gingelly	26,465	2,680	9,840	4,320	9,665	52,970	10,594
Sugar	33,180	16,070	17,097	24,510	9,785	1,00,642	26,128

Numerous other articles of minor importance are removed from the district by sea, but need not be noticed here.

7. But in addition to this export trade, in a portion only of which the railway could participate, the following figures show that the export trade by road, all of which should be taken over by the railway, is of some importance. The figures are taken from the "long distance" traffic registration returns from April to September 1889 and the quantities are given in Government maunds:—

Exports by Trunk Road.

A.—Rambha (towards Orissa).

Articles.	Total for six months.	Average per month.
	Mds.	Mds.
Turmeric	4,608	768
Ghee	1,010	168
Salt	27,876	4,646
Chillies	4,573	762
Sugar, refined	5,148	858
Do. unrefined	18,484	3,081

B.—Narsannapet (towards Vizagapatam).

Cotton, raw	1,425	237
Twist and yarn	3,525	587
Myrobolans	2,225	371
Turmeric	7,421	1,237
Hides, raw	2,109	351
Horns	2,875	479
Spirits	4,160	693
Kerosine oil	2,250	375
Other provisions	7,370	1,228
Sugar, refined	11,607	1,934

The most important of these articles are salt and sugar, both of which are produced in the district in large quantity, the former at the Government factories at Ganjam, Surlá, Naupada and Calingapatam, and the latter at Mr. Minchin's works at Aska. It is probable that both these products travel to considerable distances beyond the limits of the district (paragraph 32 of Mr. Turner's letter in G.O., No. 159, dated 25th February 1888, Revenue).

The table annexed shows the salt sold at the factories in the past year—

	Mds.
Surlá	145,831
Ganjam—	
(1) For inland consumption	60,762
(2) For Orissa, &c.	316,285
Naupada	209,304
Calingapatam	129,361
Total	861,543

of which one half at least is for consumption beyond the district.

8. It is worthy of note here that if the Sambulpur-Gopálpur line were constructed, it would carry a large quantity of salt to the Central Provinces and bring in probably a corresponding quantity of grain. In the five months April to August 1889, the exports and imports by this route have been as follow:—

	Mds.	Average per month. Mds.
Exports—		
Salt	8,756	1,751
Imports—		
Wheat	1,210	
Paddy	3,903	242
Rice	4,013	780
Cholum, &c.	4,338	802
		868

9. As regards imports into the district, the following table shows the value of the principal articles imported by sea at the four ports of the district, a considerable portion of which could doubtless be taken over by the coast railway, a portion for carriage into the district and nearly all for carriage in the district if, that is, a short branch could be made from Gopálpur to Berhampore:—

Names of articles.	Value of imports by sea.						
	April.	May.	June.	July.	August.	Total.	Average.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Twist and yarn (Indian)	26,688	37,958	33,369	24,840	25,044	1,47,899	29,579
Foreign	2,925	13,306	7,200	3,675	11,500	38,606	7,721
Piece-goods	7,307	8,920	2,680	12,480	7,300	38,687	7,737
Apparel	3,405	5,919	285	415	1,933	11,957	2,391
Raw silk	..	..	..	2,712	1,500	4,212	2,106
Paddy	840	500	2,256	40,943	18,343	62,882	12,576
Rice	2,003	600	1,700	21,716	41,716	67,735	13,547

The import of paddy and rice is an exceptional circumstance, due to the prevalence of famine in this year, but the other articles mentioned in the above table are such as are usually imported, and, in ordinary years, when there is more purchasing power in the district, the value imported would be larger than that here stated.

10. The following figures give the imports into the district by the trunk road, from April to September 1889, all of which would be taken over by a coast railway. Here, again, in regard to the import of paddy and rice, allowance must be made for the exceptional circumstances of the year, but the remaining items may be taken to be normal or less than normal in quantity. It need hardly be said that, in a time of distress, a coast railway would be able to move the paddy and rice, which must then be imported, to points adjoining the places where it might be most needed, at a much quicker pace than can be done by road, and thus prices would be equalized. In this same connection I would invite attention to the enclosure A which gives the weekly imports of grains from Orissa at the two stations on the Chilka lake, Ganjam canal, where grain is landed, in the period dealt with in other tables of land traffic in this report, viz., April to September 1889.

Imports by Trunk Road.

A.—Rambha (from Orissa).

	Total for six months.	Average.
	Mds.	Mds.
Twist and yarn	1,992	332
Paddy	107,246	17,874
Rice	15,042	2,507
Kerosine oil	3,156	526
Gingelly	1,356	226

B.—Narsannapet (from Vizagapatam).

Piece-goods (Indian)	2,655	442
Paddy	33,211	5,535
Rice	2,684	447
Cholum, &c.	1,650	275
Ghee	4,303	717
Other provisions	1,410	235
Chillies	13,963	2,327
Tobacco	11,335	1,889

11. I regret the delay which has occurred in the submission of this report, due to great pressure of work. Advantage has been taken of the delay to bring the tables of land traffic up to date.

ENCLOSURE No. 1.

STATEMENT showing the imports by the Chilka Lake and Ganjam Canal during the months of April, May, June, July, August and September 1889.

No.	Weeks.	IMPORTS IN CWTS. AT GANJAM.					IMPORTS IN CWTS. AT PODAPADRA.					
		Paddy.	Rice.	Ragi.	Green-gram.	Wheat.	Paddy.	Rice.	Ragi.	Green-gram.	Cholum.	Wheat.
1	Week ending 6th April ..	291	79	..	..	..	2,063	..	..	..	..	..
2	Do. 13th ,, ..	1,084	53	..	..	..	27	..	..	..	..	..
3	Do. 20th ,, ..	1,843	185	..	..	..	2,352	124	..	..	..	..
4	Do. 27th ,, ..	970	26	..	..	..	151	..	..	..	..	..
5	Do. 4th May ..	1,069	..	..	..	..	1,543	256	..	..	..	..
6	Do. 11th ,, ..	..	344	..	..	..	..	..	..	9	..	..
7	Do. 18th ,, ..	591	53	17	..	..	..	..	..	..	..	..
8	Do. 25th ,, ..	335	..	..	..	..	..	..	..	..	..	..
9	Do. 1st June ..	476	35	..	..	..	511	44	..	..	..	..
10	Do. 8th ,, ..	335	35	..	..	..	..	..	..	..	..	..
11	Do. 15th ,, ..	317	132	..	..	..	502	27	..	..	..	..
12	Do. 22nd ,, ..	256	79	..	..	..	101	..	..	..	..	..
13	Do. 29th ,, ..	273	71	..	..	..	400	..	..	..	..	..
14	Do. 6th July ..	194	..	..	..	..	475	..	..	..	..	..
15	Do. 13th ,, ..	309	26	..	..	..	348	..	..	..	..	..
16	Do. 20th ,, ..	168	71	34	150	..	1,411	..	..	..	..	..
17	Do. 27th ,, ..	555	62	..	..	..	1,156	..	..	..	..	..
18	Do. 3rd August ..	212	53	..	..	..	388	..	..	..	..	..
19	Do. 10th ,, ..	432	168	..	..	..	2,206	35	..	..	..	..
20	Do. 17th ,, ..	246	70	..	..	..	1,843	..	..	..	..	..
21	Do. 24th ,, ..	511	..	..	..	..	1,446	97	..	..	..	..
22	Do. 31st ,, ..	547	..	..	..	..	3,434	58	..	..	..	..
23	Do. 7th September.	723	88	..	..	..	2,245	..	..	..	..	..
24	Do. 14th ,,	220	44	..	..	..	2,988	..	..	..	177	..
25	Do. 21st ,,	458	..	..	35	..	3,388	..	..	..	..	123
26	Do. 28th ,,	882	44	..	..	..	2,866	..	..	..	..	..
	Total ..	13,297	1,718	51	185	..	2,564	..	..	..	..	..
							34,408	641	..	9	177	123

READ—the following letter from W. A. WILLOCK, Esq., Acting Collector of Vizagapatam District, to the Secretary to the Commissioner of Revenue Settlement and Director of the Department of Land Records and Agriculture, dated Pottinghy, 12th September 1889, No. 1-J :—

I have the honor to reply to the Board's Proceedings, No. 2613, dated 6th July 1889, calling for a report on the prospects of the East Coast Railway.

2. As a famine protective work I do not think that it would be of very great value to this district. Vizagapatam, though liable to seasons of great scarcity, is hardly a famine area, and when such unfortunate occasions do occur it has the Godávari on one side and the Agency, with the rich Chattishgar country behind it, on the other to fall back on, both within easy distances for cart and bullock traffic. It can feed itself from these sources unaided so long as money wherewith to purchase grain is forthcoming, but a railway would greatly reduce the prices in times of scarcity and would provide against the danger of cart traffic being stopped by an outbreak of cholera such as prevailed during the past hot weather. Fortunately, on this occasion ample stocks of grain had been secured before the epidemic became serious, or prices would have risen greatly owing to the disinclination of cart-owners to travel while it lasted. Though a railway cannot be said to be a necessity as a protection against famine for this district it is, judging from the imports by sea, never quite able to feed its population, and in a season of serious scarcity, a thing which may be expected about once in five years, the grain traffic from the Godávari is very heavy. Were the East Coast railway constructed, its transport would be all effected by rail, and the abnormal receipts therefrom on such occasions may fairly be regarded as a reliable source of revenue for the proposed line. During the last 20 years there were three other seasons in which at least as great a failure of the crops as that of 1888 took place, and I believe there were two more between 1860 and 1869. One may therefore fairly

count on abnormal grain traffic once in five years. During the past dry weather statistics were recorded of the movement of food-stuffs along the Trunk Road (Tuni to Chicacole) with a view to the Revenue Department being kept informed of how the supply of grain was progressing. The period over which this registration extended was from the 12th February to the 30th April, and the returns obtained at Paikarowpeta, Anakápalle and Ramastalam affect the railway question. The first of these stations is in the extreme south of the district near Tuni, the second is a large town 20 miles south of Vizagapatam where the Vizianagrum, Chicacole and Vizagapatam roads may be said to diverge, and a third is a few miles south of Chicacole. The traffic in paddy, rice and dry grains registered at each was as follows :—

	Laden carts.	Equivalent in tons.
Paikarowpeta	33,713	22,475
Anakápalle	15,860	10,577
Ramastalam	316	210

The imports by sea, which practically all came from the Godávari, during the same period were.—

	TONS.
Vizagapatam	2,778
Bimlipatam	2,219
Total ...	4,997

3. The total imports during this period, *i.e.*, those which came by sea *plus* those which passed through Paikarowpeta, amounted to 27,472 tons, of which more than four-fifths came by land. The movement of grain into the district had commenced long before this registration of traffic was taken up and may be considered to date back to the 1st August 1888, by which date it was clear that the dry crops were poor and the paddy cultivation in a precarious condition. From the 1st August 1888 to the 12th February 1889, the imports of grain by sea amounted to 11,166 tons. Between the 1st May 1889 and the 31st July 1889 they amounted to 1,505 tons and those by land to 11,418 tons, or nealy eight times as much. Bearing the proportion which the land transport bore to that by sea in the periods between the 13th February and the 31st April, and between the 1st May and the 31st July in mind, if we take the imports by land during the first part of the year at 20,000 tons, the estimate will be a very moderate one indeed. This would give a total import of 70,056 tons, or 70,000 tons in round numbers, for the year during which the district suffered from scarcity or apprehended scarcity, exclusive of what came in from the Agency which probably amounted to another 20,000 tons. The results obtained at Penduru, Natavalsa and Boddavalsa by the general traffic registration stations leads me to estimate that about 1,000 tons of grain were distributed, monthly from Vizagapatam or its vicinity and 2,000 from Bimlipatam during the period of scarcity. This would come to about half the total imports as estimated above, which is about what I would have expected.

4. At the same time enormous numbers of carts were pushing their way in search of grain up the Pottinghy ghât and the Rayaghada pass into localities where wheeled vehicles had never been seen before, and the requirements of the Sálúr. Bobbili and Párvatipur taluks at any rate were largely supplied in this way. They probably received from these sources a quantity equivalent to one-third of the imports from elsewhere or 23,000 tons, their population being, roughly speaking, about one-quarter of that of the whole of the ordinary tracts, and the pressure of the season being quite as severely felt in them as in the rest of the district. Large quantities of grain passed Vizianagrum going northwards, though but little got as far as Ramabhadrapur, 30 miles up the road, from which I conclude that a very slight diminution in the cost of transport would have given a great deal of the supply of these taluks to the Godávari. However, any increase of the sort in the probable imports by rail in case of scarcity may be set against competition by cart, and the total requirement of the district to be met by rail transport in such case may be set at 70,000 tons.

5. Vizagapatam would have been but little better off than Ganjam last hot weather had it not been for the relief which the vast labor market of the Godávari and Kistna districts offered to the classes which felt the pressure most severely—those living by daily cooly,—and in facilitating access thereto the line would be of inestimable service. The annual repairs to the irrigation works of the delta districts afford an immense field for the employment of laborers, and wages are high and food cheap there at all times. Emigration with a view to employment on these works is always very active in the hot season in Vizagapatam, but this year the movement attained extraordinary dimensions. I had returns of the number of coolies passing back and forwards taken at Yellamancihli—a point about 25 miles north of Tuni—from the 25th May to 6th July 1889, and ascertained that 10,107 coolies passed towards the Godávari and 6,280 returned during that period. The movement had however declined a good deal then. I had similar returns taken from 22nd to 31st August and found that 349 laborers had moved south and 5,030 returned to their homes in those few days. On these data I estimate that the number of coolies who returned to their homes during June, July and August were about as follow:—

June	4,000
July	15,000
August	15,000

As the stream is still unbroken, I do not think that the number of cooly emigrants can have been much short of 50,000 for the whole season. The suffering and loss of health which their long journey on foot must have entailed on those who undertook it, most of whom came from the north of the district and many of whom had long been on short rations, calls for no comment from me. The receipts which the railway would have taken from this traffic would not have amounted to much, but the relief the cooly population would have derived in being saved the long march can hardly be overrated. It must be remembered that there were probably at least two members of each family left at home, for every one who emigrated depended on his earnings for their support.

6. While writing on this portion of the question, I may as well dispose of the grain traffic of ordinary years also. The following statement shows the imports of grain by sea during the four years ending 1887-88. I exclude last year as an exceptional one and go back only four years so as to get results for the quinquennial period during which one year of scarcity may be expected:—

	TONS.
1884-85	1,993
1885-86	8,356
1886-87	6,161
1887-88	4,980
Total ...	21,490
Average ...	5,372

This gives an average of 5,372 tons imported by sea in normal years. The statistics of traffic referred to above show that in abnormal seasons the imports by road are very much heavier than those by sea. They probably always are, but I will assume that in average seasons they are equal. We then have a normal import of 10,744 tons for four years and then an abnormal one amounting to 70,000 tons. Deducting the normal rate of importation from this and distributing the balance over the five years, we get 22,595 tons as the average traffic in grain with the Godávari. All this would come by rail were the line constructed, and some of the supplies which the north of the district derives from the Agency would do so also.

7. Turning now to the prospects of the East Coast Railway as a commercial undertaking, I must first point out that its construction would at once transfer the whole of the trade of Bimlipatam to Vizagapatam. The former has no advantages over Vizagapatam as a port, though some of the local merchants may find it suits them to assert the contrary. It derives its present importance from its position, 16 miles

nearer the richest part of the district and the Central Provinces than Vizagapatam, but with the line of rail running to the latter this would count for nothing, and the whole of the trade would transfer itself thither without delay. I, therefore, think that, in considering this portion of the railway, the two posts may be regarded as concentrated at Vizagapatam.

8. The following table gives the exports of the principal articles dealt with during the last three years:—

STATEMENT of the export trade of the Vizagapatam district in tons.

Articles.	Coasting trade.				Foreign trade.			
	1886-87.	1887-88.	1888-89.	Total.	1886-87.	1887-88.	1888-89.	Total.
	TONS.	TONS.	TONS.	TONS.	TONS.	TONS.	TONS.	TONS.
Drugs and medicines ..	167	175	190	532	..	..	..	..
Dyeing and coloring materials	410	403	453	1,266	6,502	2,904	2,374	11,780
Grain and pulse	130	80	87	297	..	..	..	..
Hides	1,328	1,120	859	3,307	..	1	4	5
Lac	46	198	145	389	..	16	..	16
Seeds	1,929	4,854	5,433	12,216	13,913	9,467	6,915	30,295
Sugar	6	1	47	54	9,821	10,587	11,846	32,254
Total ..	4,016	6,831	7,214	18,061	30,236	22,975	21,139	74,350

As the railway is only concerned with large quantities of heavy goods, I have excluded all except the principal articles of export. All the coasting trade in these is with ports too far away to allow of any possibility of land carriage competing with sea transport; and it may therefore be lumped with "foreign" in considering the prospects of the railway. The net result is that about 30,000 tons of these commodities find their way to the coast for shipment every year. Of these articles jaggery accounts for about one-third, say 10,000 tons. Most of it comes from about Anakápalle, but a good deal is grown in Pálkonda and the north of the district. Even the latter is shipped at Vizagapatam instead of at the nearer port of Bimlipatam owing to the bad name which the northern jaggery has in the London market, and it would all go to Cocanada were the railway open to secure the advantage of the much better reputation of that port for this article of produce and to avoid shipment through the surf. Of the remainder of the articles exported, the great bulk comes from the country beyond Vizianagrum (towards Párvatipur and Pálkonda) and from the Agency and Central Provinces. The country immediately surrounding Vizagapatam and Bimlipatam is comparatively poor with the exception of the rich tract round Anakápalle, which grows chiefly sugarcane and food-grains, and I doubt if any exportable produce is raised within a radius of 25 miles of these ports, except a small quantity of gingelly seed and the Anakápalle jaggery, which latter would go to Cocanada for shipment. This view is supported by the fact that the registration now in progress shows that eight tons of oil-seeds—the principal article of export—come from beyond Vizianagrum for every one ton which joins the stream down the main road there, and this ton would include all that came in from Pálkonda as well as local produce. All produce from the tract north of Vizianagrum would come at least 40 miles by rail along the main line, and the bulk of it would also be conveyed an average of 30 miles along the Párvatipur branch, if it were constructed. The produce of the more remote littoral taluks would also follow the railway line for an average of 40 miles, as much would come from near Pálkonda and from the extreme south. The mile tonnage of the export trade specified above would therefore, be in round figures 1,600,000:—

	Ton miles.
10,000 tons of jaggery, 80 miles (from Anakápalle to Cocanada) ...	800,000
20,000 tons of other produce, 40 miles	800,000
Total ...	1,600,000

Of course all this would not be transported by rail at first, but the whole of the jaggery would, and much would come a far longer distance than the estimate allows, while the carry of 40 miles estimated for other exports is very low indeed, as the rich country between Pálkonda and Chicacole on the north would be about 75 miles distant from Vizagapatam. The present export trade in these articles which might be expected to resort to railway transport would, therefore, give 13,333 tons per mile on the total mileage within its borders, which I take at 120 miles.

9. According to the estimate of the Salt department, the following quantities of salt have passed into the Central Provinces by the Párvatipur and Potinghy routes during the past three years:—

—	1886-87.	1887-88.	1888-89.	Average.
	mds.	mds.	mds.	mds.
Párvatipur route	204,344	222,558	137,420	188,107
Sálúr route	130,869	84,031	60,250	91,717

The quantity has declined a good deal of late owing to the opening of rail communication between Chattishgar and Bombay, but the construction of a branch of the East Coast Railway to Párvatipur would win much of this custom back. These figures give an average total of 279,824 maunds, or, roughly speaking, 10,000 tons. This would all come from the Karassa factory near Vizagapatam, into which there would, I presume, be a railway siding, as was proposed for the Raipur-Vizagapatam line. It would all pass the junction of the main line with the branch to Párvatipur and move, say, 40 miles along the former and another 35 miles on the average along the latter. There would also be the ordinary consumption of the more remote taluks through which the line would pass to be provided for. This and the increase in the supply of the Central Provinces may be set against cart traffic, though the allowance seems excessive. The 10,000 tons referred to above would be equivalent to a tonnage of 3,333 tons per mile over the whole mileage of the main line within Vizagapatam.

10. We, therefore, find that the portion of the traffic of the district in the few articles detailed in paragraphs 8 and 9 which might be expected to pass along the railway would give at a very low estimate the following tonnage per mile over the 120 miles of the main line which would run through Vizagapatam, exclusive of the traffic along the Párvatipur branch, which I will deal with further on—

	Tons per mile.
Chief articles of export	13,333
Salt trade with the Central Provinces *viâ* Párvatipur, &c.	3,333
Total ...	16,666

11. A rough estimate of the general traffic of the district as compared with that of the similarly situated area given by the South Indian Railway can be arrived at in the following way. In paragraph 53 of the Administration report of the Public Works Department, Railway Branch, we learn that the total traffic of the South Indian Railway for 1888 in ordinary goods was 669,183 tons, the receipts therefrom Rs. 22,44,289 and the receipts per mile 8·094 pies. This gives an average mileage of 79·5 miles and an average tonnage per mile of 81,403 tons. In the same paragraph will be found a list of the principal articles carried and the receipts from each. The articles in this list, which correspond with the chief articles of export in Vizagapatam, and salt are cotton, hides, jaggery, seeds and salt. The average receipts from goods of all sorts during the last three years were Rs. 21,51,255 and the receipts from these items Rs. 5,67,598, or 26·4 per cent. of the whole. The circumstances of the area served by the South Indian Railway are very similar to those of this part of the proposed East Coast Railway, except in that the latter runs through a more fertile country. There seems, therefore, to be no reason why the percentage between the traffic in these articles, which holds good for the South Indian Railway, should not

afford a fair indication of what the total goods traffic here is, unless it be that the soil of Vizagapatam is richer and capable of producing larger quantities of exportable produce, which would of itself be an excellent argument in favor of the construction of the railway. Applying these percentages we arrive at a total probable existing traffic of 63,131 tons per mile of the main line against 81,403 tons on the South Indian Railway. This supposes the average freight per ton of the other articles moved by the South Indian Railway to be about the same as what would on the average be charged on the remaining traffic of this district. Any difference which might exist would probably be in favor of the less civilized country.

12. I would point out that due weight must be given to the very important fact that my estimate of the traffic in the articles selected is based on actual exports and information about salt which is almost as reliable, and does not take into consideration local transfers which the South Indian Railway returns do. If it could do so the probable tonnage would be vastly increased. It also deals only with the Vizagapatam district's contribution to the traffic of the section of the line within its limits, and does not take the through traffic into account at all. I have also considered only the existing state of things and made no allowances for future developments of trade, and if I have underrated the competition of carts in the carriage of exports, which I doubt, I have very largely overrated its importance with regard to salt. In addition to all this, I have entered the average distances over which rail transport would be employed at a very low figure indeed.

13. Besides the transport of the articles just referred to, there would be an average grain traffic of 22,595 tons for, say, 80 miles to be placed to the credit of the 120 miles of rail in the district, or an addition to the mile tonnage of 15,100 tons. If we adopt the method of comparison with the traffic of the South Indian Railway just made use of, adding grain to the article selected, we get an even better prospect for the East Coast Railway, though one short of the true one, as it does not take into account the local movement of grain.

14. I have assumed that only jaggery would be railed to Cocanada, but it seems highly probable that large proportions of other exports would be transported thither also at certain seasons. Regarding this I cannot do better than quote the following extract from a letter from Mr. Macnab, Chairman of the Cocanada Chamber of Commerce and a partner in Messrs. Hall, Wilson and Co. and Messrs. Stuart, Hall and Co., the leading shipping firms on this part of the coast:—

"The general run of vessels now carrying our produce to Europe are cargo steamers of 2,500 tons dead weight capacity, on an average, costing, perhaps, when new £35,000, at £40,000. The actual cost per day to the owners of maintaining such a steamer at anchor, that is to say, daily cost in wages, diet, marine insurance (5½ per cent.) and depreciation (10 per cent.) would be about £35 or £40, say the latter, £40. Interest on block value, you will observe, is not here included. Now to take in one of the northern ports (Vizagapatam or Bimlipatam) as a second port of call, Cocanada being the main port of loading (the usual course in the trade at present), owners would allow for an additional detention of, say, seven days, representing an extra outlay on maintenance of vessel of (7 days × £40 =) £280, and if we add to that £20 for extra port dues, £10, cost of coal changing port, and £10 for incidental expenses, we get a total of £320. On the other hand the statutory (I had almost said at any rate the established) allowance for a second or extra port of loading is 2*s.* 6*d.* per ton on the whole cargo, for example, supposing I chartered a steamer to load at Cocanada with option of sending her to a second port, I should pay (let us say) 40*s.* per ton if I gave her a full cargo at Cocanada, but if I exercised the option of sending her to Vizagapatam to commence or to complete, the freight would be 42*s.* 6*d.* per ton all round. The extra freight accruing to the ship owner on a cargo of 2,500 tons would thus be £312 10*s.* against actual cost of seven days' maintenance, (£320). These are the estimates which usually guide ship-owners in negotiating a charter. On the one hand if he is in luck in the way of despatch, he may save 2 or 3 days' maintenance (£80 to £120). On the other hand if the full seven days are occupied, there is a negative loss of seven days' interest on block value, say (at 10 per cent. per annum) £77. On the whole at half-a-crown a ton the balance of probabilities is decidedly against the vessel's interests and ship-owners would prefer loading at a single port for 40*s.* rather than at two for 42*s.* 6*d.*

"Of course if a steamer loaded a full cargo at Vizagapatam, the all-round freight would be under present conditions the same as at Cocanada, but this is very rarely possible. At equal rates, Cocanada undoubtedly offers advantages to the shipper or merchant, but it is an advantage that cannot very well be expressed in money beyond a trifling saving in actual shipping charges (*i.e.*, cost of putting the produce alongside the steamer).

Practically, therefore, the difference between Cocanada and Vizagapatam in homeward freight is 2*s.* 6*d.* per ton, but as it is 2*s.* 6*d.* on the whole cargo and not merely the Vizagapatam portion, we may take it that the extra freight fairly debitable to the Vizagapatam portion is 5*s.* per ton or say Rs. 3-12-0."

If this view be correct—and I see no reason to doubt it—the Vizagapatam contribution to the traffic of the railway would be much greater than my estimate.

15. The collection of statistics of the trade along the route from Vizagapatam to the Central Provinces *viâ* Párvatipur and Rayaghada has on several occasions received considerable attention in view of the possibility of a railway being constructed in that direction, and all except the most recent information available on the subject of road traffic refers to this line. As the branch to Párvatipur is an essential feature in the East Coast project, it is well to detail the result of these inquiries before going into the comparatively scanty figures which we have regarding the main line. I had also better explain that the main route from the Central Provinces to the sea runs nearly north and south through Ambadola and the Rayaghada valley to Párvatipur and then on to Vizianagrum. At Párvatipur another road striking the coast at Calingapatam through Pálkonda joins on. This is not much used for down traffic, but owing to the popularity which Ganjam salt enjoys amongst the Brinjaries a very large proportion of the trade in this article comes up this way. At Ramabhadrapur, 22 miles south of Párvatipur, the traffic from Jeypore and the Potinghi ghât (*viâ* Sálúr) joins on to the main line. The stream is further swollen by the transport along the Pálkonda road at Vizianagrum, where also a small amount of traffic from Srungavarapukóta adds itself from the west, and 11 miles south of Vizianagrum the trunk road from Chicacole contributes its share at Modavalsa.

16. The first attempt to collect information was made in the dry season of 1874-75 with the following results. Details of the up and down trade are not available :—

Statement of traffic statistics taken in 1874-75 on routes from the Agency to the Coast.

Year and month.	Rayaghada to Párvatipur road.	Párvatipur to Pálkonda road.	Párvatipur to Vizianagrum road.	Sálúr to Vizianagrum road.
	TONS.	TONS.	TONS.	TONS.
November 1874	..	1,090	1,088	1,355
December ,, ...	..	1,398	1,300	1,563
January 1875	1,399	2,066	2,798	3,805
February ,, ...	4,051	2,411	3,880	4,070
March ,, ...	3,906	5,628	3,959	3,691
April ,, ...	3,898	..	..	..
May ,, ...	1,661	..	..	..
Total ..	14,915	12,593	13,025	14,484
Estimate for remaining months of year	..	..	9,648	10,385
Grand Total ..	..	..	22,673	24,869

The traffic through Rayaghada was at the time altogether by pack bullocks. The estimate of the traffic in the remaining months of the year was based on actuals taken now and then for a few days at a time and is fairly reliable. I was Senior Assistant Collector at the time and the work of the establishment which recorded these statistics was carefully supervised by me and I feel confident that it was accurately done. One very striking point in connection with the Rayaghada route attracted the attention of every one interested in the matter—the fact that, allowing for casualties due to so long a journey, every bullock which came down from the Central Provinces carried back its load of salt, which showed that the main purpose of the trade was meeting the demand for salt inland and not the disposal of surplus produce, which must have largely exceeded the salt requirements of the country supplied in weight. I have statistics for other roads taken at the same time, but they are discrepant and seem exaggerated and I think it better not to refer to them. These returns show the trade between Ramabhadrapur (where the Párvatipur and Sálúr routes join) and Vizianagrum to have been about 47,500 tons per annum at this

time. To this should be added about 10,000 tons on account of the salt traffic with the coast *viâ* Pálkonda which was then very heavy and which would have come from Vizagapatam had a railway existed.

17. The next statistics which I have been able to find relate only to the traffic through Rayaghada (30 miles north of Párvatipur) during the cold seasons of 1876-77 and 1877-78. They were taken when carts were first beginning to find the Rayaghada pass practicable and to supplant pack bullock carriage. Up and down traffic were not separately recorded. The following statement shows details :—

Statement of traffic through Rayaghada in portions of 1877 and 1878.

Period.	Salt.		Gingelly seed.		Other articles.		Total.	
	Bullock.	Carts.	Bullock.	Carts.	Bullock.	Carts.	Bullock.	Carts.
From 30th December 1876 to 7th April 1877 ..	72,480	227	52,122	461	57,983	1,830	182,585	2,518
From 19th January 1878 to 31st May 1878	36,071	388	27,102	2,378	49,689	3,066	112,862	5,832

Taking 15 bullock-loads or 2 cart-loads to the ton—a fair allowance on this track—the result would be—

	1877. TONS.	1878. TONS.
Salt	4,945	2,599
Gingelly	3,705	2,996
Other articles	4,781	4,846
Total ...	13,431	10,441

18. In the first three months of 1879 very careful returns of traffic were taken between Rayaghada and Bimlipatam and also on the roads from Párvatipur to Pálkonda, Pálkonda and Srungavarapukóta to Vizianagrum, and Chicacole to Bimlipatam. The returns seem to have been mislaid, but I have found an abstract of the results, which gives the following details :—

Traffic statistics taken in 1879 (January to March).

Traffic stations.	Up.	Down.	Remarks.
Main road from Coast to Central Provinces.	TONS.	TONS.	
1. Rayaghada	5,781	4,441	82 miles north of Vizianagrum.
2. Párvatipur	1,477	5,549	52 do. do.
3. Kottaki	3,262	5,030	Branch from Sálúr and the Potinghi ghât.
4. Arikatota	2,871	8,722	26 miles north of Vizianagrum.
5. Nelivada	4,025	9,192	8 do. do.
6. Nilayya Chetram	7,779	10,416	10 do. south of do.
Other roads.			
7. Párvatipur-Pálkonda road ..	6,820	4,811	Taken near Párvatipur.
8. Pálkonda-Vizianagrum road ..	1,146	5,487	Taken 3 miles from Vizianagrum.
9. Srungavarapukóta-Vizianagrum road.	2,634	10,019	
10. Trunk road (Tuni to Chicacole) ..	2,435	3,437	Taken 33 miles south of Chicacole.

With the exception of route No. 9, I believe these returns to be reliable, though they may not seem so at first sight, as a complicated allowance has to be made for salt from the Ganjam factories passing to Sálúr through Párvatipur. This seems to have amounted to 2,000 tons during this period and accounts almost exactly for several absences of agreement in the returns of different stations. The total stream of traffic into the Agency (almost all salt) is represented by the up traffic of stations Nos. 1 and 3 (9,043 tons), and it will be observed that this corresponds fairly with

the up traffic of stations Nos. 2 and 7 (8,297 tons), which gauge the same stream a little lower down. There are several other little points of the sort which to a person who knows the country well afford strong internal evidence of reliability and I am well satisfied with the way in which the figures work into each other. The net result is to show the total traffic on the Coast-Central Provinces road at the points where things are not complicated by local currents to have been as follows during the three months :—

	TONS.
* Rayaghada (84 miles north of Vizianagrum)	
Arikatota (26 miles north of Vizianagrum)	10,222
Nelivada (8 miles north of Vizianagrum)	11,593
Nilayya Chetram (10 miles south of Vizianagrum)	13,217
	18,195

* The Rayaghada returns include the salt traffic from Ganjam *vid* Pálkonda.

In considering the prospects of the branch of the East Coast Railway to Párvatipur, at least 8,500 tons of the traffic on the Pálkonda-Párvatipur road No. 7 must be added to that of Arikatota, Nelivada and Nilayya Chetram, as the whole of the 6,820 tons up traffic on that road consisted of salt which would have come by rail from Karassa, and some allowance must be made for down trade which went to utilize the carriage sent for salt. This would make the traffic at Arikatota, which may be taken to be representative of the section between Párvatipur and the main line, about 20,000 tons during the three months.

19. Appended to Mr. Goodrich's report on the prospects of the Vizagapatam-Raipur line (No. 765, dated 18th June 1883) will be fouud a diagram showing the trade of the district for the first six months of the same year. I am not sure of the data he has used for the conversion of cart-loads into tons and consequently can only give his results which will be found in the following statement :—

TRAFFIC statistics taken in 1879 (January to June).

Traffic stations.	Up.	Down.	Remarks.
Main road from Coast to Central Provinces.			
	TONS.	TONS.	
Rayaghada	10,656	32,650	82 miles north of Vizianagrum.
Párvatipur	8,602	21,430	52 do. do.
Kottaki	10,235	26,060	Branch from Sálúr and Potinghi ghat.
Arikatota and Nelivada } average	14,012	41,000	26 miles north of Vizianagrum.
Nilayya Chetram	20,947	50,000	8 do. do.
			10 do. south of do.
Other roads.			
Párvatipur-Pálkonda road	10,753	25,000	Taken near Párvatipur.
Pálkonda-Vizianagrum road	7,459	9,600	Taken 3 miles from Vizianagrum.
Srungavarapukóta-Vizianagrum road ..	?	?	Taken 2 miles from Vizianagrum.
Trunk road (Tuni to Chicacole)	4,165	6,000	Taken 33 miles south of Chicacole.

I am not altogether satisfied about a few of these figures, which seem to be estimates rather than actuals in some cases, but bearing the actuals of the first three months in mind, they leave little doubt but that the traffic on the main road from Párvatipur to Vizianagrum must have been about 60,000 tons for the year. Yet this year was an exceptionally bad one for trade as will be seen from the following statement of the value of produce exported about that time :—

	RS.
1876-77	38,66,454
1877-78	55,27,259
1878-79	38,54,421
1879-80	31,21,258
1880 81	41,33,606
1881-82	47,04,221
1882-83	47,27,912

20. Another series of statistics were collected between October 1884 and October 1885. These covered the whole distance from Vizagapatam to near the frontier, but the returns for the stations between Chittivalsa and Vizagapatam seem to me untrustworthy. Some articles were registered by number and some by weight, which makes any general conversion into tons impossible, and as certain goods seem to have been registered under one head at some stations and under others elsewhere the tonnage I have arrived at does not correspond with my expectations at the different stations in all cases. The following statement gives the results between Rayaghada and the Coast, excluding short distance traffic :—

STATEMENT showing traffic results on road from Párvatipur to the Coast in 1884-85.

—	Up.			Down.		
	Goods in tons.	Other goods by number.	Passengers.	Goods in tons.	Other goods by number.	Passengers.
Rayaghada (82 miles north of Vizianagrum) ..	3,019	149,220	3,095	18,314	102,271	2,459
Párvatipur (52 miles north of Vizianagrum) ..	1,887	13,263	13,772	14,923	58,025	12,168
Ramabhadrapur (30 miles north of Vizianagrum) ..	13,644	222,416	144,307	51,148	373,231	141,307
Gajapatinagaram (13 miles north of Vizianagrum).	12,637	411,148	100,606	45,306	645,167	95,806
Boddavalsa (5 miles south of Vizianagrum) ..	13,477	198,542	210,690	21,040	260,507	214,658
Chittivalsa (13 miles south of Vizianagrum) ..	7,610	383,930	134,956	21,780	527,320	125,650

With regard to the up traffic, a great deal of the salt from Ganjam would not have come near the registering station at Párvatipur ; hence the increase which Rayaghada shows over Párvatipur. All the Boddavalsa traffic must have passed through Chittivalsa, but the former shows 13,477 tons, while the latter shows only 7,610. The latter, however, has an increase of nearly two lakhs under "articles," which no doubt accounts for the difference. Under down traffic about 6,000 tons more were registered at Ramabhadrapur than at Gajapatinagaram, 17 miles nearer the coast. The figure for Ramabhadrapur is, however, the total of the figures on the two of roads to Sálúr and to Párvatipur and consequently every cart, which passed either way between those towns, appears in the total under both "up" and "down." Allowing for "articles" the stream of traffic between Vizianagrum and the Coast received a large addition between Chintalavalsa and Chittivalsa evidently from the Chicacole road. I think that all marked discrepancies as regards tonnage are fairly explained in this way and that the results obtained at each station confirm each other and indicate a traffic of about 58,000 tons at Gajapatinagaram and 34,000 between Vizianagrum and the sea exclusive of "articles." I must, however, acknowledge that the balance, which remained in Vizianagrum, seems unduly large. The record regarding passengers, I fear, is utterly valueless. For railway purpose an addition will have to be made to this tonnage on account of salt from the Ganjam factories, but I have no means of estimating the amount.

21. On the whole these statistics may be summed up as follows :—

The results obtained in 1874-75 indicated a total traffic of 57,500 tons about the centre of the Vizianagrum-Párvatipur road, of which probably 18,000 tons passed through Rayaghada. Those of 1877 and 1878 show a traffic of 13,431 tons and 10,441 tons, respectively, as having passed through Rayaghada during the best part of the brinjary season. The results of 1879 point to a traffic of perhaps a little less than 60,000 tons between Vizianagrum and Párvatipur with about 20,000 tons through Rayaghada. The operation of 1884-85 gave a total of a good deal over 58,000 tons on the Vizianagrum-Párvatipur section, 21,000 tons through Rayaghada and 34,000 tons between Vizianagrum and the Coast. Allowing for Ganjam salt and the connected trade *vid* Pálkonda, the traffic of 1884-85 may be taken at 65,000, 21,000 and 40,000 tons, respectively, at these three points.

22. The uniformity of the results arrived at over such a long interval is striking and makes it tolerably certain that the traffic of the Párvatipur-Vizianagrum road has for many years been about 50,000 tons and may be taken as having been at least

60,000 tons per annum four years ago (subject to an increase on account of Ganjam salt), of which 20,000 tons was with the Central Provinces *viâ* Rayaghada, while a somewhat larger amount went inland *viâ* the Potinghi ghât. I have reason to believe that the Rayaghada transport has decreased somewhat of late owing to the extension of railway communication with Bombay in the Central Provinces, but this has been counterbalanced by an increase in the Jeypore stream, which is growing with great rapidity as roads are pushed further and further in that direction. Owing to the death of the Jeypore Maharajah and the minority of his son that estate, which consists of 11,000 square miles of country, much of it of very rich soil, will now come under the management of Government and I trust that the greater part of its large surplus revenues will be expended on its development and on the correction of many abuses which now prevail in its revenue administration and hinder the progress and prosperity of its population. If this is done the Jeypore share of the traffic will soon assume enormous dimensions.

23. The 60,000 tons which the Párvatipur branch would have to count on to start with would be a very handsome contribution to the traffic of the main line. Much of it would go at least as far as Vizagapatam along it. A good deal would probably go to Cocanada if Mr. Macnab's views are correct. But this branch will never stop at Párvatipur. Its construction would win back a good deal of the lost trade in salt with Chattishghar and Raipur, which was estimated in 1883 at 30,000 tons (*vide* Board's Proceedings, No. 2352, dated 13th August 1883). Every ten miles it was pushed onwards towards Raipur would bring a contribution of many thousands of tons of the trade of the Central Provinces to the part of the line already open and the fine forests of Bissemkatak would soon add their share of timber trade to the work to be done. Neither Bombay nor Calcutta could enter into competition even with Cocanada for the trade of the Chattishghar country were railway communication opened between Raipur and the east coast and Vizagapatam would have the advantage of being 100 miles still nearer. Vizagapatam at present is only a moderately good port, but I believe that there is no question but that it could, at a moderate cost compared with such harbour as Colombo and Madras, be converted into one which would not only allow of shipment alongside wharves but would afford a safe and easily accessible refuge in bad weather and perfect security in time of war. It is the only port between Trincomalee and the Hugli which offers this prospect. That some project for utilizing its natural advantages will be carried out sooner or later is beyond doubt. It is only a question of when its trade will justify the expenditure, or, which comes to the same thing, of when the Central Provinces are to be placed in communication with the sea by means of their natural outlet. The desirability of opening the branch to Párvatipur does not, however, depend on these considerations. I trust the statistics dealt with above show sufficiently clearly that, in addition to the passenger traffic of some of the most densely populated areas in the Presidency and a promising traffic of its own, it will bring a contribution of goods for carriage to the main line, which is even now of very large dimensions and which is capable of enormous expansion. It is also worth considering whether this promising branch should not be constructed before the main line is prolonged into Ganjam. It is just possible that it might be found advisable to continue the line up the coast by carrying the Párvatipur branch on through the Kurapam-Buttelly gap in the hills which form the Pálkonda agency nearer the coast, and so on through the rich Kimedi country. I do not think that there would be any engineering difficulties about this, and it would secure the traffic of Gunupur and Kimedi, both very fertile tracts. It would involve an addition of 30 miles or so to the through length of the line, but this would be compensated for when the Vizagapatam-Raipur Railway is constructed, as it must be some day, by the great facilities which this route would offer for traffic between the Central Provinces and Ganjam and Orissa. This route would tap a very rich country situated at a considerable distance from the sea which should be much to the advantage of the line financially.

24. Before leaving this part of the subject I may as well state that I do not think that this branch will suffer much for competition with cart traffic. The cart-owners of the north of this district almost invariably combine the

work of petty traders with that of transport. The loads they carry are usually for the time their own property, on their return journeys at any rate. With railway communication established the portion of their profits which they derive from this custom would disappear, as the large dealers would under-sell them with rail-borne articles and by means of their greater experience and business facilities. But these cart-owners are most enterprizing in their expeditions in the search of cheap produce. They have latterly been scouring the agency for trade in a most surprising manner, and I believe that instead of competing with the line they will prove most valuable allies to it in hunting up goods in the far interior. It is not as though they were compelled either to compete with the rail or to give up the carrying trade altogether. They have still an ample field for employment in the agency and towards the Central Provinces, and, as they are accustomed to enormous journeys, I feel confident that they will not leave it unworked to carry on a competition in which they must lose their trader's profits as well as be ill-paid for their and their cattle's toil.

25. To go back to the subject of the main line, the operations of 1884-85 included two registration stations between Chittivalsa and Vizagapatam, one at Vemulavalsa, where the road to Vizagapatam diverges from the trunk road (from Chicacole to Tuni) at a distance of about 16 miles from Vizagapatam, and the other at a point 5 miles north of that town called Hanumanthavaka. The results are shown below:—

Statement showing traffic registered between Chittivalsa and Vizagapatam in 1884-85.

	Up.			Down.		
	Tons.	Articles by number.	Passengers.	Tons.	Articles by number.	Passengers.
Vemulavalsa-Vizagapatam road	785	21,990	24,777	3,258	45,725	26,505
Do. Trunk road	2,316	28,372	31,016	1,744	66,005	35,209
Hanumanthavaka-Vizagapatam road	2,445	45,928	80,866	6,888	372,601	113,814

I give these particulars as the registration was effected, but they do not concern the railway except in so far as they show the then traffic along the trunk road and its diversion through Vizagapatam. The traffic to Vizagapatam which the East Coast Railway would have to look forward would be chiefly what passes now to Bimlipatam through Vizianagrum and not that at present passing along the Chittivalsa-Vizagapatam road. The registration at Hanumanthavaka seems to include the traffic with Bimlipatam, but this is not clear.

26. In April last registration of traffic along the trunk road (Chicacole to Tuni) was commenced in connection with the general scheme of presidential registration. In addition to those on the trunk road a station was established off the line at Boddavalsa or Chintalavalsa, 5 miles south of Vizianagrum on the main road to the Central Provinces. Unfortunately this registration has been commenced at a time when the trade of the district is completely disorganized by the severe scarcity which has lately prevailed, and to make matters worse a violent epidemic of cholera broke out very soon after operation began and stopped everything but absolutely necessary traffic. The results are consequently of little value. The registration stations which affect the prospects of the railway are the following:—

Nathavalsa.—On the trunk road, where the branch from Konada to Vizianagrum crosses it.

Boddavalsa.—On the Central Provinces, coast line, 5 miles south of Vizianagrum, where the traffic from the town of Vizianagrum and the Pálkonda road joins that from the north and from the Srungavarapukota side, which passes through the cantonment.

Chittivalsa.—On the section common to the trunk road and the Central Provinces, coast line, where the traffic to Vizagapatam and Anakápalle diverges from that to Bimlipatam.

Vemulavalsa.—Sixteen miles north of Vizagapatam, where the traffic which turns south at Chittivalsa divides either towards Vizagapatam or Anakápalle and the south.

Anakápalle.—Twenty miles south of Vizagapatam, where these steamers unite again.

Timmapuram.—About 45 miles south of Vizagapatam on the trunk road, where a line into Golgonda taluk turns off.

Returns were also taken at Pendur where the road from Vizagapatam to Srungavarapukota crosses the trunk road. This station, however, hardly concerns the railway question, and I exclude it from the statement which follows. I regret to find myself obliged to omit Timmapuram also, as, owing to a mistake made about the returns from this station, I see no prospect of these reaching my camp (now near Jeypore) within a reasonable time. The following statement shows the long distance traffic at the stations selected for the five months ending 31st August in tons :—

Statement of traffic registered in 1889, April to August.

Stations.	Roads.	Grain and pulses.	Hides.	Jaggery.	Oil-seeds.	Salt.	Other articles.	Total.	Passengers.
	Up.	TONS.	TONS.	TONS.	TONS.	TONS.	TONS.	TONS.	
Nathavalsa ..	Konada-Vizianagrum Trunk Road	144	54	13	2	1,140	1,140	2,493	12,606
Boddavalsa ..	Central Provinces and Srungavarapukota, coast	1,545	3	1	1	13	563	2,126	20,761
	Vizianagrum town and Pálkonda, coast	2,856	7	2	3	1,235	496	4,599	6,938
Chittivalsa ..	Doddavalsa and Natavalsa, Vizagapatam and Anakápalle ..	4,309	22	4	41	61	1,078	5,515	31,187
	Boddavalsa-Bimlipatam ..	1,878	45	..	6	121	681	2,731	22,166
Vemulavalsa ..	Chittivalsa-Vizagapatam ..	5,887	2	1	11	1,041	703	7,645	12,662
	Chittivalsa-Anakápalle (Trunk Road)	467	27	14	3	83	391	985	14,600
Anakápalle ..	Vizagapatam-Anakápalle ..	2,203	23	3	76	29	1,023	3,357	29,853
	Vemulavalsa-Anakápalle (Trunk Road)	1,292	60	1,868	94	..	286	3,600	20,375
		7,513	15	1	33	1	475	8,038	42,596
	Down.								
Nathavalsa ..	Konada-Vizianagrum Trunk-Road	149	..						
Boddavalsa ..	Central Provinces and Srungavarapukota, coast	61	33	4	12	1	343	509	11,709
	Vizianagrum town and Pálkonda, coast	118	243	6	68	4	852	1,024	18,772
Chittivalsa ..	Doddavalsa and Natavalsa, Vizagapatam and Anakápalle ..	142	581	224	1,781	2	1,150	3,518	10,601
	Boddavalsa-Bimlipatam ..	198	25	103	231	103	1,420	2,580	33,014
Vemulavalsa ..	Chittivalsa-Vizagapatam ..	80	748	172	323	2	1,803	2,523	27,519
	Chittivalsa-Anakápalle (Trunk Road)	245	44	76	1,652	..	710	3,266	9,374
Anakápalle ..	Vizagapatam-Anakápalle	130	..	131	231	37	698	1,386	15,026
	Vemulavalsa-Anakápalle (Trunk Road)	27	41	174	164	129	1,450	2,047	34,259
		71	5	16	2	2,133	572	2,791	24,389
				138	162	3	1,571	1,950	45,637

I fear that the returns taken at Chittivalsa are not exactly what was intended. They look to me as though considerable numbers of carts from the south had gone to Bimlipatam by this instead of the Gambiram route, though it is two miles longer and involves payment of a toll at Thalavalsa, which was not expected when the routes on which traffic was to be registered was prescribed. Inquiries will be made on the subject. As I have already stated the time of year and the peculiar features of the season render the information so far recorded at these stations of but little value.

27. The tolls collected by the District Board and Municipal Councils afford some information as to the extent of the traffic on the roads concerned. The following statement shows the prices for which the rights of collection at the toll-gates have sold during the past four years :—

Statement showing tolls collected on certain roads and in Municipalities.

Tolls.	1887-88.	1888-89.	1889-90.	Equivalent in tons for 1889-90.	Remarks.
	Rs.	Rs.	Rs.	Rs.	
Local Fund Tolls.					
Párvatipur (Rayaghada trade only).	900	2,500	(*a*) 4,010	21,386⅔	(*a*) Half schedule rates.
Rambhadrapur, 30 miles north of Vizianagrum.	3,530	3,600	(*a*) 9,600	51,200	
Thalavalsa, traffic between Chittivalsa and Anakápalle, and	1,215	3,510	(*b*) 3,515	37,493	(*b*) One-quarter schedule rates.
Vizagapatam and Chittivalsa ..	3,210	7,976	(*a*) 18,350	..	
Ranastalam, Trunk road, 13 miles south of Chicacole.	835	3,900	(*a*) 3,750	20,000	
Municipal Tolls.					
Vizagapatam	22,032	23,736	(*c*) 25,152	..	(*c*) Full schedule rates.
Bimlipatam	6,220	6,620	(*a*) 6,625	..	
Vizianagrum	11,050	11,525	(*a*) 10,200	..	
Anakápalle	..	..	*(*a*) 18,350	..	* Transferred to the Municipal Council in 1889-90.

Local Fund tolls were only instituted in 1887, and the way in which the sums realized are increasing every year shows that the full value has not been nearly touched as yet. In the fifth column of the statement I have shown the tonnage equivalent to the contractors' rents supposing only laden carts to be tolled. Of course collections are made under other items as well, but the results therefrom are comparatively small, and in the case of the Párvatipur, Rambhadrapur and Thalavalsa bars there are great complaints of evasions of payment and at all allowances must be made for cost of establishment and contractors' profits. On the whole therefore I do not think that the tonnage given is far as tray, and, as stated above, I do not believe that the full value of the contracts have yet been obtained for the Local Fund gates.

28. Bimlipatam has no through traffic except out to sea owing to its peculiar position. Its tolls bring in about Rs. 7,000 per annum allowing for cost of collection and contractors' profits. Of this sum I calculate, roughly, that Rs. 4,000 is collected on the export traffic, leaving Rs. 3,000 as the receipts on the supply of the requirements of its population of about 8,500 persons, or, say, Rs. 3,000 for 8,000 inhabitants. I think this rate would be a fair one for the district generally. Anakápalle is about half as large again as Bimlipatam. Its tolls are now estimated as worth at least Rs. 19,000. Deducting Rs. 4,500 on account of the requirements of the town, we get Rs. 14,500 as indicating the collections on trade passing through it which is equivalent to the tolls on laden carts carrying 77,333 tons. All the through traffic in this case passes along the railway route. The tolls at Ranastalam, which measure the trade with Ganjam, give an estimate of 20,000 tons, while Rambhadrapur and Párvatipur correspond tolerably well with those already arrived at. The collections at the last two stations are practically exclusively from laden carts, while at Rambhadrapur there is reason to believe that a good deal of traffic from Párvatipur escapes the tolls by following an old track from Bobbili to Maradam. The evidence derived from a consideration of the tolls statement is of some value as it corroborates the estimates already arrived at for the Central Provinces coast road.

29. As regards the passengers' traffic likely to be developed there is but little to be said beyond pointing to the census of the district and the extreme density of its population, which in three taluks, Sálúr, Párvatipur and Pálkonda, exceeds 1,200 persons per square mile. The population of the ordinary tracts was at the time of the last census 1,766,840 persons and that of the agency 693,634, and (allowing for the branch line to Párvatipur) almost the whole of the former will be brought into contact with the line. The Vizagapatam people are an energetic enterprising race, as the migration to the Godávari and the Kistna districts referred to in paragraph 5 shows, and fully as likely to take kindly to railway travelling as their fellows in the south of the Presidency. No serious calamity in the shape of famine or epidemic has fallen on the district since the last census took place, and the increase to the population has consequently probably been a long way above what the usual percentage

would indicate. The following important towns would lie on the line or on its branch to Párvatipur :—

	PERSONS.
Yellamanchilli	4,649
Anakápalle	30,291
Vizianagrum	24,294
Bobbili	14,943
Párvatipur	9,933
and Narsapatam	4,372
Srungavarapukota	5,329
Bimlipatam	8,582
Sálúr	11,856
Pálkonda	9,531

would not be far away. The district has also close relations with Ganjam and the Godávari, and the intercourse between their populations would probably be very great.

30. The most important festivals and the estimated number of persons who attend each are as follow :—

		PERSONS.
Sinhachellam	for the Kalyanam feast	8,000
	for the Chendana Yatra	12,000
Upmaka	for the Kalyanam feast	4,000
Anakápalle	for the Nukalamma feast	15,000
Punyagiri	for the Sivaratri	10,000
Sangam	for the „	12,000
Vaddadi	for the Kalyanam feast	12,000
Vizagapatam	for the Mohurrum feast	5,000

31. I think I have now exhausted all the information which I am at present able to supply on this subject. I hope to be able to make arrangements for the registration of traffic on the Rayaghada road and the Pottinghi ghât next cold weather which will give information of great value as regards the prospects of the Párvatipur branch.

32. I regret that owing to my absence in the agency I have not been able to have my figures checked as carefully as I would have liked, but I believe that they are fairly correct. I cannot undertake that those regarding the present registration of traffic will agree with what the Board has received, as the latter are dependent on the accuracy of the traffic gumastahs. No copies of the daily total sheets being kept, I have in consequence had to have the registers abstracted afresh.

READ—the following letter from G. F. T. POWER, Esq., Acting Collector of the Godávari District, to the Secretary to the Commissioner of Revenue Settlement and Director of the Department of Land Records and Agriculture, dated Cocanada, 14th October 1889, No. 73 :—

I have the honor to furnish the report called for in Board's Proceedings, No. 2613, dated 6th July last, regarding the proposed East Coast Railway from Bezváda to Cuttack.

2. I have consulted the European and Native Chambers of Commerce at Cocanada, and enclose copies of the letters on the subject with which they have favored me. The Chairman of the former body has stated, with accuracy and lucidity, the arguments in favor of the proposed railway, both as a commercial project and as a famine protective work, and I need only say that I accept Mr. Macnab's conclusions, and proceed to furnish the statistics of goods and passenger traffic required by the Board.

3. *Trade by Canal.*—The following statement shows the traffic on the main line of navigation for 1885-86 for which year I have full information :—

	Goods in Tons.	Passengers.
Bezváda to Ellore, 38 miles, and *vice versa*	85,321	212,493
Ellore to Rajahmundry and Dowlaishweram, 52 miles, and *vice versa*	190,640	88,641
Cocanada to Dowlaishweram and Rajahmundry and *vice versa*, 38 miles	136,756	65,283

These figures are taken from half-yearly statements prepared by the Public Works Department.

4. That the railway, if made, would carry the bulk of this traffic, there is, I think, little reason to doubt. The greater speed of transit by rail would of itself be almost enough to ensure this, even if the canals were not, as they are, closed for a period varying from 1 to 3 months in every year, and constantly liable to be closed at other times of the year, especially between Bezváda and Ellore; and, as Mr. Macnab has pointed out, there is good reason to believe that a railway from Bezváda to Cocanada would carry a very considerable additional goods traffic which at present avoids the canal route, owing to the great risk of adulteration in transit, and goes to the other side of India by the Bezváda-Hyderabad route.

5. Besides the traffic on the canals, there is a large land traffic which would no doubt be carried in great part by the railway, which would be both faster and cheaper than the country cart. The following statement shows the goods and passenger traffic registered at the several stations in this district by the establishment entertained for this purpose under Board's Proceedings, Mis. No. 3538, dated 12th November 1888 :—

Stations.	Routes.	——	Quantity.	Passengers.	Animals.
		TONS. CWTS.	I. MDS.		
Kovvur	From Polavaram to Vizjeswaram ..	..	11,741	9,772	112
	Vice versa	..	9,332	11,323	151
		771 10	21,073	21,095	263
	From Rajahmundry to Ellore ..	..	6,914	6,653	644
	Vice versa	..	20,313	6,811	1,819
		999 0	27,227	13,464	2,463
Jangareddigudem ..	From Ellore to Prakkilanka ..	..	23,716	1,003	42
	Vice versa	..	12,847	1,085	71
		1,341 10	36,563	2,088	113
Kattipudi	From Godávari to Vizagapatam District	..	324,063	19,614	488
	Vice versa	..	92,252	19,057	2,135
		15,277 10	416,315	38,671	2,623
Jaggammapet	From Godávari to Vizagapatam District	..	69,197	..	..
	Vice versa	..	11,740	..	..
		2,970 0	80,937	..	..
Cocanada	Do.	8,718 6	237,573	..	..
Sámalkót	Do.	44,066 5	1,200,804	..	..
Rajahmundry	Gokavaram to Rajahmundry ..	..	340,917	17,385	..
	Vice versa	..	326,335	31,556	..
		24,486 6	667,252	48,941	206
	Kajanagaram to Rajahmundry ..	..	232,479	30,208	..
	Vice versa	..	430,700	30,525	..
		24,336 15	663,179	60,733	246
Rajanagaram	From Korukonda to Jaggammapet, &c.	..	333,875	17,006	..
	Vice versa	..	67,555	18,061	..
		14,731 10	401,430	35,067	4,199
	From Rajahmundry to Peddápuram, Jaggammapet, &c.	..	384,406	26,372	..
	Vice versa	..	247,437	30,775	..
		23,186 15	631,843	57,147	574
Ellore	Ellore to Bezváda	..	344,184	..	..
	Vice versa	..	141,379	..	..
	From Ellore to Rajahmundry ..	..	26	..	..
	Vice versa	..	628	..	..
		17,842 10	486,217	277,206	Passengers.
		5)178,669 17		55,441	Average monthly.
		35,733 19			

It will be seen from this statement that the average monthly goods traffic registered exceeded 35,000 tons, and the average monthly number of passengers who passed through the registering stations exceeded 55,000. These figures, added to those already given of the canal traffic, are, I think, enough to justify the conclusion that a railway from Bezváda traversing this district would be successful as a commercial undertaking.

6. With regard to the prospects of the railway north of this district, I am not in a position to speak with confidence, and I have no statistics showing the road-borne traffic, which the railway might be expected to carry. I can only say from my past experience of Vizagapatam that the traffic on the Trunk Road from Tuni to Anakápalle and Vizianagrum, almost the whole of which would certainly be carried by the railway, has always struck me as being very great. I may further say that I have the opinion of the Cocanada Chamber of Commerce that the line which the railway should take in North Vizagapatam is not the line along the coast to Chicacole, but the line intended to Sálúr, Párvatipur and Pálkonda. This, however, is perhaps *ultra crepidam* as the places mentioned are not in or near my district.

7. The arguments in favor of the railway as a famine protective work may, I think, be briefly summed up as follows:—

(*a*) Without a railway from Bezváda to Cocanada, the Bellary-Kistna State Railway (dependent as it would then be for supplies of grain from the Godávari Delta on a single line of canal navigation liable to frequent interruption) would be of little use.

(*b*) With a railway from Bezváda to Orissa famine in the north would be practically impossible.

ENCLOSURE No. 1.

From M.R.Ry. B. VENKATARATNAM, Chairman, Native Chamber of Commerce, Cocanada, to the Deputy Collector in charge of Treasury, Godávari District, dated Cocanada, 5th September 1889, No. 61.

With reference to your letter, No. 1152, dated 31st July 1889, I have the honor to inform you that the members of this Chamber are unanimously of opinion that the proposed railway between Bezváda and Cuttack, if opened, will be successful both as a famine protective measure and as a commercial project.

2. (*a*) A considerable portion of the population in the Kistna, Godávari, Vizagapatam and Ganjam districts and the country of Orissa belong to the labourers' class. When there is a famine, or a slight increase in the prices of food-grains, these people, on account of their poverty, stand in need of relief; to subside the troubles arising on such occasions, the Government generally open relief works, and the proposed railway will be an additional boon to those laboring classes, especially at those times, by their being engaged in the railway works also.

(*b*) The Kistna and the Godávari districts, which have huge irrigation works, are not subject to famine to the same extent as the Vizagapatam and the Ganjam districts, where there are no such works. During the famine, these latter districts are supplied with food-grains and other necessaries from the neighbouring districts. The Chamber trusts that this can be done at a cheaper cost and with better results by rail than by steamer. The recent famine in the Ganjam district proves the necessity for connecting that district by rail with other rice-producing districts.

3. (*a*) The inland traffic of the Northern Circars is now carried on by canals and the country carts, and the chief ports with which the marine trade is carried on are Gopálpur, Bimlipatam, Vizagapatam, Cocanada and Masulipatam. The present complaint that the goods reach the sea-ports with great delay from the inland places and *vice versá* will, when the train runs, cease to exist, as they will be carried with a greater speed by it. The statistical information, called for by the Government of India on this subject, will be of greater value in determining the importance of the proposed line in its commercial aspect than any opinion which this Chamber can venture. The members of the Chamber, however, beg to submit that they believe that a major portion of the inland traffic will be transferred to the proposed rail and that traders and cultivators will be greatly benefited thereby.

(*b*) The railway, being a thing of speedy conveyance, will be very useful generally to all passengers and especially convenient to the Hindoos, who take a trip with their families without being subject to the risks of the sea voyage to which they are not accustomed.

(*c*) Further, the passengers who go on pilgrimage to the following places will travel in this train, and this will also be the shortest route for all the pilgrims going right to Benares from Rámesvaram.

Places of pilgrimage.

(1) Kottapalle (Godávari District);
(2) Oopurapa (Vizagapatam District);
(3) Simhachelam (do.);
(4) Srikoormam, &c. (Ganjam District);
(5) Sri Jagannath (Orissa); and to
(6) The Godávari and
(7) The Kistna rivers } bathing in which is considered sacred.

4. In conclusion, thanking you for the opportunity afforded to the Chamber in representing its views on this useful subject, I beg to state the names of the chief towns through which the proposed railway from Bezváda to Cuttack should positively run, viz.:—Ellore, Rajahmundry, Peddápuram, Cocanada, Tuni, Anákapalle, Vizagapatam, Bimlipatam, Vizianagrum, Chicacole, Berhampore and Sri Jagannath, &c.

ENCLOSURE No. 2.

From A. MACNAB, Esq., Chairman, Cocanada Chamber of Commerce, to the Deputy Collector in charge of Treasury, Godávari District, dated Cocanada, 18th September 1889, No. 3634.

I have the honor to acknowledge receipt of your letters, Nos. 1152 and 1444 of 1st ultimo and 13th instant, respectively, asking for the opinion of this Chamber as to the prospects of the proposed railway from Bezváda to Cuttack

(1) as a commercial project, and
(2) as a famine protective work.

Reply to the first of these letters has been deferred with a view to submitting statistics of the existing and probable goods traffic along the Northern High roads of Vizagapatam; these statistics are not as yet available, and when they are received, the Chamber will probably address Government direct if occasion should justify their doing so.

In the meantime I am to say that the contemplated railway is a project which has long engaged the close attention of this Chamber, and I am directed to express the views of the Committee in regard to it as follows:—

The whole line naturally divides itself into three sections, viz.:—

I. Bezváda to Cocanada.
II. Cocanada to the northern boundary of the Vizagapatam district.
III. Northern Vizagapatam (through Ganjam) to Cuttack.

In regard to the first of these, the Chamber entertain a very confident opinion that this portion of the line would prove a marked commercial success from the outset. The existing goods and passenger traffic along the canals, of which statistics more or less reliable are already in the hands of Government, would of itself, it is believed, suffice to give a moderate return on the cost of the railway, and beyond the inferences which these statistics warrant, conditions are present which render the traffic susceptible in an altogether peculiar degree of rapid development with improved communications.

For the trade has hitherto been seriously handicapped by the total closing of the canals every year for a period of at least three months, and the wholesale adulteration of produce which occurs during transit in open canal boats has, especially of recent years, operated to restrict exports very largely; it is in fact probably not too much to say that it is that adulteration which has primarily proved fatal to the castor-seed trade from Cocanada to Calcutta, once the largest item in the export trade of the port, and inquiries which the Chamber have recently been making as to the stoppage in supplies of castor seed from the eastern taluks of the Nizam's dominions have brought to light the fact that fear of that adulteration is acting as a serious deterrent to the movements of produce. Railway transit would at once relieve the trade from these disabling interruptions and adulteration. This alone would assure a rapid increase in the traffic, and the connection by rail of the two lines converging at Bezváda with a first-class sea-port, which in point of combined cheapness, safety and rapidity of work is probably unsurpassed in India, should develop a thorough traffic, besides materially improving the paying power of the two Government lines already constructed to Bezváda. A considerable coaching traffic might also be relied upon.

As a famine protective work, this section of the line, at any rate as far as the right bank of the Godávari, is, the Chamber would very strongly urge upon Government, absolutely imperative to connect the Bellary-Kistna famine line with the Godávari delta. Without such railway connection, famine traffic would be wholly dependent on a single canal, which even in ordinary years is found inadequate as a high road. The primary function of that canal is irrigation, rather than navigation, and in times of famine irrigation would make its largest demands on the water-supply which would at such times also be peculiarly needed for navigation. Congestion of traffic would inevitably result, and it is the opinion of this Chamber that so long as the Bellary-Kistna Railway is dependent on the Ellore canal for connection with the Godávari delta, that line will be liable to fail in possibly two-thirds of its utility as a famine protective work. In its relation to famine, the extension to Cocanada is needed to provide a cheap outlet for surplus product in ordinary years, without which the productive power of the district might possibly not be maintained at the high standard required of it in times of famine.

As regards section II, the opinion of the Chamber is that as a commercial project, the character of this section of the line will depend very largely upon the alignment selected across Northern Vizagapatam. If the line were to follow the Trunk Road through Chittevalsa and Chicacole, it would cross the routes of, but would not appreciably serve or benefit by the trade now using the ports of Vizagapatam, Bimlipatam and Calingapatam. If, on the other hand the line were carried through, or sufficiently near to, Vizianagrum, Sálúr, Párvatipur (with a short feeder line to Rayaghada) and thence through Pálkonda and Parlákimedi into Ganjam proper, it would traverse the heart of four of the most populous and productive taluks of the Vizagapatam district, and it would directly tap the three great trade routes into the Central Provinces (Sálúr Rayaghada and Gunapur). The Chamber have to urge very strongly that this alignment should be specially considered in the approaching survey. The deviation of the main line would be immaterial and would be fully compensated by a shorter length of feeder line to Rayaghada. It is the true trade route of the district, and on that alignment the railway would certainly have the carriage of the great bulk of the produce, both that exchanged internally and that now exported from Bimlipatam and Vizagapatam, while it would have the distribution of the imports. Moreover, the Chamber considered it probable that the cheaper ocean freights which concentration at the one port of Cocanada would enable the trade to command would (assuming liberal treatment by the railway) quickly attract to Cocanada the whole foreign trade of the Vizagapatam district. The route indicated would also give a direct lead between the great salt factories of the Vizagapatam and Ganjam districts, and the trade routes into the Central Provinces. If, therefore, the alignment here advocated be adopted, the Chamber consider that section II, representing some 200 miles of the whole through line, would be a success commercially, though not in the same degree as section II.

As regards section III, the districts affected (Ganjam and Orissa) are more removed from the general interests of the Chamber, and the Committee do not feel warranted in speaking with the same confidence in regard to it. Looking, however, to the population and admitted fertility of the Ganjam district, it would seem that only an outlet (at present wanting) is required to induce a marked expansion in the produce traffic of the district, and the Chamber see no reason why this section also should not in time be remunerative as a commercial project.

As a famine protective work, however, the value of the proposed railway cannot be overestimated. In the opinion of the Chamber, such railway communication, especially if, and when, connection with the Bengal system is established would make actual famine in Ganjam and Orissa practically impossible, as the Godávari and Kistna deltas could always meet the deficiencies in the food-supply, especially if Bengal were placed in position to contribute in part. Distress from high prices would no doubt be liable to occur at intervals, as elsewhere, but that would in time be largely forestalled by the amelioration in the condition of the people, which would be effected by the opening up of markets for their surplus product in ordinary years. Experience during the present and previous scarcities shows that food-grains from the Godávari cannot be laid down in Ganjam except at a figure considerably beyond what railway carriage would cost; and even the Vizagapatam district, notwithstanding much cheaper freights, only turned to the sea route when the land route became impracticable. The natural medium of supply between the districts is in fact the bullock-bandy of the country until movements of the latter are stopped by failure of fodder. Apart altogether therefore from the risk of disaster from the closing of the ports by surf, the railway would in times of scarcity perform an office in Ganjam which is not, and cannot be performed by vessels and steamers, and that at a saving in transport equivalent probably to the difference between distress and outright famine. Only a railway can replace the bullock-bandy and save the surrounding districts in time of scarcity from the certainty of outbreaks of cholera, resulting from the overcrowding and pollution of cart stations and tanks along all the lines of communication.

Of the probable through traffic between Bengal and Southern India, the Chamber do not consider it within their province to speak, the Government having probably other and more reliable sources of information.

Read—the following letter from A. T. ARUNDEL, Esq., Collector of the Kistna District, to the Secretary to the Commissioner of Revenue Settlement and Director of the Department of Land Records and Agriculture, dated Masulipatam, 25th September 1889, Extra No. 241 :—

I have the honor to submit the report on the proposed East Coast Railway called for in Board's Proceedings, No. 2613, dated 6th July.

2. The Government of India desire information "on the financial aspects of the undertaking, (1) as a famine protective undertaking, and (2) as a commercial project."

3. *I. As a Famine protective work.*—With this view the area permanently protected against famine by irrigation, viz., the deltas of the Kistna and Godávari rivers, must be effectively tapped, and their food-stuffs made available for quick and easy transport to famine-exposed areas, by which we may understand the whole of the Deccan and of Southern India not protected by permanent irrigation.

4. The tapping of the deltas must be by road, by canal or rail The two deltas are divided by the Colair lake and its affluent, but are connected by two lines of canal. The roads in the Kistna delta are few and very costly to maintain. The soil is ordinarily black silt which becomes impassable for wheeled traffic after rain. The cost of road metal is so great that the number of metalled roads can never be numerous, for the permanent charge of maintenance encroaches on the sum available for construction as each mile of new road is completed. Both deltas are partially served by navigable canals, but these have to be closed in Godávari for six weeks and in Kistna for three months for the removal of silt and for repairs. These are the months when the grain has just been harvested and when in case of famine elsewhere there is the strongest demand and the greatest need of facility for traffic. It is therefore necessary, more especially in the Kistna District where the canals are closed for so long a time, that the canal communications should be supplemented by rail.

5. There are three necessary extensions—

(1) To the river Godávari *viâ* Ellore and on to Cocanada, &c.
(2) To Masulipatam.
(3) A bridge across the Kistna with an extension to Nellore, &c.

6. (1) *Extension to the river Godávari, &c.*—Running north-east from Bezváda the new line of railway would skirt the northern edge of the Kistna delta, and after crossing two very troublesome streams, the Budameru and the Tamileru, both of which have an evil reputation with Engineers, would reach Ellore, and be finally arrested by the Godávari river opposite Rajahmundry.

7. It is proposed to communicate with the north of Godávari by means of a steam ferry. This is, of course, essential, but as the river is about four miles wide it is clear that the transport of food stuff from one side to the other must be restricted by the capabilities of the ferry. From data supplied to me, I gathered that a steam ferry at Bezváda across the Kistna river would convey only 40 railway trucks a day, and the Kistna is only three-quarters of a mile wide. Experts will be able to state what number of trucks could be conveyed by a steam ferry across the Godávari. Judging from admittedly imperfect information, I should consider that even with a steam ferry across the Godávari, the supply of food-stuff to be poured northward by rail into Vizagapatam, Ganjam or Orissa would be mainly that grown or stored on the east of the river.

8. Similarly in case of a famine in Hyderabad, the food-supply would be mainly drawn from the Western Godávari delta and from the Eastern Kistna, unless the Kistna were bridged.

9. (2) *Extension to Masulipatam.*—Of almost equal importance as a famine protective work is the extension to Masulipatam, which would open out a rich region of the eastern delta which is not served by navigable canals. This line goes a distance of 50 miles *viâ* Gudiváda and a series of populous villages through an irrigated and richly-productive country growing rice on almost every acre to Masulipatam,

a town of 35,000 inhabitants, the head-quarters of the Kistna district, where large quantities of grain are stored for export. The irrigated area of the eastern delta which would mainly be tapped by this line is 220,481 acres and is yearly increasing.

10. (3) *Bridge over Kistna and southward extension.*—Finally for the Deccan and Mysore, reached by the Bellary-Kistna State Railway, a bridge over the river Kistna is an absolute essential to secure the famine protection which that railway has been built to afford. Lacking a bridge, the railway would be able to draw off supplies only from the western delta of the Kistna supplemented with the aid of a steam ferry by only some 40 trucks of food-stuff daily drawn from the great reservoir of the Eastern Kistna and Western Godávari deltas. For three months in the year, the ferry could not be worked unless the course were kept open by dredging at great expense. In very high floods it would probably be unsafe. Ordinary goods traffic by boat across the river ceases for three months and is slow and difficult during even the normal freshes of the south-west monsoon.

11. The bridge over the Kistna is an admitted necessity to complete the Bellary-Kistna Railway as a protective work. Its construction has been accepted by the Secretary of State as part of the scheme. Paragraph 4, Secretary of State's despatch, No. 120, dated 4th October 1883, quoted in G.O., dated 13th June 1887, No. 425 R., runs—

"2. * * * * * *

It is proposed to place the eastern terminus on the right bank of the Kistna opposite to Bezváda, in order to bring it eventually by means of a light bridge into communication with the proposed southern extension of the Nizam's State Railway, thereby obtaining access to the Singareni coal fields.

"3. * * * * * *

"4. I sanction the construction of this railway as a protective work, as proposed by your Excellency's Government."

12. The extension of the East Coast Railway southward through Nellore would give larger food-supplies to that district, to North Arcot, and to Cuddapah, or would pour the food-supplies of the western delta on to the Bellary-Kistna railway, as might be necessary. As to the course it should take, I will merely remark that it should follow the line of the Bellary-Kistna Railway as far as Guntúr (19 miles, population 19,646), then bend south to Cheybrole (9 miles, population 3,088) on the Commamur canal, pass on through the rich delta to the towns of Ponnur (8 miles, population 2,367) and Bápatla (12 miles, population 6,086), and thence through the prosperous towns of Perala (10 miles, population 4,421) and Vetapálem (6 miles, population about 3,000), and emerge on to the uplands of Nellore after tapping the salt factory at China Ganjam, 8 miles further south. The southerly extension from Bezváda to the confines of Nellore would be about 60 miles. The irrigated area of the western delta is acres 168,218, and it is yearly increasing.

13. *II. As a Commercial project.*—Viewing the East Coast Railway as a commercial project and confining myself mainly to the Kistna district, I find the prospects favorable to all the local extensions I have already discussed. The three extensions will now be taken in reverse order:—(1) The bridge over the Kistna with the southern extension towards Nellore; (2) the extension to Masulipatam; (3) the extension to the Godávari.

14. *The Bridge over the Kistna*, essential as a famine protective work, adds greatly to the commercial value of the undertaking, although, from the latter point of view alone, the expenditure it will involve, of between 30 and 40 lakhs of rupees, could not be advocated. If, however, the bridge is built, as it must be, for famine protective purposes, with broad as well as narrow gauge rails, its commercial advantages will be found to be very considerable. It will at once enable the Bellary-Kistna Railway to supply itself with Singareni coal with only one break of bulk from broad gauge to narrow gauge waggon, or into the terminus coal shed, instead of a double break of bulk and a boat carriage across the river Kistna as well. The cotton grown in the country tapped by the Bellary-Kistna Railway or pressed in Guntúr will pass at once to the sea-port of Masulipatam direct, or to Cocanada with a break at the river

Godávari. The natural interchange of dry grains for rice would equally be facilitated. Passenger traffic, now conducted by ferry, would all be taken by the railway with suitable local trains.

15. *The southward extension* of the line from Guntúr to the towns of Cheybrole, Ponnur and Bápatla (chief town of the taluk), *vide* paragraph 10 above, would tap the western delta already extensively communicating with Guntúr. An industrious community of weavers and of merchants trading largely in Indian and English cloth lies in the towns of Perala and Vetapalem beyond, while the salt factory of Chinna-Ganjam turning out 434,000 maunds yearly would for three months (while the canal was closed) employ railway transport alone. For the rest of the year the canal would compete with the railway for the transport of salt to Bezváda, and the railway would probably gain it for through traffic beyond Bezváda and for the local stations served by the railway in between. The Kistna anicut irrigation in this part of the district is recent and undeveloped, and every year will increase the amount of grain harvested and the prosperity of the people.

16. (2) Recrossing the river at Bezváda, I now come to the commercial aspect of *the extension of the line to Masulipatam.* The distance, as I have said, is 50 miles, while from Bezváda to Cocanada *viâ* Rajahmundry is about 120 miles and the line is broken by the river Godávari. Masulipatam is a town of 35,000 inhabitants, and is the head-quarters of the district with a considerable European community, and holds the Judge's court, Collector's cutcherry, and other public offices, causing a large flow of passengers on public and private business. It also possesses a flourishing educational institution in the Noble College, which is now being raised to the first grade. It is difficult to obtain accurate figures as to the number of passengers between Bezváda and Masulipatam, but I have ascertained that in the nine months ending February 1887 it exceeded 38,000.

17. The trade of Masulipatam has steadily increased for many years past. The following figures show the progress made from 1870:—

—	1870-71.	1875-76.	1880-81.	1885-86.	1887-88.
Tonnage	47,000	137,000	180,900	222,900	342,000
	Rs.	Rs.	Rs.	Rs.	Rs.
Imports	13,49,978	29,67,129	22,96,706	27,36,369	29,48,082
Exports	4,76,060	11,68,229	10,91,641	8,12,052	15,17,101
Total ..	18,26,038	41,35,358	33,88,347	35,48,421	44,65,183

18. Masulipatam is not a good port as far as natural facilities are concerned, because ships have to lie at anchor about seven miles out and there is a bar to cross. In this respect it shares the disadvantages of other ports on the East Coast such as Tuticorin and Cocanada, while it does not possess the artificial aids possessed by Cocanada in a steam dredge for deepening the bar and a steam launch for passenger traffic and for easy communication with shipping. As Government have laid stress on the superiority of Cocanada as a port, I think it right to point out that Cocanada is reported to be steadily shoaling up, and that the anchorage for shipping is shifting continually to the north and east. The shoaling was prominently noticed long ago by the author of the Godávari District Manual, and although the matter is only indirectly connected with the East Coast Railway scheme, I would note that the process might be arrested by closing the present Coringa mouth of the river Godávari and cutting a direct outlet for it across the spit to the east. The reasons for this course need not here be given. In any case the port of Masulipatam does not suffer from this drawback. The southerly current so scours the bay for many months in the year that the anchorage is kept free from the enormous silt deposits brought down by the river Kistna. The Port Officer has, at my request, made investigations which show that the anchorage has been unchanged for the past thirty years, and the fact that the cargo boats of 1858 carried only 12 tons, while those now in use carry 16 and 25 tons shows that the bar is in no danger of silting up.

20. Five miles from Masulipatam up the coast is the salt factory of Manganapudi which now turns out 320,000 maunds yearly and is, together with the adjacent smaller factory of Pandraka, capable of indefinite extension. The salt traffic is of much importance, as it will not only yield returns to the railway, but forms one of the chief sources of the Imperial revenue. The salt from this factory is mainly sent inland towards Hyderabad.

21. The cost of carriage of goods by rail from Bezváda to Masulipatam will be less than half that from Bezváda to Cocanada, while there is less risk of delay, for the distance is less than half and there is always the four miles of the Godávari river to be crossed at Rajahmundry. For heavy goods, such as coal, this river-crossing, even when assisted by an efficient steam ferry, must be a drawback, while the greater distance to Cocanada is also in favor of the short and direct line to Masulipatam. In making these comparisons, I am far from any wish to favor one port to the detriment of the other. With the two great deltas of two of the chief rivers of Southern India permanently irrigating between them a million of acres yearly, increasing in population and prosperity, and brought by rail into close communication with the uplands of the Deccan, there is ample room for both ports to flourish and expand, and such a scheme as that of the East Cost Railway cannot be regarded as complete, if it does not give railway communication to both.

22. In passing from Bezváda over the 50 miles of rice-country to Masulipatam, the railway will pass a series of rapidly growing and prosperous towns and villages, so that stations would be needed at short intervals all along the route. These places beginning from Bezváda are as follows :—

	Population.	Miles.
Nidamanur		
Tenneru	1,150	7
Uppuluru }		
Mantina }	1,180 } not given }	6
Ventrapragada		
Pamalapad }	2,582 }	
Kalavapamula }	not given }	6
Gudiváda		
Anjulur	4,040	5
Vinnakota	1,700 }	
Kowtaram	1,800 }	6
Vadlamanad	2,400	5
Pedana	1,100	5
Masulipatam	4,400	4
	35,000	5
		49

23. Of the foregoing places, only one, Kowtaram, is on a navigable canal. The population given is that of the census of 1881 and has greatly increased since then. The Kistna anicut irrigation is gradually being extended to tracts far beyond the line here indicated so that an indefinite increase of rice cultivation besides the improvement of an imperfect agriculture awaits this fertile plain.

24. Mr. Furnivall, the late Agent and Chief Engineer of the Nizam's State Railway, in a note on this proposed line of railway to Masulipatam (copy of which can be supplied if desired) was "strongly of opinion that the line will pay well. The line would be very level and would consequently be worked very cheaply." His rough estimate of the total cost including stations, plant, rolling-stock and establishment was Rs. 64,000 per mile of broad gauge or 32 lakhs for the 50 miles.

25. It should be noted that heavy goods traffic between Bezváda and Masulipatam would probably keep to the canal joining those two places, but all through traffic to and from places beyond Bezváda would be taken by the railway to avoid break of bulk. With this view Mr. Furnivall concurs. The local traffic between the stations indicated above would all be taken by the railway as the navigable canal from Bezváda to Masulipatam takes a different line. I have already stated (para. 16) that Bezváda and Masulipatam alone would provide more than 38,000 passengers, and the intermediate local traffic must be added.

26. *Political considerations.*—There are two political considerations in favor of the extension to Masulipatam—one immediate, the other uncertain—which should not be overlooked in discussing the scheme.

27. The first is that as owing to the conditions of our rule in India it will always be necessary to maintain a large body of troops at Secunderabad, it is of great importance to put Secunderabad in communication by the shortest route with the East Coast as it already is with the west. For transport of troops to or from Burma or elsewhere by sea, Masulipatam is the nearest port. For rapid movement of troops the line to Cocanada must be greatly inferior owing to the barrier of the river Godávari even when crossing is facilitated by a steam ferry. Masulipatam, 70 miles from Bezváda, would be reached by a special train of thirty carriages in three hours. Cocanada about 120 miles from Bezváda with the Godávari between would not be reached probably in less than twenty-four hours, if so soon.

28. The second political consideration arises from the proximity of the Singareni coal fields. With the railway extension as proposed, Masulipatam would be the only port on the East Coast (outside the Hooghly) in direct and easy communication with an abundant coal field. In case of war, with the movements of the troopships and cruisers entirely dependent on the supply of coal, it is difficult to over-estimate the advantage that would accrue from access to an unfailing supply either for coaling direct or for supplying steam colliers for conveyance of supplies elsewhere in the eastern seas. In this case, as in the rapid movement of troops, the river Godávari presents a barrier that must cause easy preference to be given to the short direct line to Masulipatam.

29. (3) *The extension to the Godávari.*—This line would be the same as to Masulipatam as far as the east bank of Ryve's canal beyond Nidamanur (para. 19) and would then cross the Ellore canal near Kesarapally (population 931, miles 4). Thence it would pass to Atkur (population 858, miles 6) and Telaprole (population 1,984) and on to Veeravally (population 1,706, miles 4) and Perikid (miles 1). Here the Godávari district begins with the large town of Ellore about 12 miles distant.

30. It will thus be seen that the lines to the Godávari and to Masulipatam would run together for 7 or 8 miles and *pro tanto* diminish the cost of construction and working.

31. I regret that I am not in possession of more extensive statistical information to comply with the desire of the Government of India. It may be of interest to note that during 1888, land to the extent of 2,370 acres was acquired in the Kistna district for public purposes, chiefly extension of irrigation channels and enlargements of the building sites of towns and villages in the delta. The great demand for increased room in the delta to build houses and extend villages is a remarkable and distinctive feature in the administration of the Kistna district, indicative of a rapid growth in population and wealth.

32. An 8-inch map of the district is enclosed to facilitate reference.

RESOLUTION—dated 14th December 1889, No. 564.

The reports read above have already been submitted for the information of Government with reference to G.O., dated 3rd July 1889, No. 4110, Revenue Department.

2. They deal with the financial aspect of the projected East Coast Railway (1) as a famine protection requirement, and (2) as a commercial project, and the remarks below will deal with the subject in the same order.

3. *Financial aspect as a famine protection requirement.*—As a famine protection work, the object of the line is to bring the rich deltas of the Godávari and the Kistna and the ports of Cocanada, Masulipatam and others along the proposed line of the rail into connection with the town of Bezváda on the one side and with Ganjam and the province of Orissa on the other. Bezváda on the Kistna with which it is proposed that the deltas should be connected by rail is the terminus of the Bellary-Kistna Railway. This railway is a metre-gauge line of 279 miles in length now approaching

completion, constructed with the view of connecting these rich deltas with the Ceded Districts and Kurnool, a large tract situated in the centre of the Presidency, comprising an area of about 27,000 square miles with a population of over three millions. These districts have already, in the present century, been six times devastated by famine in the years 1803, 1821, 1833, 1854, 1866 and 1876, and in the last of these famines they suffered a loss of population amounting to 800,000 and a loss of cattle estimated at 730,000 in number, valued at the least at 73 lakhs of rupees. Expenditure on the relief of famine was incurred at the time of not less than 268 lakhs, and the decrease in land revenue receipts since the famine due to decreased cultivation directly consequent on the large mortality amounted at the end of the past year to over 100 lakhs.

4. The only mode of communication between this railway and the delta, and the only access to its most natural port is that afforded by a series of canals built primarily for irrigation purposes, and the inefficiency of these canals for the two antagonistic purposes of navigation and irrigation which they are required to subserve is making itself felt more and more every year. This antagonism is already very acute. The navigation interest which has for its mouthpiece the powerful commercial community of Cocanada can, as the Chief Engineer for Irrigation observes, best make its voice heard in high quarters, but district officers know that the other interest, that, namely, of the cultivator, has much to say from an entirely different point of view, and it is a fact, he writes, that much tempting and perfectly possible irrigation from near the end of the canal has to be foregone because it would still further add to the already great difficulty at times of keeping the canal open. But the canals as highways of communication are open to the further very serious drawback that *all* must be closed for a period of about six weeks in the year for repairs, while that portion of the main canal between Bezváda and Ellore, fed from the Kistna, is unnavigable from the end of February or beginning of March till the middle of June owing to the failure of water in the Kistna. The case is really worse than this, for Mr. Happell, who was for some time Collector of the Kistna, states that Local Fund contractors refused to undertake to carry heavy material along the canals after the middle of January because heavily laden boats were liable to be brought to a standstill by accumulations of silt in certain parts of the canals.

5. In addition to the certain and unavoidable interruptions to traffic caused by the annual closure of the canals for repairs, or by the water of the river Kistna being too low to keep its canals full, there is the very serious liability to accidents to which the canals are exposed.

6. The failure of the eastern delta head lock at Dowlaishweram in 1886 led to a tremendous drop in exports from Cocanada, the fall being from an average of over 135 lakhs to less than 94 lakhs. The fall was perhaps attributable to some extent to the failure of crops over a large area consequent on the damage to crops caused by the heavy rains and floods of the year, but the Chairman of the Chamber of Commerce, Cocanada, is no doubt justified to a considerable extent in attributing the fall to the stoppage of navigation caused by the breach and the consequent inability of the crops to reach the market. In 1887, also, there occurred a breach in the Ellore canal by which traffic was stopped for three weeks, and the western delta head sluice was also found to have silted up, thus necessitating a closure of the canal to clear it out.

"Both these stoppages of traffic," the Collector observes,* "were unforeseen and could not be provided for when merchants' contracts were made and many persons doubtless suffered heavy loss from this cause."

7. The utmost that can be hoped for from the canals as highways of traffic is thus stated by the Chief Engineer for Irrigation †:—

"With systematic dredging of the main canals on the Bezváda side, I believe that, with comparatively a small extra outlay, these canals—Bezváda to Masulipatam and Bezváda to Ellore—could be kept open in good and most ordinary years ten months to the great advantage of trade, but more than this cannot be hoped for."

The Chief Engineer does not definitely state that this result in improved navigation can only be ensured at some cost to irrigation, but the Board believes that such is the case.

8. There are no good roads in the deltas to supply the places of the canals, and it is quite out of the power of the District Boards with the limited funds at their disposal to construct and maintain them. The roads, the Collector of Kistna states, are very costly to maintain. The soil is ordinarily black soil which becomes impassable for wheeled traffic after rain. The cost of road metal is so great that the number of metalled roads can never be numerous, for the permanent charge of maintenance encroaches on the sum available for construction as each new mile of new road is completed, and Mr. Walch, Chief Engineer for Irrigation, who is thoroughly acquainted with the locality, observes:—

"From my general knowledge of the state of the country I believe it would cost at least ten lakhs of rupees to make a first-class road between Bezváda and the Godávari river, and for the objects with which we are dealing none but a first-class road need be considered. But even were such a road constructed, would the objects aimed at be obtained? They would not. While the canals were open, about nine months in the year, not a ton of coal, not a bag of grain or oil-seed, not a bale of cotton or piece-goods, would be carted from Bezváda to the Godávari, or from the Godávari to Bezváda, and the canals between the two points would not be relieved of the traffic which is even now too great for them, and which when augmented by the stimulus that the railway to Bezváda will create, and by the Singareni coal transport to its sea-board outlet, Cocanada, will gorge the canals and will seriously interfere with the irrigation dependent on them. And even when the canals were shut, but little of the merchandise that wished to pass between Bezváda and its sea-port, Cocanada, would be able to meet the cost of cartage; it would merely accumulate at the depôts to be poured on to the canals in an overwhelming stream when they re-opened."

9. It is in view of the entire absence of good roads, of the extremely unsatisfactory character of the canals as highways of traffic, of the extent to which such defective feeders must handicap the development of traffic on the existing protective railways, and above all of the serious obstruction which must occur in times of famine, that the construction of a railway through the deltas is urged. What is stated above must, it is believed, establish the expediency of connecting Bezváda, and, through Bezváda, the famine zone of Madras with the rich deltas whose produce it is the chief object of the Bellary-Kistna Railway to obtain, while it is of little less importance that the portion of the famine zone through which that railway passes should be placed in easy communication with a sea-port and market where the surplus of ordinary years can be disposed of and the proceeds reserved for seasons of distress. Whatever the financial prospects of the line from Bezváda to Cocanada may be, and the Board can hardly doubt the financial success of a line passing through these rich deltas to an excellent sea-port, it can hardly be questioned that its construction will very largely improve the financial prospects of the whole of the Bellary-Kistna Railway. To that line, indeed, the construction of the continuation through the delta to Cocanada is a necessity both financially and as the only means of perfecting it as a famine protective work.

10. *Location and commercial prospects of the line to Cocanada.*—The following is a short description of the proposed alignment of the portion of the East Coast Railway between Bezváda and Cocanada. From the Bezváda terminus of the Bellary-Kistna Railway south of the Kistna river, the line, crossing the river Kistna by a bridge, will follow the course of the Ellore canal which conducts water from the Bezváda anicut on the Kistna river as far as Ellore 40 miles, where the canal is met by another bringing the waters of the Godávari, and along or in the neighbourhood of this second canal the line will be taken for 46 miles until the Godávari river is reached. The Godávari, 4 miles wide, will be crossed by a steam ferry to Dowlaishweram on the left bank, whence the line will be taken *viâ* Rajahmundry to Sámalkót, a branch running from the latter place to Cocanada. The country thus enclosed between the railway and the sea comprises the eastern delta of the Kistna and the whole delta of the Godávari with a cultivated area of some 834,000 acres of unsurpassed fertility

* Para. 3 of Mr. Happell's endorsement, page 17 of G.O., dated 6th July 1889, No. 754-R, Public Works.

† Para. 5 of Chief Engineer's note, page 20 of G.O., dated 6th July 1889, No. 754-R, Public Works.

under unfailing sources of irrigation. The line would compete with the existing canals for the carriage to Cocanada of the whole surplus produce of the delta and would inevitably have the carriage to that place of the whole of the cotton now pressed at Guntúr and of the whole surplus produce of the districts of Kistna and Godávari outside the deltas. It would also carry to the port of Cocanada the surplus produce of the Kurnool district and of the northern portion of the Nellore district including the Venkatagiri zemindari, as well as of a considerable portion of the Nizam's territory. The Singareni coal field, situated in the Nizam's territory within easy reach of Bezváda, would find at Cocanada an outlet for its invaluable produce, and the quantity of coal to be carried by the railway may be expected at an early date to assume large dimensions. In times of distress in the Ceded Districts it would carry to the junction at Bezváda the whole of the surplus produce of the deltas, and would find at its port of Cocanada a depôt from which to carry the surplus produce of the Bengal and Burma rice fields.

11. The area of the Kistna and Godávari districts is 16,254 square miles and the total population is 3,343,849 or 206 to the square mile as shown in the margin, and the area of land in occupation in 1888-89 was 2,714,000 acres. It was estimated on data accepted by the Famine Commission that, taking the average area under cultivation during the four years ending 1875-76, the quantity of food-grains available for export after providing for local consumption was 696,000 tons as shown below :—

Districts.	Area. SQ. MLS.	Population.
Godávari	7,857	1,795,369
Kistna	8,397	1,548,480
Total ...	16,254	3,343,849

Districts.	Total cropped area including zemindaries.	Total cropped area under food-crops including zemindaries.	Outturn of area shown in column 3.	Probable quantity remaining after meeting local consumption.
1	2	3	4	5
	ACS.	ACS.	TONS.	TONS.
Kistna	2,653,000	2,077,000	756,000	432,000
Godávari	1,510,000	1,189,000	601,000	264,000
Total ..	4,163,000	3,266,000	1,357,000	696,000

The Board is inclined to think that this estimate of the surplus produce was excessive. Another estimate framed on data furnished by Mr. Wilson, who had great experience in the valuation of the outturn of lands while in the Settlement Department, gives the surplus of the two districts, taking the cultivation of the last three years and the population at 5 per cent. over that of the last census, as 332,000 tons in Kistna and 176,000 tons in Godávari. The Board considers this a more probable estimate, judging from what is known of the imports and exports of the district. It still perhaps rather overestimates the surplus produce, owing probably to the allowance made by the Board for seed-grain, wastage, &c., being insufficient; but there is no doubt that the surplus in these two districts is very considerable.

12. The only trade statistics that are available for the two districts are (1) the statistics of imports and exports by sea; (2) statistics of the traffic on the canals running along the line to be followed by the railway; and (3) statistics of traffic on the roads along the same line.

13. *Imports and Exports by Sea.*—The value of the imports and exports by sea in the two districts for the fourteen years ending 1888-89 inclusive is shown in Appendix A and a statement showing the chief articles of import and export from the principal ports during the past two years is given in Appendix B. Excluding Government stores and treasure, the value of the export trade from the Kistna district during the past ten years has ranged between 18¾ lakhs in 1882-83 and 32½ lakhs in 1885-86 and has averaged 27¼ lakhs; the import trade during the same period has ranged in value between 8¾ lakhs in 1885-86 and 15¼ lakhs in 1887-88 and has averaged

11¼ lakhs. The exports and imports of Government stores and treasure averaged in value 15¾ lakhs and 4¼ lakhs, respectively. In the Godávari district the value of the export trade in private merchandise during the same period has ranged between 91¾ lakhs in 1879-80 and 147 lakhs in 1884-85, the average being 121¾ lakhs and that of the import trade between 21⅛ lakhs in 1879-80 and 30 lakhs in 1887-88, the average value being 24 lakhs. The exports and imports of Government stores and treasure averaged 15¾ lakhs and 16⅛ lakhs, respectively.

14. The chief articles of export from the two districts and the average weight exported during the past two years were as follows :—

	From the Kista district. TONS.	From the Godávari district. TONS.
Grain and pulse	15,352	24,948
Seeds, chiefly castor and gingelly oil seeds ...	13,150	32,829
Sugar	...	22,190
Tobacco	...	3,217
Oils	...	4,471
Dyeing and colouring materials	2,419	2,617
Cotton	...	2,927

The chief articles of import and the average weight imported during the past two years were —

	In the Kistna district. TONS.
Gunny-bags	628
Liquors	539
Cotton twist and yarn and piece-goods	210
Grain and pulse	174

	In the Godávari district. TONS.
Gunny bags	1,143
Cotton twist and yarn and piece-goods	826
Oils	548

15. *Traffic on the Canals.*—A more immediate guide to the possible future traffic on the railway, however, is afforded by the statistics of existing traffic on the canals and roads along the line of the railroad. The traffic on the canals running from Bezváda to Ellore, the Godávari river, and thence to Cocanada, for the year 1888-89, is shown in the subjoined statement. The figures show a total ton mileage during the year of 11,378,068, the average tonnage per mile being 93,263 tons. In no cases were the canals open throughout the whole of the year :—

STATEMENT showing the traffic on the canals in the Kistna and Godávari districts between Bezváda and Cocanada for 1888-89.

Canals.	Stations.	Ton mileage.	Passengers.
Kistna delta, Eastern section, Ellore canal.	Bezváda to Ellore	5,438,662	58,818
Godávari delta, Western section, Ellore canal.	Ellore to Dowlaishweram (Rajahmundry).	3,880,800	67,267
Godávari delta, eastern section, Cocanada canal.	Dowlaishweram to Cocanada..	2,058,606	82,491
	Total ..	11,378,068	..

16. Mr. Turner has some interesting remarks in paragraph 22 of his note* regarding the capability of the proposed new line to compete with the canal traffic between Bezváda and Cocanada. He instances the case of the American railways which have entirely triumphed over the canals and quotes Mr. Jeans, the author of "Railway Problems," to show that though in 1883-84 the rail rates between Chicago and New York were 98 per cent. above those by lake and canal, yet the traffic was leaving the canals and clearing to the railways, the reason being that the railways

* G.O., dated 6th July 1889, No. 754 R., page 34.

give reasonable rates; are not liable to be affected by the weather; deliver the grain in good condition; and can always be absolutely depended upon.

17. There can be no doubt that if a railway were constructed the canals would year by year be more and more worked in the interests of irrigation as opposed to those of navigation, navigation being altogether a secondary object and in time the Board considers it certain that the great bulk of the traffic would be diverted to the railway.

18. *Road Traffic.*—The only statistics of road traffic in the Kistna and Godávari districts which have been compiled hitherto are those taken during the six months ending September last—*vide* appendix C. They have been doubled to show the traffic for twelve months. The figures most material to the present inquiry are those showing the traffic between Bezváda and Cocanada *via* Rajahmundry and Sámalkót; they were taken at seven points on the line and give the following results:—

Section.	Station.	Merchandise.	Passengers.
		I. MDS.	
I. Bezváda to Ellore, 40 miles	Bezváda	122,680	
	Ellore	179,602	38,204
			4,280
	Total ...	302,282	
	Average ...	151,141	42,484
			21,242
II. Ellore to Rajahmundry, 55 miles	Ellore	1,308	
	Kovvur	60,212	218
			19,014
	Total ...	61,520	
	Average ...	30,760	19,232
			9,616
III. Rajahmundry to Cocanada—			
(*a*) Rajahmundry to Rajanagaram, 10 miles.	Rajahmundry	1,470,794	
	Rajanagaram	1,270,976	111,126
			106,862
	Total ...	2,741,770	
	Average ...	1,370,885	217,988
			108,994
(*b*) Rajanagaram to Samalkót, 19 miles.	Rajanagaram	852,042	
	Samalkót	1,080,790	66,260
			50,202
	Total ...	1,932,832	
	Average ...	966,416	116,462
			58,231
(*c*) Samalkót to Cocanada, 8 miles.	Samalkót	2,706,402	
	Cocanada	593,714	264,668
			33,040
	Total ...	3,300,116	
	Average ...	1,650,058	257,708
			148,854

Reducing the figures to tons and multiplying the quantity by the length of the several sections, the following ton mileage is obtained:—

Section.					Ton mileage.
I	5,552	× 40	...	...	= 222,080
II	1,130	× 55	...	...	= 62,150
III	50,359	× 10	...	...	
	35,501	× 19			
	60,614	× 8			= 16,63,021
			Total ...		1,947,251
			Average tonnage per mile ...		14,752

Even assuming that only half this quantity correctly represents the probable tonnage per mile by road, it will be seen that the total tonnage per mile, taking both the canal and road traffic together, comes to 100,600 tons per mile as compared with 96,773 tons, the tonnage per mile carried by the South Indian Railway in 1888.

19. *Continuation of East Coast Railway from Cocanada to Cuttack.*—The continuation of the railway northwards from Cocanada will take off at Sámalkót nine miles from Cocanada. In the note on the reconnaissance of the line printed with the G.O., dated 6th July 1889, already referred to, it is proposed that the line after leaving Sámalkót shall proceed northwards keeping east of the existing road to the vicinity of Tuni, mile 147; from Tuni to Anakápalle thence *viâ* the Gazubaka hills to Vizagapatam; thence northwards through Vizianagrum to Berhampore and on through Chatrapur and Ganjam to the Chilka lake near Rambha; thence skirting the shore of the lake to the right bank of the Mahánadi river at Naraj, mile 495.

20. Mr. Turner gives the following interesting description of the route:—

"From Cocanada leaving the deltaic and canalized country it has hitherto traversed, the railway passes through the Pithápuram and Tuni divisions to the town of Tuni on the borders of the Vizagapatam district. The Pithápuram zemindari contains about 371 square miles with a population of 184,018. Pithápuram town has 11,593 inhabitants, six villages have a population exceeding 3,000 and eleven other villages contain over 2,000 inhabitants each. The mileage of rail throughout the Vizagapatam district is 136 and the branch line 50, making a total of 186 miles. At Tuni the line will cross the Tuni river, which is a waterway of 350 feet. A run of twelve miles brings us to Nakkepalle. Here there is a very celebrated shrine, resorted to by pilgrims, who were numbered in 1868 and found to aggregate 8,000. Thirteen miles further on Yellamanchili is reached, a considerable village and the head-quarters of the taluk. A run of twelve miles brings us to Kasimkót, a town of 7,078 inhabitants, and three miles further on is the large and flourishing commercial town of Anakápalle, with 13,341 inhabitants. Twenty miles intervene before Vizagapatam is reached. The population of this seaport town is 36,291, and for trade and importance it occupies a prominent position. Leaving Vizagapatam, the line will run along the alignment already surveyed for the Vizagapatam-Raipur line for 36 miles, passing *en route* the important shrine of Simhachellam and the port of Bimlipatam. Possibly a small branch of three miles may be required here. Vizianagrum is a town of 22,577 inhabitants. It is the residence of the Maharajah, and a place of great prosperity and much trade in cotton goods and iron. A branch will leave the main line at Vizianagrum and run fifty miles inland to serve the town of Sálúr (11,856 population), Bobbili (14,943 population), and Párvatipur (9,933 population). The first and last towns are the emporia for the hill produce as mentioned further on. Leaving Vizianagrum, the main line runs 40 miles through Chípurupalle and Pondur to Chicacole, passing a Pálkonda road station. Pálkonda is the chief town of a taluk containing 200,000 inhabitants, the richest and most prosperous taluk in the district. At Pondur there is a wealthy society of weavers, who manufacture very excellent cloths for export to the neighbouring markets.

"Entering the Ganjam district at Chicacole, the main line of railway will follow the trunk road nearly, the mileage of which from Chicacole to the Bengal frontier is 136 miles. Probably a branch line will be required, running from Gopálpur into the Goomsur taluk, but particulars of the exact alignment are not yet available, and details of this branch are entirely omitted from this paper. The main line will run from one large town to another. Chicacole has 16,355 inhabitants. From Chicacole to Calingapatam it is 16 miles, but probably a nearer station to the port will be selected, perhaps on the banks of Vamsadhára river which can, it appears, be made navigable for some distance from its mouth. Calingapatam is the only port which has any shelter and which is not a perfectly open roadstead and unprotected between Coringa, 150 miles south, and Dharma in Orissa, 250 miles north. Communication between the shore and shipping is but rarely interrupted. Narsannapet, 14 miles from Chicacole, is a large congeries of villages containing 8,230 inhabitants. There is a large market held here in cattle and goods, and much good cloth is woven here. A further run of twenty miles brings us to Naupada, where are situated the largest salt-pans in the district. The salt from Naupada and Calingapatam furnish the supplies for Kalahandi, Jeypore, Pálkonda, Sálúr, Bustar, and the southern parts of Chattisgarh. The salt will be conveyed from these two factories by rail to Vizianagrum and thence along the branch line to Sálúr and Párvatipur, which are the emporia for the hill produce of all the lands that lie beyond the ghâts to the west. Passing through the estates of Tekkali, Tarla and Mandasa, the next port passed at a little distance will be Barwah. This port is frequented by native passengers proceeding to and from Barwah. Icháp ur, 84 miles from Chicacole, is a large place of 5,528 inhabitants. Berhampore, 15 miles further north, is then reached. This is the largest town in the district of Ganjam. It contains 23,599 inhabitants. The head-quarters of a native regiment are located here. The chief industry is the manufacture of silk, and common native cloths

See "Manual of the Ganjam District."

are also woven here. Leaving Berhampore, the trunk road passes at a distance of three miles from Gopálpur, the chief port of the district. Possibly it may be well to bring the line still nearer to the port than this, for Gopálpur is a very important place. It contains only between two and three thousand inhabitants, but the trade of the port is very valuable, amounting to over 50 lakhs per annum. From Gopálpur the trunk line runs to Ganjam, 19 miles from Berhampore, where there is a large salt factory, to which traders resort from Cuttack, Sambalpore and Goomsur. Ten miles from Ganjam, Rambha is the next point touched at. Rambha is the depót for all the trade on the Chilka lake. Finally, the railway runs skirting the lake, through the most beautiful scenery, until it leaves the Ganjam district and the Madras Presidency between the villages of Panditagaon and Barkal."

21. From the boundary of the Ganjam district to the terminus on the Mahánadi, the line runs through the Bengal Province of Orissa.

22. The length of the line from Sámalkót to Naraj is 375 miles, and it is estimated that the following branch lines would be necessary :—

(1) A branch from Vizianagrum to Párvatipur, probably 45 miles in length.
(2) A branch to Gopálpur from a point in the main line a few miles north of Berhampore, about 6 miles in length.
(3) A branch to Pooree, probably 25 miles in length.

23. Regarding the suggested alignment of the railway through the Vizagapatam district, the Chamber of Commerce, Cocanada, remark as follows :—

"As regards the line through Vizagapatam, the opinion of the Chamber is that as a commercial project the character of the line will depend upon the alignment selected across Northern Vizagapatam. If the line were to follow the trunk road through Chittivalsa and Chicacole, it would cross the routes of, but would not appreciably serve or benefit by the trade now using the ports of Vizagapatam, Bimlipatam and Calingapatam. If, on the other hand, the line were carried through, or sufficiently near to, Vizianagrum, Sálúr, Párvatipur (with a short feeder line to Rayaghada) and thence through Pálkonda and Parlákimedi into Ganjam proper, it would traverse the heart of four of the most populous and productive taluks of the Vizagapatam district, and it would directly tap the three great trade routes into the Central Provinces (Sálúr, Rayaghada and Gunapur). The Chamber have to urge very strongly that this alignment should be specially considered in the approaching survey. The deviation of the main line would be immaterial and would be fully compensated by a shorter length of feeder line to Rayaghada. It is the true trade route of the district, and on that alignment the railway would certainly have the carriage of the great bulk of the produce, both that exchanged internally and that now exported from Bimlipatam and Vizagapatam, while it would have the distribution of the imports. Moreover, the Chamber considered it probable that the cheaper ocean freights which concentration at the one port of Cocanada would enable the trade to command would (assuming liberal treatment by the railway) quickly attract to Cocanada the whole foreign trade of the Vizagapatam district. The route indicated would also give a direct lead between the great salt factories of the Vizagapatam and Ganjam districts, and the trade routes into the Central Provinces. If, therefore, the alignment here advocated be adopted, the Chamber consider that this portion, representing some 200 miles of the whole through line, would be a success commercially, though not in the same degree as the portion between Bezváda and Cocanada."—Letter to Collector, dated 18th September 1889, No. 3634.

The Board does not think that the Chamber has sufficiently taken into account the proposed branch from Vizianagrum to Párvatipur. This branch will tap the trade routes into the Central Provinces almost as efficiently as the Chamber's proposed alignment of the main line.

24. *Area and population of country served by proposed line.*—The area and population of the Godávari district through 32 miles of which the line northward from Sámalkót would pass have already been given, para. 11 above. The area and population of the Vizagapatam and Ganjam districts are shown in the margin. Excluding the hill tracts, the population on the plains is in Vizagapatam 1,790,468 or 515 to the square mile, and in Ganjam 1,503,301 or 484 to the square mile.

	Area in square miles.	Population.
Vizagapatam	16,992	2,481,284
Ganjam	8,369	1,749,604
Total ...	25,361	4,230,888

The area under cultivation in the two districts amounted on the average of the past three years to nearly two million acres, or about 4 per cent. of the total cultivated area of the presidency.

25. The only trade statistics available for the two districts are—(1) statistics of the imports and exports by sea, and (2) statistics of traffic by road along the route to be followed by the railway.

26. *Imports and Exports by Sea.*—The value of the imports and exports by sea in the two districts for the fourteen years ending 1888 89 is shown in Appendix A, and a statement showing the tonnage of the chief articles of import and export from the principal ports during the past two years is given in Appendix B. The value of the export trade in private merchandize from the Vizagapatam district during the past ten years has ranged between 35¼ lakhs in 1879-80 and 54½ lakhs in 1885-86, and has averaged 47¼ lakhs. The import trade during the same period has ranged in value between 20¼ lakhs in 1879-80 and 28 lakhs nearly in 1884-85, and has averaged 25½ lakhs. The exports and imports of Government stores and treasure during the ten years averaged 4¼ lakhs and 10¾ lakhs, respectively. In the Ganjam district the value of the export trade in private merchandize during the same period, excluding the past two years which were famine years, has ranged between 23 lakhs in 1885-86 and 52¾ lakhs in 1883-84, the average annual value being 38½ lakhs. The value of the import trade, excluding the same period which, however, shows no considerably increased imports, has ranged between 10¾ lakhs in 1886-87 and 19 lakhs nearly in 1884-85, and has averaged 14 lakhs. The exports and imports of Government stores and treasure during the same period averaged 14¼ lakhs and 1½ lakhs, respectively.

27. The chief articles of export from the two districts and the average weight exported during the past two years were as follows :—

—	From the Vizagapatam district.	From the Ganjam district.
	TONS.	TONS.
Grain and pulse	15,836	3,989
Seeds	11,217	5,765
Sugar	3,066	1,202
Dyeing and coloring materials ..		490

The chief articles of import and the average weight imported during the past two years were in the Vizagapatam district—Grain and pulse 10,700 tons ; jute, raw, and in gunny-bags 1,213 tons ; cotton twist and yarn and piece-goods 813 tons. In the Ganjam district—Grain and pulse 750 tons, cotton twist and yarn and piece-goods 533 tons.

28. A very careful analysis of the exports and imports of the Vizagapatam district has been made by Mr. Willock in his letter in view to determining the extent to which the railway would share in the carriage of this trade to or from the ports. Writing with great local knowledge, he comes to the conclusion that the railway would have the carriage of 10,000 tons of jaggery for 80 miles from Anakápalle, the place of production, to Cocanada, to which port the opening of the railway would divert the trade, and of 20,000 tons of other produce for 40 miles, giving a total average carriage of 13,333 tons per mile on the total mileage of the railway within the district.

29. *Road Traffic.*—The only statistics available showing the road traffic on the route along which the railway will pass between Sámalkót and the northern frontier of the district are those which exhibit the traffic on the road between Tuni on the one hand and Rajahmundry and Sámalkót on the other compiled during the six months April to September of the current year—*vide* Appendix C. They give for the year an estimated traffic along the line of 39,000 tons going northwards and 11,000 tons going southwards, or a total traffic of 50,000 tons per mile. The traffic northwards was perhaps unusually large as great quantities of grain were being exported from the Godávari district to Vizagapatam during the first six months of the year attracted by the scarcity prices prevailing there ; but, on the other hand, the considerable failure of the crops in Vizagapatam must have tended largely to diminish importations from that district southwards into Godávari.

30. The statistics of road traffic available for the Vizagapatam district are the following :—

(1) Registrations of traffic made in the dry season of 1874-75 to gauge the traffic along the route from Vizagapatam to the Central Provinces *viâ* Párvatipur and Rayaghada. These relate to the proposed branch line from Vizianagrum to Párvatipur.

(2) Registrations made during the cold seasons of 1876-77 and 1877-78 of the traffic passing through Rayaghada, 30 miles north of Párvatipur, these also relating to the branch line.

(3) Registrations made in the first three months of 1879 of the traffic between Rayaghada and Bimlipatam and also on the roads from Párvatipur to Pálkonda, Pálkonda and Srungavarapukóta to Vizianagrum and from Chicacole to Bimlipatam.

(4) Registrations made in January to June 1879 to test the traffic on the main road from the coast to the Central Provinces and on other roads of the district.

(5) Registrations made between October 1884 and October 1885 of the traffic between Vizagapatam and the frontier between the Vizagapatam district and the Central Provinces.

(6) Registrations effected at different places along the above lines of the proposed railway since the beginning of April of the current year.

31. The above statistics are given in Appendix C. They have been very carefully reviewed by Mr. Willock, Collector of Vizagapatam, and the Board accepts the following conclusions at which he arrives and which are set forth in paragraph 21 of his letter read above :—

First.—That the registrations of 1874-75 indicate a total traffic of 57,500 tons about the centre of the Vizianagrum-Párvatipur road, the line of the proposed branch railway.

Second.—That the registrations of 1879 point to a traffic of perhaps a little less than 60,000 tons along the same line.

Third.—That the registrations of 1884-85 show a total of over 58,000 tons on the above section, while the presence of a railway would certainly have diverted to the same route a further traffic of 7,000 tons which went by a parallel route.

Fourth.—That the registrations of the same year give a total of 34,000 tons as the traffic between Vizianagrum and the coast which the presence of a railway would have increased to 40,000 tons.

32. The uniformity of the results, Mr. Willock observes, arrived at over such a long interval on the Vizianagrum-Párvatipur road, makes it tolerably certain that the traffic on that road has for many years been about 50,000 tons, and may be taken to have been at least 60,000 tons per annum 4 years ago (subject to an increase on account of Ganjam salt), of which 20,000 was with the Central Provinces *viâ* Rayaghada, while a somewhat larger amount went inland *viâ* the Potinghy ghât. Mr. Willock sees reason to believe that the Rayaghada transport has decreased somewhat of late owing to the extension of railway communication with Bombay in the Central Provinces, but considers that it has been counterbalanced by an increase in the Jeypore stream which is growing with great rapidity as roads are pushed further and further in that direction.

33. The only statistics of road traffic in the Ganjam district along the route to be followed by the railway are as under—

(1) Registrations made for nine months from December 1878 to August 1879, of the traffic between Ganjam and Khurda, both on the proposed line, a distance of 70 miles. The traffic during nine months was 32,166 cart-loads, 7,997 laden bullocks, and 33,145 foot-passengers, and adding one-third for the remaining months the traffic for one year will be—

Foot passengers	44,193
Laden carts	42,888
Bullocks	10,663

(2) Registrations of traffic made in the six months commencing April last at six spots along the length of the proposed line between Pooree and Chicacole, *vide* appendix C. These show an average traffic of 6,200 tons going northwards and of 5,700 tons going southward, giving a total traffic of 11,900 tons per mile on this portion of the line.

34. The figures given above show that on great lengths of the line which the railway will take a very large road traffic at present exists, and the Board sees no reason to doubt that a railway would have in these districts the effect which it has had everywhere else of largely and rapidly increasing this traffic. The country through which the line will pass is rich in agricultural and industrial products and very thickly peopled, the population per square mile in Vizagapatam and Ganjam excluding the Hill tracts being denser than that of any other district in the Presidency with the exception of Tanjore. It is difficult to frame any forecast of the financial success of the line, but taking into consideration the agricultural advantages of the tract, subject though it is at intervals in parts to devastation by famine, and the largeness and density of the population of the country through which the line will pass, the Board sees no reason to doubt that the line would be at least as successful as any equal length of the South Indian Railway, the dividend on the main line of which has risen from 2·91 per cent. in 1883 to 3·56 in 1887 and is still steadily rising. As a famine protective work, the value cannot be overestimated. On this point the opinion of the Chamber of Commerce, Cocanada, which naturally takes a great interest in the proposed line and which speaks with a full knowledge earned during the recent famine of difficulties in the way of communication between Cocanada and Ganjam, may be quoted.

"In the opinion of the Chamber, such railway communication, especially if, and when, connection with the Bengal system is established, would make actual famine in Ganjam and Orissa practically impossible, as the Godávari and Kistna deltas could always meet the deficiencies in the food-supply, especially if Bengal were placed in a position to contribute in part. Distress from high prices would no doubt be liable to occur at intervals, as elsewhere, but that would in time be largely forestalled by the amelioration in the condition of the people, which would be effected by the opening up of markets for their surplus product in ordinary years. Experience during the present and previous scarcities shows that food-grains from the Godávari cannot be laid down in Ganjam except at a figure considerably beyond what railway carriage would cost ; and even the Vizagapatam district, notwithstanding much cheaper freights, only turned to the sea route when the land route became impracticable. The natural medium of supply between the districts is in fact the bullock-bandy of the country until movements of the latter are stopped by failure of fodder. Apart altogether therefore from the risk of disaster from the closing of the ports by surf, the railway would in times of scarcity perform an office in Ganjam which is not, and cannot be performed by vessels and steamers, and that at a saving in transport equivalent probably to the difference between distress and outright famine. Only a railway can replace the bullock-bandy and save the surrounding districts in times of scarcity from the certainty of outbreaks of cholera, resulting from the overcrowding and pollution of cart stations and tanks along all the lines of communication."

35. Mr. Horsfall, the Collector of Ganjam, who has so ably served the district throughout the whole of the famine now just drawn to a close, writing of the great utility of the proposed railway to this district, says—

"We had a famine 23 years ago, and then, though grain was brought almost within a stone's throw of land, it could not be brought to shore because of the surf. Very fortunately the waves have been more propitious in the famine months which have just passed, and in only one instance had a few bags of paddy to be over-carried to Calcutta, because the steamer could not wait till the surf should subside. But in another year of distress we might not be so favored, and it is not difficult to imagine what the result would be if stocks were low and no grain could be landed, to replenish them, for a few weeks. * * * With a railway running through the length of the district and connecting it with the rich grain-producing districts south and north, there would never be any danger of failure of external supplies, even if the crops in the district should again fail ; and the certainty of such supplies would go far to keep prices within reasonable limits.

"It may be a question whether the district would benefit most by such a line of railway as is now proposed, or by a line which should run from Gopálpur to Sambalpur in the Central Provinces. But as long as the district is connected with the Madras Presidency, it must be to its advantage to have direct communication with the capital, and by either line communication more or less direct would be opened up between this district and Calcutta and Bombay."

36. The famine of 1866 in Ganjam cost the Government, including the expenditure on relief of distress, remission of revenue and other losses, about six lakhs of rupees. The mortality amounted to upwards of fifty thousand. During the famine which the district has just passed through, the suffering has been very grievous, and the mortality doubtless very large. The actual cost of the relief measures cannot yet be completely stated, but it has been very great.

37. To Orissa, where the famine of 1866 cost the State about 145 lakhs of rupees and the mortality amounted to nearly one million or about a third of the population, a line which would link it with the ports of Vizagapatam, Bimlipatam and Cocanada and with the rich delta districts of Godávari and Kistna, may be regarded as a necessity.

38. It is almost unnecessary for the Board to refer to the great advantages to Vizagapatam and Ganjam into railway communication with the districts of Godávari, the Government or to dwell on the claims which the inhabitants of those districts possess to be brought into railway connection with the rest of the country. Cut off by the Eastern Ghâts from the plains of India they are at present practically accessible only by sea, and communication between them and Madras is carried on by weekly steamers, the journey to the Godávari averaging two days, to Vizagapatam three days, and to Ganjam five days with the possibility during the north-east monsoon of being unable to land at all in Ganjam and of being taken on to Calcutta.

(True Copies and Extract,)

(Signed) P. RAJARATNA MUDALIAR,
Secretary.

To the Secretary to Government, Revenue Department.
" Collector of Ganjam.
" " of Vizagapatam.
" " of the Godávari.
" " of the Kistna.

APPENDIX A.

STATEMENT showing the total value of the exports and imports (foreign and coasting).

Year.	GANJAM.			VIZAGAPATAM.			GODAVARI.			KISTNA.		
	Merchandise, private.	Government stores.	Treasure.	Merchandise, private.	Government stores.	Treasure.	Merchandise, private.	Government stores.	Treasure.	Merchandise, private.	Government stores.	Treasure.
Exports.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.
1875-76	27,88,168	Not available.	Not available.	34,86,096	Not available.	Not available.	88,60,263	Not available.	Not available.	34,20,672	Not available	Not available.
1876-77	49,13,142			38,66,454			1,31,76,210			33,84,712		
1877-78	53,82,721			55,27,209			1,15,70,889			25,28,704		
1878-79	25,35,092	96,220	16,65,138	38,85,421	4,633	7,62,813	49,70,382	3,395	44,30,546	17,57,043	89,728	17,52,632
1879-80	32,13,955	27,832	16,75,964	33,21,258	1,489	41,300	91,77,674	22,213	20,02,720	28,80,189	13,292	2,04,285
1880-81	46,11,882	40,467	16,50,000	41,33,606	12,617	1,88,500	1,12,72,915	26,704	19,80,000	28,57,780	17,663	14,85,458
1881-82	47,04,146	4,136	18,11,400	47,04,213	6,129	9,83,750	1,24,68,863	4,440	7,50,000	21,97,194	18,121	10,27,100
1882-83	43,31,663	20,009	7,00,000	47,27,912	19,961	4,28,650	1,26,61,244	6,864	20,23,164	18,64,783	8,816	5,50,085
1883-84	52,88,641	35,252	5,77,270	54,24,191	31,761	6,07,254	1,40,88,516	11,004	10,25,552	19,06,443	3,705	21,14,123
1884-85	40,48,481	4,853	14,26,900	46,65,454	11,190	6,26,950	1,47,02,175	11,592	8,80,730	31,68,094	2,530	8,66,063
1885-86	22,92,835	25,918	17,65,800	54,31,768	14,868	94,950	1,25,61,012	2,275	21,62,000	32,44,133	1,669	25,27,901
1886-87	23,56,918	6,833	17,08,000	51,17,869	18,057	9,900	93,93,523	70	20,53,780	30,73,919	2,483	28,18,081
1887-88	19,87,143	20,221	17,64,600	46,38,379	1,75,324	9,95,650	1,17,51,214	4,663	18,50,000	30,00,208	687	15,52,900
1888-89	17,59,126	9,993	11,30,000	51,08,103	24,710	10,800	1,36,41,485	1,157	8,80,000	31,04,261	653	25,17,759
Average of ten years, ending 1888-89 ..	34,59,479	19,551	14,20,993	47,27,275	31,611	3,98,710	1,21,71,842	9,098	15,60,795	27,29,700	6,962	15,66,376
Imports.												
1875-76	7,41,912	Not available.	Not available.	19,59,174	Not available.	Not available.	21,31,652	Not available.	Not available	15,72,611	Not available.	Not available
1876-77	10,54,130			19,52,183			22,75,234			14,92,827		
1877-78	12,08,944			25,57,254			27,53,954			17,81,926		
1878-79	10,08,423	76,792	82,030	26,89,321	3,55,853	1,87,150	23,61,362	42,044	4,20,122	13,66,173	33,177	3,75,800
1879-80	* 12,52,705	70,711	Not available.	† 20,21,785	81,341	Not available.	‡ 21,14,241	59,496	Not available.	§ 10,44,145	49,017	Not available.
1880-81	11,72,023	66,443	2,76,855	23,74,386	1,79,019	10,57,140	21,97,071	50,912	12,16,663	12,39,149	47,646	3,34,350
1881-82	14,57,570	38,966	1,56,800	27,38,966	74,372	9,11,607	21,66,267	33,988	6,45,110	8,88,919	31,858	3,58,350
1882-83	14,04,348	44,741	91,050	25,33,664	1,21,205	10,59,000	26,49,796	55,620	22,17,277	10,86,919	33,028	2,18,800
1883-84	17,35,303	68,054	15,700	26,07,299	1,17,510	8,39,047	24,17,607	67,461	18,81,200	10,51,955	43,835	1,31,500
1884-85	18,91,415	82,111	25,150	27,90,671	1,31,003	5,33,300	27,37,263	66,035	16,01,300	10,88,331	47,419	3,99,400
1885-86	12,20,941	54,906	5,050	25,70,098	78,742	13,73,350	21,55,155	1,55,994	19,54,500	8,63,995	31,609	6,07,100
1886-87	10,75,955	47,869	11,000	25,33,671	1,30,675	7,18,700	23,54,876	53,309	2,60,500	11,16,636	16,773	2,80,000
1887-88	11,18,599	49,543	75,650	26,58,339	80,424	11,37,000	30,07,952	5,68,816	15,15,000	15,26,061	24,577	3,97,400
1888-89	11,12,828	17,540	20,800	27,34,835	2,13,484	9,28,000	23,19,289	27,746	22,06,000	12,49,741	18,086	7,53,000
Average of ten years ending 1888-89 ..	13,44,169	54,088	75,339	25,56,371	1,20,778	9,50,794	24,11,952	1,13,938	14,99,728	11,15,585	34,385	3,86,656

* Relates to the ports of Gopálpur and Calingapatam only.
† Do. do. of Vizagapatam and Bimlipatam only.
‡ Relates to the port of Cocanada only.
§ Do. do. of Masulipatam only.

APPENDIX B.

Exports.

Articles.	Ganjam.						Vizagapatam.						Godavari.		Kistna.	
	1887-88.			1888-89.			1887-88.			1888-89.			1887-88.	1888-89.	1887-88.	1888-89.
	Gopálpur.	Calingapatam.	Total.	Gopálpur.	Calingapatam.	Total.	Vizagapatam.	Bimlipatam.	Total.	Vizagapatam.	Bimlipatam.	Total.	Cocanada.		Masulipatam.	
	TONS.	TONS.	TONS.	TONS.	TONS.	TONS.	TONS.	TONS.	TONS.	TONS.	TONS.	TONS.	TONS.	TONS.	TONS.	TONS.
Cotton	..	..	..	3	..	3	32	16	48	28	22	50	3,180	2,674	21	342
Dyeing and coloring materials	298	243	541	126	314	440	302	3,004	3,306	375	2,452	2,827	2,427	2,808	3,101	1,737
Grain and pulse	5,027	1,352	6,379	1,056	543	1,599	79	26	105	5	84	89	12,597	37,299	15,083	15,621
Oils	..	..	..	..	..	..	1	3	4	..	2	2	4,510	4,432	28	39
Provisions—																
Ghee	..	..	..	..	..	..	3	8	11	36	22	58	928	759	20	46
Other kinds	48	1	49	41	..	41	39	99	138	41	367	408	128	130	74	38
Seeds—																
Castor	..	..	..	..	..	..	34	32	66	..	2	2	25,199	11,975	11,301	11,876
Gingelly	904	2,931	3,835	2,179	1,985	4,164	1,123	7,471	8,594	207	7,237	7,444	11,632	13,558	1,148	261
Other kinds	206	2,708	2,914	124	493	617	21	10,645	10,666	18	4,883	4,901	1,716	1,579	777	937
Spices	..	..	..	..	..	..	..	..	..	..	..	..	477	514	2,078	1,448
Sugar	1,039	..	1,039	1,366	..	1,366	9,897	690	10,587	11,018	829	11,847	18,954	25,426	..	..
Tobacco	..	..	..	..	..	..	3	23	26	11	20	31	2,793	3,641	173	65
Total	7,522	7,235	14,757	4,895	3,335	8,230	11,534	22,017	33,551	11,739	15,920	27,659	84,541	104,795	33,804	32,410

Imports.

Articles.	Ganjam.						Vizagapatam.						Godavari.		Kistna.	
	1887-88.			1888-89.			1887-88.			1888-89.			1887-88.	1888-89.	1887-88.	1888-89.
	Gopálpur.	Calingapatam.	Total.	Gopálpur.	Calingapatam.	Total.	Vizagapatam.	Bimlipatam.	Total.	Vizagapatam.	Bimlipatam.	Total.	Cocanada.		Masulipatam.	
	TONS.	TONS.	TONS.	TONS.	TONS.	TONS.	TONS.	TONS.	TONS.	TONS.	TONS.	TONS.	TONS.	TONS.	TONS.	TONS.
Cotton—																
Raw	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Twist and yarn	450	41	491	384	75	459	18	741	759	29	600	629	662	699	54	71
Piece-goods	52	8	60	51	5	56	45	79	124	32	82	114	135	152	126	169
Other manufactures	5	2	7	..	..	..	..	..	..	..	..	..	290	157	..	..
Grain and pulse	54	44	98	1,186	215	1,401	4,579	401	4,980	8,762	7,659	16,421	448	20	298	50
Jute—																
Raw	..	..	..	..	..	..	..	1,059	1,059	..	1,186	1,186	4	..	..	3
Gunny-bags	138	28	166	72	8	80	13	65	78	3	101	104	172	2,115	617	640
Gunny-cloths	..	..	..	..	..	..	..	..	..	..	..	..	1	..	3	..
Other manufactures	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	3
Liquors	14	2	16	12	2	14	197	7	204	53	10	63	19	17	684	394
Oils	117	2	119	26	..	26	3	36	39	38	33	71	532	564	48	108
Seeds	33	9	42	63	6	69	25	35	60	164	303	467	813	55	15	10
Spices	42	5	47	15	5	20	17	47	64	19	38	57	40	37	13	11
Sugar	1	..	1	398	..	398	2	37	39	19	50	69	183	212	7	6
Total	906	141	1,047	2,207	316	2,523	4,899	2,507	7,406	9,119	10,062	19,181	3,303	4,028	1,867	1,465

APPENDIX C.

STATEMENT showing the long distance traffic registered in the districts of Ganjam, Vizagapatam, Godavari and Kistna

Districts.	Routes on which traffic was registered.	Stations.	—	Long distance traffic.		
				L. MDS. Total Merchandise.	NO. Animals.	NO. Passengers.
Ganjam	Between the Central Provinces and Ganjam.	Kalingiá	Inwards	68,198	1,412	1,446
			Outwards	20,046	30	2,378
			Total	88,244	1,442	3,724
	1. Between Pooree and Ganjam.	Rambha	Inwards	283,912	498	31,998
			Outwards	131,482	28	32,868
			Total	415,394	526	64,866
	2. Between Ganjam and Berhampore.	Mustidipuram	Inwards	152,205	400	62,518
			Outwards	39,396	..	48,201
			Total	191,601	400	110,719
	3. Between Berhampore and Haripuram.	Korlam	Inwards	36,770	3,634	6,166
			Outwards	113,966	112	8,536
			Total	150,736	3,796	14,702
Vizagapatam	4. Between Haripuram and Chicacole.	Pundi	Inwards	121,620	3,258	57,350
			Outwards	355,982	98	76,482
			Total	477,602	3,356	113,832
		Naupada	Inwards	60,640	492	7,246
			Outwards	89,356	198	8,894
			Total	149,996	690	16,140
		Narsannapet	Inwards	271,542	..	282,758
			Outwards	275,398	..	259,332
			Total	546,940	..	542,090
	1. Between Chicacole and the junction of the Vizianagrum-Bimlipatam road.	Nattavalasa	Inwards	225,128	10,552	74,436
			Outwards	176,334	598	76,468
			Total	401,462	11,150	150,904
	2. Between Vizianagrum and Vizagapatam.	Boddavalasa	Inwards	617,764	4,448	102,186
			Outwards	664,506	4,592	91,790
			Total	1,282,270	9,040	193,976
		Chittivalasa	Inwards	437,328	5,922	84,126
			Outwards	647,452	606	80,628
			Total	1,084,780	6,528	164,754
		Vemulavalasa	Inwards	232,398	514	118,416
			Outwards	314,406	672	100,058
			Total	546,804	1,186	213,474
	3. Between Bimlipatam and Vizagapatam to Tuni.	Pendur	Inwards	313,978	14,634	72,466
			Outwards	554,282	1,934	68,848
			Total	868,260	16,568	141,314
		Anakápalle	Inwards	306,646	2,476	153,598
			Outwards	440,988	120	103,170
			Total	747,634	2,596	256,768
		Timmapuram	Inwards	136,500	9,614	116,004
			Outwards	995,662	2,502	132,482
			Total	1,132,162	12,116	248,486
Godavari	1. Between Tuni and Rajahmundry.	Kattipudi	Inwards	227,092	7,318	43,348
			Outwards	857,884	1,010	77,298
			Total	1,084,976	8,328	120,646
		Jaggammapet	Inwards	277,718	70	20,340
			Outwards	230,448	6	18,290
			Total	508,166	76	38,630

N.B.—Traffic on road No. 2 in Ganjam was registered during 1888-89 for a whole year. In all other cases figures are available for six months only, viz., April to September 1889 inclusive; double the traffic is therefore entered in these cases so as to give the probable traffic for a year.

APPENDIX C.—*cont.*

Statement showing the long distance traffic registered in the districts of Ganjam, Vizagapatam, Godávari and Kistna—*cont.*

Districts.	Routes on which traffic was registered.	Stations.		Long distance traffic. Total Merchandise.	Animals.	Passengers.
				L. mds.	No.	No.
Godávari ..	Between Cocanada and Sámalkót.	Cocanada	Inwards ..	..	..	..
			Outwards..	..	..	..
			Total * ..	593,714	4,302	33,040
	Between Cocanada and Tuni.	Sámalkót	Inwards ..	372,596	4,350	131,192
			Outwards..	1,253,016	3,500	83,274
			Total ..	1,625,612	7,850	214,466
	Between Jaggammapet and Rajanagaram on one side and Cocanada on the other.	Do.	Inwards ..	671,010	396	24,510
			Outwards..	409,780	2,900	25,692
			Total ..	1,080,790	3,296	50,202
	Between Sámalkót and Rajanagaram.	Rajanagaram ..	Inwards ..	136,870	7,358	31,938
			Outwards..	715,172	1,040	34,322
			Total ..	852,042	8,398	66,260
	Between Rajanagaram and Rajahmundry.	Do. ..	Inwards ..	482,574	1,836	58,046
			Outwards..	788,402	100	48,816
			Total ..	1,270,976	1,936	106,862
	Do.	Rajahmundry ..	Inwards ..	523,638	822	50,338
			Outwards..	947,156	..	60,788
			Total ..	1,470,794	822	1,11,126
	Between Rajahmundry and Ellore.	Kovvur	Inwards ..	14,750	1,422	9,354
			Outwards..	45,462	4,358	9,660
			Total ..	60,212	5,780	19,014
	Between Ellore and Rajahmundry.	Ellore	Inwards ..	1,256	..	172
			Outwards..	52	..	46
			Total ..	1,308	..	218
	Between Ellore and Bezváda..	Do.	Inwards ..	27,368	50	1,666
			Outwards..	152,234	..	2,614
			Total ..	179,602	50	4,280
Kistna ..	Between Bezváda (or rather Guntúr) and Ellore.	Bezváda	Inwards ..	117,804	292	19,690
			Outwards..	4,876	..	18,514
			Total ..	122,680	292	38,204

* Details of inwards and outwards traffic not yet furnished by the Collector.

STATEMENT of traffic statistics taken in 1874-75 on routes from the Agency to the Coast.

Year and month.	Rayaghada to Párvatipur road.	Párvatipur to Pálkonda road.	Párvatipur to Vizianagrum road.	Sálúr to Vizianagrum road.
	tons.	tons.	tons.	tons.
November 1874	..	1,090	1,088	1,355
December ,, ...	..	1,398	1,300	1,563
January 1875	1,399	2,066	2,798	3,805
February ,, ...	4,051	2,411	3,880	4,070
March ,, ...	3,906	5,628	3,959	3,691
April ,, ...	3,898	..	..	..
May ,, ...	1,661	..	..	..
Total ..	14,915	12,593	13,025	14,484
Estimate for remaining months of year	..	..	9,648	10,385
Grand Total ..	..	..	22,673	24,869

APPENDIX C—*cont.*

STATEMENT of traffic through Rayaghada in portions of 1877 and 1878.

Period.	Salt.		Gingelly-seed.		Other articles.		Total.	
	Bullock.	Carts.	Bullock.	Carts.	Bullock.	Carts.	Bullock.	Carts.
From 30th December 1876 to 7th April 1877 ..	72,480	227	52,122	461	57,983	1,830	182,585	2,518
From 19th January 1878 to 31st May 1878	36,071	388	27,102	2,378	49,689	3,066	112,862	5,832

TRAFFIC statistics taken in 1879 (January to March).

Traffic stations.	Up.	Down.	Remarks.
Main road from Coast to Central Provinces.	tons.	tons.	
1. Rayaghada	5,781	4,441	82 miles north of Vizianagrum.
2. Párvatipur	1,477	5,549	52 do. do.
3. Kottaki	3,262	5,030	Branch from Sálúr and the Potinghi ghat.
4. Arikatota	2,871	8,722	26 miles north of Vizianagrum.
5. Nelivada	4,025	9,192	8 do. do.
6. Nilayya Chatram	7,779	10,416	10 do. south of do.
Other roads.			
7. Párvatipur-Pálkonda road	6,820	4,811	Taken near Párvatipur.
8. Pálkonda-Vizianagrum road ..	1,146	5,487	Taken 3 miles from Vizanagrum.
9. Srungavarapukóta-Vizianagrum road.	2,634	10,019	
10. Trunk road (Tuni to Chicacole) ..	2,435	3,437	Taken 33 miles south of Chicacole.

TRAFFIC statistics taken in 1879 (January to June).

Traffic stations.	Up.	Down.	Remarks.
Main road from Coast to Central Provinces.	tons.	tons.	
Rayaghada	10,656	32,650	82 miles north of Vizianagrum.
Párvatipur	8,602	21,430	52 do. do.
Kottaki	10,235	26,000	Branch from Sálúr and Potinghi ghât.
Arikatota and Nelivada average	14,012	41,000	26 miles north of Vizianagrum.
	..	..	8 do. do.
	20,947	50,000	10 do. south of do.
Nilayya Chatram			
Other roads.			
Párvatipur-Pálkonda road	10,753	25,000	Taken near Párvatipur.
Pálkonda-Vizianagrum road	7,459	9,600	Do. 3 miles from Vizianagrum.
Srungavarapukóta-Vizianagrum road	?	?	Do. 2 miles from Vizianagrum.
Trunk road (Tuni to Chicacole)	4,165	6,000	Do. 33 miles south of Chicacole.

STATEMENT showing traffic results on road from Párvatipur to the Coast in 1884-85.

—	Up.			Down.		
	Goods in tons.	Other goods by number.	Passengers.	Goods in tons.	Other goods by number.	Passengers.
Rayaghada (82 miles north of Vizianagrum) ..	3,019	149,220	3,095	18,314	102,271	2,459
Párvatipur (52 miles north of Vizianagrum) ..	1,887	13,263	13,772	14,923	58,025	12,168
Ramabhadrapur (30 miles north of Vizianagrum) ..	13,644	222,416	144,307	51,148	373,231	141,307
Gajapatinagaram (13 miles north of Vizianagrum).	12,637	411,148	100,606	45,306	645,167	95,806
Boddavalsa (5 miles south of Vizianagrum) ..	13,477	198,542	210,690	21,040	260,507	214,658
Chittivalsa (13 miles south of Vizianagrum) ..	7,610	383,930	134,956	21,780	527,320	125,650

REVENUE DEPARTMENT.

1889.

Board of Revenue

(Revenue Settlement, Land Records and Agriculture),

MADRAS.

Printed January 9th, 1890.

Proceedings, 14th Dec. 1889, No. 564.

Submitting to Government a review on the East Coast Railway project as a famine protective requirement and as a commercial project.

P.W.C. No. 395

REVENUE SECRETARIAT.

No. 1

OFFICE NOTE.

Station Fort St. George date 3rd January 1890.

P 14.1.90

From The Secretary to Government
Revenue Department.

To The Joint Secretary to Government
P. W. D. Railway Branch.

Copy of Board's Proceedings dated 14th December 1889 No 564 will be furnished to the joint Secretary to Government P. W. D, Railway Branch, with reference to his office note No 5686C dated 4th December 1889

Reserve

for Secretary to Government

ak Papers W.1 11-1-90

Sir his Proceedings
so I can obtain the papers
for Papers herewith 11/1

OS.

REVE

Boar

(Revenue

Printed Janu

Proceeding

Submitt
East Coast
tive requir

PUBLIC WORKS SECRETARIAT,

RAILWAY BRANCH.

No. 389. C

C

OFFICE NOTE.

Station Madras date 21st January 1890.

From The Jt. Secy. to Govt. P.W.D. Rly. Br.

To The Secy. to Govt. Rev. Depte.

The undersigned has the honour to request the favour of being furnished with another copy of the Rops. of the Board of Revenue (Rev. Sect. I Rds. Regn.) 14th Dec. 1889, No. 564 and to enquire whether any G.O. has issued on the above, if so, it is requested that a copy may be communicates to this department. —

and to the Press

C.L.S
20.1.90

IR.

REVI

Boa

(Revenue

Printed J

Proce

PUBLIC WORKS SECRETARIAT,

RAILWAY BRANCH.

No. 648. C dy 6 July 90

OFFICE NOTE.

atic

Sir

Please see C.A.W's remarks on the under of these personal orders - we have asked the Rev. Dept. to communicate the G.O. to no. - vide 1st Note No. 289 C dy 21-1-90; but they have not done so. -

4. 2. 9

R.

D 6/2

REVI

Bom

(Revenue

Printe

Pr

PUBLIC WORKS SECRETARIAT,

RAILWAY BRANCH.

No. 648. C dy 6th Feby: 1890

OFFICE NOTE.

Station Madras date 6th Feby. 1890.

From The Jt. Secy. to Govt. P.W.D. Ry: Mans

To The Secy. to Govt. Rev. Depto.

The undersigned has the honour to invite attention to P.W.D. Office Note No 389 C dy 21st January 1890 and to request that G.O. (Revenue) No: 6 dated 3d January 1890 may be communicated to the P.W. Depts: Railway Branch

C.L.S.
4.2.90
R.

D 6/2

C.L.S.
4.2.90.

P.W.C. No. 1354.

REVENUE SECRETARIAT.

No 8

OFFICE NOTE.

Rec'd. 10-2-90
Encl. 1 + 42 Sl. (2 sent)

Station ~~Fort St. George~~ date 7th February 1890.

From The Revenue Secretary to Govt

To The Joint Secretary to Govt
P.W.D. (Railway Branch)

R office 29-1-90

Adverting to your "Office Note, dated 21st January 1890, no. 389 P.C. the undersigned has the honor to forward a copy of G.O. dated 3rd January 1890, No 6, and to state that the above order will be placed on the Editor's Table.

Secretary to Government

2 more copies are forwarded.

The Rev. Dept. of Haverty
Requests to communicate
the P.R. to the P.W. Branch.
There is no need for this
Tech Sanction &c &c.

O.J.
10.2.90.

NK

389. cy 21-1-90
No 1 dy 3-1-90

Cos 1352

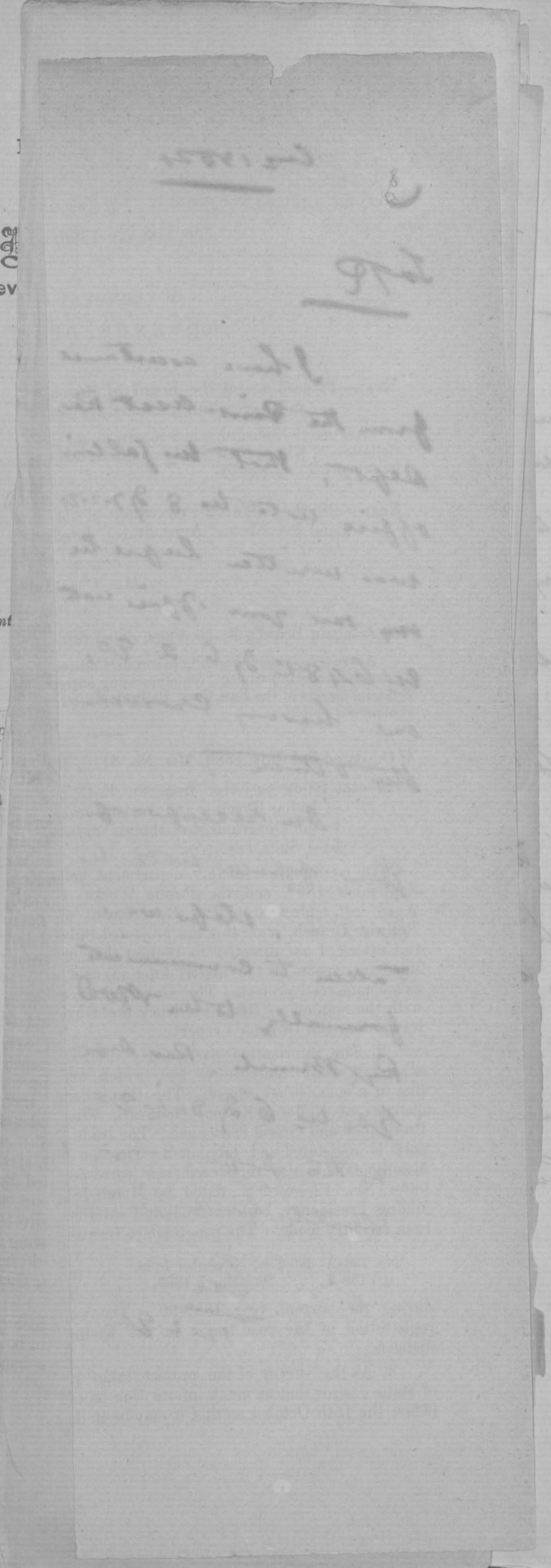
To R

I have ascertained from the Finn-Asst. Rev. Dept., that the Collr's office note No 8 of 7.2.20 was written before he ~~by~~ saw your office note No 648C of 6.2.20, one having crossed the other.

On receipt of your office note No 648C, steps were taken to communicate formally to the M.o.D. Rev. Branch. Rev. Dept. G.O. No 6 of 8-1-20, & the paper may shortly be expected.

JS 12.2.20

Cr 12.2.20



GOVERNMENT OF MADRAS.

REVENUE DEPARTMENT.

Read—Proceedings of the Board of Revenue (Revenue Settlement, Land Records and Agriculture), dated 12th November 1889, No. 4502, Mis.

Abstract.—Submitting four reports on the proposed East Coast Railway received from the Collectors of Kistna, Godávari, Vizagapatam and Ganjam without the Board's review which will be submitted very shortly.

Read—also the following Proceedings of the Board of Revenue (Revenue Settlement, Land Records and Agriculture), dated 14th December 1889, No. 564:—

Mr. Clogstoun.

Read—again Board's Proceedings, dated 6th July 1889, Mis. No. 2613.

Abstract.—Communicating to certain Collectors, for early report, the following Government Order, Revenue Department, communicating letter from the Government of India regarding the financial aspects of the East Coast Railway project as a famine protective requirement and as a commercial project.

G.O., dated 3rd July 1889, Mis. No. 4110, Revenue:—

Read—the following letter from Sir E. C. Buck, *Kt.*, Secretary to the Government of India, Revenue and Agricultural Department (Statistics), to the Secretary to the Government of Madras, dated Simla, the 24th June 1889, No. 285—51-1 Stats.:—

In continuation of this department endorsement, No. 280—3-2 S., dated 18th September 1888, and the Public Works Department No. 326 R. C., dated 24th April last, addressed to the Government of Madras, Public Works Department, Railway Branch, regarding the projected railway from Bezváda along the East Coast to Cuttack, I am directed to request that an early report may be called for on the financial aspects of the undertaking (i) as a famine protective requirement and (ii) as a commercial project. The Government of India will also be glad to be favored with the opinion of His Excellency the Governor in Council on these points when forwarding the Director's report.

2. The information particularly desired by the Government of India should consist of useful statistics or facts which would indicate the value of the projected line in a commercial aspect. The line when completed would apparently tap the districts of Nellore, Kistna, Godávari, Vizagapatam and Ganjam in the Madras Presidency and Orissa in Bengal. The trade by coast and sea to and from the Madras ports is registered and tabulated. The canal traffic of Bezváda with Cocanada and Masulipatam is also registered (*vide* correspondence ending with this department's letter, No. 112—66-2 S., dated 1st March 1889). As regards the road traffic of the Madras Presidency, both external and internal, arrangements for its registration have been recently made. The programmes furnished by the local Board of Revenue with your endorsements noted on the margin indicate what registration was undertaken during 1888-89 and will be undertaken during the current year 1889-90. The work for the current year includes the registration of the road traffic in the Kistna, Godávari, Vizagapatam and Ganjam districts.

No. 754-A, dated 1st November 1888.
„ 139-A, „ 2nd March 1889.

3. As the survey of the project takes place next cold season, the Government of India desires that as much information as can be made available should be supplied before the 15th October so that it may be in the hands of the Engineer-in-Chief of the

Survey before he takes the field. Statistics of the road traffic during the present year could not therefore be furnished for more than six months, but the Government of India leaves it to His Excellency to arrange for the early collection of all the useful and relevant statistics available. But it will be desirable that further information should continue to be collected after the above date.

Order—dated 3rd July 1889, Mis. No. 4110, Revenue.

Communicated to the Board of Revenue for *very early* report.

(True Extract.)

(Signed) C. A. GALTON,
Secretary.

To the Commissioner of Revenue Settlement,
Land Records and Agriculture.

Read—the following letter from J. G. HORSFALL, Esq., Collector of Ganjam, to the Secretary to the Commissioner of Revenue Settlement and Director of the Department of Land Records and Agriculture, dated Chatrapur, 11th October 1889, No. 7952:—

I have the honor to submit the following report in reply to Board's Proceedings, Mis. No. 2613, dated 6th July 1889, regarding the East Coast of India Railway. I am afraid that I cannot add much to the information which is already before the Board in the shape of returns of traffic by road and canal in this district and returns of imports and exports by sea from the four ports—Gopálpur, Barwa, Pundi and Calingapatam.

2. All that I will therefore endeavour to do is to draw the attention of the Board briefly to some chief points in connection with the proposed East Coast of India Railway in this district and the probable traffic thereon.

3. First, I beg to point out, as I have pointed out before in my weekly famine reports, the great utility of such a railway to the district. We had a famine 23 years ago, and then, though grain was brought almost within a stone's throw of land, it could not be brought to shore because of the surf. Very fortunately the waves have been more propitious in the famine months which have just passed, and in only one instance had a few bags of paddy to be over-carried to Calcutta, because the steamer could not wait till the surf should subside. But in another year of distress we might not be so favored, and it is not difficult to imagine what the result would be if stocks were low and no grain could be landed, to replenish them, for a few weeks. The Government have made an attempt to obviate the difficulty by the construction of the pier at Gopálpur, but this attempt has proved abortive, and it is now in contemplation to dismantle the pier. With a railway running through the length of the district and connecting it with the rich grain-producing districts south and north, there would never be any danger of failure of external supplies, even if the crops in the district should again fail; and the certainty of such supplies would go far to keep prices within reasonable limits.

4. It may be a question whether the district would benefit most by such a line of railway as is now proposed, or by a line which should run from Gopálpur to Sambulpur in the Central Provinces. But as long as the district is connected with the Madras Presidency, it must be to its advantage to have direct communication with the capital, and by either line communication more or less direct would be opened up between this district and Calcutta and Bombay.

5. Coming now to the question of probable traffic on the proposed line, it may be noted that, according to the census of 1881, the population of this district below the Maliahs * was 1,490,272, which gives an average of over 300 persons per square mile. This is a far denser population than

* *Note.*—Area below Maliahs 4,839 square miles.

that along the greater part of the Madras Railway, and it may be assumed that here, as elsewhere in India, large numbers of the people would avail themselves of the facilities for travel afforded by a railway. There is a constant stream of pilgrims pouring along the trunk road to the Jaggernat temple in Puri, and most of such pilgrims would go by rail. Some idea of the numbers passing along the trunk road may be gathered from the following table taken from the long distance traffic returns for five months April to August 1889.

A.—South to North.

Traffic station.	Total passengers for five months.	Average per month.
Rambha	13,812	*2,762
Naupada	2,570	514
Pundi	†5,736	2,868
Narsannapet—		
(*a*) From Chicacole	84,812	16,962
(*b*) Do. Calingapatam	34,239	6,847

* Many pilgrims also come by boat along the Chilka canal and escape registration.
† Two months only.

B.—North to South.

Rambha	13,491	2,698
Naupada	3,605	721
Pundi	‡5,539	2,769
Narsannapet—		
(*a*) To Chicacole	83,628	16,726
(*b*) Do. Calingapatam	2,505	501

‡ Two months only.

There is always, of course, a certain percentage of error in such figures as these, but if they are only approximately correct, they indicate the possibility of a very considerable third-class coaching traffic.

6. In ordinary years, the district, including importations from Orissa and the Central Provinces, produces a large quantity of grain (chiefly rice) in excess of its requirements, and there is a considerable export trade in rice; for example, in 1887-88 62,335 cwts. of rice were exported from Gopálpur and Calingapatam. There is always a considerable export also of hides and skins, sugar and rum manufactured by Messrs. Minchin and Co. at Aska. These articles, for the most part, now leave the district by sea and, perhaps, even if a railway were built would, to some extent, continue to be exported in this way, but no doubt the railway would take its share in bringing them to the various ports. The following table shows the value of the principal articles of export removed by sea from the four ports of this district from April to August 1889; as the quantities given in the returns are of various descriptions, the value has been taken instead of the quantity. It will be noticed that no rice has been exported this year, and, on the contrary, as will appear below, large quantities of grain have been imported to supply the deficiency in the stocks in the district:—

Names of articles.	Value of exports per month (1889).						
	April.	May.	June.	July.	August.	Total.	Average.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Hides and skins ..	31,992	19,164	27,870	17,908	17,194	1,14,128	22,826
Rum	6,478	9,875	1,232	7,100	4,175	28,860	5,772
Rape seeds	5,913	6,697	1,016	369	1,050	15,045	3,009
Gingelly	26,465	2,680	9,840	4,320	9,665	52,970	10,594
Sugar	33,180	16,070	17,097	24,510	9,785	1,00,642	26,128

Numerous other articles of minor importance are removed from the district by sea, but need not be noticed here.

7. But in addition to this export trade, in a portion only of which the railway could participate, the following figures show that the export trade by road, all of which should be taken over by the railway, is of some importance. The figures are taken from the "long distance" traffic registration returns from April to September 1889 and the quantities are given in Government maunds:—

Exports by Trunk Road.

A.—Rambha (towards Orissa).

Articles.	Total for six months.	Average per month.
	Mds.	Mds.
Turmeric	4,608	768
Ghee	1,010	168
Salt	27,876	4,646
Chillies	4,573	762
Sugar, refined	5,148	858
Do. unrefined	18,484	3,081

B.—Narsannapet (towards Vizagapatam).

Cotton, raw	1,425	237
Twist and yarn	3,525	587
Myrobolans	2,225	371
Turmeric	7,421	1,237
Hides, raw	2,109	351
Horns	2,875	479
Spirits	4,160	693
Kerosine oil	2,250	375
Other provisions	7,370	1,228
Sugar, refined	11,607	1,934

The most important of these articles are salt and sugar, both of which are produced in the district in large quantity, the former at the Government factories at Ganjam, Surlá, Naupada and Calingapatam, and the latter at Mr. Minchin's works at Aska. It is probable that both these products travel to considerable distances beyond the limits of the district (paragraph 32 of Mr. Turner's letter in G.O., No. 159, dated 25th February 1888, Revenue).

The table annexed shows the salt sold at the factories in the past year—

	Mds.
Surlá	145,831
Ganjam—	
(1) For inland consumption	60,762
(2) For Orissa, &c.	316,285
Naupada	209,304
Calingapatam...	129,361
Total ...	861,543

of which one half at least is for consumption beyond the district.

8. It is worthy of note here that if the Sambulpur-Gopálpur line were constructed, it would carry a large quantity of salt to the Central Provinces and bring in probably a corresponding quantity of grain. In the five months April to August 1889, the exports and imports by this route have been as follow:—

	Mds.	Average per month. Mds.
Exports—		
Salt	8,756	1,751
Imports—		
Wheat	1,210	242
Paddy	3,903	780
Rice	4,013	802
Cholum, &c.	4,338	868

9. As regards imports into the district, the following table shows the value of the principal articles imported by sea at the four ports of the district, a considerable portion of which could doubtless be taken over by the coast railway, a portion for carriage into the district and nearly all for carriage in the district if, that is, a short branch could be made from Gopálpur to Berhampore:—

Names of articles.	Value of imports by sea.						
	April.	May.	June.	July.	August.	Total.	Average.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Twist and yarn (Indian) ..	26,688	37,958	33,369	24,840	25,044	1,47,899	29,579
Foreign	2,925	13,306	7,200	3,675	11,500	38,606	7,721
Piece-goods	7,307	8,920	2,680	12,480	7,300	38,687	7,737
Apparel	3,405	6,919	285	415	1,933	11,957	2,391
Raw silk	..	..	..	2,712	1,500	4,212	2,106
Paddy	840	500	2,256	40,943	18,343	62,882	12,576
Rice	2,003	600	1,700	21,716	41,716	67,735	13,547

The import of paddy and rice is an exceptional circumstance, due to the prevalence of famine in this year, but the other articles mentioned in the above table are such as are usually imported, and, in ordinary years, when there is more purchasing power in the district, the value imported would be larger than that here stated.

10. The following figures give the imports into the district by the trunk road, from April to September 1889, all of which would be taken over by a coast railway. Here, again, in regard to the import of paddy and rice, allowance must be made for the exceptional circumstances of the year, but the remaining items may be taken to be normal or less than normal in quantity. It need hardly be said that, in a time of distress, a coast railway would be able to move the paddy and rice, which must then be imported, to points adjoining the places where it might be most needed, at a much quicker pace than can be done by road, and thus prices would be equalized. In this same connection I would invite attention to the enclosure A which gives the weekly imports of grains from Orissa at the two stations on the Chilka lake, Ganjam canal, where grain is landed, in the period dealt with in other tables of land traffic in this report, viz., April to September 1889.

Imports by Trunk Road.

A.—Rambha (from Orissa).

	Total for six months.	Average.
	Mds.	Mds.
Twist and yarn	1,992	332
Paddy	107,246	17,874
Rice	15,042	2,507
Kerosine oil	3,156	526
Gingelly	1,356	226

B.—Narsannapet (from Vizagapatam).

Piece-goods (Indian)	2,655	442
Paddy	33,211	5,535
Rice	2,684	447
Cholum, &c.	1,650	275
Ghee	4,303	717
Other provisions	1,410	235
Chillies	13,963	2,327
Tobacco	11,335	1,889

11. I regret the delay which has occurred in the submission of this report, due to great pressure of work. Advantage has been taken of the delay to bring the tables of land traffic up to date.

Enclosure No. 1.

Statement showing the imports by the Chilka Lake and Ganjam Canal during the months of April, May, June, July, August and September 1889.

No.	Weeks.	Imports in cwts. at Ganjam.					Imports in cwts. at Podapadra.					
		Paddy.	Rice.	Ragi.	Green-gram.	Wheat.	Paddy.	Rice.	Ragi.	Green-gram.	Cholum.	Wheat.
1	Week ending 6th April ..	291	79	..	..	..	2,063	..	..	..	..	..
2	Do. 13th " ..	1,084	53	..	..	..	27	..	..	..	..	..
3	Do. 20th " ..	1,843	185	..	..	..	2,352	124	..	..	..	..
4	Do. 27th " ..	970	26	..	..	..	151	..	..	..	..	..
5	Do. 4th May ..	1,069	..	..	..	..	1,543	256	..	..	..	..
6	Do. 11th " ..	..	344	..	..	..	..	..	..	9	..	..
7	Do. 18th " ..	591	53	17	..	..	..	..	..	..	..	..
8	Do. 25th " ..	335	..	..	..	..	..	..	..	..	..	..
9	Do. 1st June ..	476	35	..	..	..	511	44	..	..	..	..
10	Do. 8th " ..	335	35	..	..	..	..	..	..	..	..	..
11	Do. 15th " ..	317	132	..	..	..	502	27	..	..	..	..
12	Do. 22nd " ..	256	79	..	..	..	101	..	..	..	..	..
13	Do. 29th " ..	273	71	..	..	..	400	..	..	..	..	..
14	Do. 6th July ..	194	..	..	..	..	475	..	..	..	..	..
15	Do. 13th " ..	309	26	..	..	..	348	..	..	..	..	..
16	Do. 20th " ..	168	71	..	150	..	1,411	..	..	..	..	..
17	Do. 27th " ..	555	62	34	..	..	1,156	..	..	..	..	..
18	Do. 3rd August ..	212	53	..	..	..	388	..	..	..	..	..
19	Do. 10th " ..	432	168	..	..	..	2,206	35	..	..	..	..
20	Do. 17th " ..	246	70	..	..	..	1,843	..	..	..	..	..
21	Do. 24th " ..	511	..	..	..	..	1,446	97	..	..	..	..
22	Do. 31st " ..	547	..	..	..	..	3,434	58	..	..	..	..
23	Do. 7th September.	723	88	..	..	..	2,245	..	..	..	..	..
24	Do. 14th "	220	44	..	..	..	2,988	..	..	..	177	..
25	Do. 21st "	458	..	..	35	..	3,388	..	..	..	..	123
26	Do. 28th "	882	44	..	..	..	2,866	..	..	..	..	..
	Total ..	13,297	1,718	51	185	..	2,564	..	..	..	..	..
							34,408	641	..	9	177	123

Read—the following letter from W. A. WILLOCK, Esq., Acting Collector of Vizagapatam District, to the Secretary to the Commissioner of Revenue Settlement and Director of the Department of Land Records and Agriculture, dated Pottinghy, 12th September 1889, No. 1-J :—

I have the honor to reply to the Board's Proceedings, No. 2613, dated 6th July 1889, calling for a report on the prospects of the East Coast Railway.

2. As a famine protective work I do not think that it would be of very great value to this district. Vizagapatam, though liable to seasons of great scarcity, is hardly a famine area, and when such unfortunate occasions do occur it has the Godávari on one side and the Agency, with the rich Chattishgar country behind it, on the other to fall back on, both within easy distances for cart and bullock traffic. It can feed itself from these sources unaided so long as money wherewith to purchase grain is forthcoming, but a railway would greatly reduce the prices in times of scarcity and would provide against the danger of cart traffic being stopped by an outbreak of cholera such as prevailed during the past hot weather. Fortunately, on this occasion ample stocks of grain had been secured before the epidemic became serious, or prices would have risen greatly owing to the disinclination of cart-owners to travel while it lasted. Though a railway cannot be said to be a necessity as a protection against famine for this district it is, judging from the imports by sea, never quite able to feed its population, and in a season of serious scarcity, a thing which may be expected about once in five years, the grain traffic from the Godávari is very heavy. Were the East Coast railway constructed, its transport would be all effected by rail, and the abnormal receipts therefrom on such occasions may fairly be regarded as a reliable source of revenue for the proposed line. During the last 20 years there were three other seasons in which at least as great a failure of the crops as that of 1888 took place, and I believe there were two more between 1860 and 1869. One may therefore fairly

count on abnormal grain traffic once in five years. During the past dry weather statistics were recorded of the movement of food-stuffs along the Trunk Road (Tuni to Chicacole) with a view to the Revenue Department being kept informed of how the supply of grain was progressing. The period over which this registration extended was from the 12th February to the 30th April, and the returns obtained at Paikarowpeta, Anakápalle and Ramastalam affect the railway question. The first of these stations is in the extreme south of the district near Tuni, the second is a large town 20 miles south of Vizagapatam where the Vizianagrum, Chicacole and Vizagapatam roads may be said to diverge, and a third is a few miles south of Chicacole. The traffic in paddy, rice and dry grains registered at each was as follows :—

	Laden carts.	Equivalent in tons.
Paikarowpeta	33,713	22,475
Anakápalle	15,860	10,577
Ramastalam	316	210

The imports by sea, which practically all came from the Godávari, during the same period were.—

	tons.
Vizagapatam	2,778
Bimlipatam	2,219
Total ...	4,997

3. The total imports during this period, *i.e.*, those which came by sea *plus* those which passed through Paikarowpeta, amounted to 27,472 tons, of which more than four-fifths came by land. The movement of grain into the district had commenced long before this registration of traffic was taken up, and may be considered to date back to the 1st August 1888, by which date it was clear that the dry crops were poor and the paddy cultivation in a precarious condition. From the 1st August 1888 to the 12th February 1889, the imports of grain by sea amounted to 11,166 tons. Between the 1st May 1889 and the 31st July 1889 they amounted to 1,505 tons and those by land to 11,418 tons, or nealy eight times as much. Bearing the proportion which the land transport bore to that by sea in the periods between the 13th February and the 31st April, and between the 1st May and the 31st July in mind, if we take the imports by land during the first part of the year at 20,000 tons, the estimate will be a very moderate one indeed. This would give a total import of 70,056 tons, or 70,000 tons in round numbers, for the year during which the district suffered from scarcity or apprehended scarcity, exclusive of what came in from the Agency which probably amounted to another 20,000 tons. The results obtained at Penduru. Natavalsa and Boddavalsa by the general traffic registration stations leads me to estimate that about 1,000 tons of grain were distributed, monthly from Vizagapatam or its vicinity and 2,000 from Bimlipatam during the period of scarcity. This would come to about half the total imports as estimated above, which is about what I would have expected.

4. At the same time enormous numbers of carts were pushing their way in search of grain up the Pottinghy ghât and the Rayaghada pass into localities where wheeled vehicles had never been seen before, and the requirements of the Sálúr. Bobbili and Párvatipur taluks at any rate were largely supplied in this way. They probably received from these sources a quantity equivalent to one-third of the imports from elsewhere or 23,000 tons, their population being, roughly speaking, about one-quarter of that of the whole of the ordinary tracts, and the pressure of the season being quite as severely felt in them as in the rest of the district. Large quantities of grain passed Vizianagrum going northwards, though but little got as far as Ramabhadrapur, 30 miles up the road, from which I conclude that a very slight diminution in the cost of transport would have given a great deal of the supply of these taluks to the Godávari. However, any increase of the sort in the probable imports by rail in case of scarcity may be set against competition by cart, and the total requirement of the district to be met by rail transport in such case may be set at 70,000 tons.

5. Vizagapatam would have been but little better off than Ganjam last hot weather had it not been for the relief which the vast labor market of the Godávari and Kistna districts offered to the classes which felt the pressure most severely—those living by daily cooly,—and in facilitating access thereto the line would be of inestimable service. The annual repairs to the irrigation works of the delta districts afford an immense field for the employment of laborers, and wages are high and food cheap there at all times. Emigration with a view to employment on these works is always very active in the hot season in Vizagapatam, but this year the movement attained extraordinary dimensions. I had returns of the number of coolies passing back and forwards taken at Yellamancihli—a point about 25 miles north of Tuni—from the 25th May to 6th July 1889, and ascertained that 10,107 coolies passed towards the Godávari and 6,280 returned during that period. The movement had however declined a good deal then. I had similar returns taken from 22nd to 31st August and found that 349 laborers had moved south and 5,030 returned to their homes in those few days. On these data I estimate that the number of coolies who returned to their homes during June, July and August were about as follow:—

June	4,000
July	15,000
August	15,000

As the stream is still unbroken, I do not think that the number of cooly emigrants can have been much short of 50,000 for the whole season. The suffering and loss of health which their long journey on foot must have entailed on those who undertook it, most of whom came from the north of the district and many of whom had long been on short rations, calls for no comment from me. The receipts which the railway would have taken from this traffic would not have amounted to much, but the relief the cooly population would have derived in being saved the long march can hardly be overrated. It must be remembered that there were probably at least two members of each family left at home, for every one who emigrated depended on his earnings for their support.

6. While writing on this portion of the question, I may as well dispose of the grain traffic of ordinary years also. The following statement shows the imports of grain by sea during the four years ending 1887-88. I exclude last year as an exceptional one and go back only four years so as to get results for the quinquennial period during which one year of scarcity may be expected:—

	TONS.
1884-85	1,993
1885-86	8,356
1886-87	6,161
1887-88	4,980
Total ...	21,490
Average ...	5,372

This gives an average of 5,372 tons imported by sea in normal years. The statistics of traffic referred to above show that in abnormal seasons the imports by road are very much heavier than those by sea. They probably always are, but I will assume that in average seasons they are equal. We then have a normal import of 10,744 tons for four years and then an abnormal one amounting to 70,000 tons. Deducting the normal rate of importation from this and distributing the balance over the five years, we get 22,595 tons as the average traffic in grain with the Godávari. All this would come by rail were the line constructed, and some of the supplies which the north of the district derives from the Agency would do so also.

7. Turning now to the prospects of the East Coast Railway as a commercial undertaking, I must first point out that its construction would at once transfer the whole of the trade of Bimlipatam to Vizagapatam. The former has no advantages over Vizagapatam as a port, though some of the local merchants may find it suits them to assert the contrary. It derives its present importance from its position, 16 miles

nearer the richest part of the district and the Central Provinces than Vizagapatam, but with the line of rail running to the latter this would count for nothing, and the whole of the trade would transfer itself thither without delay. I, therefore, think that, in considering this portion of the railway, the two posts may be regarded as concentrated at Vizagapatam.

8. The following table gives the exports of the principal articles dealt with during the last three years:—

STATEMENT of the export trade of the Vizagapatam district in tons.

Articles.	Coasting trade.				Foreign trade.			
	1886-87.	1887-88.	1888-89.	Total.	1886-87.	1887-88.	1888-89.	Total.
	TONS.	TONS.	TONS.	TONS.	TONS.	TONS.	TONS.	TONS.
Drugs and medicines ..	167	175	190	532	..	..	..	..
Dyeing and coloring materials	410	403	453	1,266	6,502	2,904	2,374	11,780
Grain and pulse	130	80	87	297	..	..	..	..
Hides	1,328	1,120	859	3,307	..	1	4	5
Lac	46	198	145	389	..	16	..	16
Seeds	1,929	4,854	5,433	12,216	13,913	9,467	6,915	30,295
Sugar	6	1	47	54	9,821	10,587	11,846	32,254
Total ..	4,016	6,831	7,214	18,061	30,236	22,975	21,139	74,350

As the railway is only concerned with large quantities of heavy goods, I have excluded all except the principal articles of export. All the coasting trade in these is with ports too far away to allow of any possibility of land carriage competing with sea transport; and it may therefore be lumped with "foreign" in considering the prospects of the railway. The net result is that about 30,000 tons of these commodities find their way to the coast for shipment every year. Of these articles jaggery accounts for about one-third, say 10,000 tons. Most of it comes from about Anakápalle, but a good deal is grown in Pálkonda and the north of the district. Even the latter is shipped at Vizagapatam instead of at the nearer port of Bimlipatam owing to the bad name which the northern jaggery has in the London market, and it would all go to Cocanada were the railway open to secure the advantage of the much better reputation of that port for this article of produce and to avoid shipment through the surf. Of the remainder of the articles exported, the great bulk comes from the country beyond Vizianagrum (towards Párvatipur and Pálkonda) and from the Agency and Central Provinces. The country immediately surrounding Vizagapatam and Bimlipatam is comparatively poor with the exception of the rich tract round Anakápalle, which grows chiefly sugarcane and food-grains, and I doubt if any exportable produce is raised within a radius of 25 miles of these ports, except a small quantity of gingelly seed and the Anakápalle jaggery, which latter would go to Cocanada for shipment. This view is supported by the fact that the registration now in progress shows that eight tons of oil-seeds—the principal article of export—come from beyond Vizianagrum for every one ton which joins the stream down the main road there, and this ton would include all that came in from Pálkonda as well as local produce. All produce from the tract north of Vizianagrum would come at least 40 miles by rail along the main line, and the bulk of it would also be conveyed an average of 30 miles along the Párvatipur branch, if it were constructed. The produce of the more remote littoral taluks would also follow the railway line for an average of 40 miles, as much would come from near Pálkonda and from the extreme south. The mile tonnage of the export trade specified above would therefore, be in round figures 1,600,000:—

	Ton miles.
10,000 tons of jaggery, 80 miles (from Anakápalle to Cocanada) ...	800,000
20,000 tons of other produce, 40 miles	800,000
Total ...	1,600,000

Of course all this would not be transported by rail at first, but the whole of the jaggery would, and much would come a far longer distance than the estimate allows, while the carry of 40 miles estimated for other exports is very low indeed, as the rich country between Pálkonda and Chicacole on the north would be about 75 miles distant from Vizagapatam. The present export trade in these articles which might be expected to resort to railway transport would, therefore, give 13,333 tons per mile on the total mileage within its borders, which I take at 120 miles.

9. According to the estimate of the Salt department, the following quantities of salt have passed into the Central Provinces by the Párvatipur and Potinghy routes during the past three years:—

—	1886-87.	1887-88.	1888-89.	Average.
	mds.	mds.	mds.	mds.
Párvatipur route	204,344	222,558	137,420	188,107
Sálúr route	130,869	84,031	60,250	91,717

The quantity has declined a good deal of late owing to the opening of rail communication between Chattishgar and Bombay, but the construction of a branch of the East Coast Railway to Párvatipur would win much of this custom back. These figures give an average total of 279,824 maunds, or, roughly speaking, 10,000 tons. This would all come from the Karassa factory near Vizagapatam, into which there would, I presume, be a railway siding, as was proposed for the Raipur-Vizagapatam line. It would all pass the junction of the main line with the branch to Párvatipur and move, say, 40 miles along the former and another 35 miles on the average along the latter. There would also be the ordinary consumption of the more remote taluks through which the line would pass to be provided for. This and the increase in the supply of the Central Provinces may be set against cart traffic, though the allowance seems excessive. The 10,000 tons referred to above would be equivalent to a tonnage of 3,333 tons per mile over the whole mileage of the main line within Vizagapatam.

10. We, therefore, find that the portion of the traffic of the district in the few articles detailed in paragraphs 8 and 9 which might be expected to pass along the railway would give at a very low estimate the following tonnage per mile over the 120 miles of the main line which would run through Vizagapatam, exclusive of the traffic along the Párvatipur branch, which I will deal with further on—

	Tons per mile.
Chief articles of export	13,333
Salt trade with the Central Provinces *viâ* Párvatipur, &c.	3,333
Total ...	16,666

11. A rough estimate of the general traffic of the district as compared with that of the similarly situated area given by the South Indian Railway can be arrived at in the following way. In paragraph 53 of the Administration report of the Public Works Department, Railway Branch, we learn that the total traffic of the South Indian Railway for 1888 in ordinary goods was 669,183 tons, the receipts therefrom Rs. 22,44,289 and the receipts per mile 8·094 pies. This gives an average mileage of 79·5 miles and an average tonnage per mile of 81,403 tons. In the same paragraph will be found a list of the principal articles carried and the receipts from each. The articles in this list, which correspond with the chief articles of export in Vizagapatam, and salt are cotton, hides, jaggery, seeds and salt. The average receipts from goods of all sorts during the last three years were Rs. 21,51,255 and the receipts from these items Rs. 5,67,598, or 26·4 per cent. of the whole. The circumstances of the area served by the South Indian Railway are very similar to those of this part of the proposed East Coast Railway, except in that the latter runs through a more fertile country. There seems, therefore, to be no reason why the percentage between the traffic in these articles, which holds good for the South Indian Railway, should not

afford a fair indication of what the total goods traffic here is, unless it be that the soil of Vizagapatam is richer and capable of producing larger quantities of exportable produce, which would of itself be an excellent argument in favor of the construction of the railway. Applying these percentages we arrive at a total probable existing traffic of 63,131 tons per mile of the main line against 81,403 tons on the South Indian Railway. This supposes the average freight per ton of the other articles moved by the South Indian Railway to be about the same as what would on the average be charged on the remaining traffic of this district. Any difference which might exist would probably be in favor of the less civilized country.

12. I would point out that due weight must be given to the very important fact that my estimate of the traffic in the articles selected is based on actual exports and information about salt which is almost as reliable, and does not take into consideration local transfers which the South Indian Railway returns do. If it could do so the probable tonnage would be vastly increased. It also deals only with the Vizagapatam district's contribution to the traffic of the section of the line within its limits, and does not take the through traffic into account at all. I have also considered only the existing state of things and made no allowances for future developments of trade, and if I have underrated the competition of carts in the carriage of exports, which I doubt, I have very largely overrated its importance with regard to salt. In addition to all this, I have entered the average distances over which rail transport would be employed at a very low figure indeed.

13. Besides the transport of the articles just referred to, there would be an average grain traffic of 22,595 tons for, say, 80 miles to be placed to the credit of the 120 miles of rail in the district, or an addition to the mile tonnage of 15,100 tons. If we adopt the method of comparison with the traffic of the South Indian Railway just made use of, adding grain to the article selected, we get an even better prospect for the East Coast Railway, though one short of the true one, as it does not take into account the local movement of grain.

14. I have assumed that only jaggery would be railed to Cocanada, but it seems highly probable that large proportions of other exports would be transported thither also at certain seasons. Regarding this I cannot do better than quote the following extract from a letter from Mr. Macnab, Chairman of the Cocanada Chamber of Commerce and a partner in Messrs. Hall, Wilson and Co. and Messrs. Stuart, Hall and Co., the leading shipping firms on this part of the coast:—

"The general run of vessels now carrying our produce to Europe are cargo steamers of 2,500 tons dead weight capacity, on an average, costing, perhaps, when new £35,000, at £40,000. The actual cost per day to the owners of maintaining such a steamer at anchor, that is to say, daily cost in wages, diet, marine insurance (5¼ per cent.) and depreciation (10 per cent.) would be about £35 or £40, say the latter, £40. Interest on block value, you will observe, is not here included. Now to take in one of the northern ports (Vizagapatam or Bimlipatam) as a second port of call, Cocanada being the main port of loading (the usual course in the trade at present), owners would allow for an additional detention of, say, seven days, representing an extra outlay on maintenance of vessel of (7 days × £40 =) £280, and if we add to that £20 for extra port dues, £10, cost of coal changing port, and £10 for incidental expenses, we get a total of £320. On the other hand the statutory (I had almost said at any rate the established) allowance for a second or extra port of loading is 2*s*. 6*d*. per ton on the whole cargo, for example, supposing I chartered a steamer to load at Cocanada with option of sending her to a second port, I should pay (let us say) 40*s*. per ton if I gave her a full cargo at Cocanada, but if I exercised the option of sending her to Vizagapatam to commence or to complete, the freight would be 42*s*. 6*d*. per ton all round. The extra freight accruing to the ship owner on a cargo of 2,500 tons would thus be £312 10*s*. against actual cost of seven days' maintenance, (£320). These are the estimates which usually guide ship-owners in negotiating a charter. On the one hand if he is in luck in the way of despatch, he may save 2 or 3 days' maintenance (£80 to £120). On the other hand if the full seven days are occupied, there is a negative loss of seven days' interest on block value, say (at 10 per cent. per annum) £77. On the whole at half-a-crown a ton the balance of probabilities is decidedly against the vessel's interests and ship-owners would prefer loading at a single port for 40*s*. rather than at two for 42*s*. 6*d*.

"Of course if a steamer loaded a full cargo at Vizagapatam, the all-round freight would be under present conditions the same as at Cocanada, but this is very rarely possible. At equal rates, Cocanada undoubtedly offers advantages to the shipper or merchant, but it is an advantage that cannot very well be expressed in money beyond a trifling saving in actual shipping charges (*i.e.*, cost of putting the produce alongside the steamer).

Practically, therefore, the difference between Cocanada and Vizagapatam in homeward freight is 2*s.* 6*d.* per ton, but as it is 2*s.* 6*d.* on the whole cargo and not merely the Vizagapatam portion, we may take it that the extra freight fairly debitable to the Vizagapatam portion is 5*s.* per ton or say Rs. 3-12-0."

If this view be correct—and I see no reason to doubt it—the Vizagapatam contribution to the traffic of the railway would be much greater than my estimate.

15. The collection of statistics of the trade along the route from Vizagapatam to the Central Provinces *viâ* Párvatipur and Rayaghada has on several occasions received considerable attention in view of the possibility of a railway being constructed in that direction, and all except the most recent information available on the subject of road traffic refers to this line. As the branch to Párvatipur is an essential feature in the East Coast project, it is well to detail the result of these inquiries before going into the comparatively scanty figures which we have regarding the main line. I had also better explain that the main route from the Central Provinces to the sea runs nearly north and south through Ambadola and the Rayaghada valley to Párvatipur and then on to Vizianagrum. At Párvatipur another road striking the coast at Calingapatam through Pálkonda joins on. This is not much used for down traffic, but owing to the popularity which Ganjam salt enjoys amongst the Brinjaries a very large proportion of the trade in this article comes up this way. At Ramabhadrapur, 22 miles south of Párvatipur, the traffic from Jeypore and the Potinghi ghât (*viâ* Sálúr) joins on to the main line. The stream is further swollen by the transport along the Pálkonda road at Vizianagrum, where also a small amount of traffic from Srungávarapukóta adds itself from the west, and 11 miles south of Vizianagrum the trunk road from Chicacole contributes its share at Modavalsa.

16. The first attempt to collect information was made in the dry season of 1874-75 with the following results. Details of the up and down trade are not available :—

STATEMENT of traffic statistics taken in 1874-75 on routes from the Agency to the Coast.

Year and month.	Rayaghada to Párvatipur road.	Párvatipur to Pálkonda road.	Párvatipur to Vizianagrum road.	Sálúr to Vizianagrum road.
	TONS.	TONS.	TONS.	TONS.
November 1874	..	1,090	1,088	1,355
December ,, ...	..	1,398	1,300	1,563
January 1875	1,399	2,066	2,798	3,805
February ,, ...	4,051	2,411	3,880	4,070
March ,, ...	3,906	5,628	3,959	3,691
April ,, ...	3,898	..	..	..
May ,, ...	1,661	..	..	..
Total ..	14,915	12,593	13,025	14,484
Estimate for remaining months of year	..	..	9,648	10,385
Grand Total ..	..	..	22,673	24,869

The traffic through Rayaghada was at the time altogether by pack bullocks. The estimate of the traffic in the remaining months of the year was based on actuals taken now and then for a few days at a time and is fairly reliable. I was Senior Assistant Collector at the time and the work of the establishment which recorded these statistics was carefully supervised by me and I feel confident that it was accurately done. One very striking point in connection with the Rayaghada route attracted the attention of every one interested in the matter—the fact that, allowing for casualties due to so long a journey, every bullock which came down from the Central Provinces carried back its load of salt, which showed that the main purpose of the trade was meeting the demand for salt inland and not the disposal of surplus produce, which must have largely exceeded the salt requirements of the country supplied in weight. I have statistics for other roads taken at the same time, but they are discrepant and seem exaggerated and I think it better not to refer to them. These returns show the trade between Ramabhadrapur (where the Párvatipur and Sálúr routes join) and Vizianagrum to have been about 47,500 tons per annum at this

time. To this should be added about 10,000 tons on account of the salt traffic with the coast *viâ* Pálkonda which was then very heavy and which would have come from Vizagapatam had a railway existed.

17. The next statistics which I have been able to find relate only to the traffic through Rayaghada (30 miles north of Párvatipur) during the cold seasons of 1876-77 and 1877-78. They were taken when carts were first beginning to find the Rayaghada pass practicable and to supplant pack bullock carriage. Up and down traffic were not separately recorded. The following statement shows details :—

STATEMENT of traffic through Rayaghada in portions of 1877 and 1878.

Period.	Salt.		Gingelly seed.		Other articles.		Total.	
	Bullock.	Carts.	Bullock.	Carts.	Bullock.	Carts.	Bullock.	Carts.
From 30th December 1876 to 7th April 1877 ..	72,480	227	52,122	461	57,983	1,830	182,585	2,518
From 19th January 1878 to 31st May 1878	36,071	388	27,102	2,378	49,689	3,066	112,862	5,832

Taking 15 bullock-loads or 2 cart-loads to the ton—a fair allowance on this track—the result would be—

	1877. TONS.	1878. TONS.
Salt	4,945	2,599
Gingelly	3,705	2,996
Other articles	4,781	4,846
Total ...	13,431	10,441

18. In the first three months of 1879 very careful returns of traffic were taken between Rayaghada and Bimlipatam and also on the roads from Párvatipur to Pálkonda, Pálkonda and Srungavarapukóta to Vizianagrum, and Chicacole to Bimlipatam. The returns seem to have been mislaid, but I have found an abstract of the results, which gives the following details :—

TRAFFIC statistics taken in 1879 (January to March).

Traffic stations.	Up.	Down.	Remarks.
Main road from Coast to Central Provinces.	TONS.	TONS.	
1. Rayaghada	5,781	4,441	82 miles north of Vizianagrum.
2. Párvatipur	1,477	5,549	52 do. do.
3. Kottaki	3,262	5,030	Branch from Sálúr and the Potinghi ghât.
4. Arikatota	2,871	8,722	26 miles north of Vizianagrum.
5. Nelivada	4,025	9,192	8 do. do.
6. Nilayya Chetram	7,779	10,416	10 do. south of do.
Other roads.			
7. Párvatipur-Pálkonda road ..	6,820	4,811	Taken near Párvatipur.
8. Pálkonda-Vizianagrum road ..	1,146	5,487	Taken 3 miles from Vizianagrum.
9. Srungavarapukóta-Vizianagrum road.	2,634	10,019	Taken 3 miles from Vizianagrum.
10. Trunk road (Tuni to Chicacole) ..	2,435	3,437	Taken 33 miles south of Chicacole.

With the exception of route No. 9, I believe these returns to be reliable, though they may not seem so at first sight, as a complicated allowance has to be made for salt from the Ganjam factories passing to Sálúr through Párvatipur. This seems to have amounted to 2,000 tons during this period and accounts almost exactly for several absences of agreement in the returns of different stations. The total stream of traffic into the Agency (almost all salt) is represented by the up traffic of stations Nos. 1 and 3 (9,043 tons), and it will be observed that this corresponds fairly with

the up traffic of stations Nos. 2 and 7 (8,297 tons), which gauge the same stream a little lower down. There are several other little points of the sort which to a person who knows the country well afford strong internal evidence of reliability and I am well satisfied with the way in which the figures work into each other. The net result is to show the total traffic on the Coast-Central Provinces road at the points where things are not complicated by local currents to have been as follows during the three months :—

	tons.
* Rayaghada (84 miles north of Vizianagrum)	10,222
Arikatota (26 miles north of Vizianagrum)	11,593
Nelivada (8 miles north of Vizianagrum)	13,217
Nilayya Chetram (10 miles south of Vizianagrum)	18,195

* The Rayaghada returns include the salt traffic from Ganjam *vid* Pálkonda.

In considering the prospects of the branch of the East Coast Railway to Párvatipur, at least 8,500 tons of the traffic on the Pálkonda-Párvatipur road No. 7 must be added to that of Arikatota, Nelivada and Nilayya Chetram, as the whole of the 6,820 tons up traffic on that road consisted of salt which would have come by rail from Karassa, and some allowance must be made for down trade which went to utilize the carriage sent for salt. This would make the traffic at Arikatota, which may be taken to be representative of the section between Párvatipur and the main line, about 20,000 tons during the three months.

19. Appended to Mr. Goodrich's report on the prospects of the Vizagapatam-Raipur line (No. 765, dated 18th June 1883) will be found a diagram showing the trade of the district for the first six months of the same year. I am not sure of the data he has used for the conversion of cart-loads into tons and consequently can only give his results which will be found in the following statement :—

Traffic statistics taken in 1879 (January to June).

Traffic stations.	Up.	Down.	Remarks.
	Main road from Coast to Central Provinces.		
	tons.	tons.	
Rayaghada	10,656	32,650	82 miles north of Vizianagrum.
Párvatipur	8,602	21,430	52 do. do.
Kottaki	10,235	26,060	Branch from Sálúr and Potinghi ghat.
Arikatota and Nelivada } average	14,012	41,000	26 miles north of Vizianagrum.
Nilayya Chetram	..	..	8 do. do.
	20,947	50,000	10 do. south of do.
	Other roads.		
Párvatipur-Pálkonda road	10,753	25,000	Taken near Párvatipur.
Pálkonda-Vizianagrum road	7,459	9,600	Taken 3 miles from Vizianagrum.
Srungavarapukóta-Vizianagrum road ..	?	?	Taken 2 miles from Vizianagrum.
Trunk road (Tuni to Chicacole)	4,165	6,000	Taken 33 miles south of Chicacole.

I am not altogether satisfied about a few of these figures, which seem to be estimates rather than actuals in some cases, but bearing the actuals of the first three months in mind, they leave little doubt but that the traffic on the main road from Párvatipur to Vizianagrum must have been about 60,000 tons for the year. Yet this year was an exceptionally bad one for trade as will be seen from the following statement of the value of produce exported about that time :—

	Rs.
1876-77	38,66,454
1877-78	55,27,259
1878-79	38,54,421
1879-80	31,21,258
1880-81	41,33,606
1881-82	47,04,221
1882-83	47,27,912

20. Another series of statistics were collected between October 1884 and October 1885. These covered the whole distance from Vizagapatam to near the frontier, but the returns for the stations between Chittivalsa and Vizagapatam seem to me untrustworthy. Some articles were registered by number and some by weight, which makes any general conversion into tons impossible, and as certain goods seem to have been registered under one head at some stations and under others elsewhere the tonnage I have arrived at does not correspond with my expectations at the different stations in all cases. The following statement gives the results between Rayaghada and the Coast, excluding short distance traffic :—

Statement showing traffic results on road from Párvatipur to the Coast in 1884-85.

—	Up.			Down.		
	Goods in tons.	Other goods by number.	Passengers.	Goods in tons.	Other goods by number.	Passengers.
Rayaghada (82 miles north of Vizianagrum) ..	3,019	149,220	3,095	18,314	102,271	2,459
Párvatipur (52 miles north of Vizianagrum) ..	1,887	13,263	13,772	14,923	58,025	12,168
Ramabhadrapur (30 miles north of Vizianagrum) ..	13,644	222,416	144,307	51,148	373,231	141,307
Gajapatinagaram (13 miles north of Vizianagrum) ..	12,637	411,148	100,606	45,306	645,167	95,806
Boddavalsa (5 miles south of Vizianagrum) ..	13,477	198,542	210,690	21,040	260,507	214,658
Chittivalsa (13 miles south of Vizianagrum) ..	7,610	383,930	134,956	21,780	527,320	125,650

With regard to the up traffic, a great deal of the salt from Ganjam would not have come near the registering station at Párvatipur ; hence the increase which Rayaghada shows over Párvatipur. All the Boddavalsa traffic must have passed through Chittivalsa, but the former shows 13,477 tons, while the latter shows only 7,610. The latter, however, has an increase of nearly two lakhs under "articles," which no doubt accounts for the difference. Under down traffic about 6,000 tons more were registered at Ramabhadrapur than at Gajapatinagaram, 17 miles nearer the coast. The figure for Ramabhadrapur is, however, the total of the figures on the two of roads to Sálúr and to Párvatipur and consequently every cart, which passed either way between those towns, appears in the total under both "up" and "down." Allowing for "articles" the stream of traffic between Vizianagrum and the Coast received a large addition between Chintalavalsa and Chittivalsa evidently from the Chicacole road. I think that all marked discrepancies as regards tonnage are fairly explained in this way and that the results obtained at each station confirm each other and indicate a traffic of about 58,000 tons at Gajapatinagaram and 34,000 between Vizianagrum and the sea exclusive of "articles." I must, however, acknowledge that the balance, which remained in Vizianagrum, seems unduly large. The record regarding passengers, I fear, is utterly valueless. For railway purpose an addition will have to be made to this tonnage on account of salt from the Ganjam factories, but I have no means of estimating the amount.

21. On the whole these statistics may be summed up as follows :—

The results obtained in 1874-75 indicated a total traffic of 57,500 tons about the centre of the Vizianagrum-Párvatipur road, of which probably 18,000 tons passed through Rayaghada. Those of 1877 and 1878 show a traffic of 13,431 tons and 10,441 tons, respectively, as having passed through Rayaghada during the best part of the brinjary season. The results of 1879 point to a traffic of perhaps a little less than 60,000 tons between Vizianagrum and Párvatipur with about 20,000 tons through Rayaghada. The operation of 1884-85 gave a total of a good deal over 58,000 tons on the Vizianagrum-Párvatipur section, 21,000 tons through Rayaghada and 34,000 tons between Vizianagrum and the Coast. Allowing for Ganjam salt and the connected trade *vid* Pálkonda, the traffic of 1884-85 may be taken at 65,000, 21,000 and 40,000 tons, respectively, at these three points.

22. The uniformity of the results arrived at over such a long interval is striking and makes it tolerably certain that the traffic of the Párvatipur-Vizianagrum road has for many years been about 50,000 tons and may be taken as having been at least

60,000 tons per annum four years ago (subject to an increase on account of Ganjam salt), of which 20,000 tons was with the Central Provinces *viâ* Rayaghada, while a somewhat larger amount went inland *viâ* the Potinghi ghât. I have reason to believe that the Rayaghada transport has decreased somewhat of late owing to the extension of railway communication with Bombay in the Central Provinces, but this has been counterbalanced by an increase in the Jeypore stream, which is growing with great rapidity as roads are pushed further and further in that direction. Owing to the death of the Jeypore Maharajah and the minority of his son that estate, which consists of 11,000 square miles of country, much of it of very rich soil, will now come under the management of Government and I trust that the greater part of its large surplus revenues will be expended on its development and on the correction of many abuses which now prevail in its revenue administration and hinder the progress and prosperity of its population. If this is done the Jeypore share of the traffic will soon assume enormous dimensions.

23. The 60,000 tons which the Párvatipur branch would have to count on to start with would be a very handsome contribution to the traffic of the main line. Much of it would go at least as far as Vizagapatam along it. A good deal would probably go to Cocanada if Mr. Macnab's views are correct. But this branch will never stop at Párvatipur. Its construction would win back a good deal of the lost trade in salt with Chattishghar and Raipur, which was estimated in 1883 at 30,000 tons (*vide* Board's Proceedings, No. 2352, dated 13th August 1883). Every ten miles it was pushed onwards towards Raipur would bring a contribution of many thousands of tons of the trade of the Central Provinces to the part of the line already open and the fine forests of Bissemkatak would soon add their share of timber trade to the work to be done. Neither Bombay nor Calcutta could enter into competition even with Cocanada for the trade of the Chattishghar country were railway communication opened between Raipur and the east coast and Vizagapatam would have the advantage of being 100 miles still nearer. Vizagapatam at present is only a moderately good port, but I believe that there is no question but that it could, at a moderate cost compared with such harbour as Colombo and Madras, be converted into one which would not only allow of shipment alongside wharves but would afford a safe and easily accessible refuge in bad weather and perfect security in time of war. It is the only port between Trincomalee and the Hugli which offers this prospect. That some project for utilizing its natural advantages will be carried out sooner or later is beyond doubt. It is only a question of when its trade will justify the expenditure, or, which comes to the same thing, of when the Central Provinces are to be placed in communication with the sea by means of their natural outlet. The desirability of opening the branch to Párvatipur does not, however, depend on these considerations. I trust the statistics dealt with above show sufficiently clearly that, in addition to the passenger traffic of some of the most densely populated areas in the Presidency and a promising traffic of its own, it will bring a contribution of goods for carriage to the main line, which is even now of very large dimensions and which is capable of enormous expansion. It is also worth considering whether this promising branch should not be constructed before the main line is prolonged into Ganjam. It is just possible that it might be found advisable to continue the line up the coast by carrying the Párvatipur branch on through the Kurapam-Buttelly gap in the hills which form the Pálkonda agency nearer the coast, and so on through the rich Kimedi country. I do not think that there would be any engineering difficulties about this, and it would secure the traffic of Gunupur and Kimedi, both very fertile tracts. It would involve an addition of 30 miles or so to the through length of the line, but this would be compensated for when the Vizagapatam-Raipur Railway is constructed, as it must be some day, by the great facilities which this route would offer for traffic between the Central Provinces and Ganjam and Orissa. This route would tap a very rich country situated at a considerable distance from the sea which should be much to the advantage of the line financially.

24. Before leaving this part of the subject I may as well state that I do not think that this branch will suffer much for competition with cart traffic. The cart-owners of the north of this district almost invariably combine the

work of petty traders with that of transport. The loads they carry are usually for the time their own property, on their return journeys at any rate. With railway communication established the portion of their profits which they derive from this custom would disappear, as the large dealers would under-sell them with rail-borne articles and by means of their greater experience and business facilities. But these cart-owners are most enterprizing in their expeditions in the search of cheap produce. They have latterly been scouring the agency for trade in a most surprising manner, and I believe that instead of competing with the line they will prove most valuable allies to it in hunting up goods in the far interior. It is not as though they were compelled either to compete with the rail or to give up the carrying trade altogether. They have still an ample field for employment in the agency and towards the Central Provinces, and, as they are accustomed to enormous journeys, I feel confident that they will not leave it unworked to carry on a competition in which they must lose their trader's profits as well as be ill-paid for their and their cattle's toil.

25. To go back to the subject of the main line, the operations of 1884-85 included two registration stations between Chittivalsa and Vizagapatam, one at Vemulavalsa, where the road to Vizagapatam diverges from the trunk road (from Chicacole to Tuni) at a distance of about 16 miles from Vizagapatam, and the other at a point 5 miles north of that town called Hanumanthavaka. The results are shown below :—

Statement showing traffic registered between Chittivalsa and Vizagapatam in 1884-85.

	Up.			Down.		
	Tons.	Articles by number.	Passengers.	Tons.	Articles by number.	Passengers.
Vemulavalsa-Vizagapatam road	785	21,990	24,777	3,258	45,725	26,505
Do. Trunk road	2,316	28,372	31,016	1,744	66,005	35,209
Hanumanthavaka-Vizagapatam road	2,445	45,928	80,866	6,888	372,601	113,814

I give these particulars as the registration was effected, but they do not concern the railway except in so far as they show the then traffic along the trunk road and its diversion through Vizagapatam. The traffic to Vizagapatam which the East Coast Railway would have to look forward would be chiefly what passes now to Bimlipatam through Vizianagrum and not that at present passing along the Chittivalsa-Vizagapatam road. The registration at Hanumanthavaka seems to include the traffic with Bimlipatam, but this is not clear.

26. In April last registration of traffic along the trunk road (Chicacole to Tuni) was commenced in connection with the general scheme of presidential registration. In addition to those on the trunk road a station was established off the line at Boddavalsa or Chintalavalsa, 5 miles south of Vizianagrum on the main road to the Central Provinces. Unfortunately this registration has been commenced at a time when the trade of the district is completely disorganized by the severe scarcity which has lately prevailed, and to make matters worse a violent epidemic of cholera broke out very soon after operation began and stopped everything but absolutely necessary traffic. The results are consequently of little value. The registration stations which affect the prospects of the railway are the following :—

Nathavalsa.—On the trunk road, where the branch from Konada to Vizianagrum crosses it.

Boddavalsa.—On the Central Provinces, coast line, 5 miles south of Vizianagrum, where the traffic from the town of Vizianagrum and the Pálkonda road joins that from the north and from the Srungavarapukota side, which passes through the cantonment.

Chittivalsa.—On the section common to the trunk road and the Central Provinces, coast line, where the traffic to Vizagapatam and Anakápalle diverges from that to Bimlipatam.

Vemulavalsa.—Sixteen miles north of Vizagapatam, where the traffic which turns south at Chittivalsa divides either towards Vizagapatam or Anakápalle and the south.

Anakápalle.—Twenty miles south of Vizagapatam, where these steamers unite again.

Timmapuram.—About 45 miles south of Vizagapatam on the trunk road, where a line into Golgonda taluk turns off.

Returns were also taken at Pendur where the road from Vizagapatam to Srungavarapukota crosses the trunk road. This station, however, hardly concerns the railway question, and I exclude it from the statement which follows. I regret to find myself obliged to omit Timmapuram also, as, owing to a mistake made about the returns from this station, I see no prospect of these reaching my camp (now near Jeypore) within a reasonable time. The following statement shows the long distance traffic at the stations selected for the five months ending 31st August in tons :—

STATEMENT of traffic registered in 1889, April to August.

Stations.	Roads.	Grain and pulses.	Hides.	Jaggery.	Oil seeds.	Salt.	Other articles.	Total.	Passengers.
	Up.	TONS.	TONS.	TONS.	TONS.	TONS.	TONS.	TONS.	
Nathavalsa ..	Konada-Vizianagrum Trunk Road	144	54	13	2	1,140	1,140	2,493	12,606
Boddavalsa ..	Central Provinces and Srungavarapukota, coast ..	1,545	3	1	1	13	563	2,126	20,761
	Vizianagrum town and Pálkonda, coast	2,856	7	2	3	1,235	496	4,599	6,938
Chittivalsa ..	Boddavalsa and Natavalsa, Vizagapatam and Anakápalle ..	4,309	22	4	41	61	1,078	5,515	31,187
	Boddavalsa-Bimlipatam ..	1,878	45	..	6	121	681	2,731	22,166
Vemulavalsa ..	Chittivalsa-Vizagapatam ..	5,887	2	1	11	1,041	703	7,645	12,662
	Chittivalsa-Anakápalle (Trunk Road)	467	27	14	3	83	391	985	14,600
Anakápalle ..	Vizagapatam-Anakápalle ..	2,203	23	3	76	29	1,023	3,357	29,853
	Vemulavalsa-Anakápalle (Trunk Road)	1,292	60	1,868	94	..	286	3,600	20,375
		7,513	15	1	33	1	475	8,038	42,596
	Down.								
Nathavalsa ..	Konada-Vizianagrum Trunk Road	149	..	4	12	1	343	509	11,709
Boddavalsa ..	Central Provinces and Srungavarapukota, coast ..	61	33	6	68	4	852	1,024	18,772
	Vizianagrum town and Pálkonda, coast	118	243	224	1,781	2	1,150	3,518	10,601
Chittivalsa ..	Boddavalsa and Natavalsa, Vizagapatam and Anakápalle ..	142	581	103	231	103	1,420	2,580	33,914
	Boddavalsa-Bimlipatam ..	198	25	172	323	2	1,803	2,523	27,519
Vemulavalsa ..	Chittivalsa-Vizagapatam ..	80	748	76	1,652	..	710	3,266	9,374
	Chittivalsa-Anakápalle (Trunk Road)	245	44	131	231	37	698	1,386	15,026
Anakápalle ..	Vizagapatam-Anakápalle ..	130	..	174	164	129	1,450	2,047	34,259
	Vemulavalsa-Anakápalle (Trunk Road)	27	41	16	2	2,133	572	2,791	24,389
		71	5	138	162	3	1,571	1,950	45,637

I fear that the returns taken at Chittivalsa are not exactly what was intended. They look to me as though considerable numbers of carts from the south had gone to Bimlipatam by this instead of the Gambiram route, though it is two miles longer and involves payment of a toll at Thalavalsa, which was not expected when the routes on which traffic was to be registered was prescribed. Inquiries will be made on the subject. As I have already stated the time of year and the peculiar features of the season render the information so far recorded at these stations of but little value.

27. The tolls collected by the District Board and Municipal Councils afford some information as to the extent of the traffic on the roads concerned. The following statement shows the prices for which the rights of collection at the toll-gates have sold during the past four years :—

STATEMENT showing tolls collected on certain roads and in Municipalities.

Tolls.	1887-88.	1888-89.	1889-90.	Equivalent in tons for 1889-90.	Remarks.
	RS.	RS.	RS.	RS.	
Local Fund Tolls.					
Párvatipur (Rayaghada trade only).	900	2,500	(a) 4,010	21,386⅔	(a) Half schedule rates.
Rambhadrapur, 30 miles north of Vizianagrum.	3,530*	3,600	(a) 9,600	51,200	
Thalavalsa, traffic between Chittivalsa and Anakápalle, and	1,215	3,510	(b) 3,515	37,493	(b) One-quarter schedule rates.
Vizagapatam and Chittivalsa ..	3,210	7,976	(a) 18,350	..	
Ranastalam, Trunk road, 13 miles south of Chicacole.	835	3,900	(a) 3,750	20,000	
Municipal Tolls.					
Vizagapatam	22,032	23,736	(c) 25,152	..	(c) Full schedule rates.
Bimlipatam	6,220	6,626	(a) 6,625	..	
Vizianagrum	11,050	11,525	(a) 10,200	..	
Anakápalle	..	..	*(a) 18,350	..	* Transferred to the Municipal Council in 1889-90.

Local Fund tolls were only instituted in 1887, and the way in which the sums realized are increasing every year shows that the full value has not been nearly touched as yet. In the fifth column of the statement I have shown the tonnage equivalent to the contractors' rents supposing only laden carts to be tolled. Of course collections are made under other items as well, but the results therefrom are comparatively small, and in the case of the Párvatipur, Rambhadrapur and Thalavalsa bars there are great complaints of evasions of payment and at all allowances must be made for cost of establishment and contractors' profits. On the whole therefore I do not think that the tonnage given is far as tray, and, as stated above, I do not believe that the full value of the contracts have yet been obtained for the Local Fund gates.

28. Bimlipatam has no through traffic except out to sea owing to its peculiar position. Its tolls bring in about Rs. 7,000 per annum allowing for cost of collection and contractors' profits. Of this sum I calculate, roughly, that Rs. 4,000 is collected on the export traffic, leaving Rs. 3,000 as the receipts on the supply of the requirements of its population of about 8,500 persons, or, say, Rs. 3,000 for 8,000 inhabitants. I think this rate would be a fair one for the district generally. Anakápalle is about half as large again as Bimlipatam. Its tolls are now estimated as worth at least Rs. 19,000. Deducting Rs. 4,500 on account of the requirements of the town, we get Rs. 14,500 as indicating the collections on trade passing through it which is equivalent to the tolls on laden carts carrying 77,333 tons. All the through traffic in this case passes along the railway route. The tolls at Ranastalam, which measure the trade with Ganjam, give an estimate of 20,000 tons, while Rambhadrapur and Párvatipur correspond tolerably well with those already arrived at. The collections at the last two stations are practically exclusively from laden carts, while at Rambhadrapur there is reason to believe that a good deal of traffic from Párvatipur escapes the tolls by following an old track from Bobbili to Maradam. The evidence derived from a consideration of the tolls statement is of some value as it corroborates the estimates already arrived at for the Central Provinces coast road.

29. As regards the passengers' traffic likely to be developed there is but little to be said beyond pointing to the census of the district and the extreme density of its population, which in three taluks, Sálúr, Párvatipur and Pálkonda, exceeds 1,200 persons per square mile. The population of the ordinary tracts was at the time of the last census 1,766,840 persons and that of the agency 693,634, and (allowing for the branch line to Párvatipur) almost the whole of the former will be brought into contact with the line. The Vizagapatam people are an energetic enterprising race, as the migration to the Godávari and the Kistna districts referred to in paragraph 5 shows, and fully as likely to take kindly to railway travelling as their fellows in the south of the Presidency. No serious calamity in the shape of famine or epidemic has fallen on the district since the last census took place, and the increase to the population has consequently probably been a long way above what the usual percentage

would indicate. The following important towns would lie on the line or on its branch to Párvatipur:—

	PERSONS.
Yellamanchilli	4,649
Anakápalle	30,291
Vizianagrum	24,294
Bobbili	14,943
Párvatipur	9,933
and	4,372
Narsapatam	5,329
Srungavarapukota	8,582
Bimlipatam	11,856
Sálúr	9,531
Pálkonda	

would not be far away. The district has also close relations with Ganjam and the Godávari, and the intercourse between their populations would probably be very great.

30. The most important festivals and the estimated number of persons who attend each are as follow:—

		PERSONS.
Sinhachellam	for the Kalyanam feast	8,000
	for the Chendana Yatra	12,000
Upmaka	for the Kalyanam feast	4,000
Anakápalle	for the Nukalamma feast	15,000
Punyagiri	for the Sivaratri	10,000
Sangam	for the ,, ...	12,000
Vaddadi	for the Kalyanam feast	12,000
Vizagapatam	for the Mohurrum feast	5,000

31. I think I have now exhausted all the information which I am at present able to supply on this subject. I hope to be able to make arrangements for the registration of traffic on the Rayaghada road and the Pottinghi ghât next cold weather which will give information of great value as regards the prospects of the Párvatipur branch.

32. I regret that owing to my absence in the agency I have not been able to have my figures checked as carefully as I would have liked, but I believe that they are fairly correct. I cannot undertake that those regarding the present registration of traffic will agree with what the Board has received, as the latter are dependent on the accuracy of the traffic gumastahs. No copies of the daily total sheets being kept, I have in consequence had to have the registers abstracted afresh.

Read—the following letter from G. F. T. POWER, Esq., Acting Collector of the Godávari District, to the Secretary to the Commissioner of Revenue Settlement and Director of the Department of Land Records and Agriculture, dated Cocanada, 14th October 1889, No. 73:—

I have the honor to furnish the report called for in Board's Proceedings, No. 2613, dated 6th July last, regarding the proposed East Coast Railway from Bezváda to Cuttack.

2. I have consulted the European and Native Chambers of Commerce at Cocanada, and enclose copies of the letters on the subject with which they have favored me. The Chairman of the former body has stated, with accuracy and lucidity, the arguments in favor of the proposed railway, both as a commercial project and as a famine protective work, and I need only say that I accept Mr. Macnab's conclusions, and proceed to furnish the statistics of goods and passenger traffic required by the Board.

3. *Trade by Canal.*—The following statement shows the traffic on the main line of navigation for 1885-86 for which year I have full information:—

	Goods in Tons.	Passengers.
Bezváda to Ellore, 38 miles, and *vice versa*	85,321	212,493
Ellore to Rajahmundry and Dowlaishweram, 52 miles, and *vice versa*	100,640	88,641
Cocanada to Dowlaishweram and Rajahmundry and *vice versa*, 38 miles	136,756	65,283

These figures are taken from half-yearly statements prepared by the Public Works Department.

4. That the railway, if made, would carry the bulk of this traffic, there is, I think, little reason to doubt. The greater speed of transit by rail would of itself be almost enough to ensure this, even if the canals were not, as they are, closed for a period varying from 1 to 3 months in every year, and constantly liable to be closed at other times of the year, especially between Bezváda and Ellore; and, as Mr. Macnab has pointed out, there is good reason to believe that a railway from Bezváda to Cocanada would carry a very considerable additional goods traffic which at present avoids the canal route, owing to the great risk of adulteration in transit, and goes to the other side of India by the Bezváda-Hyderabad route.

5. Besides the traffic on the canals, there is a large land traffic which would no doubt be carried in great part by the railway, which would be both faster and cheaper than the country cart. The following statement shows the goods and passenger traffic registered at the several stations in this district by the establishment entertained for this purpose under Board's Proceedings, Mis. No. 3538, dated 12th November 1888:—

Stations.	Routes.	——	Quantity.	Passengers.	Animals.
		TONS. CWTS.	I. MDS.		
Kovvur	From Polavaram to Vizjeswaram ..	..	11,741	9,772	112
	Vice versa	..	9,332	11,323	151
		771 10	21,073	21,095	263
	From Rajahmundry to Ellore ..	..	6,914	6,653	644
	Vice versa	..	20,313	6,811	1,819
		999 0	27,227	13,464	2,463
Jangareddigudem ..	From Ellore to Prakkilanka ..	..	23,716	1,003	42
	Vice versa	..	12,847	1,085	71
		1,341 10	36,563	2,088	113
Kattipudi	From Godávari to Vizagapatam District	..	324,063	19,614	488
	Vice versa	..	92,252	19,057	2,135
		15,277 10	416,315	38,671	2,623
Jaggammapet	From Godávari to Vizagapatam District	..	69,197	..	..
	Vice versa	..	11,740	..	..
		2,970 0	80,937	..	..
Cocanada	Do.	8,718 6	237,573	..	..
Sámalkót	Do.	44,066 5	1,200,804	..	..
Rajahmundry	Gokavaram to Rajahmundry ..	..	340,917	17,385	..
	Vice versa	..	326,335	31,556	..
		24,486 6	667,252	48,941	206
	Rajanagaram to Rajahmundry ..	..	232,479	30,208	..
	Vice versa	..	430,700	30,525	..
		24,336 15	663,179	60,733	246
Rajanagaram	From Korukonda to Jaggammapet, &c.	..	333,875	17,006	..
	Vice versa	..	67,555	18,061	..
		14,731 10	401,430	35,067	4,199
	From Rajahmundry to Peddápuram, Jaggammapet, &c.	..	384,406	26,372	..
	Vice versa	..	247,437	30,775	..
		23,186 15	631,843	57,147	574
Ellore	Ellore to Bezváda	..	344,184	..	..
	Vice versa	..	141,379	..	..
	From Ellore to Rajahmundry ..	..	26	..	..
	Vice versa	..	628	..	..
		17,842 10	486,217	277,206	Passengers.
		5)178,669 17		55,441	Average monthly.
		35,733 19			

It will be seen from this statement that the average monthly goods traffic registered exceeded 35,000 tons, and the average monthly number of passengers who passed through the registering stations exceeded 55,000. These figures, added to those already given of the canal traffic, are, I think, enough to justify the conclusion that a railway from Bezváda traversing this district would be successful as a commercial undertaking.

6. With regard to the prospects of the railway north of this district, I am not in a position to speak with confidence, and I have no statistics showing the road-borne traffic, which the railway might be expected to carry. I can only say from my past experience of Vizagapatam that the traffic on the Trunk Road from Tuni to Anakápalle and Vizianagrum, almost the whole of which would certainly be carried by the railway, has always struck me as being very great. I may further say that I have the opinion of the Cocanada Chamber of Commerce that the line which the railway should take in North Vizagapatam is not the line along the coast to Chicacole, but the line intended to Sálúr, Párvatipur and Pálkonda. This, however, is perhaps *ultra crepidam* as the places mentioned are not in or near my district.

7. The arguments in favor of the railway as a famine protective work may, I think, be briefly summed up as follows:—

(*a*) Without a railway from Bezváda to Cocanada, the Bellary-Kistna State Railway (dependent as it would then be for supplies of grain from the Godávari Delta on a single line of canal navigation liable to frequent interruption) would be of little use.

(*b*) With a railway from Bezváda to Orissa famine in the north would be practically impossible.

Enclosure No. 1.

From M.R.Ry. B. VENKATARATNAM, Chairman, Native Chamber of Commerce, Cocanada, to the Deputy Collector in charge of Treasury, Godávari District, dated Cocanada, 5th September 1889, No. 61.

With reference to your letter, No. 1152, dated 31st July 1889, I have the honor to inform you that the members of this Chamber are unanimously of opinion that the proposed railway between Bezváda and Cuttack, if opened, will be successful both as a famine protective measure and as a commercial project.

2. (*a*) A considerable portion of the population in the Kistna, Godávari, Vizagapatam and Ganjam districts and the country of Orissa belong to the labourers' class. When there is a famine, or a slight increase in the prices of food-grains, these people, on account of their poverty, stand in need of relief; to subside the troubles arising on such occasions, the Government generally open relief works, and the proposed railway will be an additional boon to those laboring classes, especially at those times, by their being engaged in the railway works also.

(*b*) The Kistna and the Godávari districts, which have huge irrigation works, are not subject to famine to the same extent as the Vizagapatam and the Ganjam districts, where there are no such works. During the famine, these latter districts are supplied with food-grains and other necessaries from the neighbouring districts. The Chamber trusts that this can be done at a cheaper cost and with better results by rail than by steamer. The recent famine in the Ganjam district proves the necessity for connecting that district by rail with other rice-producing districts.

3. (*a*) The inland traffic of the Northern Circars is now carried on by canals and the country carts, and the chief ports with which the marine trade is carried on are Gopálpur, Bimlipatam, Vizagapatam, Cocanada and Masulipatam. The present complaint that the goods reach the sea-ports with great delay from the inland places and *vice versá* will, when the train runs, cease to exist, as they will be carried with a greater speed by it. The statistical information, called for by the Government of India on this subject, will be of greater value in determining the importance of the proposed line in its commercial aspect than any opinion which this Chamber can venture. The members of the Chamber, however, beg to submit that they believe that a major portion of the inland traffic will be transferred to the proposed rail and that traders and cultivators will be greatly benefited thereby.

(*b*) The railway, being a thing of speedy conveyance, will be very useful generally to all passengers and especially convenient to the Hindoos, who take a trip with their families without being subject to the risks of the sea voyage to which they are not accustomed.

(*c*) Further, the passengers who go on pilgrimage to the following places will travel in this train, and this will also be the shortest route for all the pilgrims going right to Benares from Rámesvaram.

Places of pilgrimage.

(1) Kottapalle (Godávari District);
(2) Oopurapa (Vizagapatam District);
(3) Simhachelam (do.)
(4) Srikoormam, &c. (Ganjam District);
(5) Sri Jagannath (Orissa); and to
(6) The Godávari and } bathing in which is considered sacred.
(7) The Kistna rivers }

4. In conclusion, thanking you for the opportunity afforded to the Chamber in representing its views on this useful subject, I beg to state the names of the chief towns through which the proposed railway from Bezváda to Cuttack should positively run, viz.:—Ellore, Rajahmundry, Peddápuram, Cocanada, Tuni, Anákapalle, Vizagapatam, Bimlipatam, Vizianagrum, Chicacole, Berhampore and Sri Jagannath, &c.

Enclosure No. 2.

From A. MACNAB, Esq., Chairman, Cocanada Chamber of Commerce, to the Deputy Collector in charge of Treasury, Godávari District, dated Cocanada, 18th September 1889, No. 3634.

I have the honor to acknowledge receipt of your letters, Nos. 1152 and 1444 of 1st ultimo and 13th instant, respectively, asking for the opinion of this Chamber as to the prospects of the proposed railway from Bezváda to Cuttack

(1) as a commercial project, and
(2) as a famine protective work.

Reply to the first of these letters has been deferred with a view to submitting statistics of the existing and probable goods traffic along the Northern High roads of Vizagapatam; these statistics are not as yet available, and when they are received, the Chamber will probably address Government direct if occasion should justify their doing so.

In the meantime I am to say that the contemplated railway is a project which has long engaged the close attention of this Chamber, and I am directed to express the views of the Committee in regard to it as follows:—

The whole line naturally divides itself into three sections, viz.:—

I. Bezváda to Cocanada.
II. Cocanada to the northern boundary of the Vizagapatam district.
III. Northern Vizagapatam (through Ganjam) to Cuttack.

In regard to the first of these, the Chamber entertain a very confident opinion that this portion of the line would prove a marked commercial success from the outset. The existing goods and passenger traffic along the canals, of which statistics more or less reliable are already in the hands of Government, would of itself, it is believed, suffice to give a moderate return on the cost of the railway, and beyond the inferences which these statistics warrant, conditions are present which render the traffic susceptible in an altogether peculiar degree of rapid development with improved communications.

For the trade has hitherto been seriously handicapped by the total closing of the canals every year for a period of at least three months, and the wholesale adulteration of produce which occurs during transit in open canal boats has, especially of recent years, operated to restrict exports very largely; it is in fact probably not too much to say that it is that adulteration which has primarily proved fatal to the castor-seed trade from Cocanada to Calcutta, once the largest item in the export trade of the port, and inquiries which the Chamber have recently been making as to the stoppage in supplies of castor seed from the eastern taluks of the Nizam's dominions have brought to light the fact that fear of that adulteration is acting as a serious deterrent to the movements of produce. Railway transit would at once relieve the trade from these disabling interruptions and adulteration. This alone would assure a rapid increase in the traffic, and the connection by rail of the two lines converging at Bezváda with a first-class sea-port, which in point of combined cheapness, safety and rapidity of work is probably unsurpassed in India, should develop a thorough traffic, besides materially improving the paying power of the two Government lines already constructed to Bezváda. A considerable coaching traffic might also be relied upon.

As a famine protective work, this section of the line, at any rate as far as the right bank of the Godávari, is, the Chamber would very strongly urge upon Government, absolutely imperative to connect the Bellary-Kistna famine line with the Godávari delta. Without such railway connection, famine traffic would be wholly dependent on a single canal, which even in ordinary years is found inadequate as a high road. The primary function of that canal is irrigation, rather than navigation, and in times of famine irrigation would make its largest demands on the water-supply which would at such times also be peculiarly needed for navigation. Congestion of traffic would inevitably result, and it is the opinion of this Chamber that so long as the Bellary-Kistna Railway is dependent on the Ellore canal for connection with the Godávari delta, that line will be liable to fail in possibly two-thirds of its utility as a famine protective work. In its relation to famine, the extension to Cocanada is needed to provide a cheap outlet for surplus product in ordinary years, without which the productive power of the district might possibly not be maintained at the high standard required of it in times of famine.

As regards section II, the opinion of the Chamber is that as a commercial project, the character of this section of the line will depend very largely upon the alignment selected across Northern Vizagapatam. If the line were to follow the Trunk Road through Chittevalsa and Chicacole, it would cross the routes of, but would not appreciably serve or benefit by the trade now using the ports of Vizagapatam, Bimlipatam and Calingapatam. If, on the other hand, the line were carried through, or sufficiently near to, Vizianagrum, Sálúr, Párvatipur (with a short feeder line to Rayaghada) and thence through Pálkonda and Parlákimedi into Ganjam proper, it would traverse the heart of four of the most populous and productive taluks of the Vizagapatam district, and it would directly tap the three great trade routes into the Central Provinces (Sálúr Rayaghada and Gunapur). The Chamber have to urge very strongly that this alignment should be specially considered in the approaching survey. The deviation of the main line would be immaterial and would be fully compensated by a shorter length of feeder line to Rayaghada. It is the true trade route of the district, and on that alignment the railway would certainly have the carriage of the great bulk of the produce, both that exchanged internally and that now exported from Bimlipatam and Vizagapatam, while it would have the distribution of the imports. Moreover, the Chamber considered it probable that the cheaper ocean freights which concentration at the one port of Cocanada would enable the trade to command would (assuming liberal treatment by the railway) quickly attract to Cocanada the whole foreign trade of the Vizagapatam district. The route indicated would also give a direct lead between the great salt factories of the Vizagapatam and Ganjam districts, and the trade routes into the Central Provinces. If, therefore, the alignment here advocated be adopted, the Chamber consider that section II, representing some 200 miles of the whole through line, would be a success commercially, though not in the same degree as section II.

As regards section III, the districts affected (Ganjam and Orissa) are more removed from the general interests of the Chamber, and the Committee do not feel warranted in speaking with the same confidence in regard to it. Looking, however, to the population and admitted fertility of the Ganjam district, it would seem that only an outlet (at present wanting) is required to induce a marked expansion in the produce traffic of the district, and the Chamber see no reason why this section also should not in time be remunerative as a commercial project.

As a famine protective work, however, the value of the proposed railway cannot be overestimated. In the opinion of the Chamber, such railway communication, especially if, and when, connection with the Bengal system is established would make actual famine in Ganjam and Orissa practically impossible, as the Godávari and Kistna deltas could always meet the deficiencies in the food-supply, especially if Bengal were placed in position to contribute in part. Distress from high prices would no doubt be liable to occur at intervals, as elsewhere, but that would in time be largely forestalled by the amelioration in the condition of the people, which would be effected by the opening up of markets for their surplus product in ordinary years. Experience during the present and previous scarcities shows that food-grains from the Godávari cannot be laid down in Ganjam except at a figure considerably beyond what railway carriage would cost; and even the Vizagapatam district, notwithstanding much cheaper freights, only turned to the sea route when the land route became impracticable. The natural medium of supply between the districts is in fact the bullock-bandy of the country until movements of the latter are stopped by failure of fodder. Apart altogether therefore from the risk of disaster from the closing of the ports by surf, the railway would in times of scarcity perform an office in Ganjam which is not, and cannot be performed by vessels and steamers, and that at a saving in transport equivalent probably to the difference between distress and outright famine. Only a railway can replace the bullock-bandy and save the surrounding districts in time of scarcity from the certainty of outbreaks of cholera, resulting from the overcrowding and pollution of cart stations and tanks along all the lines of communication.

Of the probable through traffic between Bengal and Southern India, the Chamber do not consider it within their province to speak, the Government having probably other and more reliable sources of information.

Read—the following letter from A. T. ARUNDEL, Esq., Collector of the Kistna District, to the Secretary to the Commissioner of Revenue Settlement and Director of the Department of Land Records and Agriculture, dated Masulipatam, 25th September 1889, Extra No. 241 :—

I have the honor to submit the report on the proposed East Coast Railway called for in Board's Proceedings, No. 2613, dated 6th July.

2. The Government of India desire information "on the financial aspects of the undertaking, (1) as a famine protective undertaking, and (2) as a commercial project."

3. *I. As a Famine protective work.*—With this view the area permanently protected against famine by irrigation, viz., the deltas of the Kistna and Godávari rivers, must be effectively tapped, and their food-stuffs made available for quick and easy transport to famine-exposed areas, by which we may understand the whole of the Deccan and of Southern India not protected by permanent irrigation.

4. The tapping of the deltas must be by road, by canal or rail. The two deltas are divided by the Colair lake and its affluent, but are connected by two lines of canal. The roads in the Kistna delta are few and very costly to maintain. The soil is ordinarily black silt which becomes impassable for wheeled traffic after rain. The cost of road metal is so great that the number of metalled roads can never be numerous, for the permanent charge of maintenance encroaches on the sum available for construction as each mile of new road is completed. Both deltas are partially served by navigable canals, but these have to be closed in Godávari for six weeks and in Kistna for three months for the removal of silt and for repairs. These are the months when the grain has just been harvested and when in case of famine elsewhere there is the strongest demand and the greatest need of facility for traffic. It is therefore necessary, more especially in the Kistna District where the canals are closed for so long a time, that the canal communications should be supplemented by rail.

5. There are three necessary extensions—

(1) To the river Godávari *viâ* Ellore and on to Cocanada, &c.
(2) To Masulipatam.
(3) A bridge across the Kistna with an extension to Nellore, &c.

6. (1) *Extension to the river Godávari, &c.*—Running north-east from Bezváda the new line of railway would skirt the northern edge of the Kistna delta, and after crossing two very troublesome streams, the Budameru and the Tamileru, both of which have an evil reputation with Engineers, would reach Ellore, and be finally arrested by the Godávari river opposite Rajahmundry.

7. It is proposed to communicate with the north of Godávari by means of a steam ferry. This is, of course, essential, but as the river is about four miles wide it is clear that the transport of food stuff from one side to the other must be restricted by the capabilities of the ferry. From data supplied to me, I gathered that a steam ferry at Bezváda across the Kistna river would convey only 40 railway trucks a day, and the Kistna is only three-quarters of a mile wide. Experts will be able to state what number of trucks could be conveyed by a steam ferry across the Godávari. Judging from admittedly imperfect information, I should consider that even with a steam ferry across the Godávari, the supply of food-stuff to be poured northward by rail into Vizagapatam, Ganjam or Orissa would be mainly that grown or stored on the east of the river.

8. Similarly in case of a famine in Hyderabad, the food-supply would be mainly drawn from the Western Godávari delta and from the Eastern Kistna, unless the Kistna were bridged.

9. (2) *Extension to Masulipatam.*—Of almost equal importance as a famine protective work is the extension to Masulipatam, which would open out a rich region of the eastern delta which is not served by navigable canals. This line goes a distance of 50 miles *viâ* Gudiváda and a series of populous villages through an irrigated and richly-productive country growing rice on almost every acre to Masulipatam,

a town of 35,000 inhabitants, the head-quarters of the Kistna district, where large quantities of grain are stored for export. The irrigated area of the eastern delta which would mainly be tapped by this line is 220,481 acres and is yearly increasing.

10. (3) *Bridge over Kistna and southward extension.*—Finally, for the Deccan and Mysore, reached by the Bellary-Kistna State Railway, a bridge over the river Kistna is an absolute essential to secure the famine protection which that railway has been built to afford. Lacking a bridge, the railway would be able to draw off supplies only from the western delta of the Kistna supplemented with the aid of a steam ferry by only some 40 trucks of food-stuff daily drawn from the great reservoir of the Eastern Kistna and Western Godávari deltas. For three months in the year, the ferry could not be worked unless the course were kept open by dredging at great expense. In very high floods it would probably be unsafe. Ordinary goods traffic by boat across the river ceases for three months and is slow and difficult during even the normal freshes of the south-west monsoon.

11. The bridge over the Kistna is an admitted necessity to complete the Bellary-Kistna Railway as a protective work. Its construction has been accepted by the Secretary of State as part of the scheme. Paragraph 4, Secretary of State's despatch, No. 120, dated 4th October 1883, quoted in G.O., dated 13th June 1887, No. 425 R., runs—

"2. * * * * * * *
It is proposed to place the eastern terminus on the right bank of the Kistna opposite to Bezváda, in order to bring it eventually by means of a light bridge into communication with the proposed southern extension of the Nizam's State Railway, thereby obtaining access to the Singareni coal fields.

"3. * * * * * * *

"4. I sanction the construction of this railway as a protective work, as proposed by your Excellency's Government."

12. The extension of the East Coast Railway southward through Nellore would give larger food-supplies to that district, to North Arcot, and to Cuddapah, or would pour the food-supplies of the western delta on to the Bellary-Kistna railway, as might be necessary. As to the course it should take, I will merely remark that it should follow the line of the Bellary-Kistna Railway as far as Guntúr (19 miles, population 19,646), then bend south to Cheybrole (9 miles, population 3,088) on the Commamur canal, pass on through the rich delta to the towns of Ponnur (8 miles, population 2,367) and Bápatla (12 miles, population 6,086), and thence through the prosperous towns of Perala (10 miles, population 4,421) and Vetapálem (6 miles, population about 3,000), and emerge on to the uplands of Nellore after tapping the salt factory at China Ganjam, 8 miles further south. The southerly extension from Bezváda to the confines of Nellore would be about 60 miles. The irrigated area of the western delta is acres 168,218, and it is yearly increasing.

13. *II. As a Commercial project.*—Viewing the East Coast Railway as a commercial project and confining myself mainly to the Kistna district, I find the prospects favorable to all the local extensions I have already discussed. The three extensions will now be taken in reverse order:—(1) The bridge over the Kistna with the southern extension towards Nellore; (2) the extension to Masulipatam; (3) the extension to the Godávari.

14. *The Bridge over the Kistna*, essential as a famine protective work, adds greatly to the commercial value of the undertaking, although, from the latter point of view alone, the expenditure it will involve, of between 30 and 40 lakhs of rupees, could not be advocated. If, however, the bridge is built, as it must be, for famine protective purposes, with broad as well as narrow gauge rails, its commercial advantages will be found to be very considerable. It will at once enable the Bellary-Kistna Railway to supply itself with Singareni coal with only one break of bulk from broad gauge to narrow gauge waggon, or into the terminus coal shed, instead of a double break of bulk and a boat carriage across the river Kistna as well. The cotton grown in the country tapped by the Bellary-Kistna Railway or pressed in Guntúr will pass at once to the sea-port of Masulipatam direct, or to Cocanada with a break at the river

Godávari. The natural interchange of dry grains for rice would equally be facilitated. Passenger traffic, now conducted by ferry, would all be taken by the railway with suitable local trains.

15. *The southward extension* of the line from Guntúr to the towns of Cheybrole, Ponnur and Bápatla (chief town of the taluk), *vide* paragraph 10 above, would tap the western delta already extensively communicating with Guntúr. An industrious community of weavers and of merchants trading largely in Indian and English cloth lies in the towns of Perala and Vetapalem beyond, while the salt factory of Chinna-Ganjam turning out 434,000 maunds yearly would for three months (while the canal was closed) employ railway transport alone. For the rest of the year the canal would compete with the railway for the transport of salt to Bezváda, and the railway would probably gain it for through traffic beyond Bezváda and for the local stations served by the railway in between. The Kistna anicut irrigation in this part of the district is recent and undeveloped, and every year will increase the amount of grain harvested and the prosperity of the people.

16. (2) Recrossing the river at Bezváda, I now come to the commercial aspect of *the extension of the line to Masulipatam.* The distance, as I have said, is 50 miles, while from Bezváda to Cocanada *viâ* Rajahmundry is about 120 miles and the line is broken by the river Godávari. Masulipatam is a town of 35,000 inhabitants, and is the head-quarters of the district with a considerable European community, and holds the Judge's court, Collector's cutcherry, and other public offices, causing a large flow of passengers on public and private business. It also possesses a flourishing educational institution in the Noble College, which is now being raised to the first grade. It is difficult to obtain accurate figures as to the number of passengers between Bezváda and Masulipatam, but I have ascertained that in the nine months ending February 1887 it exceeded 38,000.

17. The trade of Masulipatam has steadily increased for many years past. The following figures show the progress made from 1870:—

	1870-71.	1875-76.	1880-81.	1885-86.	1887-88.
Tonnage	47,000	137,000	180,900	222,900	342,000
	Rs.	Rs.	Rs.	Rs.	Rs.
Imports	13,49,978	29,67,129	22,96,706	27,36,369	29,48,082
Exports	4,76,060	11,68,229	10,91,641	8,12,052	15,17,101
Total ..	18,26,038	41,35,358	33,88,347	35,48,421	44,65,183

18. Masulipatam is not a good port as far as natural facilities are concerned, because ships have to lie at anchor about seven miles out and there is a bar to cross. In this respect it shares the disadvantages of other ports on the East Coast such as Tuticorin and Cocanada, while it does not possess the artificial aids possessed by Cocanada in a steam dredge for deepening the bar and a steam launch for passenger traffic and for easy communication with shipping. As Government have laid stress on the superiority of Cocanada as a port, I think it right to point out that Cocanada is reported to be steadily shoaling up, and that the anchorage for shipping is shifting continually to the north and east. The shoaling was prominently noticed long ago by the author of the Godávari District Manual, and although the matter is only indirectly connected with the East Coast Railway scheme, I would note that the process might be arrested by closing the present Coringa mouth of the river Godávari and cutting a direct outlet for it across the spit to the east. The reasons for this course need not here be given. In any case the port of Masulipatam does not suffer from this drawback. The southerly current so scours the bay for many months in the year that the anchorage is kept free from the enormous silt deposits brought down by the river Kistna. The Port Officer has, at my request, made investigations which show that the anchorage has been unchanged for the past thirty years, and the fact that the cargo boats of 1858 carried only 12 tons, while those now in use carry 16 and 25 tons shows that the bar is in no danger of silting up.

20. Five miles from Masulipatam up the coast is the salt factory of Manganapudi which now turns out 320,000 maunds yearly and is, together with the adjacent smaller factory of Pandraka, capable of indefinite extension. The salt traffic is of much importance, as it will not only yield returns to the railway, but forms one of the chief sources of the Imperial revenue. The salt from this factory is mainly sent inland towards Hyderabad.

21. The cost of carriage of goods by rail from Bezváda to Masulipatam will be less than half that from Bezváda to Cocanada, while there is less risk of delay, for the distance is less than half and there is always the four miles of the Godávari river to be crossed at Rajahmundry. For heavy goods, such as coal, this river-crossing, even when assisted by an efficient steam ferry, must be a drawback, while the greater distance to Cocanada is also in favor of the short and direct line to Masulipatam. In making these comparisons, I am far from any wish to favor one port to the detriment of the other. With the two great deltas of two of the chief rivers of Southern India permanently irrigating between them a million of acres yearly, increasing in population and prosperity, and brought by rail into close communication with the uplands of the Deccan, there is ample room for both ports to flourish and expand, and such a scheme as that of the East Cost Railway cannot be regarded as complete, if it does not give railway communication to both.

22. In passing from Bezváda over the 50 miles of rice-country to Masulipatam, the railway will pass a series of rapidly growing and prosperous towns and villages, so that stations would be needed at short intervals all along the route. These places beginning from Bezváda are as follows :—

	Population.	Miles.
Nidamanur		
Tenneru	1,150	7
Uppuluru }	1,180	
Mantina }	not given	6
Ventrapragada		
Pamalapad }	2,582	
Kalavapamula }	not given	6
Gudiváda	4,040	5
Anjulur	1,700	
Vinnakota	1,800	6
Kowtaram	2,400	5
Vadlamanad	1,100	5
Pedana	4,400	4
Masulipatam	35,000	5
		49

23. Of the foregoing places, only one, Kowtaram, is on a navigable canal. The population given is that of the census of 1881 and has greatly increased since then. The Kistna anicut irrigation is gradually being extended to tracts far beyond the line here indicated so that an indefinite increase of rice cultivation besides the improvement of an imperfect agriculture awaits this fertile plain.

24. Mr. Furnivall, the late Agent and Chief Engineer of the Nizam's State Railway, in a note on this proposed line of railway to Masulipatam (copy of which can be supplied if desired) was "strongly of opinion that the line will pay well. The line would be very level and would consequently be worked very cheaply." His rough estimate of the total cost including stations, plant, rolling-stock and establishment was Rs. 64,000 per mile of broad gauge or 32 lakhs for the 50 miles.

25. It should be noted that heavy goods traffic between Bezváda and Masulipatam would probably keep to the canal joining those two places, but all through traffic to and from places beyond Bezváda would be taken by the railway to avoid break of bulk. With this view Mr. Furnivall concurs. The local traffic between the stations indicated above would all be taken by the railway as the navigable canal from Bezváda to Masulipatam takes a different line. I have already stated (para. 16) that Bezváda and Masulipatam alone would provide more than 38,000 passengers, and the intermediate local traffic must be added.

26. *Political considerations.*—There are two political considerations in favor of the extension to Masulipatam—one immediate, the other uncertain—which should not be overlooked in discussing the scheme.

27. The first is that as owing to the conditions of our rule in India it will always be necessary to maintain a large body of troops at Secunderabad, it is of great importance to put Secunderabad in communication by the shortest route with the East Coast as it already is with the west. For transport of troops to or from Burma or elsewhere by sea, Masulipatam is the nearest port. For rapid movement of troops the line to Cocanada must be greatly inferior owing to the barrier of the river Godávari even when crossing is facilitated by a steam ferry. Masulipatam, 50 miles from Bezváda, would be reached by a special train of thirty carriages in three hours. Cocanada about 120 miles from Bezváda with the Godávari between would not be reached probably in less than twenty-four hours, if so soon.

28. The second political consideration arises from the proximity of the Singareni coal fields. With the railway extension as proposed, Masulipatam would be the only port on the East Coast (outside the Hooghly) in direct and easy communication with an abundant coal field. In case of war, with the movements of the troopships and cruisers entirely dependent on the supply of coal, it is difficult to over-estimate the advantage that would accrue from access to an unfailing supply either for coaling direct or for supplying steam colliers for conveyance of supplies elsewhere in the eastern seas. In this case, as in the rapid movement of troops, the river Godávari presents a barrier that must cause easy preferenee to be given to the short direct line to Masulipatam.

29. (3) *The extension to the Godávari.*—This line would be the same as to Masulipatam as far as the east bank of Ryve's canal beyond Nidamanur (para. 19) and would then cross the Ellore canal near Kesarapally (population 931, miles 4). Thence it would pass to Atkur (population 858, miles 6) and Telaprole (population 1,984) and on to Veeravally (population 1,766, miles 4) and Perikid (miles 4). Here the Godávari district begins with the large town of Ellore about 12 miles distant.

30. It will thus be seen that the lines to the Godávari and to Masulipatam would run together for 7 or 8 miles and *pro tanto* diminish the cost of construction and working.

31. I regret that I am not in possession of more extensive statistical information to comply with the desire of the Government of India. It may be of interest to note that during 1888, land to the extent of 2,370 acres was acquired in the Kistna district for public purposes, chiefly extension of irrigation channels and enlargements of the building sites of towns and villages in the delta. The great demand for increased room in the delta to build houses and extend villages is a remarkable and distinctive feature in the administration of the Kistna district, indicative of a rapid growth in population and wealth.

32. An 8-inch map of the district is enclosed to facilitate reference.

Resolution—dated 14th December 1889, No. 564.

The reports read above have already been submitted for the information of Government with reference to [illegible].Q., dated 3rd July 1889, No. 4110, Revenue Department.

2. They deal with the [illegible]ancial aspect of the projected East Coast Railway (1) as a famine protection req[illegible]ement, and (2) as a commercial project, and the remarks below will deal with the subject in the same order.

3. *Financial aspect as a famine protection requirement.*—As a famine protection work, the object of the line is to bring the rich deltas of the Godávari and the Kistna and the ports of Cocanada, Masulipatam and others along the proposed line of the rail into connection with the town of Bezváda on the one side and with Ganjam and the province of Orissa on the other. Bezváda on the Kistna with which it is proposed that the deltas should be connected by rail is the terminus of the Bellary-Kistna Railway. This railway is a metre-gauge line of 279 miles in length now approaching

completion, constructed with the view of connecting these rich deltas with the Ceded Districts and Kurnool, a large tract situated in the centre of the Presidency, comprising an area of about 27,000 square miles with a population of over three millions. These districts have already, in the present century, been six times devastated by famine in the years 1803, 1824, 1833, 1854, 1866 and 1876, and in the last of these famines they suffered a loss of population amounting to 800,000 and a loss of cattle estimated at 730,000 in number, valued at the least at 73 lakhs of rupees. Expenditure on the relief of famine was incurred at the time of not less than 268 lakhs, and the decrease in land revenue receipts since the famine due to decreased cultivation directly consequent on the large mortality amounted at the end of the past year to over 100 lakhs.

4. The only mode of communication between this railway and the delta, and the only access to its most natural port is that afforded by a series of canals built primarily for irrigation purposes, and the inefficiency of these canals for the two antagonistic purposes of navigation and irrigation which they are required to subserve is making itself felt more and more every year. This antagonism is already very acute. The navigation interest which has for its mouthpiece the powerful commercial community of Cocanada can, as the Chief Engineer for Irrigation observes, best make its voice heard in high quarters, but district officers know that the other interest, that, namely, of the cultivator, has much to say from an entirely different point of view, and it is a fact, he writes, that much tempting and perfectly possible irrigation from near the end of the canal has to be foregone because it would still further add to the already great difficulty at times of keeping the canal open. But the canals as highways of communication are open to the further very serious drawback that *all* must be closed for a period of about six weeks in the year for repairs, while that portion of the main canal between Bezváda and Ellore, fed from the Kistna, is unnavigable from the end of February or beginning of March till the middle of June owing to the failure of water in the Kistna. The case is really worse than this, for Mr. Happell, who was for some time Collector of the Kistna, states that Local Fund contractors refused to undertake to carry heavy material along the canals after the middle of January because heavily laden boats were liable to be brought to a standstill by accumulations of silt in certain parts of the canals.

5. In addition to the certain and unavoidable interruptions to traffic caused by the annual closure of the canals for repairs, or by the water of the river Kistna being too low to keep its canals full, there is the very serious liability to accidents to which the canals are exposed.

6. The failure of the eastern delta head lock at Dowlaishweram in 1886 led to a tremendous drop in exports from Cocanada, the fall being from an average of over 135 lakhs to less than 94 lakhs. The fall was perhaps attributable to some extent to the failure of crops over a large area consequent on the damage to crops caused by the heavy rains and floods of the year, but the Chairman of the Chamber of Commerce, Cocanada, is no doubt justified to a considerable extent in attributing the fall to the stoppage of navigation caused by the breach and the consequent inability of the crops to reach the market. In 1887, also, there occurred a breach in the Ellore canal by which traffic was stopped for three weeks, and the western delta head sluice was also found to have silted up, thus necessitating a closure of the canal to clear it out.

"Both these stoppages of traffic," the Collector observes,* "were unforeseen and could not be provided for when merchants' contracts were made and many persons doubtless suffered heavy loss from this cause."

7. The utmost that can be hoped for from the canals as highways of traffic is thus stated by the Chief Engineer for Irrigation †:—

"With systematic dredging of the main canals on the Bezváda side, I believe that, with comparatively a small extra outlay, these canals—Bezváda to Masulipatam and Bezváda to Ellore—could be kept open in good and most ordinary years ten months to the great advantage of trade, but more than this cannot be hoped for."

The Chief Engineer does not definitely state that this result in improved navigation can only be ensured at some cost to irrigation, but the Board believes that such is the case.

8. There are no good roads in the deltas to supply the places of the canals, and it is quite out of the power of the District Boards with the limited funds at their disposal to construct and maintain them. The roads, the Collector of Kistna states, are very costly to maintain. The soil is ordinarily black soil which becomes impassable for wheeled traffic after rain. The cost of road metal is so great that the number of metalled roads can never be numerous, for the permanent charge of maintenance encroaches on the sum available for construction as each new mile of new road is completed, and Mr. Walch, Chief Engineer for Irrigation, who is thoroughly acquainted with the locality, observes:—

"From my general knowledge of the state of the country I believe it would cost at least ten lakhs of rupees to make a first-class road between Bezváda and the Godávari river, and for the objects with which we are dealing none but a first-class road need be considered. But even were such a road constructed, would the objects aimed at be obtained? They would not. While the canals were open, about nine months in the year, not a ton of coal, not a bag of grain or oil-seed, not a bale of cotton or piece-goods, would be carted from Bezváda to the Godávari, or from the Godávari to Bezváda, and the canals between the two points would not be relieved of the traffic which is even now too great for them, and which when augmented by the stimulus that the railway to Bezváda will create, and by the Singareni coal transport to its sea-board outlet, Cocanada, will gorge the canals and will seriously interfere with the irrigation dependent on them. And even when the canals were shut, but little of the merchandise that wished to pass between Bezváda and its sea-port, Cocanada, would be able to meet the cost of cartage; it would merely accumulate at the depôts to be poured on to the canals in an overwhelming stream when they re-opened."

9. It is in view of the entire absence of good roads, of the extremely unsatisfactory character of the canals as highways of traffic, of the extent to which such defective feeders must handicap the development of traffic on the existing protective railways, and above all of the serious obstruction which must occur in times of famine, that the construction of a railway through the deltas is urged. What is stated above must, it is believed, establish the expediency of connecting Bezváda, and, through Bezváda, the famine zone of Madras with the rich deltas whose produce it is the chief object of the Bellary-Kistna Railway to obtain, while it is of little less importance that the portion of the famine zone through which that railway passes should be placed in easy communication with a sea-port and market where the surplus of ordinary years can be disposed of and the proceeds reserved for seasons of distress. Whatever the financial prospects of the line from Bezváda to Cocanada may be, and the Board can hardly doubt the financial success of a line passing through these rich deltas to an excellent sea-port, it can hardly be questioned that its construction will very largely improve the financial prospects of the whole of the Bellary-Kistna Railway. To that line, indeed, the construction of the continuation through the delta to Cocanada is a necessity both financially and as the only means of perfecting it as a famine protective work.

10. *Location and commercial prospects of the line to Cocanada.*—The following is a short description of the proposed alignment of the portion of the East Coast Railway between Bezváda and Cocanada. From the Bezváda terminus of the Bellary-Kistna Railway south of the Kistna river, the line, crossing the river Kistna by a bridge, will follow the course of the Ellore canal which conducts water from the Bezváda anicut on the Kistna river as far as Ellore 40 miles, where the canal is met by another bringing the waters of the Godávari, and along or in the neighbourhood of this second canal the line will be taken for 46 miles until the Godávari river is reached. The Godávari, 4 miles wide, will be crossed by a steam ferry to Dowlaishweram on the left bank, whence the line will be taken *viâ* Rajahmundry to Sámalkót, a branch running from the latter place to Cocanada. The country thus enclosed between the railway and the sea comprises the eastern delta of the Kistna and the whole delta of the Godávari with a cultivated area of some 834,000 acres of unsurpassed fertility

* Para. 3 of Mr. Happell's endorsement, page 17 of G.O., dated 6th July 1889, No. 754-R, Public Works.

† Para. 5 of Chief Engineer's note, page 20 of G.O., dated 6th July 1889, No. 754-R, Public Works.

under unfailing sources of irrigation. The line would compete with the existing canals for the carriage to Cocanada of the whole surplus produce of the delta and would inevitably have the carriage to that place of the whole of the cotton now pressed at Guntúr and of the whole surplus produce of the districts of Kistna and Godávari outside the deltas. It would also carry to the port of Cocanada the surplus produce of the Kurnool district and of the northern portion of the Nellore district including the Venkatagiri zemindari, as well as of a considerable portion of the Nizam's territory. The Singareni coal field, situated in the Nizam's territory within easy reach of Bezváda, would find at Cocanada an outlet for its invaluable produce, and the quantity of coal to be carried by the railway may be expected at an early date to assume large dimensions. In times of distress in the Ceded Districts it would carry to the junction at Bezváda the whole of the surplus produce of the deltas, and would find at its port of Cocanada a depôt from which to carry the surplus produce of the Bengal and Burma rice fields.

11. The area of the Kistna and Godávari districts is 16,254 square miles and the total population is 3,343,849 or 206 to the square mile as shown in the margin, and the area of land in occupation in 1888-89 was 2,714,000 acres. It was estimated on data accepted by the Famine Commission that, taking the average area under cultivation during the four years ending 1875-76, the quantity of food-grains available for export after providing for local consumption was 696,000 tons as shown below :—

Districts.	Area. SQ. MLS.	Population.
Godávari	7,857	1,795,369
Kistna	8,397	1,548,480
Total ...	16,254	3,343,849

Districts.	Total cropped area including zemindaries.	Total cropped area under food-crops including zemindaries.	Outturn of area shown in column 3.	Probable quantity remaining after meeting local consumption.
1	2	3	4	5
	ACS.	ACS.	TONS.	TONS.
Kistna	2,653,000	2,077,000	756,000	432,000
Godávari	1,510,000	1,189,000	601,000	264,000
Total ..	4,163,000	3,266,000	1,357,000	696,000

The Board is inclined to think that this estimate of the surplus produce was excessive. Another estimate framed on data furnished by Mr. Wilson, who had great experience in the valuation of the outturn of lands while in the Settlement Department, gives the surplus of the two districts, taking the cultivation of the last three years and the population at 5 per cent. over that of the last census, as 332,000 tons in Kistna and 176,000 tons in Godávari. The Board considers this a more probable estimate, judging from what is known of the imports and exports of the district. It still perhaps rather overestimates the surplus produce, owing probably to the allowance made by the Board for seed-grain, wastage, &c., being insufficient; but there is no doubt that the surplus in these two districts is very considerable.

12. The only trade statistics that are available for the two districts are (1) the statistics of imports and exports by sea; (2) statistics of the traffic on the canals running along the line to be followed by the railway; and (3) statistics of traffic on the roads along the same line.

13. *Imports and Exports by Sea.*—The value of the imports and exports by sea in the two districts for the fourteen years ending 1888-89 inclusive is shown in Appendix A and a statement showing the chief articles of import and export from the principal ports during the past two years is given in Appendix B. Excluding Government stores and treasure, the value of the export trade from the Kistna district during the past ten years has ranged between $18\frac{3}{4}$ lakhs in 1882-83 and $32\frac{1}{2}$ lakhs in 1885-86 and has averaged $27\frac{1}{4}$ lakhs; the import trade during the same period has ranged in value between $8\frac{3}{4}$ lakhs in 1885-86 and $15\frac{1}{4}$ lakhs in 1887-88 and has averaged

$11\frac{1}{4}$ lakhs. The exports and imports of Government stores and treasure averaged in value $15\frac{3}{4}$ lakhs and $4\frac{1}{4}$ lakhs, respectively. In the Godávari district the value of the export trade in private merchandise during the same period has ranged between $91\frac{3}{4}$ lakhs in 1879-80 and 147 lakhs in 1884-85, the average being $121\frac{3}{4}$ lakhs and that of the import trade between $21\frac{1}{8}$ lakhs in 1879-80 and 30 lakhs in 1887-88, the average value being 24 lakhs. The exports and imports of Government stores and treasure averaged $15\frac{3}{4}$ lakhs and $16\frac{1}{8}$ lakhs, respectively.

14. The chief articles of export from the two districts and the average weight exported during the past two years were as follows :—

	From the Kista district.	From the Godávari district.
	TONS.	TONS.
Grain and pulse	15,352	24,948
Seeds, chiefly castor and gingelly oil seeds ...	13,150	32,829
Sugar	...	22,190
Tobacco	...	3,217
Oils	...	4,471
Dyeing and colouring materials	2,419	2,617
Cotton	...	2,927

The chief articles of import and the average weight imported during the past two years were —

	In the Kistna district.
	TONS.
Gunny-bags	628
Liquors	539
Cotton twist and yarn and piece-goods	210
Grain and pulse	174
	In the Godávari district.
	TONS.
Gunny bags	1,143
Cotton twist and yarn and piece-goods	826
Oils	548

15. *Traffic on the Canals.*—A more immediate guide to the possible future traffic on the railway, however, is afforded by the statistics of existing traffic on the canals and roads along the line of the railroad. The traffic on the canals running from Bezváda to Ellore, the Godávari river, and thence to Cocanada, for the year 1888-89, is shown in the subjoined statement. The figures show a total ton mileage during the year of 11,378,068, the average tonnage per mile being 93,263 tons. In no cases were the canals open throughout the whole of the year :—

STATEMENT showing the traffic on the canals in the Kistna and Godávari districts between Bezváda and Cocanada for 1888-89.

Canals.	Stations.	Ton mileage.	Passengers.
Kistna delta, Eastern section, Ellore canal.	Bezváda to Ellore	5,438,662	58,818
Godávari delta, Western section, Ellore canal.	Ellore to Dowlaishweram (Rajahmundry).	3,880,800	67,267
Godávari delta, eastern section, Cocanada canal.	Dowlaishweram to Cocanada..	2,058,606	82,491
	Total ..	11,378,068	..

16. Mr. Turner has some interesting remarks in paragraph 22 of his note* regarding the capability of the proposed new line to compete with the canal traffic between Bezváda and Cocanada. He instances the case of the American railways which have entirely triumphed over the canals and quotes Mr. Jeans, the author of "Railway Problems," to show that though in 1883-84 the rail rates between Chicago and New York were 98 per cent. above those by lake and canal, yet the traffic was leaving the canals and clearing to the railways, the reason being that the railways

* G.O., dated 6th July 1889, No. 754-R., page 34.

give reasonable rates; are not liable to be affected by the weather; deliver the grain in good condition; and can always be absolutely depended upon.

17. There can be no doubt that if a railway were constructed the canals would year by year be more and more worked in the interests of irrigation as opposed to those of navigation, navigation being altogether a secondary object and in time the Board considers it certain that the great bulk of the traffic would be diverted to the railway.

18. *Road Traffic.*—The only statistics of road traffic in the Kistna and Godávari districts which have been compiled hitherto are those taken during the six months ending September last—*vide* appendix C. They have been doubled to show the traffic for twelve months. The figures most material to the present inquiry are those showing the traffic between Bezváda and Cocanada *via* Rajahmundry and Sámalkót; they were taken at seven points on the line and give the following results:—

Section.	Station.	Merchandise.	Passengers.
		I. mds.	
I. Bezváda to Ellore, 40 miles	Bezváda	122,680	
	Ellore	179,602	38,204
			4,280
	Total ...	302,282	42,484
	Average ...	151,141	21,242
II. Ellore to Rajahmundry, 55 miles	Ellore	1,308	218
	Kóvvur	60,212	19,014
	Total ...	61,520	19,232
	Average ...	30,760	9,616
III. Rajahmundry to Cocanada—			
(*a*) Rajahmundry to Rajanagaram, 10 miles.	Rajahmundry	1,470,794	111,126
	Rajanagaram	1,270,976	106,862
	Total ...	2,741,770	217,988
	Average ...	1,370,885	108,994
(*b*) Rajanagaram to Samalkót, 19 miles.	Rajanagaram	852,042	66,260
	Samalkót	1,080,790	50,202
	Total ...	1,932,832	116,462
	Average ...	966,416	58,231
(*c*) Samalkót to Cocanada, 8 miles.	Samalkót	2,706,402	264,668
	Cocanada	593,714	33,040
	Total ...	3,300,116	267,708
	Average ...	1,650,058	148,854

Reducing the figures to tons and multiplying the quantity by the length of the several sections, the following ton mileage is obtained:—

Section.					Ton mileage.
I	5,552	×	40	... ... =	222,080
II	1,130	×	55	... ... =	62,150
III	50,359	×	10		
	35,501	×	19	... ... =	16,63,021
	60,614	×	8		
				Total ...	1,947,251
				Average tonnage per mile ...	14,752

Even assuming that only half this quantity correctly represents the probable tonnage per mile by road, it will be seen that the total tonnage per mile, taking both the canal and road traffic together, comes to 100,600 tons per mile as compared with 96,773 tons, the tonnage per mile carried by the South Indian Railway in 1888.

19. *Continuation of East Coast Railway from Cocanada to Cuttack.*—The continuation of the railway northwards from Cocanada will take off at Sámalkót nine miles from Cocanada. In the note on the reconnaissance of the line printed with the G O., dated 6th July 1889, already referred to, it is proposed that the line after leaving Sámalkót shall proceed northwards keeping east of the existing road to the vicinity of Tuni, mile 147; from Tuni to Anakápalle thence *viâ* the Gazubaka hills to Vizagapatam; thence northwards through Vizianagrum to Berhampore and on through Chatrapur and Ganjam to the Chilka lake near Rambha; thence skirting the shore of the lake to the right bank of the Mahánadi river at Naraj, mile 495.

20. Mr. Turner gives the following interesting description of the route:—

"From Cocanada leaving the deltaic and canalized country it has hitherto traversed, the railway passes through the Pithápuram and Tuni divisions to the town of Tuni on the borders of the Vizagapatam district. The Pithápuram zemindari contains about 371 square miles with a population of 184,018. Pithápuram town has 11,593 inhabitants, six villages have a population exceeding 3,000 and eleven other villages contain over 2,000 inhabitants each. The mileage of rail throughout the Vizagapatam district is 136 and the branch line 50, making a total of 186 miles. At Tuni the line will cross the Tuni river, which is a waterway of 350 feet. A run of twelve miles brings us to Nakkepalle. Here there is a very celebrated shrine, resorted to by pilgrims, who were numbered in 1868 and found to aggregate 8,000. Thirteen miles further on Yellamanchili is reached, a considerable village and the head-quarters of the taluk. A run of twelve miles brings us to Kasimkót, a town of 7,078 inhabitants, and three miles further on is the large and flourishing commercial town of Anakápalle, with 13,341 inhabitants. Twenty miles intervene before Vizagapatam is reached. The population of this seaport town is 36,291, and for trade and importance it occupies a prominent position. Leaving Vizagapatam, the line will run along the alignment already surveyed for the Vizagapatam-Raipur line for 36 miles, passing *en route* the important shrine of Simhachellam and the port of Bimlipatam. Possibly a small branch of three miles may be required here. Vizianagrum is a town of 22,577 inhabitants. It is the residence of the Maharajah, and a place of great prosperity and much trade in cotton goods and iron. A branch will leave the main line at Vizianagrum and run fifty miles inland to serve the town of Sálúr (11,856 population), Bobbili (14,943 population), and Párvatipur (9,933 population). The first and last towns are the emporia for the hill produce as mentioned further on. Leaving Vizianagrum, the main line runs 40 miles through Chípurupalle and Pondur to Chicacole, passing a Pálkonda road station. Pálkonda is the chief town of a taluk containing 200,000 inhabitants, the richest and most prosperous taluk in the district. At Pondur there is a wealthy society of weavers, who manufacture very excellent cloths for export to the neighbouring markets.

"Entering the Ganjam district at Chicacole, the main line of railway will follow the trunk road nearly, the mileage of which from Chicacole to the Bengal frontier is 136 miles. Probably a branch line will be required, running from Gopálpur into the Goomsur taluk, but particulars of the exact alignment are not yet available, and details of this branch are entirely omitted from this paper. The main line will run from one large town to another. Chicacole has 16,355 inhabitants. From Chicacole to Calingapatam it is 16 miles, but probably a nearer station to the port will be selected, perhaps on the banks of Vamsadhára river which can, it appears, be made navigable for some distance from its mouth. Calingapatam is the only port which has any shelter and which is not a perfectly open roadstead and unprotected

See "Manual of the Ganjam District."

between Coringa, 150 miles south, and Dharma in Orissa, 250 miles north. Communication between the shore and shipping is but rarely interrupted. Narsannapet, 14 miles from Chicacole, is a large congeries of villages containing 8,230 inhabitants. There is a large market held here in cattle and goods, and much good cloth is woven here. A further run of twenty miles brings us to Naupada, where are situated the largest salt-pans in the district. The salt from Naupada and Calingapatam furnish the supplies for Kalahandi, Jeypore, Pálkonda, Sálúr, Bustar, and the southern parts of Chattisgarh. The salt will be conveyed from these two factories by rail to Vizianagrum and thence along the branch line to Sálúr and Párvatipur, which are the emporia for the hill produce of all the lands that lie beyond the ghâts to the west. Passing through the estates of Tekkali, Tarla and Mandasa, the next port passed at a little distance will be Barwah. This port is frequented by native passengers proceeding to and from Barwah. Ichápur, 84 miles from Chicacole, is a large place of 5,528 inhabitants. Berhampore, 15 miles further north, is then reached. This is the largest town in the district of Ganjam. It contains 23,599 inhabitants. The head-quarters of a native regiment are located here. The chief industry is the manufacture of silk, and common native cloths

are also woven here. Leaving Berhampore, the trunk road passes at a distance of three miles from Gopálpur, the chief port of the district. Possibly it may be well to bring the line still nearer to the port than this, for Gopálpur is a very important place. It contains only between two and three thousand inhabitants, but the trade of the port is very valuable, amounting to over 50 lakhs per annum. From Gopálpur the trunk line runs to Ganjam, 19 miles from Berhampore, where there is a large salt factory, to which traders resort from Cuttack, Sambalpore and Goomsur. Ten miles from Ganjam, Rambha is the next point touched at. Rambha is the depót for all the trade on the Chilka lake. Finally, the railway runs skirting the lake, through the most beautiful scenery, until it leaves the Ganjam district and the Madras Presidency between the villages of Panditagaon and Barkal."

21. From the boundary of the Ganjam district to the terminus on the Mahánadi, the line runs through the Bengal Province of Orissa.

22. The length of the line from Sámalkót to Naraj is 375 miles, and it is estimated that the following branch lines would be necessary :—

(1) A branch from Vizianagrum to Párvatipur, probably 45 miles in length.
(2) A branch to Gopálpur from a point in the main line a few miles north of Berhampore, about 6 miles in length.
(3) A branch to Pooree, probably 25 miles in length.

23. Regarding the suggested alignment of the railway through the Vizagapatam district, the Chamber of Commerce, Cocanada, remark as follows :—

"As regards the line through Vizagapatam, the opinion of the Chamber is that as a commercial project the character of the line will depend upon the alignment selected across Northern Vizagapatam. If the line were to follow the trunk road through Chittivalsa and Chicacole, it would cross the routes of, but would not appreciably serve or benefit by the trade now using the ports of Vizagapatam, Bimlipatam and Calingapatam. If, on the other hand, the line were carried through, or sufficiently near to, Vizianagrum, Sálúr, Párvatipur (with a short feeder line to Rayaghada) and thence through Pálkonda and Parlákimedi into Ganjam proper, it would traverse the heart of four of the most populous and productive taluks of the Vizagapatam district, and it would directly tap the three great trade routes into the Central Provinces (Sálúr, Rayaghada and Gunapur). The Chamber have to urge very strongly that this alignment should be specially considered in the approaching survey. The deviation of the main line would be immaterial and would be fully compensated by a shorter length of feeder line to Rayaghada. It is the true trade route of the district, and on that alignment the railway would certainly have the carriage of the great bulk of the produce, both that exchanged internally and that now exported from Bimlipatam and Vizagapatam, while it would have the distribution of the imports. Moreover, the Chamber considered it probable that the cheaper ocean freights which concentration at the one port of Cocanada would enable the trade to command would (assuming liberal treatment by the railway) quickly attract to Cocanada the whole foreign trade of the Vizagapatam district. The route indicated would also give a direct lead between the great salt factories of the Vizagapatam and Ganjam districts, and the trade routes into the Central Provinces. If, therefore, the alignment here advocated be adopted, the Chamber consider that this portion, representing some 200 miles of the whole through line, would be a success commercially, though not in the same degree as the portion between Bezváda and Cocanada."—Letter to Collector, dated 18th September 1889, No. 3634.

The Board does not think that the Chamber has sufficiently taken into account the proposed branch from Vizianagrum to Párvatipur. This branch will tap the trade routes into the Central Provinces almost as efficiently as the Chamber's proposed alignment of the main line.

24. *Area and population of country served by proposed line.*—The area and population of the Godávari district through 32 miles of which the line northward from Sámalkót would pass have already been given, para. 11 above. The area and population of the Vizagapatam and Ganjam districts are shown in the margin. Excluding the hill tracts, the population on the plains is in Vizagapatam 1,790,468 or 515 to the square mile, and in Ganjam 1,503,301 or 484 to the square mile.

	Area in square miles.	Population.
Vizagapatam	16,992	2,481,284
Ganjam	8,369	1,749,604
Total ...	25,361	4,230,888

The area under cultivation in the two districts amounted on the average of the past three years to nearly two million acres, or about 4 per cent. of the total cultivated area of the presidency.

25. The only trade statistics available for the two districts are—(1) statistics of the imports and exports by sea, and (2) statistics of traffic by road along the route to be followed by the railway.

26. *Imports and Exports by Sea.*—The value of the imports and exports by sea in the two districts for the fourteen years ending 1888-89 is shown in Appendix A, and a statement showing the tonnage of the chief articles of import and export from the principal ports during the past two years is given in Appendix B. The value of the export trade in private merchandize from the Vizagapatam district during the past ten years has ranged between 33¼ lakhs in 1879-80 and 54½ lakhs in 1885-86, and has averaged 47¼ lakhs. The import trade during the same period has ranged in value between 20¼ lakhs in 1879-80 and 28 lakhs nearly in 1884-85, and has averaged 25½ lakhs. The exports and imports of Government stores and treasure during the ten years averaged 4¼ lakhs and 10¾ lakhs, respectively. In the Ganjam district the value of the export trade in private merchandize during the same period, excluding the past two years which were famine years, has ranged between 23 lakhs in 1885-86 and 52¾ lakhs in 1883-84, the average annual value being 38½ lakhs. The value of the import trade, excluding the same period which, however, shows no considerably increased imports, has ranged between 10¾ lakhs in 1886-87 and 19 lakhs nearly in 1884-85, and has averaged 14 lakhs. The exports and imports of Government stores and treasure during the same period averaged 14¼ lakhs and 1½ lakhs, respectively.

27. The chief articles of export from the two districts and the average weight exported during the past two years were as follows :—

—	From the Vizagapatam district.	From the Ganjam district.
	TONS.	TONS.
Grain and pulse..	..	3,989
Seeds	15,836	5,765
Sugar	11,217	1,202
Dyeing and coloring materials ..	3,066	490

The chief articles of import and the average weight imported during the past two years were in the Vizagapatam district—Grain and pulse 10,700 tons ; jute, raw, and in gunny-bags 1,213 tons ; cotton twist and yarn and piece-goods 813 tons. In the Ganjam district—Grain and pulse 750 tons, cotton twist and yarn and piece-goods 533 tons.

28. A very careful analysis of the exports and imports of the Vizagapatam district has been made by Mr. Willock in his letter in view to determining the extent to which the railway would share in the carriage of this trade to or from the ports. Writing with great local knowledge, he comes to the conclusion that the railway would have the carriage of 10,000 tons of jaggery for 80 miles from Anakápalle, the place of production, to Cocanada, to which port the opening of the railway would divert the trade, and of 20,000 tons of other produce for 40 miles, giving a total average carriage of 13,333 tons per mile on the total mileage of the railway within the district.

29. *Road Traffic.*—The only statistics available showing the road traffic on the route along which the railway will pass between Sámalkót and the northern frontier of the district are those which exhibit the traffic on the road between Tuni on the one hand and Rajahmundry and Sámalkót on the other compiled during the six months April to September of the current year—*vide* Appendix C. They give for the year an estimated traffic along the line of 39,000 tons going northwards and 11,000 tons going southwards, or a total traffic of 50,000 tons per mile. The traffic northwards was perhaps unusually large as great quantities of grain were being exported from the Godávari district to Vizagapatam during the first six months of the year attracted by the scarcity prices prevailing there ; but, on the other hand, the considerable failure of the crops in Vizagapatam must have tended largely to diminish importations from that district southwards into Godávari.

30. The statistics of road traffic available for the Vizagapatam district are the following :—

(1) Registrations of traffic made in the dry season of 1874-75 to gauge the traffic along the route from Vizagapatam to the Central Provinces *viâ* Párvatipur and Rayaghada. These relate to the proposed branch line from Vizianagrum to Párvatipur.

(2) Registrations made during the cold seasons of 1876-77 and 1877-78 of the traffic passing through Rayaghada, 30 miles north of Párvatipur, these also relating to the branch line.

(3) Registrations made in the first three months of 1879 of the traffic between Rayaghada and Bimlipatam and also on the roads from Párvatipur to Pálkonda, Pálkonda and Srungavarapukóta to Vizianagrum and from Chicacole to Bimlipatam.

(4) Registrations made in January to June 1879 to test the traffic on the main road from the coast to the Central Provinces and on other roads of the district.

(5) Registrations made between October 1884 and October 1885 of the traffic between Vizagapatam and the frontier between the Vizagapatam district and the Central Provinces.

(6) Registrations effected at different places along the above lines of the proposed railway since the beginning of April of the current year.

31. The above statistics are given in Appendix C. They have been very carefully reviewed by Mr. Willock, Collector of Vizagapatam, and the Board accepts the following conclusions at which he arrives and which are set forth in paragraph 21 of his letter read above :—

First.—That the registrations of 1874-75 indicate a total traffic of 57,500 tons about the centre of the Vizianagrum-Párvatipur road, the line of the proposed branch railway.

Second.—That the registrations of 1879 point to a traffic of perhaps a little less than 60,000 tons along the same line.

Third.—That the registrations of 1884-85 show a total of over 58,000 tons on the above section, while the presence of a railway would certainly have diverted to the same route a further traffic of 7,000 tons which went by a parallel route.

Fourth.—That the registrations of the same year give a total of 34,000 tons as the traffic between Vizianagrum and the coast which the presence of a railway would have increased to 40,000 tons.

32. The uniformity of the results, Mr. Willock observes, arrived at over such a long interval on the Vizianagrum-Párvatipur road, makes it tolerably certain that the traffic on that road has for many years been about 50,000 tons, and may be taken to have been at least 60,000 tons per annum 4 years ago (subject to an increase on account of Ganjam salt), of which 20,000 was with the Central Provinces *viâ* Rayaghada, while a somewhat larger amount went inland *viâ* the Potinghy ghât. Mr. Willock sees reason to believe that the Rayaghada transport has decreased somewhat of late owing to the extension of railway communication with Bombay in the Central Provinces, but considers that it has been counterbalanced by an increase in the Jeypore stream which is growing with great rapidity as roads are pushed further and further in that direction.

33. The only statistics of road traffic in the Ganjam district along the route to be followed by the railway are as under—

(1) Registrations made for nine months from December 1878 to August 1879, of the traffic between Ganjam and Khurda, both on the proposed line, a distance of 70 miles. The traffic during nine months was 32,166 cart-loads, 7,997 laden bullocks, and 33,145 foot-passengers, and adding one-third for the remaining months the traffic for one year will be—

Foot passengers	44,193
Laden carts	42,888
Bullocks	10,663

(2) Registrations of traffic made in the six months commencing April last at six spots along the length of the proposed line between Pooree and Chicacole, *vide* appendix C. These show an average traffic of 6,200 tons going northwards and of 5,700 tons going southward, giving a total traffic of 11,900 tons per mile on this portion of the line.

34. The figures given above show that on great lengths of the line which the railway will take a very large road traffic at present exists, and the Board sees no reason to doubt that a railway would have in these districts the effect which it has had everywhere else of largely and rapidly increasing this traffic. The country through which the line will pass is rich in agricultural and industrial products and very thickly peopled, the population per square mile in Vizagapatam and Ganjam excluding the Hill tracts being denser than that of any other district in the Presidency with the exception of Tanjore. It is difficult to frame any forecast of the financial success of the line, but taking into consideration the agricultural advantages of the tract, subject though it is at intervals in parts to devastation by famine, and the largeness and density of the population of the country through which the line will pass, the Board sees no reason to doubt that the line would be at least as successful as any equal length of the South Indian Railway, the dividend on the main line of which has risen from 2·91 per cent. in 1883 to 3·56 in 1887 and is still steadily rising. As a famine protective work, the value cannot be overestimated. On this point the opinion of the Chamber of Commerce, Cocanada, which naturally takes a great interest in the proposed line and which speaks with a full knowledge earned during the recent famine of difficulties in the way of communication between Cocanada and Ganjam, may be quoted.

"In the opinion of the Chamber, such railway communication, especially if, and when, connection with the Bengal system is established, would make actual famine in Ganjam and Orissa practically impossible, as the Godávari and Kistna deltas could always meet the deficiencies in the food-supply, especially if Bengal were placed in a position to contribute in part. Distress from high prices would no doubt be liable to occur at intervals, as elsewhere, but that would in time be largely forestalled by the amelioration in the condition of the people, which would be effected by the opening up of markets for their surplus product in ordinary years. Experience during the present and previous scarcities shows that food-grains from the Godávari cannot be laid down in Ganjam except at a figure considerably beyond what railway carriage would cost; and even the Vizagapatam district, notwithstanding much cheaper freights, only turned to the sea route when the land route became impracticable. The natural medium of supply between the districts is in fact the bullock-bandy of the country until movements of the latter are stopped by failure of fodder. Apart altogether therefore from the risk of disaster from the closing of the ports by surf, the railway would in times of scarcity perform an office in Ganjam which is not, and cannot be performed by vessels and steamers, and that at a saving in transport equivalent probably to the difference between distress and outright famine. Only a railway can replace the bullock-bandy and save the surrounding districts in times of scarcity from the certainty of outbreaks of cholera, resulting from the overcrowding and pollution of cart stations and tanks along all the lines of communication."

35. Mr. Horsfall, the Collector of Ganjam, who has so ably served the district throughout the whole of the famine now just drawn to a close, writing of the great utility of the proposed railway to this district, says—

"We had a famine 23 years ago, and then, though grain was brought almost within a stone's throw of land, it could not be brought to shore because of the surf. Very fortunately the waves have been more propitious in the famine months which have just passed, and in only one instance had a few bags of paddy to be over-carried to Calcutta, because the steamer could not wait till the surf should subside. But in another year of distress we might not be so favored, and it is not difficult to imagine what the result would be if stocks were low and no grain could be landed, to replenish them, for a few weeks. * * * With a railway running through the length of the district and connecting it with the rich grain-producing districts south and north, there would never be any danger of failure of external supplies, even if the crops in the district should again fail; and the certainty of such supplies would go far to keep prices within reasonable limits.

"It may be a question whether the district would benefit most by such a line of railway as is now proposed, or by a line which should run from Gopálpur to Sambalpur in the Central Provinces. But as long as the district is connected with the Madras Presidency, it must be to its advantage to have direct communication with the capital, and by either line communication more or less direct would be opened up between this district and Calcutta and Bombay."

36. The famine of 1866 in Ganjam cost the Government, including the expenditure on relief of distress, remission of revenue and other losses, about six lakhs of rupees. The mortality amounted to upwards of fifty thousand. During the famine which the district has just passed through, the suffering has been very grievous, and the mortality doubtless very large. The actual cost of the relief measures cannot yet be completely stated, but it has been very great.

37. To Orissa, where the famine of 1866 cost the State about 145 lakhs of rupees and the mortality amounted to nearly one million or about a third of the population, a line which would link it with the ports of Vizagapatam, Bimlipatam and Cocanada and with the rich delta districts of Godávari and Kistna, may be regarded as a necessity.

38. It is almost unnecessary for the Board to refer to the great advantages to good administration which would be afforded by bringing the districts of Godávari, Vizagapatam and Ganjam into railway communication with the head-quarters of the Government or to dwell on the claims which the inhabitants of those districts possess to be brought into railway connection with the rest of the country. Cut off by the Eastern Ghats from the plains of India they are at present practically accessible only by sea, and communication between them and Madras is carried on by weekly steamers, the journey to the Godávari averaging two days, to Vizagapatam three days, and to Ganjam five days with the possibility during the north-east monsoon of being unable to land at all in Ganjam and of being taken on to Calcutta.

True Copies and Extract.)

(Signed) P. RAJARATHNA MUDALIAR,
Secretary.

To the Secretary to Government, Revenue Department.
" Collector of Ganjam.
" " of Vizagapatam.
" " of the Godávari.
" " of the Kistna.

APPENDIX A.

STATEMENT showing the total value of the exports and imports (foreign and coasting).

Year.	GANJAM.			VIZAGAPATAM.			GODAVARI.			KISTNA.		
	Merchandise, private.	Government stores.	Treasure.	Merchandise, private.	Government stores.	Treasure.	Merchandise, private.	Government stores.	Treasure.	Merchandise, private.	Government stores.	Treasure.
Exports.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.
1875-76	27,88,168	Not available.	Not available.	34,86,096	Not available.	Not available.	88,60,263	Not available.	Not available.	34,20,672	Not available	Not available.
1876-77	49,13,142			38,66,454			1,31,76,210			33,84,712		
1877-78	53,82,721			55,27,209			1,15,70,889			25,28,704		
1878-79	25,35,092	96,220	16,65,138	38,85,421	4,633	7,62,813	49,70,382	3,395	44,30,546	17,57,043	89,728	17,52,632
1879-80	32,13,955	27,832	16,75,964	33,21,258	1,489	41,300	91,77,674	22,213	20,02,720	28,80,189	13,292	2,04,285
1880-81	46,11,882	40,467	16,50,000	41,33,606	12,617	1,88,500	1,12,72,915	26,704	19,80,000	28,57,780	17,663	14,85,458
1881-82	47,04,146	4,136	18,11,400	47,04,213	6,129	9,83,750	1,24,68,863	4,440	7,50,000	21,97,194	18,121	10,27,100
1882-83	43,31,663	20,009	7,00,000	47,27,912	19,961	4,28,050	1,26,61,244	6,864	20,23,164	18,64,783	8,816	5,50,085
1883-84	52,88,641	35,252	5,77,270	54,24,191	31,761	6,07,254	1,40,88,516	11,004	10,25,552	19,06,443	3,705	21,14,123
1884-85	40,48,481	4,853	14,26,900	46,65,454	11,190	6,26,950	1,47,02,175	11,592	8,80,730	31,68,094	2,530	8,66,063
1885-86	22,92,835	25,918	17,65,800	54,31,768	14,868	94,950	1,25,61,012	2,275	21,62,000	32,44,133	1,669	25,27,901
1886-87	23,56,918	6,833	17,08,000	51,17,869	18,057	9,900	93,93,323	70	20,53,780	30,73,919	2,483	28,18,081
1887-88	19,87,143	20,221	17,64,600	46,38,379	1,75,324	9,95,650	1,17,51,214	4,663	18,50,000	30,00,208	687	15,52,900
1888-89	17,59,126	9,993	11,30,000	51,08,103	24,710	10,800	1,36,41,485	1,157	8,80,000	31,04,261	653	25,17,759
Average of ten years, ending 1888-89 ..	34,59,479	19,551	14,20,993	47,27,275	31,611	3,98,710	1,21,71,842	9,098	15,60,795	27,29,700	6,962	15,66,376
Imports.												
1875-76	7,41,912	Not available.	Not available.	19,59,174	Not available.	Not available.	21,31,652	Not available.	Not available	15,72,611	Not available.	Not available
1876-77	10,54,130			19,52,483			22,75,234			14,92,827		
1877-78	12,08,944			25,57,254			27,53,954			17,81,926		
1878-79	10,08,423	76,792	82,030	26,89,321	3,55,853	1,87,150	23,61,362	42,044	4,20,122	13,66,173	33,177	3,75,800
1879-80	* 12,52,705	70,711	Not available.	† 20,21,785	81,341	Not available.	‡ 21,14,241	59,496	Not available.	§ 10,44,145	49,017	Not available.
1880-81	11,72,023	66,443	2,76,855	23,74,386	1,79,019	10,57,140	21,97,071	50,912	12,16,663	12,39,149	47,646	3,34,350
1881-82	14,57,570	38,966	1,56,800	27,38,966	74,372	9,11,607	21,66,267	33,988	6,45,110	8,88,919	31,858	3,58,350
1882-83	14,04,348	44,741	91,050	25,33,664	1,21,205	10,59,000	26,49,796	55,620	22,17,277	10,86,919	33,028	2,18,800
1883-84	17,35,303	68,054	15,700	26,07,299	1,17,510	8,39,047	24,17,607	67,461	18,81,200	10,51,955	43,835	1,31,500
1884-85	18,91,415	82,111	25,150	27,90,671	1,31,003	5,33,300	27,37,263	66,035	16,01,300	10,88,331	47,419	3,99,400
1885-86	12,20,941	54,906	5,050	25,70,098	78,742	13,73,350	21,55,155	1,55,994	19,54,500	8,63,995	31,609	6,07,100
1886-87	10,75,955	47,869	11,000	25,33,671	1,30,675	7,18,700	23,54,876	53,309	2,60,500	11,16,636	16,773	2,80,000
1887-88	11,18,599	49,543	75,650	26,58,339	80,424	11,37,000	30,07,952	5,68,816	15,15,000	15,26,061	24,577	3,97,400
1888-89	11,12,828	17,540	20,800	27,34,835	2,13,484	9,28,000	23,19,289	27,746	22,06,000	12,49,741	18,086	7,53,000
Average of ten years ending 1888-89 ..	13,44,169	54,088	75,339	25,56,371	1,20,778	9,50,794	24,11,952	1,13,938	14,99,728	11,15,585	34,385	3,86,656

* Relates to the ports of Gopálpur and Calingapatam only.
† Do. do. of Vizagapatam and Bimlipatam only.
‡ Relates to the port of Cocanada only.
§ Do. do. of Masulipatam only.

APPENDIX B.

Exports.

Articles.	Ganjam.						Vizagapatam.						Godavari.			Kistna.		
	1887-88.			1888-89.			1887-88.			1888-89.			1887-88.	1888-89.		1887-88.	1888-89.	
	Gopálpur.	Calingapatam.	Total.	Gopálpur.	Calingapatam.	Total.	Vizagapatam.	Bimlipatam.	Total.	Vizagapatam.	Bimlipatam.	Total.	Cocanada.			Masulipatam.		
	TONS.	TONS.	TONS.	TONS.	TONS.	TONS.	TONS.	TONS.	TONS.	TONS.	TONS.	TONS.	TONS.			TONS.		
Cotton	..	..	..	..	..	..	3	16	19	28	22	50	3,180			21		342
Dyeing and coloring materials ..	..	..	..	3	..	3	440	3,004	3,444	375	2,452	2,827	2,427			3,104		1,737
Grain and pulse	298	243	541	126	314	440	599	26	625	5	84	89	12,597			15,083		15,621
Oils	5,027	1,352	6,379	1,056	543	1,599	1	3	4	..	2	2	4,510			28		39
Provisions—																		
Ghee	..	..	..	..	..	..	..	8	8	36	22	58	928			20		46
Other kinds	48	1	49	41	..	41	39	99	138	41	367	408	128			74		38
Seeds—																		
Castor	..	..	..	..	..	..	..	32	32	..	2	2	25,199			11,301		11,876
Gingelly	904	2,931	3,835	2,179	1,985	4,164	1,123	7,471	8,594	207	7,237	7,444	11,632			1,148		261
Other kinds	206	2,708	2,914	124	493	617	21	10,645	10,666	18	4,883	4,901	1,716			777		937
Spices	..	..	..	..	..	..	..	..	..	..	..	..	477			514		1,448
Sugar	1,039	..	1,039	1,366	..	1,366	9,897	690	10,587	11,018	829	11,847	18,954			2,078		..
Tobacco	..	..	..	..	..	..	3	23	26	11	20	31	2,793			173		65
Total ..	7,522	7,235	14,757	4,896	3,335	8,230	11,534	22,017	33,551	11,739	15,920	27,659	84,541			33,804		32,410

Imports.

Articles.	Ganjam.						Vizagapatam.						Godavari.			Kistna.		
	1887-88.			1888-89.			1887-88.			1888-89.			1887-88.	1888-89.		1887-88.	1888-89.	
	Gopálpur.	Calingapatam.	Total.	Gopálpur.	Calingapatam.	Total.	Vizagapatam.	Bimlipatam.	Total.	Vizagapatam.	Bimlipatam.	Total.	Cocanada.			Masulipatam.		
	TONS.	TONS.	TONS.	TONS.	TONS.	TONS.	TONS.	TONS.	TONS.	TONS.	TONS.	TONS.	TONS.			TONS.		
Cotton—																		
Raw	450	..	450	..	..	..	..	..	..	..	..	..	..			..		..
Twist and yarn	52	41	93	14	2	16	18	741	759	29	600	629	662			64		71
Piece-goods	5	8	13	117	119	236	45	79	124	32	82	114	135			126		169
Other manufactures ..	54	2	56	33	9	42	4,579	401	4,980	8,762	7,659	16,421	290			298		50
Grain and pulse ..	..	44	44	42	6	48	..	1,059	1,059	3	1,186	1,186	448			..		3
Jute—																		
Raw	..	..	..	1	..	1	..	65	78	..	101	104	20			..		640
Gunny-bags	138	..	138	..	..	..	13	..	13	..	..	..	4			..		3
Gunny-cloths	..	28	28	..	8	8	..	..	..	..	..	..	172			80		640
Other manufactures ..	..	166	166	..	80	80	197	7	204	53	10	63	1			..		3
Liquors	14	..	14	..	..	..	3	36	39	38	33	71	..			..		2
Oils	117	2	119	2	14	16	25	35	60	164	303	467	19			2		394
Seeds	33	9	42	26	2	12	17	47	64	19	38	57	532			684		108
Spices	42	5	47	63	6	69	2	37	39	19	50	69	813			48		10
Sugar	1	..	1	15	5	20							55			15		11
													40			37		6
													183			13		
													212			7		
Total ..	906	144	1,047	2,207	316	2,523	4,899	2,507	7,406	9,119	10,062	19,181	3,303			4,028		1,867
																		1,465

APPENDIX C.

STATEMENT showing the long distance traffic registered in the districts of Ganjam, Vizagapatam, Godávari and Kistna

Districts.	Routes on which traffic was registered.	Stations.		Long distance traffic. Total Merchandise.	Animals.	Passengers.
				I. MDS.	NO.	NO.
Ganjam ..	Between the Central Provinces and Ganjam.	Kalingyiá	Inwards ..	68,198	1,412	1,446
			Outwards ..	20,046	30	2,278
			Total ..	88,244	1,442	3,724
	1. Between Pooree and Ganjam.	Rambha	Inwards ..	283,912	498	31,998
			Outwards ..	131,482	28	32,868
			Total ..	415,394	526	64,866
	2. Between Ganjam and Berhampore.	Musidipuram ..	Inwards ..	152,205	400	62,518
			Outwards ..	39,396	..	48,201
			Total ..	191,601	400	110,719
	3. Between Berhampore and Haripuram.	Korlam	Inwards ..	36,770	3,684	6,166
			Outwards ..	113,966	112	8,536
			Total ..	150,736	3,796	14,702
	4. Between Haripuram and Chicacole.	Pundi	Inwards ..	121,620	3,258	37,350
			Outwards ..	355,982	98	76,482
			Total ..	477,602	3,356	113,832
		Naupada	Inwards ..	60,640	492	7,246
			Outwards ..	89,356	198	8,894
			Total ..	149,996	690	16,140
		Narsannapet ..	Inwards ..	271,542	..	282,758
			Outwards ..	275,398	..	259,332
			Total ..	546,940	..	542,090
Vizagapatam.	1. Between Chicacole and the junction of the Vizianagrum-Bimlipatam road.	Natavalasa ..	Inwards ..	225,128	10,552	74,436
			Outwards ..	176,334	598	76,468
			Total ..	401,462	11,150	150,904
	2. Between Vizianagrum and Vizagapatam.	Boddavalasa ..	Inwards ..	617,764	4,448	102,186
			Outwards ..	664,506	4,592	91,790
			Total ..	1,282,270	9,040	193,976
		Chittivalasa ..	Inwards ..	437,328	5,922	84,126
			Outwards ..	647,452	606	80,628
			Total ..	1,084,780	6,528	164,754
		Vemulavalasa ..	Inwards ..	232,398	514	113,416
			Outwards ..	314,406	672	100,058
			Total ..	546,804	1,186	213,474
	3. Between Bimlipatam and Vizagapatam to Tuni.	Pendur	Inwards ..	313,978	14,634	72,466
			Outwards ..	554,282	1,934	68,848
			Total ..	868,260	16,568	141,314
		Anakápalle ..	Inwards ..	306,646	2,476	153,598
			Outwards ..	440,988	120	103,170
			Total ..	747,634	2,596	256,768
		Timmapuram ..	Inwards ..	136,500	9,614	116,004
			Outwards ..	995,662	2,502	132,482
			Total ..	1,132,162	12,116	248,486
		Kattipudi	Inwards ..	227,092	7,318	43,348
			Outwards ..	857,884	1,010	77,298
			Total ..	1,084,976	8,328	120,646
Godávari ..	1. Between Tuni and Rajahmundry.	Jaggammapet ..	Inwards ..	277,718	70	20,340
			Outwards ..	230,448	6	18,290
			Total ..	508,166	76	38,630

N.B.—Traffic on road No. 2 in Ganjam was registered during 1888-89 for a whole year. In all other cases figures are available for six months only, viz., April to September 1889 inclusive; double the traffic is therefore entered in these cases so as to give the probable traffic for a year.

APPENDIX C.—*cont.*

Statement showing the long distance traffic registered in the districts of Ganjam, Vizagapatam, Godávari and Kistna—*cont.*

Districts.	Routes on which traffic was registered.	Stations.	—	Long distance traffic. Total Merchandise.	Animals.	Passengers.
				I. mds.	No.	No.
Godávari ..	Between Cocanada and Sámalkót.	Cocanada	Inwards ..	..	..	..
			Outwards ..	..	..	..
			Total * ..	593,714	4,302	33,040
	Between Cocanada and Tuni.	Sámalkót	Inwards ..	372,596	4,350	131,192
			Outwards ..	1,253,016	3,500	83,274
			Total ..	1,625,612	7,850	214,466
	Between Jaggammapet and Rajanagaram on one side and Cocanada on the other.	Do.	Inwards ..	671,010	396	24,510
			Outwards ..	409,780	2,900	25,692
			Total ..	1,080,790	3,296	50,202
	Between Sámalkót and Rajanagaram.	Rajanagaram ..	Inwards ..	136,870	7,358	31,938
			Outwards ..	715,172	1,040	34,322
			Total ..	852,042	8,398	66,260
	Between Rajanagaram and Rajahmundry.	Do. ..	Inwards ..	482,574	1,836	58,046
			Outwards ..	788,402	100	48,816
			Total ..	1,270,976	1,936	106,862
	Do.	Rajahmundry ..	Inwards ..	523,638	822	50,338
			Outwards ..	947,156	..	60,788
			Total ..	1,470,794	822	1,11,126
	Between Rajahmundry and Ellore.	Kovvur	Inwards ..	14,750	1,422	9,354
			Outwards ..	45,462	4,358	9,660
			Total ..	60,212	5,780	19,014
	Between Ellore and Rajahmundry.	Ellore	Inwards ..	1,256	..	172
			Outwards ..	52	..	46
			Total ..	1,308	..	218
	Between Ellore and Bezváda ..	Do.	Inwards ..	27,368	50	1,666
			Outwards ..	152,234	..	2,614
			Total ..	179,602	50	4,280
Kistna ..	Between Bezváda (or rather Guntúr) and Ellore.	Bezváda	Inwards ..	117,804	292	19,690
			Outwards ..	4,876	..	18,514
			Total ..	122,680	292	38,204

* Details of inwards and outwards traffic not yet furnished by the Collector.

STATEMENT of traffic statistics taken in 1874-75 on routes from the Agency to the Coast.

Year and month.	Rayaghada to Párvatipur road.	Párvatipur to Pálkonda road.	Párvatipur to Vizianagrum road.	Sálúr to Vizianagrum road.
	tons.	tons.	tons.	tons.
November 1874	..	1,090	1,088	1,355
December ,, ...	..	1,398	1,300	1,563
January 1875	1,399	2,066	2,798	3,805
February ,, ...	4,051	2,411	3,880	4,070
March ,, ...	3,906	5,628	3,959	3,691
April ,, ...	3,898	..	..	..
May ,, ...	1,661	..	..	..
Total ..	14,915	12,593	13,025	14,484
Estimate for remaining months of year	..	..	9,648	10,385
Grand Total ..	..	..	22,673	24,869

APPENDIX C—*cont.*

STATEMENT of traffic through Rayaghada in portions of 1877 and 1878.

Period.	Salt. Bullock.	Salt. Carts.	Gingelly-seed. Bullock.	Gingelly-seed. Carts.	Other articles. Bullock.	Other articles. Carts.	Total. Bullock.	Total. Carts.
From 30th December 1876 to 7th April 1877 ..	72,480	227	52,122	461	57,983	1,830	182,585	2,518
From 19th January 1878 to 31st May 1878	36,071	388	27,102	2,378	49,689	3,066	112,862	5,832

TRAFFIC statistics taken in 1879 (January to March).

Traffic stations.	Up.	Down.	Remarks.
Main road from Coast to Central Provinces.	tons.	tons.	
1. Rayaghada	5,781	4,441	82 miles north of Vizianagrum.
2. Párvatipur	1,477	5,549	52 do. do.
3. Kottaki	3,262	5,030	Branch from Sálúr and the Potinghi ghat.
4. Arikatota	2,871	8,722	26 miles north of Vizianagrum.
5. Nelivada	4,025	9,192	8 do. do.
6. Nilayya Chatram	7,779	10,416	10 do. south of do.
Other roads.			
7. Párvatipur-Pálkonda road	6,820	4,811	Taken near Párvatipur.
8. Pálkonda-Vizianagrum road ..	1,146	5,487	Taken 3 miles from Vizanagrum.
9. Srungavarapukóta-Vizianagrum road.	2,634	10,019	
10. Trunk road (Tuni to Chicacole) ..	2,435	3,437	Taken 33 miles south of Chicacole.

TRAFFIC statistics taken in 1879 (January to June).

Traffic stations.	Up.	Down.	Remarks.
Main road from Coast to Central Provinces.	tons.	tons.	
Rayaghada	10,656	32,650	82 miles north of Vizianagrum.
Párvatipur	8,602	21,430	52 do. do.
Kottaki	10,235	26,000	Branch from Sálúr and Potinghi ghât.
Arikatota and Nelivada average	14,012	41,000	26 miles north of Vizianagrum.
	..	..	8 do. do.
Nilayya Chatram	20,947	50,000	10 do. south of do.
Other roads.			
Párvatipur-Pálkonda road	10,753	25,000	Taken near Párvatipur.
Pálkonda-Vizianagrum road	7,459	9,600	Do. 3 miles from Vizianagrum.
Srungavarapukóta-Vizianagrum road	?	?	Do. 2 miles from Vizianagrum.
Trunk road (Tuni to Chicacole)	4,165	6,000	Do. 33 miles south of Chicacole.

STATEMENT showing traffic results on road from Párvatipur to the Coast in 1884-85.

—	Up. Goods in tons.	Up. Other goods by number.	Up. Passengers.	Down. Goods in tons.	Down. Other goods by number.	Down. Passengers.
Rayaghada (82 miles north of Vizianagrum) ..	3,019	149,220	3,095	18,314	102,271	2,459
Párvatipur (52 miles north of Vizianagrum) ..	1,887	13,263	13,772	14,923	58,025	12,168
Ramabhadrapur (30 miles north of Vizianagrum) ..	13,644	222,416	144,307	51,148	373,231	141,307
Gajapatinagaram (13 miles north of Vizianagrum).	12,637	411,148	100,606	45,306	645,167	95,806
Boddavalsa (5 miles south of Vizianagrum) ..	13,477	198,542	210,690	21,040	260,507	214,658
Chittivalsa (13 miles south of Vizianagrum) ..	7,610	383,930	134,956	21,780	527,320	125,650

Order—dated 3rd January 1890, No. 6, Revenue.

Miscellaneous.

Ordered to be forwarded to the Government of India.

(True Extract.)

Secretary to Government.

To the Commissioner of Revenue Settlement, Land Records and Agriculture.
" Public Works Department, Railway Branch "

Exd. T. K. Narayana Aiyangar.

80 Copies.

5 Spare copies
" have been sent already
Please add the additions in the other copies sent already

P.W. Gen. 1480.

Govt. of {1890} Madras.

REVENUE.

I.S.C.

No 648C. 6.2.90.
387C. 21.1.90.

Issued

Recd. 13-2-90 *Encl.*

G.O., 3rd January 1890, No. 6.

B No 261R dy 18th July/90.

JANUARY.

East Coast Railway.

Board's Proceedings submitting a review of the prospects of the —, as a famine protective requirement and as a commercial project, ordered to be forwarded to the Government of India.

B No 261R dy 18th July 90.

C.S. 12.2.90 Issue 15 Feb

Communicated to the Engineer-in-Chief. East Coast Railway Survey for information.

C.S.
13.2.90

R.

8 Letters

To The Consulting Engr for Rys. √
" Engr-in-Chief E.C. Rly √
" Exec. P.W. Accts. √
" Financial Depart. √

Hon. 14-2-90 R 17-2-90. 3/3 D 20/2