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MADRAS RECORD OFFICE

Government of Madras

Public works DEPARTMENT

G.O. No.	2690	Press
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470 to 472		
Dated	21-9-1874	195-

Not to be folded or roughly handled

Read the following papers :—

No. 470. From J. H. LATHAM, Esq., Chief Engineer and Manager of the Madras Irrigation and Canal Company, to Lieutenant-Colonel J. MULLINS, R.E., Chief Engineer for Irrigation, dated Kurnool, 7th August 1874, No. 94.

In reference to G. O., No. 1,396, of 23rd May last, paragraph 3, I enclose some

correspondence* in order to enable you to express any opinion you may desire. It is obvious that the points, 3 to 6, asked to be investigated require

* My No. 35 of 1st July 1874, to the Collector.
Mr. Hope's No. 100 of 27th July 1874, to me.
My No. 61 of 6th August 1874, in reply.

the preliminary settlement of three questions, viz. :—

- (1.) Is the Company, as suggested in paragraph 2, really to receive goods at their stations and take charge of them for delivery at their destinations ?
- (2.) (And this is a distinct question.) Is the Company to carry passengers ?
- (3.) What is the present tendency of traffic in detail, and its probable attraction by the canal ?

My impression is that Government, in paragraph 4, desire the most accurate possible statistics to be obtained and used as a basis for the answers to these questions, and, I may add, that these should be of as convincing a kind as possible. Hence my proposal in the enclosed correspondence.

The Board seem (*vide* the last meeting) to consider that about half railway fares will be appropriate. I am inclined to agree with that, subject to the following modifications :—

- (1.) Since the difference in fare of *classes* will be halved, I think *all* special rates may be cut out and placed in one class or another.

This need not prevent a maximum of, say, 150 miles being fixed as the mileage charged, or for miles 70 to 100 reckoning as half a mile each, or what not, if it be found necessary to accommodate the traffic between Nundial and Kurnool and prevent its being diverted by the road.

- (2.) The classes should be generally defined, and it seems to me could be brought under twenty or thirty heads instead of some thousand odd.

(3.) Every possible precaution should be taken to prevent beginners and dabblers in trade being choked off by the greater facilities given to the few large and skilled merchants. This should be done at almost any cost of trouble, for success depends *entirely* on the commencement of new trade.

(4.) Cotton alone requires great care. The Railway charges from 14 pies ($1\frac{3}{4}d.$) to 42 pies ($3\frac{1}{2}d.$) per ton per mile for cotton, according as it is pressed well, badly, or not at all. On the strength of this merchants have built hydraulic or other cotton presses at Adoni and Cuddapah; and to one or other of these presses cotton is brought from all the Ceded Districts and Nizam's dominion, since it is ruinous to put it on the railway unpressed. I suppose that of all the cotton in the Nizam's dominions sent to Madras only about 5,000 bales now come *via* Kurnool to Cuddapah. The Government here will have to select whether it be best for the country to drive the cotton round by Adoni, or to make the canal compete with the railway. My impression is that the canal fares should be fixed to suit the canal and country best, and that that policy will in the end best benefit the Government, and even the Railway Company. Undoubtedly, then, the Company must have a press of their own at Cuddapah, where they will necessarily

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use hydraulic power for transshipment on to the trucks, and have water-power sufficient to work both; and cotton should be charged by weight only, or at most at two rates, and, if necessary, run on special boats with narrow hulls and projecting decks. The resistance in the water is not affected by the load being pressed or no, and the bridges have been constructed specially to carry unpressed cotton.

I will not say more, but will leave the documents to speak for themselves, only appending, as a mere suggestion, a form of traffic register which should be used to register the traffic (and despatched daily to head-quarters) at any point on a road where a registering party is placed. It may be well to let there be two peons of the Company instead of one, as I proposed, and they might relieve each other and prick their register, while the writer might try to get more detail information and write it in a sort of report, stating whether each cart was going to or fro beyond the district.

P.S.—The 6,000 or 7,000 tons of timber annually cut in Kurnool seem to have escaped remark by Mr. Hope.

Cart Register Station.

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Description.	Going out.	Going in.
Field carts, empty		
Manure		
Produce		
Limestone, earth carts, empty		
Full		
Other carts, empty		
Cotton		
Indigo		
Salt		
Chilly		
Rice		
Grain and pulse		
Oil		
Betel		
Iron		
Leather		
Timber		
Bamboo and Cane		
Firewood		
Native cloths		
Europe cloths		
Europe articles		
Sundries		
Charcoal and so forth		
Pack cattle, empty		
Salt		
Grain		
Charcoal		

I certify that I pricked each of the above as the tail of the cattle passed by the station post.

Peon, M. I. C. Co.

Peon, M. I. C. Co.

[Rough specimen for a printed ruled form for use, one each day, upon a canvas frame, to be pricked through for each cart, and sent to head-quarters daily by a peon.

The writer's report of the destination of each cart must tally with this.

No question need be asked any driver (as a rule) in order to fill up this form.] To accompany my letter of 7th August 1874.

(Signed) J. H. LATHAM,
Chief Engineer for Irrigation.

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From J. H. LATHAM, Esq., Chief Engineer and Manager of the Madras Irrigation and Canal Company, to J. HOPE, Esq., Acting Collector of Kurnool, dated Kurnool, 1st July. 1874, No. 35.

No. 510, P. M. G.

I HAVE the honor to ask your attention to the highly important G. O., No. 1,396, of 23rd May 1874, and to the six points raised in that order.

2. As regards the first four of those points, I have myself and staff commenced the necessary estimates and calculations; but on the 5th and 6th it is in your power to obtain the information desired by Government, with a precision and authority far more effective than I can secure without such aid. I propose, first, to consider what is the least information that will thoroughly and practically meet the queries of Government, including sufficient checks, or tests of accuracy. It will then remain merely to take efficient steps to secure that information, and I shall have little to do but to offer every possible assistance. It is true that the Government ask for estimates which involve opinion; but in paragraph 4 it is distinctly indicated that facts are to form the basis of such estimates, viz., the actual exports and imports from and to each taluq affected by the canal.

3. I am not aware that such statistics have yet been obtained for any taluqs in this Presidency, or, indeed, in India. If they have, the process by which they were obtained would afford a useful example. Had it only been a question of cost, I suppose there would never have been hesitation about ascertaining the exports and imports for each taluq in the Presidency; the difficulty lies in ensuring accuracy, and to secure this a careful set of operations by subordinates of the Revenue service, the Police, and the Canal Company, seem likely enough to be successful.

4. Of the importance of having such statistics, the Government seem happily and fully aware. No doubt calculations of the amount of trade the country ought ultimately to support when every field shall be well farmed, and every crop well selected, and every cloth and utensil shall be brought from the best places of manufacture, are useful, especially in reference to the adjustment of taxes. Such calculations need little study of local markets any more than a doctor consults local customs when his object is by a scientific analysis to find what foods will keep the human body in best health and best develop every organ in it. But the butcher and baker must study present customs if they are to secure a fair return for outlay; and it is necessary to follow the tradesman's example and learn local customs if money is to be laid out in communications, so as to make immediate return to the public, and to be felt as a boon by every individual. Also this is quite independent of the canal. If it be found that better roads will meet all practical requirements better, or at less cost, than the canal, the information gained will be of the utmost value to Government and to the Local Fund Boards.

5. If you will favor me with such information as can be obtained at once from your department, and with your opinion as to its trustworthiness, and also with any proposal for testing this information, I shall be happy to assist in any way. As regards the actual testing of the traffic, it seems to me that it need not necessarily be restricted to taluq boundaries, since the population and area of every village is separately known. The whole area specially affected by the canal must include both Cuddapah, and Kurnool towns, since they are centres of supply and export; and the trade in these towns might perhaps be taken at the toll-gates. For other traffic it might be enough to gauge that of the taluqs of Nundikotkur, Nundial, Sirwell, Koilkuntla, Banaganpilly and Proddatur as a whole. This district lies between two ranges of hills, impassable except at certain

known passes; and is terminated at each end by a river, passable also at a few known points.

* Say Gardemaddagu
Allampur ford.
Morarakonda ford.
Gaziapully pass.
Tamrazpully pass.
Banaganpilly pass.
Nandialampetti pass.
Jammalamuddagu ford.
Proddatur ford.
Chennur ford.

I suggest that the traffic be taken at the important passes* by a small staff of a maistry, or writer, with a Police peon and Canal peon, the two

last paid by the Canal; and that where less important fords or passes exist, the village curmum and

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reddi, or, in some cases perhaps, the Forest Department, be asked to record the traffic. I strongly

Rs.	
• 1 Maistry	15
1 Police Peon	8
1 Canal do.	7
Rs. 30 a month.	
Or for all Stations	300
Or for a year	3,600
Fees to Curums	400
	4,000

recommend that the staff* be maintained for one year, and am sure that the information gained will ensure that the cost of this staff will be saved in a single year's operations on the roads, etc.

6. It will be important that the villagers be informed that the information is wanted to guide the Government and Local Fund Board and canal in making provision of roads,

etc., for the village traffic; that it is, in fact, merely a census of traffic wholly unconnected with taxation. This information, together with a few queries to be answered by each driver, should be printed and posted up at the ten stations and elsewhere. I think no drivers will object to say whether they have come from the neighbourhood or from a distance, nor what they are carrying, and that is perhaps all we want to know. Drivers from the neighbourhood nearly always give the name of the village they come from, but those from a distance may give any name not on the face of it absurd.

7. I write to the above effect to the Collector of Cuddapah, and will wait to have your opinion as to the best course to be pursued.

From J. HOPE, Esq., Acting Collector of Kurnool, to J. H. LATHAM, Esq., Chief Engineer of the Madras Irrigation and Canal Company, dated Kurnool, 27th July 1874, No. 100.

With reference to your letter, No. 35, dated 1st July 1874, I have the honor to forward copy of a demi-official letter I addressed to Mr. W. Robinson on the subject.

2. From the statement which accompanies this letter, you will observe that the statistics regarding export and import are based, *first*, on the returns of cultivation and population in the taluqs affected by the canal; and, *secondly*, upon information obtained from the merchants who trade in the articles usually exported from this and the Nizam's Territories, or imported from Cuddapah and Madras. I see no reason to doubt the approximate correctness of the figures given in the statement, and am doubtful whether better statistics could be collected by employing ill-paid writers, who cannot be properly controlled to gauge the traffic in the different taluqs referred to by you. Village officials and Revenue Inspectors might be able to collect some useful information; but the fact of an inquiry of this kind being made might soon become known and its object misunderstood, and bandymen and traders would become chary of giving true information, and possibly traffic might be diverted from one route to another. It would be difficult, if not impossible, to get our men to be present at their posts, day after day, and faithfully to record the results of their inquiries and observations. It would be difficult also to prevent them from making illegal exactions on every ignorant traveller or merchant they may meet with.

From J. HOPE, Esq., Acting Collector of Kurnool, to the Honorable W. ROBINSON, dated Kurnool, 25th April 1874.

I must apologize for my delay in answering your inquiries about canal navigation. I just a week ago returned from an extensive tour in the district, and was disappointed in not meeting Mr. Latham to talk with on the subject. However, he wrote to me particulars of what he is ready to undertake on behalf of the Company, and that information I am now able to give you. But, first, I will give you some idea of the traffic that would be likely to be attracted to the canal were navigation opened. I have made inquiries of Tahsildars, Kurnool merchants, and others. The taluqs which alone are likely to be affected are Ramalcottah, Nandikotkur, Nundial and Sirwell. Koilkuntla and Patticondah are altogether too near the Railway, and Cumbum and Markapur are beyond the hills. My calculations of course must be regarded as only approximate.

The exports from this district are cotton, indigo, and leather.

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The extent of cotton cultivation in the four taluqs is about one lakh of acres, and the yield about 2,000 tons annually.

Indigo about 40,000 acres, yielding 214 tons.

Leather manufacture about 429 tons.

The imports into the district are chiefly salt, cloth and iron.

Taking Mr. Thornhill's estimate of 12 lbs. as the consumption of salt per head of the population, I estimate that 2,500 tons will be required by the population of the four taluqs. All this would most probably come by the canal from Madras and Cuddapah.

About 400 tons of iron are annually imported and 200 tons of cloth.

Making allowance for a certain proportion of products being consumed in the district, we may summarize the above as follows:—

Exports.—Cotton, say	1,500 tons out of 2,000 tons.
Indigo,	150 214 ..
Leather,	400 429 ..
Imports.—Salt	2,500 ..
Iron	400 ..
Cloth	200 ..
	5,150 ..

Then, of course, the canal will attract the products of the neighbouring districts of the Nizam's country. The merchants here export annually to Madras and Cuddapah the following products of that part of the country:—

Oil about	1,000 tons.
Cotton	214 ..
Cholum*	535 ..
Agise seed	214 ..
Gingelly	214 ..
Leather	400 ..
	2,577 tons or roughly 2,600 tons.

Adding then 2,600
to 5,150

we have 7,750 tons as very nearly the *actual* traffic that would be at present conveyed by the canal in preference to the usual means of transport by carts, and making no allowance for any stimulus to production that the opening of canal navigation may be supposed to give.

To what extent production will be stimulated it is not easy to say, but I should think it will be considerable. In seasons of drought, rice and other grains would likely be exported. A small trade, too, we have every reason to expect would spring up in fuel and timber and bamboos between Nundial (near which are several important forest stations) and Cuddapah or Madras and Kurnool also. With the increase which may be confidently anticipated in the cultivation of rice under the canal there may very likely be considerable exportation of rice to Madras, but this will take a good many years to develop.

Roughly speaking, I do not think we can count *at the outset* on a through traffic exceeding 6,000 tons, which is a fourth of the estimate taken by Colonel Randall to get 5 per cent. interest on the capital debitable to navigation (Capital, Rupees 36,80,584.—Interest at 5 per cent., Rupees 1,84,000).

* The merchants say that 10,000 barwas of cholam are brought to Kurnool, of which half is exported to the Nizam's side, but I have taken one-fourth as the export in ordinary years. Of the oilseed all is said to go to the Madras side.

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To estimate the probable number of passengers who may avail themselves of the canal navigation is a still more difficult matter, for here we have no data at all to go upon. I am afraid, however, that Colonel Rundall's estimate of the number required to get 5 per cent. interest on expended capital must be reduced in the same proportion as the traffic, viz., to absorb one-fourth, and that there are not likely to be more than forty or fifty through passengers daily.

As regards the number and kind of boats to be employed, I enclose Mr. Latham's letter to me.

You will observe that he wants five lakhs to start with, assuming that the Railway Company would make a branch line from the terminus near Cuddapah to the Railway station. Mr. Latham is at present at Coonoor, and you might arrange an interview with him before he leaves the Hills. Considering that Colonel Rundall's estimate of what would be required to convey a much greater traffic than can reasonably be anticipated for many years falls far below Mr. Latham's, the details of Mr. Latham's schemes would seem to require full discussion before it could be adopted in its integrity.

	Population.	AVERAGE OF THREE YEARS' CULTIVATION.	
		Cotton.	Indigo.
		ACRES.	ACRES.
Ramalcottah ...	146,729	28,180	4,311
Nandikotkur ...	99,761	18,755	9,431
Nundial ...	107,154	32,099	13,927
Koilkuntla ...	98,535		7,945
Sirwell ...	71,368	43,641	10,253
Total...	523,547	122,675	45,867

Taking 12 lbs. of salt as the consumption per head (see Mr. Thornhill's Report), and excluding Patticondah, which must get its supply by rail, and Cumbum and Markapur, to which it is brought by lambadies on pack-bullocks, we might take roughly 500,000 of people who might be supplied by boats on the canal. Therefore $\frac{500,000 \times 12 \text{ lbs.}}{28 \times 4 \times 20} = 2,678 \text{ tons.}$

Taking 40,000 acres under indigo and half a maund as the minimum yield (the maximum often exceeds 1 or 1½ maunds), we have 40,000 maunds $\times \frac{1}{2} = \frac{20,000 \times 24}{28 \times 4 \times 20} = 214\frac{1}{2}$.

Average yield of cotton 7 maunds (with seed) per acre three parts seed and one, cotton $\frac{1}{4} = 1\frac{1}{2}$ Roughly 1 lakh of acres $\times 1\frac{1}{2}$ maunds = 175,000 maunds = $\frac{175,000 \times 24 \text{ lbs.}}{28 \times 4 \times 20} \text{ tons} = 1,875 \text{ tons.}$

2,000 Baruvass = 2,000 $\times 20$ maunds = $\frac{2,000 \times 20 \times 24}{28 \times 4 \times 20} = 428\frac{1}{2} \text{ tons.}$

Cloth from Madras.	1,000	Do.	do.	do.	214 tons.
Iron from Madras.	2,000	Do.	do.	do.	428½ do.

The above shows the export from and import to the district.

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From the Nizam's. Oil 5,000 Baruvass (every week 25 bandies arrive, each bandy containing 2 baruvass) = 1,071 tons.

Cotton 1,000 baruvass = 214 tons.

Jonna (10,000 baruvass are brought to Kurnool, of which half is said to be exported again to Nundial side. I think one-fourth may be taken as the export in ordinary years) 2,500 baruvass = 535
Agise seed (all goes to Madras side), 1,000 baruvass = 214
Gingelly 2,000, of which half goes to Madras side = 429
Leather 2,000 baruvass = 429

Total... 2,677

From the District. Cotton 1,500 tons out of 1,864
Leather 400 do. 429
Indigo 150 do. 214

2,650

Into the District. Salt 2,500 do. 2,678
Cloth 200 do. 214
Iron 400 do. 429

3,100

5,150 tons.

From the Nizam's country to Cuddapah and Madras. 2,600 tons.

7,750

Rice and other grains would be exported in seasons of drought. Besides this we may expect a small trade to spring up in fuel and timber and bamboos. And if the cultivation under the canal increases, there may be export of rice to Madras to a large extent, but this will take many years. Roughly, 6,000 tons may be taken as through traffic along the canal, which is a fourth of the estimate taken by Colonel Rundall

* 36,80,584.

to get 5 per cent. interest on the capital* debitable on account of navigation. As regards passengers, the merchants whom I have inquired say that there might be a 100 daily travelling between Nundial and Kurnool and Nundial and Cuddapah, or fifty through passengers. Perhaps it would be safe to take it at between thirty and forty a day. Colonel Rundall would require 175 through passengers a day to realize the interest† above referred to.

† 1,84,000.

(Initialed) J. H.

From J. H. LATHAM, Esq., Chief Engineer and Manager of the Madras Irrigation and Canal Company, to J. HOPE, Esq., Acting Collector of Kurnool, dated Kurnool, 6th August 1874, No. 61.

G. O., No. 1,396, of 23rd May 1874.

I HAVE the honor to acknowledge your letter, No. 160 of the 27th ultimo, enclosing copy of your letter to the Honorable W. Robinson. That letter certainly seems a favorable example of the kind of information which can be obtained from local officials and sowcars, when the utmost care is taken to guide inquiries to the best effect, and to originate them from the most applicable statistics existing.

2. The first investigation concerns four taluqs, viz., Ramalkotah, Nandikotkur, Nundial and Sirwell; of which we know that the population is half a million, the average area under

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cotton 100,000 acres, and under indigo 40,000 acres. The statistics given by you in detail indicate that the accurate figures are 122,675 and 37,922, but perhaps these cannot be depended on to 20 or 30 per cent. The average prices have been *per ton*, *vide Gazette*:—

Salt	Rupees 150	
Cotton	450	
Indigo	4,500	
The land assessment is	7,58,800	Rs.
Sundry sources, 30 per cent.	2,27,640	
		Total 9,86,440

3. Starting from this basis your inquiries indicate the following to be an estimate of the local trade. In it the figures marked (?) are inserted by myself and are conjectural; but they admit of being corrected if they can be more accurately learnt:—

I.—Imports for local consumption.

2,500 tons of salt, at Rupees 150 =	3,75,000
400 „ of iron, at „ 140 (?)	56,000 (?)
200 „ of cloth (and yarn?), at Rupees 1,400 (?)	3,00,000 (?)
1,000 (?) bullocks	50,000 (?)
Total...	7,81,000 (A)

II.—Local exports.

1,500 tons of cotton, at Rupees 450	6,75,000
150 „ of indigo, at „ 4,500	6,75,000
400 „ of leather	2,00,000 (?)
Total...	15,50,000 (B)

III.—Export of public cash.

Local collection	9,86,440
Telegraph, Postal, and Law Stamps, Money Orders or private remittances will perhaps pay the salaries of officials spent in the taluqs. I suppose the stamps for Justice would pay the whole salaries for the Courts and Police together. I will conjecture, then, that the local collection exported is say	9,00,000 (C)

4. Since (A) and (C) together make up (B) as nearly as could be expected, the above estimate seems to stand well on paper. The gross profit per acre appears as for cotton Rupees 9 and for indigo Rupees 24. I should be inclined to double these; and this would necessitate the reduction of the acreage to half, or must imply the private export, hoarding, or addition to the currency in circulation in these taluqs of about Rupees 1,50,000 annually. This sum would be smaller if 12 lbs. a head *per annum* be an under-estimate of the consumption of salt. Some households afford very clear evidence of consuming 23 lbs., 20 lbs., etc., a head. The smallest consumption I can hear of is 12 lbs. in a family of eight, five being children, of which one is a month old; but if 30 per cent. be an over-estimate of the proportion of imported cloths worn in these taluqs, the disappearance of cash would be increased.

5. We have thus obtained a result that 2,650 tons of sundries and 2,500 of salt will travel half the length of the canal to and from the four taluqs. Adding a like proportion ($\frac{1}{4}$ ton per cent. on the assessment) for the trade in sundries for Markapur and Cumbum, which passes *via* Nundial and Kurnool or Cuddapah, we get 3,230 tons. Your figures give 2,600 tons of oil, etc., transmitted through the taluqs. All this at half railway rates very closely gives—

2,500 tons salt carried 85 miles, at 4 Pies	...	...	...	...
3,230 „ sundries 85 „ at 9 „	...	...	...	...
2,600 „ „ 170 „ at 7 „	...	...	...	...
				33,500 Rs.

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as the pretty certain return, from existing trade alone, in years in which the indigo and cotton crops are both ruinously bad..

6. With regard to this, and your letter under reply, it has reference only to existing trade, and especially to my proposal* to gauge the traffic at a cost of £500 or thereabouts at every

passable road connecting the district with the world. It must however be borne in mind that paragraph 4 of G. O., No. 1,395, suggests the careful analysis of existing trade with the especial view of estimating the value of the traffic which may be anticipated after the opening of the canal. Supposing the canal to be left unopened for traffic, its original promoters may be by some thought to have spent public money uselessly; but those who allow it to rot unused will have a still more definite charge to meet. I shall be glad to know whether you think the estimates made above are satisfactory, under existing circumstances and difficulties, to submit to the Madras Government, in order to determine them to abandon the canal or to open it as a navigation, and if they be so, whether there be no way of making them more convincing to people at home, so as to make the raising of fresh money possible on easy terms, if the canal have to be opened, or to prevent the squandering of money in a bad speculation, if it be clear here that money spent in opening the canal will be wasted.

7. The strongest support you give these estimates is conveyed in the words—“I see no reason to doubt the approximate correctness of the figures,” “am doubtful whether better statistics could be collected.” The objections to actually gauging the traffic are that it is proposed to employ ill-paid writers (I proposed full double the average pay of village curnums, so far as I know); that they cannot be properly controlled; and that the fact of an inquiry might create misunderstanding and make traders and drivers chary of giving true information, that it would be difficult to prevent our men making illegal exactions on every ignorant traveller they met. To these are added that traffic might be diverted from one route to another, and that it would be difficult to get our men to keep at their posts.

8. Now every word of the above paragraph, except the last two objections, might have been, and probably was, used in reference to the old *census*, as got from local officials, when Madras was stated to have 720,000 inhabitants, the Ceded Districts 2,954,710; and $\frac{1}{4}$ of the inhabitants of India were returned as Mahomedans.*

* Murray's Hand-Book, 1859.

I remember laughing when, in the first census taken by count, the village curnum came to my station, thoroughly bewildered between the orders on his form of register and the vague rumours of poll-tax, etc., which were rife, and obligingly asked me whether I wished the population of my station to be put down at 50, 75, or 100, or what. But as to the result: we have Madras now put down at 397,552, the Ceded Districts at 3,978,840; and the census of the Central and North-Western Provinces seems to prove that the Mahomedans in India do not exceed one-eighth of the whole. Who would now “doubt” as to which statistics are the better? With every confidence in the care with which your estimates have been constructed, I consider that £500 will have been well spent in enabling you to give an opinion *after* an actual count has been as carefully tried at that cost, and I am sure that that opinion would be well worth £500 in England.

9. As to the objections to taking actual count of the traffic, which objections I may perhaps infer from the way you introduce them, may be mainly suggested by the native gentlemen who will have very much the carrying of it out. I will say that plenty of sufficiently educated young men of good caste, sons of Government writers, curnums, etc., will gladly take the duties; and if these men will make illegal exactions, I fear the practice of doing so must exist in their families, and might account for $1\frac{1}{2}$ lakhs of money disappearing from the district annually. I am willing to offer Rupees 10 reward for the discovery of any such exactions, and to this perhaps the Government would add. I suggest that all departments be invited to aid, for all will benefit by the knowledge gained, and by knowing where traffic chiefly runs, and the kind of traders and drivers concerned in it. The object of ascertaining which roads most require maintenance, and what outlay may be assigned for repairs, is one that every trader and carter can understand, and

most would fully credit. I find no difficulty in securing a continual watch upon sluices, if I have a tindal on Rupees 15 and two men on Rupees 6 each, and a suitable hut or booth for shelter; and an hourly gong may be struck with such a staff, day and night, if desirable. No doubt failures may take place, as with the census, but the men will be pretty well drilled before the months of heaviest traffic—March, April, May and June.

10. Besides the market trade in toddy, ghee, curds, betel, and vegetables, which would be very sensible as affecting dividend, I am informed of other vastly superior sources of traffic. Salt goes into Hyderabad territory via Raichore by rail. Unpressed cotton goes then to Adoni, or (even now 5,000 bales) by Kurnool to Cuddapah by the road, to be pressed for putting on the train. Oil is already sent from that territory to Madras largely, and the immense quantity of skins from this large area must go somewhere. All this existing trade is likely enough to come by Kurnool from at least the eastern half of the dominion. Even without the canal to aid him, a native merchant informs me that he contemplates putting up a cotton press in Kurnool, and anticipates diverting to it the Eastern Hyderabad cotton trade. There is also already a considerable trade in English articles—watches, knives, and even crockery. It is small in amount, but if we knew that amount and the nature of the goods pretty accurately it might soon be extended, and therefore should not be overlooked.

11. I shall therefore be very glad to join in any effort which may meet your approval to extend our knowledge and confirm our statistics as to existing trade. What I have proposed is the best measure I can think of, but I am not at all averse to trying any method which will give our estimates a firmer basis.

12. If you think any further attempt at getting information as to existing traffic needless, I shall be glad to estimate in detail for such canal as may be required. To float some wooden boats and let them out to boatmen by the mile, or year, with sufficient bollards, fenders, wharves, etc., for such traffic, might cost Rupees 50,000. To open the navigation by the Company, with periodical boats durably constructed of iron, and capable of high speed, warehouses, etc., might cost Rupees 5,00,000; and to add a connection with the railway and dredgers so as to make the thing complete, might cost Rupees 10,00,000. But it is of no use putting up large appliances and repairing docks and sheds for a petty traffic conducted by natives, nor is it desirable to build petty works and sheds unless the idea of fully working the canal be abandoned. On knowing the kind of boats needed, their carrying power, and mode of being worked, also whether the Company will take responsible charge of the traffic or no, I shall be able to estimate for properly putting the canal to work.

No. 26.

No. 471. *Note by the Chief Engineer for Irrigation.*

THE Chief Engineer and Manager, Madras Irrigation and Canal Company, has, with reference to G. O., No. 1,396, of the 23rd May last, submitted certain correspondence between himself and the Collector of Kurnool on the subject of the traffic which may be expected to make use of the Company's canal, should it be opened for navigation.

2. Mr. Latham points out that three questions require to be settled before Clauses 3 to 6 of paragraph 3 of the Government Order referred to can be dealt with properly. These questions are—

1. Is the Company really to receive goods at its stations and take charge of them for delivery at their destinations.
2. Is the Company to carry passengers.
3. What is the present tendency of traffic in detail, and its probable attraction by the canal.

With regard to the first, paragraph 2 of the Government Order appears to clearly contemplate the receipt by the Company of goods and merchandize, and the

delivery of such goods by them at any other station precisely in the manner in which the Railways undertake such business. The canal would probably take and deliver goods at any village or road crossing, this being a modification of detail which the circumstances of canals render feasible, and it would give the canal an advantage over a railway by conducting the traffic in a manner more convenient to the consignors and consignees of merchandize. Paragraph 1 of the Government Order shows why the Company must, in the first instance, be the carriers, if the traffic is to be developed with success. There would, of course, be nothing to prevent the licensing of private boats at any time or to any extent, and no doubt in time the Company would be able to withdraw from the carrying trade almost entirely. Mr. Latham may properly consider what license fees or other means of obtaining a revenue from the use of the canal by private boats should be proposed. I think license fees based upon the tonnage of boats would be a more convenient arrangement than tolls, and render less likely the levy of irregular charges by canal establishments. It is doubtless contemplated that the Company should carry passengers as well as goods at fixed rates. Canal travelling is certainly popular in the deltas, and there is every probability of the people taking to it on the line of the Kurnool and Cuddapah canal.

3. With regard to the estimated traffic it will be seen that Mr. Latham proposes to employ establishments to register the traffic on all the principal roads by which goods and produce enter or leave the Kurnool District, and that part of Cuddapah in which the canal is interested. The Collector of Kurnool, on the other hand, thinks it doubtful whether better statistics than those he has collected would be obtained from this registration of traffic on the several roads and passes through the hills, while he considers that some inconveniences might result from the employment of such establishments in the manner proposed. It may be remarked that, while it may be admitted that as regards the communications of the districts generally, an accurate census of traffic would be of considerable value in determining how the funds available for outlay on these communications should be distributed, it would be difficult to distinguish between the traffic which would use the canal, and that which as at present would continue to make use of lines of trade not approximating even within somewhat wide limits to the direction of the canal. It must further be observed that a considerable time must necessarily elapse before data based on registered traffic could be made available, and, on the whole, it would seem therefore that it will be best to act upon the information obtainable from returns of cultivation and population and from the trading classes.

4. From Mr. Hope's statistics as given in his letter* to the Honorable Mr. Robinson, it would appear that about 6,000 tons annually may be taken as a

fair estimate of the traffic, out of that at present existing, which might be expected to make use of the canal, and possibly the ton mileage would be about $6,000 \times 60 = 360,000$. The canal cannot be relied upon as a means of conveyance for more than six months, so 60,000 ton miles a month, or 2,000 a day, would be the average traffic; and taking ten miles a day as the average distance traversed, and 20 tons

as the average load, ten boats would be needed for the goods trade. A start might be made, it is thought, with twelve or fifteen boats carrying an aggregate load of 300 to 400 tons, as there would inevitably be empties, as also the necessity for some boats being occasionally laid up for repairs. Eight passenger boats would suffice to test this kind of traffic. The distance, 54 miles, from Kurnool to Mittakondal could be done in two days, and two boats would enable a passage to be arranged twice a week. Similarly from Mittakondal to Cuddapah, a distance of about 120 miles, five days might be required, as there are in the 6th, 8th, and 9th sections a good many locks, and four or five boats would be required for a through service twice a week. It has been here assumed that a through service twice a week would be as little as would be likely to make the people take to canal travelling. On the other hand, there are some parts of the canal where probably it would pay to run extra boats. These remarks are merely hints or rough approximations, and are not intended to do more than afford some idea of what floating plant will have to be provided in order that the canal navigation may be started.

5. It seems to be advisable that no time should be lost in designing cargo and passenger boats, and in getting a few put together and placed on the canal. Taking the climate of the country into account, iron will probably be deemed preferable to wood as a material for their construction, and, if so, at any rate the first few boats will be obtainable more cheaply from England than they could be constructed on the canal.

6. With regard to a tariff of goods rates, the Chief Engineer and Manager might draw up a scale on the principle advocated by him, which excludes special rates, and there will be plenty of time to adjust these when further information shall have become available. The maximum rates to be prescribed in the Act required by the contract will leave an ample margin for the subsequent modifications which a little experience may suggest.

OOTACAMUND, (Signed) JOHN MULLINS, Lieut.-Colonel, R.E.,
18th August 1874. Chief Engineer for Irrigation.

No. 472. ORDER THEREON, 21st September 1874, No. 2,690.

IRRIGATION, No. 56.

His Excellency the Governor in Council is glad to learn from the papers recorded in these Proceedings that prompt action has been taken by the Chief Engineer and Manager, Madras Irrigation and Canal Company, as also by the Collector of Kurnool, for obtaining information in connection with the proposed opening of Company's canal for navigation.

2. With regard to the questions asked by Mr. Latham in his letter* to the Chief Engineer for Irrigation, His Excellency is of opinion that the Company should arrange to carry goods and merchandize as a provisional measure, receiving and delivering them in a manner as closely resembling that adopted on the railways, as the differing circumstances of the canal render applicable; that

* No. 94.

passenger traffic should be provided for, and that the statistics of traffic furnished by the Collector of Kurnool may be accepted as an approximate basis for estimating the goods traffic which may be expected to use the canal, and for providing therefore the means of carrying it.

3. The Government consider that, while it may be readily admitted that a census of traffic would be of considerable value, the experience which will be obtained from one year's working of the canal navigation will be so much more useful and reliable that it is hardly worthwhile to employ establishments for registering the actual existing traffic of the country, much of which would afford but very indirect evidence of that which the canal would attract. Upon the broad ground that cheap transport will certainly be made use of to some extent at once, and thereafter tend to develop itself, a beginning of navigation on a small scale and for the purpose of experiment may well be made. The statistics of traffic based upon population and cultivation afford a rough means of deciding upon the floating plant required for such a beginning. It will take time to get even a very small fleet ready for use, and there will be no risk of loss from miscalculation if a few cargo boats and passenger boats be in the first instance designed, estimated for and built, and the Governor in Council desires that no time be lost in putting things in hand. It would be a very different matter had a canal for navigation yet to be constructed. - Upwards of a third of a million sterling has been expended already to that end, and there is no room for much error in determining whether a moderate further capital outlay shall be incurred, so that the estimates for floating plant may without imprudence be prepared on the necessarily assumed, but still sufficiently probable, calculations of traffic which are contained in the foregoing papers.

(True Extract.)

Lieut.-Colonel, R.E.,
Joint Secretary to Government.

To the Chief Engineer and Manager of the Madras Irrigation and Canal Company.
,, Chief Engineer for Irrigation.
,, Revenue Department.

Exd. S. T. Austin.
Spare Copies

The Chief Engineer and Manager Madras Irrigation and Canal Company has, with reference to G.O. No. 1396 of the 23rd May last, submitted certain correspondence between himself and the Collector of Tirunelveli on the subject of the traffic which may be expected to make use of the Company's Canal, should it be opened for navigation.

2. Mr. Latham points out that 3 questions require to be settled before clauses 3 to 6 of para 3 of the G.O. referred to can be dealt with properly. These questions are

1. Is the Company really to receive goods at their stations and take charge of them for delivery at their destinations.
 2. Is the Company to carry passengers.
 3. What is the present tendency of traffic in detail, and its probable attraction by the canal.
- With regard to the first para 2 of the G.O. appears to clearly contemplate the

the receipt by the Company of goods and merchandise and the delivery of such goods by them at any other station precisely in the manner in which the Railways undertake such business. The Canal would probably take and deliver goods at any village or road crossing, this being a modification of detail which the circumstances of canals render feasible, and it would give the Canal an advantage over a Railway by conducting the traffic in a manner more convenient to the consignors and consignees of merchandise. Para. 1 of the R.O. shows why the Company must in the first instance be the carriers, if the traffic is to be developed with success. There would of course be no thing to prevent the licensing of private boats at any time or to any extent, and no doubt in time the Company would be able to withdraw from the carrying trade almost entirely. Mr Latham may

may properly consider what ²⁵license fees or other means of obtaining a revenue from the use of the Canal by private boats should be proposed. I think license fees based upon the tonnage of boats would be a more convenient arrangement than tolls, and render less likely the levy of irregular charges by Canal establishments. It is doubtless contemplated that the Company should carry passengers as well as goods at fixed rates. Canal travelling is certainly popular in the Deccan, and there is every probability of the people taking to it on the line of the Turnool and Cuddapah Canal.

3. With regard to the estimated traffic it will be seen that Mr Latham proposes to employ establishments to register the traffic on all the principal roads by which goods and produce enter

enter or leave the Kurnool Dis-
trict, and that part of Cudda-
pah in which the Canal is in-
terested. The Collector of Kurnool
on the other ^{hand} thinks it doubtful
whether better statistics than ^{Mr Hope's}
those he has collected would ^{be} quite so
be obtained from this registra- ^{tion}
tion of traffic on the several ^{roads}
roads, and passes through the ^{hills}
hills, while he considers that ^{some}
some inconveniences might result ^{from}
from the employment of such ^{establishments}
establishments in the manner ^{proposed}
proposed. It may be remarked
that, while it may be admitted
that, as regards the communi-
cations of the District generally,
an accurate census of traffic
would be of considerable value
in determining how the funds
available for outlay on these
communications should be dis-
tributed, it would be difficult
to distinguish between the traf-
fic which would use the Canal,
and that which as at present
would

would continue to make use of
lines of trade not approximating
even within somewhat wide limits
to the direction of the Canal.
It must further be observed that
a considerable time must ne-
cessarily elapse before data based
on registered traffic could be
made available, and on the
whole it would seem therefore
that it will be best to act
upon the information obtainable
from returns of cultivation and
population and from the
trading classes.

4. From Mr Hope's statistics
of 25th April 1874 as given in his letter to the
Honourable Mr Robinson, it would
appear that about 6000 tons an-
nually may be taken as a fair
estimate of the traffic, out of
that at present existing, which
might be expected to make
use of the Canal, and possibly
the ton mileage would be about
 $6000 \times 60 = 360,000$. The Canal cannot
be.

Many times 22
miles 1/2
miles

be relied upon as a means of con-
veyance for more than 6 months,
as 6000 tons miles a month or
2000 a day would be the average
traffic; and taking 10 miles a
day as the average distance
traversed, and 20 tons as the
average load, 10 boats would
be needed for the goods trade.
A start might be made if it is
thought with 12 or 15 boats carry-
ing an aggregate load of 300
to 400 tons, as there would in-
evitably be empties, as also
the necessity for some boats
being occasionally laid up
for repairs. Eight passenger boats
would suffice to test this kind
of traffic. The distance, 54 miles,
from Turnool to Mittakondal
could be done in 2 days, and
2 boats would enable a pas-
sage to be arranged twice a
week. Similarly from Mittakon-
dal to Cuddapah a distance
of about 120 miles 5 days might
be required, as there are in the
6th

This is possible

Yes

6th 8th & 9th sections a good many
locks, and 4 or 5 boats would
be required for a through service
twice a week. It has been here
assumed that a through service
twice a week would be as little
as would be likely to make the
people take to Canal travelling.
On the other hand, there are some
parts of the Canal where pos-
sibly it would pay to run ex-
tra boats. These remarks are
merely hints or rough approxi-
mations and are not intended
to do more than afford some
idea of what floating plant
will have to be provided in
order that the Canal naviga-
tion may be started.

5 It seems to be advisable
that no time should be lost
in designing cargo and passen-
ger boats, and in getting a
few put together and placed
on the Canal. Taking the climate
of the country into account it
will

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18 August 1874

To The Secretary to Govt. P.W. D.

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P. W. 1874 Sept.
P.W. 1874 Sept.
No: 5517

From

The Chief Engr.
for Irrigation

Dated 18 Aug 1874
Recd 2 Sept 1874

E.G. ✓ to 26

Q. No: 2690. 21-9-74.

~~Q. No: 2690.~~
Note on correspon-
-dence on the subject
of the traffic on the
Madras Irrigation Board
Company's Canal should
it be opened for na-
-vigation -

Ok 4/11

Public Works Department
Proceedings of the Madras Govt.
Read the following
From The Chief Engr. and
Manager Madras
Irr. & C. Co. (H. B. Co. 95 dated
8th Aug 1874)
" Chief Engr. for Irr. (H. B. Co. dated 18 Aug
1874)

His Excellency the
Governor in Council is
glad to learn from
the papers recorded
in these Proceedings
that prompt action
has been taken by
the Chief Engineer &
Manager Madras Ir-
-rigation and Canal
Company, as also by
the Collector of Tan-
-jore, for obtaining
information in con-
-nection with the
proposed opening
of Company's Canal
for navigation.

2 With regard to
the

the questions asked
by Mr. Latham in
his letter to the Chief
Engineer for Irrigation,
His Excellency is of
opinion that the
Company should ar-
range to carry goods
and merchandize,
receiving and deli-
vering them in a
manner as closely
resembling that
adopted on the Rail-
ways, as the differ-
ing circumstances
of the Canal ren-
der applicable; that
passenger traffic
should be provided
for, and that the
statistics of traffic
furnished by the
Collector of Kurnool
may be accepted as
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as a provisional measure
as a provisional measure

an approximate
a basis for estimating
the goods traffic, which
may be expected to
use the Canal, and
for providing there-
for the means of
carrying it.

3. The Government
consider that, while
it may be readily
admitted that a cen-
sus of traffic would
be of considerable
value, the experience
which will be ob-
tained from one year
working of the Canal
navigation will be so
much more useful
and reliable, that
it is hardly worth-
while to employ es-
tablishments for re-
gistering the actual
existing traffic of
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the country, much of
which would afford
but very indirect evi-
dence of that which
the canal would at-
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ground that cheap
transport will cer-
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after tend to de-
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The statistics of traf-
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required for such
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as it will take time
to get even a very
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that no time be lost in putting
things in hand

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small fleet ready for
use, ^{and} there will be no
risk of loss from
calculation if a few
cargo boats and pas-
senger boats be in
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designed, estimated
for and built. It
would be a very dif-
ferent matter had
a canal for naviga-
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the estimates for a
floating plant may
without imprudence
be prepared on the
necessarily ascertained,
but still sufficient-
ly probable, calcu-
lations of traffic
which are contained
in the foregoing
papers.

by 19/9/74

Cann.

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The Chipping Sney-
m H.C. ✓
- - Chipping for H.C. ✓
- - River Dept ✓
S. C. Piers depd 29/9/74

470-472

by 22/10/74 Rd 30/8/74

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G.O. of 1874 Madras.

PUBLIC WORKS.

Mr. C. Engr & Mngt.
of the
M. S. & Canal Co.

cd.

Encl. 6

G. O. 21 Sept 74, No. 21790

No.

470-472.

Madras Irrigation
and Canal Company

Passing orders on
Note by the Chief Engr.
for Irrigation in cor-
respondence on the subject
of the traffic of the Com-
pany's Canal should
it be opened for na-
vigation.