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TAMIL NADU ARCHIVES

GOVERNMENT OF TAMIL NADU

REVENUE DEPARTMENT

G.O. No. / B.P. No: 1628	Press. / Mis.
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Archives 1—10,006—19-4-79.

Read the following papers:—

No. 661. From Major J. BEATTY, R.E., District Engineer, Godavery, to Lieutenant-Colonel J. MULLINS, R.E., Chief Engineer for Irrigation, dated Dowlaishweram, 17th April 1876, No. 109.

I HAVE the honor to report on the subject of boat licensing, with reference to G.O., No. 478, of 22nd February 1876.

2. I may first observe that this has been by no means an exceptional* year in regard to the closure of the canals. The head sluices of the Eastern Delta have closed as follows, in order to carry out the works provided for in the completion project:—

In 1874, from 15th April to 1st †
„ 1875, „ 20th February to 3d May.
„ 1876, „ 21st January, and will be re-opened on 16th April.

The head sluices of the Western Delta have been closed as follows:—

In 1874, from 10th January to 31st March.
„ 1875, „ 15th January to 7th April.
„ 1876, „ 19th January, and will be re-opened on 15th April.

In 1877 it will probably not be necessary to close the head sluices of the Eastern Delta, and water communication between Dowlaishweram and Cocanada will continue all the year. One bay of the head sluices has still to be fitted with the new shutters and gearing, but arrangements will be made to have this work carried out without closing the canal.

In the Western Delta, however, the completion of the main duct has become urgent, and the opportunity will be taken to complete fitting the head sluices with new shutters and screw gearing.

The old head sluice shutters are in bad order, are very inefficient and troublesome to work, and, being of insufficient streigth, are a source of danger to the works in the Delta, being liable to be burst in at the occasion of extraordinary floods, as happened at Vejaishweram in 1861. It is therefore most necessary that the new shutters and gearing should be supplied as early as practicable.

The completion of the Western Delta main duct to its full section is now urgently required, as the first crop irrigation in that Delta has extended to 270,000 acres, and is steadily increasing, and there would doubtless be a serious loss of crops if the main duct were not sufficient to carry a full supply in exceptional states of the river. The main duct can be dug out to its full width in a three months' closure next year.

3. At the present date the number of miles of navigable canal, the number of locks, and cost of lock establishments is as follows:—

Deltas.	No. of Miles of Canal.	No. of Locks.	Cost of Establishments per month.	Cost of Establishments per annum.
			Rs.	Rs.
Eastern	181½	17	606	7,272
Central	114½	9	260	3,123
Western	206½	19	637	7,644
Total ...	452½	45	1,503	18,103

* Except as regards length of closure in the Eastern Delta.

† Or only for a few days.

A.

Statement showing the cost of repairs of locks, lock channels, towing paths, clearing silt, dredging shoals, repairing canal banks, &c., for four years.

Years.	Eastern Delta.	Central Delta.	Western Delta.	Total for each year.
	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.
1872-73	12,356 7 0	11,41[illegible] 7 1	17,123 8 3	40,899 6 4
1873-74	12,043 12 11	19,46[illegible] 14 9	11,402 4 8	43,752 0 4
1874-75	9,631 12 0	8,00[illegible] 13 2	13,935 8 8	31,577 1 5
1875-76	9,358 4 2	13,67[illegible] 0 0	11,660 1 7	34,691 5 9
			Total ...	1,50,919 13 10
			Average ...	37,729 15 6

(Signed) J. BEATTY, Major, R.E.,
District Engineer, Godavery.

B.

Estimate of the probable annual cost of establishment and repairs for the maintenance of navigation in the Delta of the Godavery.

Particulars.	Amount. Rs.
Repairs of locks, clearing lock channels, clearing towing paths, digging out silt, dredging shoals, strengthening canal banks, &c., &c.; average expenditure of four years	37,730
Pay of lock establishments	18,108
Total ...	55,838
Deduct present revenue from navigation; average of last two years...	34,114
Additional income to be raised to cover all expenses	21,724

(Signed) J. BEATTY, Major, R.E.,
District Engineer, Godavery.

C

Estimate of the probable annual cost of maintaining navigation in the Delta of the Godavery, including establishments, repairs, and current interest on capital sunk since beginning of 1871, *for purely navigation purposes.*

Particulars.	Amount. Rs.
Repairs of lock, clearing lock channels, clearing towing-paths, &c...	37,730
Pay of lock establishments	18,108
Interest on capital sunk since 1871 for purely navigation purposes...	22,584
	78,422
Deduct present Revenue ...	34,114
Additional income to be raised to cover working expenses and interest on capital sunk	44,308

(Signed) J. BEATTY, Major, R.E.,
District Engineer, Godavery.

D.

Statement showing the number, tonnage, and fees collected from boats and rafts using the Godavery Canals.

Years.	Cargo Boats.		Passenger Boats.			Rafts.	Fees collected.
	No.	Tonnage.	No.	Passengers.	Pleasure Boats.		
							Rs. A. P.
1871	1,221	24,791	8	5,833	50	Not known.	34,486 9 3
1874	1,210	25,089	7	5,255	3	3,196	32,649 6 11
1875	1,256	26,934	7	5,193	2	3,408	35,579 1 3
Total ...	3,687	76,731		15,781	...	6,604	102,715 1 5
Average ...	1,229	25,577		5,260	...	3,302	34,238 5 5

Average of 1874 and 1875, Rupees 34,114.

N.B.—Returns for 1872 and 1873 not available, owing to the loss of part of the records.

(Signed) J. BEATTY, Major, R.E.,
District Engineer Godavery.

E.

Statement showing the expenditure on purely navigation works from 1870-71, to end of February 1876.

	Amount of Expenditure on each work from 1870-71 to 1875-76.
	Rs. A. P.
Extraordinary.	
Navigation Canal.	
Mogultur lock	29,742 14 11
Palool do.	8,160 11 8
Do. weir	2,461 2 0
Kavitam lock	22,809 0 0
Itemputi do.	18,866 14 4
Do. weir	206 2 1 Railway
Marter lock	1,130 0 0
Peravelli do.	19,134 13 2
Eastern Canal.	
Siddhantam lock	13,027 5 11
Do. weir	1,710 0 0
Koder lock	14,438 1 0
Do. weir	3,152 1 11
Doddipatla lock	1,308 12 0
Undi Canal.	
Undi canal head-lock	14,736 6 4
Addi Canal.	
Gedicheria lock	11,928 0 0
Do. weir	3,995 0 10
Gummampad lock	12,313 2 5
Do. weir	1,846 3 4
Gostanadi and Velpur Canal.	
Head lock, Gostanadi	14,857 6 0
Mamudur lock	6,706 11 7
Do. weir	2,265 8 2

Statement showing the Expenditure on purely Navigation Works from 1870-71 to end of February in 1875-76—(Continued).

	Amount of Expenditure on each work from 1870-71 to 1875-76.
	Rs. A. P.
Restoring Navigation with Weirs.	
Junction canal	20,965 12 1
Double lock at Muddapuram	40,062 8 1
Total ...	2,65,412 0 0

GODAVERY, (Signed) A. R. F. DORWARD, Lieut., R.E.,
30th March 1876. *Assistant Engineer, No. 3 Range.*

N.B.—There was expenditure on navigation works in connection with the project previous to 1870-71.

(Signed) J. BEATTY, Major, R.E.,
District Engineer.

E.

EASTERN DELTA DIVISION, GODAVERY DISTRICT.

Statement showing the outlay on purely navigation original works prepared with reference to District Engineer's Memorandum, No. 747, dated 21st March 1876.

Purely Navigation Original Works.	1870-71.	1871-72.	1872-73.	1873-74.	1874-75.	1875-76, viz., from April 1875 to February 1876.	Total.
	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.
Locks ...	13,054 1 5	46,184 9 5	37,135 0 8	18,[illegible] 2 1 9	26,000 15 2	12,139 15 5	1,53,096 11 1
Lock weirs ...	...	4,010 9 0	10,044 15 7	4,4[illegible]6 6 0	6,489 6 2	5,180 15 0	33,162 1 9
Total ...	13,054 1 5	50,195 2 5	47,179 14 3	22,[illegible]8 7 0	32,490 5 4	20,370 14 5	1,86,258 12 10

DOWLAISHWERAM, (Signed) R. F. E. BROCKMAN, Captain, R.E.,
28th March 1876. *Executive Engineer, Godavery.*

F.

Calculation of the probable present return to a boat-owner from his outlay.

Average size	20 tons.
Probable cost, 500 Rupees for a boat that will last ten years—	
Maintenance per annum	50 —
Pay of crew	180
Occasional towing expenses	50
License fee	20
Total working expenses per annum	300
Do. for 10 years	3,000
Add original cost of boat	500
Hence total outlay in 10 years	3,500

A boat travels 200 miles per mensem = 2,400 miles per annum, carrying 48,000 tons over one mile.

A boat-owner can easily get 3 pies per ton per mile; therefore income = 12,000 Annas = 750 Rupees ∴ income in ten years = 7,500 Rupees.

Deducting total outlay from total earnings, we get net profit in ten years = 4,000 Rupees, or 400 Rupees per annum = 80 per cent. on the original cost of the boat.

(Signed) J. BEATTY, Major, R.E.,
District Engineer, Godavery.

C.

Calculation of the probable return to a boat-owner on his outlay if the license fee be raised to 3 Rupees per ton.

Average size of boat	20 tons.
Probable cost of a boat that will last ten years	500 Rupees.
Maintenance per annum	50
Pay of crew	180
Occasional towing expenses	50
License fee	60
Total working expenses per annum	340
Do. for ten years	3,400
Add original cost of boat	500
Total outlay in ten years	3,900

A boat travels 200 miles per month = 2,400 miles per annum, carrying 48,000 tons over one mile.

A boat-owner can easily get 3 pies per ton per mile; therefore income = 12,000 Annas = 750 Rupees ∴ income in ten years = 7,5 Rupees.

Deducting total outlay from total income, we get the net profit in ten years = 3,600 Rupees, or 360 Rupees per annum = 72 per cent. original cost of boat.

(Signed) J. BEATTY, Major, R.E.,
District Engineer, Godavery.

From J. HOPE, Esq., Acting Collector, Godavery District, to the District Engineer, Dowlaishweram, dated Cocanada, 31st May 1876, No. 81.

With reference to your letter of the 4th March last, No. 3,679, and 3rd ultimo, No. 25, I have the honor to inform you that, under the circumstances stated in your letter to the Chief Engineer for Irrigation, dated the 17th ultimo, No. 109, I am of opinion that the license fee on all boats should be doubled at least. I have no doubt that the boat-owners make a good profit out of the canals, and I quite approve of the principle that the fees should be raised so as to cover the expenditure on works of navigation. Even should Government think it advisable to recover interest on the outlay, and so make it necessary to treble the present fees, I think the boat-owners and the public between them should be quite able to bear the burden. The former, by raising the rates of carriage, will no doubt transfer a considerable portion (if not the whole) of the increased charges to the public at large. I do not anticipate that this will be any impediment to traffic. I think that the fees should be raised in the case of passenger as well as cargo boats.

No. 323 W.

No. 661-A. *Note by the Chief Engineer for Irrigation.*

In G.O., No. 478, of the 22nd February 1876, the District Engineer, Godavery, was instructed to report, in consultation with the Collector, what alteration of the terms on which licenses for the navigation of the Delta canals are issued would be requisite—

1*st*—to cover all current charges for establishments, repairs, &c.;

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27th February 1877. *No.* 662.

2*nd*—to cover in addition to the above current charges, current interest on all outlay since the beginning of 1871, for purely navigation purposes.

Letter No. 109, 17th April.
" " 1,047, 12th July.

No. 81 of 31st May.

2. The District Engineer, in the letters under margin, has afforded tolerably complete information, and has forwarded also a communication from the Collector on the subject.

3. From the information given in paragraph 3 of the District Engineer's letter and in Statements A and D with the Appendix to A, the following particulars are obtained:—

Deltas.	Number of Miles of Canal.	Number of Locks.	Yearly Charges, average of 4 years. Establishment.	Maintenance.	Total.	Charges per Mile.	License Fees, average of 1871, 1874, and 1875. Cargo Boats.	Passenger Boats.	Rafts.	Total.	Receipts per Mile.
Eastern ...	132	17	7,272	11,167	18,4	Rs. ..					
Central ...	104	9	9,192	12,806	21,9	..					
Western ..	187	19	7,644	13,725	21,3	..	25,577	5,359	3,302	34,238	81
	*423	45	18,108	37,698	56,8	132	25,577	5,359	3,302	34,238	81

* The mileage is taken from Administration report which appears to be more correct.

Statement D does not give the fees collected under each head, but, as the tonnage and number of rafts are shown, the entries will be very nearly if not quite correct. From Statement D it further appears as follows:—

Cargo Boats.		Passenger Boats.		Rafts.
Number.	Tonnage.	Number.	Conveying Passengers.	Number.
1,229	25,577	7	5,260	3,302

4. By the amended rules sanctioned for adoption in G.O., 4th March 1876, No. 691, which will there be found in juxtaposition with the old rules, the license fees were fixed at for—

* Maximum. Viz., 5 square feet of deck at 6 annas and 3 annas per square foot respectively.

			Rs. A. P.
Cargo boats—Rule III		... ...	1 0 0 a ton.*
Passenger boats " VI	1st class	... ...	1 14 0 per passenger.
	2nd "	... ...	0 15 0 "
Rafts		... ...	1 0 0 per raft.

Vide Statement E.

5. The expenditure on works for navigation purposes since 1870-71, and up to February 1876, has been—

	Rs.
Eastern Delta	1,86,259
Western do.	2,65,412
	4,51,671

and there was some expenditure previously. It will suffice to take the outlay there at 5 lakhs. There will also ere long be a considerable outlay on works for the improvement of the navigation in the Cen[illegible] Delta, and altogether it may be assumed that about 8 lakhs will be the outlay, the current interest Rupees 40,000 on which has to be considered.

6. The foregoing information demonstrates tolerably clearly, it is considered, that it will be only right to make a very considerable addition to the amount to be charged for the use of the canals of this Delta. In the first place the District Engineer calculates the—

Statements F and G.

Average tonnage of the boats at*	...	...	...	20 tons.
The mileage traversed at 200 a m[illegible]	...	...	...	2,400 miles.
The ton mileage of each boat	...	...	...	48,000

Some deduction would be necessary on account of closure of canals, repairs, trade requirements, &c., and on the average it may be assumed that the mileage will be 1,600 and the ton mileage 32,000

The license fee being 20 Rupees on a 20 ton boat, the charge amounts to less than one-eighth of a pie a ton mile. The above calculation would give a ton mileage for the Delta of $1,229 \times 32,000 = 39{\cdot}328$ millions,

Administration Report, paragraph 12.

and the abstract traffic statements give this at 39·741 millions for 1875-76.

7. The District Engineer, in Statements F and G, estimates the returns obtained by a boat-owner, with the license fee at 1 and 3 Rupees a ton respectively, and he makes the profits on the capital of Rupees 500 invested in a boat, 80 per cent. in the one case and 72 per cent. in the other. Correcting these for the lower mileage of 1,600, the net income per annum becomes

* 30 per cent.
† 22 do.

Rupees 150* with the present license fee, and Rupees 110† if that be trebled, while, if the charge for carriage be increased to ½ pies a ton a mile, the net income in the latter case will be 193⅓ Rupees, or nearly 39 per cent. on the capital invested in the boat. Whatever margin it may be thought proper to allow for contingencies, there appears to be no room for supposing that a material enhancement of the fees will affect prejudicially the trade.

8. So long as the receipts from navigation do not cover expenses, the Government are practically subsidising the carrying trade. It was good to do so while the trade was undeveloped. It would be right to do so in many cases where the difficulties of conveyance are great and the cost high, but it must be unnecessary to foster artificially the carriage of produce when it can be conveyed so cheaply as on the canals of this Delta.

9. The Collector and the District Engineer are fully agreed as to the propriety of raising the license fees on cargo boats. The latter proposes at once to treble them, the former considers that they should be doubled at least, and that the boat-owners and the public between them will be well able to bear the burden even if they be trebled. The undersigned entertains the same opinion, and thinks that it will be better to raise the fees at once to an extent which will probably suffice for many years to come, rather than to make the increase gradual; because, as has been shown above,

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the addition to the actual cost of carriage will be very small, but on the other hand boat-owners will be likely to raise their charges as much if the fee be doubled as if it be trebled. They will in either case exaggerate the effect of the additional annual payment, and rates will at first be much increased, and will then come down to their proper level again. The less frequently they are disturbed the better it will be.

10. The Collector advocates the raising of the fees of passenger boats at the same time. Major Beatty would make no change in them. No reasons have been adduced for either opinion. Prior to 1874 fees were at the rate of 4 annas per square foot of deck-room, and only one class of boats was recognized. In the revised rules the boats were divided into two classes: for the first, in which the fares to be charged and the caste of the passengers to be conveyed were left optional, the fees are fixed at 6 annas per square foot of deck-room; for the second class, in which passengers must be taken irrespective of caste and at a fare not exceeding 1½ pies a mile, the charge is 3 annas a square foot. Statement D shows that there were in—

1871,	82	boats carrying 1,333 passengers.
1874, 76	do.	255 „
1875, 73	do.	193 „

and neither in 1874 nor 1875 were any licenses taken out for first-class boats. There has practically been a reduction of license fees, which was not intended, and which in 1875 involved a loss of Rupees 1,594 without exercising any influence on the development of this kind of traffic. The figures appear to indicate that an increase to the number of passenger boats is not to be expected at present, and it may therefore be advisable not to alter the license fees without further information. It would not be objectionable to return to the rate of 4 annas per square foot, seeing that the introduction of two classes of boats to meet a supposed want of caste travellers has been shown to be unnecessary; but the financial result of this alteration would not be very considerable, and it may be postponed until more is known on the subject. At the same time it may be considered, should it be proposed to raise the fee, whether it would be proper to raise at the same time the maximum fare leviable from 1½ to 2 pies a mile.

11. The financial result of trebling the license fees for cargo boats would be as follows:—

Income.			Rs.
Cargo boats, 26,000 tons, at 3 Rupees ton...	...	...	78,000
Passenger boats, No. 80, at 70 „	...	...	5,600
Rafts, No. 3,500	...	...	3,500
			87,100
Charges.			
Establishment and maintenance charges, allowing for extra lock establishments, as new locks now under construction are completed, &c.	...	60,000	
Interest at 5 per cent. on cost of Navigation Works	...	40,000	
			1,00,000
Deficit Rupees ...			12,900

which deficit, it may be expected, will be covered partly by the development of traffic and partly by an increase of the passe[illegible]t license fees, while possibly some reduction of maintenance charges may be e[illegible]

12. The District Engine[illegible]s proposals for hutting the lock establishments, which in this Delta, equally w[illegible]e Kistna, for which an estimate for huts has recently been sanctioned, are at present very miserably lodged. These proposals are being revised to correspond g[illegible] with those allowed for the Kistna, and will be submitted to Government in du[illegible]e.

G.O., No. 1,115-A, 6th May 1876.

13. It is recommended that no [illegible] of license fees in the Kistna Delta should be made until the canals there have b[illegible]terially improved and the length of good navigation increased.

OOTACAMUND, (S[illegible]) JOHN MULLINS, *Lt.*-Col., R.E.,
20th July 1876. *Chief Engineer for Irrigation.*

To the Secretary to Government, Public W[illegible] Department.

No. 661-B. Endorsement of the C[illegible] Engineer for Irrigation, dated Ootacamund, 13th Septem[illegible] 1876, No. 324 W.

From Lieutenant D. McNEIL CAMP[illegible]LL, R.E., Executive Engineer, in charge Godavery District, to Lieute[illegible]t-Colonel J. MULLINS, R.E., Chief Engineer for Irrigation, dated Do[illegible]ishweram, 26th August 1876, No. 1,473.

WITH reference to your memora[illegible]n No. 73 G. D., dated 26th July 1876, I have the honor to forward statements as per margin, giving you the information you require regarding passenger boats.

2	Statements,	H and I.	
1	do.	J and K.	
1	do.	L	

2. It will be seen from the State[illegible]nts H and I that the license fee can be very considerably increased without d[illegible]ing materially the profits of boat-owners, while at the same time the returns fro[illegible]avigation will be augmented by a large sum.

3. From Statement L the profit[illegible] Government, by increasing the license fee on cargo boats from Rupee 1 to Rupee[illegible] per ton, as proposed by Major Beatty, R.E., in his letter, No. 109, dated 17th Apri[illegible]876, as well as by raising the passenger boat license fee from Annas 3 to Annas 9 [illegible] square foot of deck-room, as now proposed can be seen. This profit amounts to [illegible]pees 16,404 per annum.

4. It will be observed that I have made no mention of first-class passenger boats, the license fee of which is now Annas [illegible] per square foot of deck-room; the reason for this is that it is believed there are only two first-class passenger boats in this district, so I have thought it unnecessary to include them in the calculations, though of course the license fees on these will have to be proportionately increased, that is, to Rs. 1-2-0 per square foot.

5. The average fare per passenge[illegible]as been taken as pies 2 per mile, and I think this is correct; the charges are pies 1½ [illegible]r mile for the general cabin, and pies 3 for the fore and aft cabins, giving an average of pies 2¼; but, as there are always more general cabin passengers than others, I have taken pies 2 as the average.

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6. Transit boats travel continually; the owners employ coolies by the month, who are posted at the several stages, so that th[illegible] is no delay. Boats leaving Dowlaishweram a[illegible]5 P.M. one day arrive at Cocanad[illegible] the next morning, leave again at 5 P.M. and return to Dowlaishweram at 10 A.M. [illegible] following day, and so on throughout the time the canals are open; they thus do 6[illegible]miles in 39 hours, or over 40 miles a day, so I have been on the safe side in allowi[illegible] that they travel 36 miles a day.

7. As regards the errors in Major Bea[illegible]y's letter and statement pointed out by you, I would observe that the lengths of the [illegible]nals will make an almost imperceptible difference in the results; consequently, whet[illegible] you adopt the figures given in the letter or in the Administration Report is imm[illegible]erial. The ton mileage given in that report cannot, I think, be taken as a proof o[illegible] distance travelled by a 20-ton boat, because the number of miles entered there[illegible] represents the distance travelled on canals in this district; the same boats may [illegible]e been employed for months in the Kistna District or on the river, &c., &c. It cer[illegible]nly seems absurd to suppose that a 20-ton boat only travels 1,600 miles a year, [illegible]bout 4½ miles a day, and I think that even the distance mentioned by Major Beatty, [illegible],2,400 miles, or about 7 miles a day, is below the mark. It may be objected that that [illegible]fficer has assumed that a 20-ton boat always carries 20 tons, which I should say is n[illegible]t the case; but, on the other hand, he has entered the charge per ton as only 3 pies [illegible]er mile, while in this Eastern Delta it is at least 6 pies.

8. Major Beatty recommended that the [illegible]ense fee on passenger boats should not be raised, but I do not know for what re[illegible]on, as the profit made by the owners of these boats is certainly greater than that m[illegible]de by cargo boat-owners.

9. I believe you have now all the infe[illegible]mation you can require to enable you to lay the question of increased license fees b[illegible]ore Government at any rate as regards cargo and passenger boats; should you want information regarding rafts, the fees on which should in my opinion also be raised, [illegible] will be submitted to you.

H.

Calculation of the probable return to transit boat-owner from his outlay.

AN average-sized transit boat can carry about 68 passengers (*vide* Major Beatty's Statement D), that is, it has 340 square feet of deck-[illegible]om, but the average number of passengers carried is found to be 30. The probable original co[illegible] of a boat of this size is Rupees 1,000.

	Rs.	A.	P.
Annual repairs	100	0	0
Pay of crew at Rupees 26 per month	312	0	0
„ towing coolies at Rupees 75 per month	900	0	0
License fee	63	12	0
Occasional expenses	50	0	0
Interest on original cost at 5 per cent.	50	0	0
Total expenses for 1 year ...	1,475	12	0
Say ...	1,476	0	0
Do. d. for 10 years ...	14,760	0	0
Add original cost of boat, Rupees 1,000	15,760	0	0

At a moderate computation, a transit boat travels 3 miles an hour for 12 hours in the 24, *i.e.* 36 miles a day = 1,080 miles a month, a[s] canals are open for 9 months in the year = 9,720 miles a year = 291,600 passengers carried one mile; the average fare being 2 pies per mile, this represents Rupees 3,037 per annum = Rupees 30,370 for 10 years. Deduct total outlay from total earnings result = Rupees 14,610, [or] Rupees 1,461 for 1 year, which gives a net profit of Rupees 146·1 per cent. on original cost o[f] boat.

N.B.—Though a boat capable of carrying 68 passengers carries as a rule only 30, the extra space is generally filled with cargo, which is not taken into account. The expenses of crew, towing, &c., have been calculated for the whole year, but the returns only for 9 months, so the calculation is altogether a very lenient one as far as boat-owners are concerned.

(Signed) D. McN. CAMPBELL, Lieut., R.E.,

26*th August* 1876. *Executive Engineer, in charge Godavery District.*

I.

Calculation of the probable return to a transit boat-owner on his outlay if the license fee be raised from 3 Annas to 9 Annas per square foot of deck-room.

An average-sized transit boat can carry 68 passengers, that is, has 340 square feet of deck-room; but the average number of passengers carried is found to be 30. The probable original cost of a boat of this size is Rupees 1,00[0]

		Rs.	A.	P.
Annual expenses		100	0	0
Pay of crew at Rupees 26 per month		312	0	0
,, towing coolies at Rupees [7] per month		900	0	0
Increase license fee		191	4	0
Occasional expenses		50	0	0
Interest on original cost at Rupe[es] 5 per cent.		50	0	0
Total expenses for 1 year ...		1,603	4	0
	Say ...	1,604	0	0
Do. do. for 10 years ...		16,040	0	0
Add original cost of boat, Rupees [1],000		17,040	0	0

The returns are the same as given in Statement II, consequently net profit to boat-owner 30,370 — 17,040 = Rupees 13,330 = Rupees 1,333 for 1 year = Rupees 133·3 per cent. on original cost.

N.B.—The cost of license fee bears a very small proportion to the other expenses, that it can be greatly increased without making much difference in the profit. If it were raised to Rupees 1½ per square foot, instead of Annas 9, the profit would still be over 100 per cent.

(Signed) D. McN. CAMPBELL, Lieut., R.E.,

Executive Engineer, in charge Godavery District.

Proceedings of the Madras Government, Public Works Department,
27th February 1877. *No.* 662.

J.

Statement showing the present return to Government on account of Boat License for 1871, 1874, 1875, *taken from Statement D forwarded with Major Beatty's letter, No.* 109, *dated* 17*th April* 1876.

	Cargo Boats.			Passenger Boats.			Rafts.		
	No.	Tonnage.	Fee at Rs. 1 per ton.	No.	Passengers.	Fee at 3 As. per pass. Fee.	No.	Fee at Rs. 1 per lock.	Remarks.
Average of the 3 years ...	1,229	25,577	Rs. 25,577	77	600	Rs. 4,951	3,302	Rs. 3,302	1 passenger = 6 square feet deck-room in licensing.

Total receipts, Rupees 33,810. The different[ce] between this and the figure given by Major Beatty, viz., Rupees 34,238, can be accounted for by [fees] on pleasure boats, and occasional fees collected.

K.

Statement showing the return to Government if cargo boats are charged Rupees 3 per ton and Passenger Boats Annas 9 per square foot deck-room.

	Cargo Boats.			Passenger Boats.			Rafts.		
	No.	Tonnage.	Fee at Rs. 3 per ton.	No.	Passengers.	Fee at As. 9 per sqr. foot.	No.	Fee.	Remarks.
Average of 3 years ...	1,229	25,577	Rs. 76,731	77	6,260	Rs. 14,793	3,302	Rs. 3,302	

Total Receipts Rupees ... 94,826

(Signed) D. McN. CAMPBELL, Lieut., R.E.,

Executive Engineer, in charge Godavery District.

L.

Statement showing profit to Government if license fees are raised as proposed.

	Rs.
Total cost to Government for keeping up navigation (*vide* Major Beatty's Statement E)	78,422
Returns after licenses are increased (*vide* Statement K)	94,826
Difference or profit	16,404

(Signed) D. McN. CAMPBELL, Lieut., R.E.,

Executive Engineer, in charge Godavery District.

Appendix to Statement A, showing the details of Expenditure on Navigation Repairs from the years 1872-73 *to* 1875-76.

Years.	Clearance of Lock Channels.	Repairs to Locks and Lock Weirs.	Clearing Tow-paths.	Repairs to Lock Establishment Sheds.	Dredging.	Repairs to Main Canals.	Miscellaneous.	Total.
Eastern Delta.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.
1872-73	109 9 6	825 7 9	...	...	1,192 4 7	10,229 1 11	...	12,356 7 0
1873-74	...	92 13 9	...	...	400 12 3	12,441 2 11	...	12,943 12 11
1874-75	...	5,412 1 4	...	...	...	4,219 10 8	...	9,631 12 0
1875-76	...	2,336 15 3	...	...	288 5 9	7,115 2 3	...	9,735 7 3
Total ...	109 9 6	8,667 5 4	...	...	1,885 6 7	34,005 1 0	...	44,667 7 2
Average ...	27 6 4	2,166 13 4	...	...	471 5 8	8,501 4 6	...	11,166 13 9
Central Delta.								
1873-74	...	...	...	...	...	...	...	...
1874-75	202 14 8	279 3 6	...	...	...	...	...	481 13 2
1875-76	569 8 6	824 11 6	...	...	...	...	...	1,394 4 0
Total ...	771 7 2	1,104 14 6	...	...	...	...	...	1,875 17 2
Average ...	385 11 7	552 7 3	...	...	...	...	...	937 14 1
Western Delta.								
1872-73	1,691 10 11	847 7 9	466 7 3	483 12 2	1,915 2 1	8,930 11 5	414 2 9	17,123 8 3
1873-74	1,790 0 3	538 15 0	3,169 7 8	120 15 1	1,133 9 9	3,414 5 1	1,415 14 11	11,402 4 8
1874-75	4,143 2 2	1,829 3 9	2,242 13 6	...	...	4,095 4 8	442 0 8	13,935 8 3
1875-76	2,112 1 6	978 9 7	1,625 14 7	...	652 10 6	6,004 12 8	1,265 7 5	12,440 9 8
Total ...	9,736 14 10	4,194 9 1	11,002 9 1	...	4,105 2 6	22,935 1 7	3,537 9 9	54,901 14 10
Average ...	2,434 3 8	1,048 10 3	2,750 10 4	...	1,026 4 7	5,583 12 5	881 14 5	13,725 7 8
Grand Total ...	10,891 3 9	16,025 12 10	11,569 0 4	483 12 2	5,990 9 1	1,02,106 12 2	3,635 8 3	1,56,792 10 7
Average ...	2,722 12 10	4,006 7 2	2,892 4 2	120 16 1	1,497 10 3	25,549 3 0	908 14 1	*37,698 2 7

* This sum does not agree with the total (37,730) shown in the Statement B, in which average on the probable outlay of the year 1876-77 was shown, whereas the average in this statement has been taken on the actual expenditure of that year.

(Signed) D. McN. CAMPBELL, Lieutenant, R.E.,
Executive Engineer, in charge Godavery District.

DOWLAISHWERAM,
July 1876.

SUBMITTED for the consideration of Government in continuation of the papers reviewed in this office note No. 323-W, [illegible] 26th July last.

2. The information given in the [illegible] from the Executive Engineer in charge Godavery District, and its accompaniments, indicates that the license fees of passenger boats might be raised without pressing too heavily on the traffic, the present fee being only $\frac{1}{25}$ of the total working expenses of a passenger or transit boat. Looking however to the fact that the number of passenger boats has not increased of late years, it may be assumed that they are [illegible] as remunerative as Statements H and J show. Repairs, for instance, if costing only Rupees 100 per annum, take time to execute, and it is probable that for paint [illegible] sails and gear, the real cost of up-keep of a boat must be from 200 to 250 Rupees. Taking the latter amount, the outgoings would be annually in round numbers, with present license fee and with one-tenth of the value of the best added ... ... Rupees 1,726 with the license fee trebled they would be ... ... „ 1,853 on the other hand, by Lieutenant Campbell's showing, three miles an hour is too high a calculation of speed, and the boats plying between Dowlaishweram and Cocanada traverse only about 34 miles a day at most; that 30 miles a day, instead of 36 miles, would be a sufficient estimate of distance. On the other hand, the undersigned would take a somewhat lower average than 2 Pies a mile as the passenger fare, the two fares being 3 and 1½ Pies, for probably there are three or four passengers at the lower for one at the higher rate. Adopting 1¼ Pies as the average, the calculation of gross returns becomes—

Period. Number. Miles. Pies.
$9 \times 30 \times 30 \times 30 \times 1\frac{1}{4} =$ ... ... Rupees 2,278
and the net returns would then be with the present fees,
9 Annas a square foot ... ... „ 562
do. do. with trebled fees, Annas do. ... „ 425
or 55 and 42½ per cent. respectively on the capital sunk in the boat.

3. On the whole there seems to be no reason why the license fees for passenger boats should not be raised to 8 Annas a square foot, or to Rupees 170 for the average boat of 340 square feet, licensed to carry 8 passengers, and usually carrying about 30 passengers and some cargo.

(Signed) JOHN MULLINS, Lt.-Col., R.E.,
Chief Engineer for Irrigation.

No. 661-C	Note by His Grace the President,	dated 14th Aug.	1876.
No. 661-D.	Explanatory memo. by Chief Engr. for Irrign.,	„ 18th „	„
No. 661-E.	Memo. by Chief Engr. for Irrigation,	„ 27th Oct.	„
No. 661-F.	Telegram to District Engineer Godavery,	„ 2nd Nov.	„
No. 661-G.	Notification,	„ 7th „	„
No. 661-H.	Note by His Grace the President,	„ 3rd Dec.	„
No. 661-I.	Memo. by Chief Engineer for Irrigation, No. 1474 D. & 52 K.S.	„ 13th „	„
No. 661-J.	Telegram to Superintending Engineer Godavery,	„ 16th „	„

No. 662. ORDER THEREON, 24th February 1877, No. 662.

IRRIGATION, No. 68.

Account.

HIS GRACE the Governor in Council ving given full consideration to the pers which have been laid before overnment on the subject of increasing the fees for the use of the Godavery I Canals, is of opinion that the license fees for cargo boats may properly be raised n 1 Rupee to 2 Rupees a ton, and this enhancement of the fees would have be ntroduced from the 1st January 1877, but for the desire of Government to avoid a sible increase of the cost of transport at a time when the uninterrupted flow of the coast was of much public importance. It has been decided, therefore, to pos e introduction of the higher fees until the 1st January 1878, from which da 'll be levied.

2. It is not considered expedie make any alteration in the license fees for passenger boats; but the District E er will consider and report whether any modification of the last clause of Rule

Proceedings, Madras Government, dated March 1873, No. 691.

VI will be necessary to prevent boats licensed as passenger boats of the second-class being used principally as cargo ds with, as a result, inconvenience to the travelling public.

3. The District Engineers, Go ry and Kistna, have been already called upon by the Chief Engineer for Irrigation to report as to the modifications of, or additions to, the rules which are required to meet the case of boats which—

Nos. 144 G.D. & 52 K. S., dated 16th December 1876.

1st,—only occasionally need to pass the Ellore lock;

2nd,—generally ply only at Cocanda or below the Delta Canals, but which occasionally may want to make use of the Delta Canals;

3rd,—ordinarily ply on the river above Dowlaishweram or Rajahmundry, but which may sometimes want to carry a cargo through the delta.

A settlement of the arrangements at an early date is desirable, and the subject should, therefore, receive prompt consideration.

4. It is not intended at present ise the license fees in the Kistna Delta.

5. It is the desire of Governm hat in due course the navigation of the canals in the deltas shall be made s pporting. It is clear that the charges are at present considerably in excess of the ceipts, but it is not evident that the former have been correctly ascertained. Fo future the annual report of the working of the navigation rules and bye laws m be accompanied by full information as to the receipts, charges, and working expens; it is therefore important that the indirect charges should be assessed on a recog system. The direct charges for establishments, lock repairs, maintenance of tow this, dredging, &c., are readily ascertainable, but the share of cost of canal maintenance properly chargeable to navigation has to be determined. Each District Engineer ll forthwith consider and report what proper tion of the average annual cost of canal arances and maintenance should be debited to navigation, the calculation being bas the additional outlay rendered necessary, owing to the increased section requi sequence of the water being carried at a

STATEMENT of Receipts and Charges on Delta Navigation for the Year 187

Receipts.

Description.	Amount.	Remarks.
	Rs.	
License fees for passenger boats, 1st class.		
Do. do. 2nd do.		
Cargo boats		
Private do.		
Tolls for passenger boats		
Cargo do.		
Private do.		
Rafts		
Miscellaneous		

Charges.

Description.	Amount.	Remarks.
	Rs.	
Lock establishments and lock wage repairs		
Navigation tolls[illegible] and repairs		
Tow paths maintenance		
Dredging, Lock channels		
Dredging, Mandvy		
Miscellaneous.		
Interest for the year on Capital outlay on Navigation		
Lock wages proper		

STATEMENT of Capital Outlay on Navigation as proper of the Delta from the Year 1875-76 Receipts.

Section of Delta.	To end of 1875-76.	For 1876-77.	Total.
	Rs.	Rs.	Rs.
Eastern Delta			
Central do.			
Western do.			

N.B.—The current interest for 1876-77 will be calculated on the capital expenditure to end of 1875-76 at 5 per cent.

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

Exd. E. C. Shunker.

few, instead of a considerably greater, velocit ...nd upon any other causes of increased expenditure due to the use of the ... for purposes of navigation. A reasonable approximation only is expected.

6. The annual statements of receipts ...urges will be drawn up in the annexed forms, and statements for 1876 in t ... forms should be prepared and submitted as soon as possible.

7. The charges to be entered in the stat ...nt of receipts and charges for any calendar year will be those of the official yea ...ded on the 31st March of that calendar year.

(True Extr ...

...
Lieut.-Colonel, R.E.,
S ...etary to Government, P.W.D.

To the Superintending Engineers of Godavery and K ...na.
„ Collectors of „
„ Chief Engineer for Irrigation.
„ Examiner of Public Works Accounts.
„ Revenue Department.
„ Judicial „

Ex̄d. E. C. Sinnaker.
Spare Copies

Letter Dept
No. 1814

Dept. of Docks and
PUBLIC WORKS

Bureau of Engineering and Construction
Borough of Manhattan

Dated February 27th, 1914.

Received
Mar 19 1914
Dept. of Docks and Ferries

FEBRUARY.
Nos. 661-662.

Subject: Relief Sheds — Planning Sheds
in regard to the subject of locating the
Relief Sheds —

Forbes

Comm'd. to the
Board of Docks

2 Marshfg

Dept. of Docks & Ferries 52-27

No. 52107/18