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DEPARTMENT.

G.O. No. 662

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

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 Dowlaiswaram, 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

* Except as regards length of closure in the head sluices of the Eastern Delta have been closed as follows, in order to carry

out the works provided for in the completion project :—

In 1874, from 15th April to 1st July.

„ 1875, „ 20th February to 5th 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 15th 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 Dowlaiswaram and Cocanada will continue all the year. One bay of the head sluices has still to be fitted with the new shutters

† Or only for a few days.

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 strength, are a source of danger to the works in the Delta, being liable to be burst in on the occasion of extraordinary floods, as happened at Vejaishwaram 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.
Eastern	...	...	...	131½	17	RS. 606	RS. 7,272
Central	...	...	...	114½	9	266	3,192
Western	...	...	...	206½	19	637	7,644
Total ...				452½	45	1,509	18,108

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4. The expenditure on clearances of lock channels, repairs of locks, clearing towing paths, dredging, &c., is shown on the accompanying statement marked A. The average cost for the last four years has been Rupees 37,730.

5. The total cost of establishments and repairs, for maintenance of navigation, is therefore now about Rupees 55,838 per annum, and the accompanying statement, marked B, shows the returns from boat licenses in 1874 and 1875, which have yielded an income of Rupees 34,114.* I am unable to give similar information for 1872 and 1873, as part of the records of those years is missing.

* Average of two years.

6. The outlay for purely navigation purposes since 1871, *i.e.*, on the reconstruction and improvement of old locks, and for new ones and new lock weirs, has been Rupees 4,51,671;† 5 per cent. on this sum would be Rupees 22,584, which, added to the annual cost of establishments and maintenance, gives a total of Rupees 78,422.

† Vide Appendix E.

7. It has frequently been represented to me by the Range Officers that no class of the community has benefited more largely by the construction of the canals than boat-owners, and that they could well afford to pay 3 or 4 Rupees a ton out of the handsome profits now made by working their boats. In my calculations‡ of a boat-owner's returns, I have assumed that he can easily get 3 pies a ton per mile.

‡ Vide Appendices F & G.

The fact is that this department cannot hire boats to carry gravel or other materials, in the Eastern and Central Deltas, under 6 to 8 pies per ton per mile in the Western Delta they probably do it for 3 pies.

I am informed that there is a large amount of boat-building going on just now, and that the rates of carriage by boat are falling. At the same time, owing probably to the scarcity of bandies, cart-hire is at 3 to 4 annas a ton per mile.

8. The sum realized by fees on boats and rafts last year was Rupees 35,579, while of this sum Rupees 26,934, or about three-fourths of the whole, was paid by cargo boats only; paying a license fee of one rupee per ton. I would propose to raise the fee on cargo boats from one to three rupees; and to make no change in the licensing of passenger boats and rafts.

9. I have consulted with the Collector, who is now considering the matter and will give me his opinion as early as practicable. I have shown him this report, and will forward you his letter as soon as I receive it.

LIST OF ENCLOSURES:

- Statement showing the cost of navigation repairs, Rupees 37,730.
- Estimate of the cost of maintaining navigation, repairs and establishments, only Rupees 55,838.
- Estimate of the cost of maintaining navigation, including interest on capital sunk, Rupees 78,422.
- Statement of license fees collected, average of last two years, Rupees 34,114.
- Statements showing the expenditure on purely navigation works from 1870-71 to end of February 1876 inclusive.
- Calculation of present return to boat-owners.
- Calculation of probable return to boat-owners when license fees are raised to 3 Rupees.

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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	11,419	7	1	17,123	8	3	40,899	6	4
1873-74	12,943	12	11	19,405	14	9	11,402	4	8	43,752	0	4
1874-75	9,631	12	0	8,009	13	2	13,935	8	3	31,577	1	5
1875-76	9,358	4	2	13,673	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 establishments 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
Deduct present Revenue	78,422
Additional income to be raised to cover working expenses and interest on capital sunk	34,114
	44,308

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

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D.

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

Years.	Cargo Boats.		Passenger Boats.		Pleasure Boats.	Rafts.	Fees collected.
	No.	Tonnage.	No.	Passengers.			
1871 ...	1,221	24,794	82	5,333	50	Not known.	RS. A. P.
1874 ...	1,210	25,003	76	5,255	3	3,136 1/2	34,486 9 3
1875 ...	1,256	26,934	73	5,193	2	3,468	32,649 6 11
Total ...	3,687	76,731	231	15,781	...	6,604	35,579 1 3
Average ...	1,229	25,577	77	5,260	...	3,302	102,715 1 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 in 1875-76.

EXTRAORDINARY.		Amount of Expenditure on each work from 1870-71 to 1875-76.	
Narsapur Canal.		RS.	A. P.
Mogulur lock	...	29,742	14 11
Palcol 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
Marter lock	...	1,130	0 0
Peravelli do.	...	19,134	13 2
Bank 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
Attali Canal.			
Godicherla 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

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

Restoring Navigation with Wyeru.		Amount of Expenditure on each work from 1870-71 to 1875-76.	
		RS.	A. P.
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. 3,747, 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..	18,054 1 5	46,184 9 5	32,135 0 8	18,532 1 0	28,000 15 2	12,189 15 5	1,53,096 11 1
Lock weirs ..	...	4,010 9 0	10,044 13 7	4,436 6 0	6,489 6 2	8,180 15 0	33,162 1 9
Total ..	18,054 1 5	50,195 2 5	42,179 14 3	22,968 7 0	32,490 5 4	20,370 14 5	1,86,258 12 10

DOWLAISHWERAM, (Signed) R. R. 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.

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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.

G.

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 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 income, we get the net profit in ten years = 3,600 Rupees, or 360 Rupees per annum = 72 per cent. on 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, Dowlaish-weram, dated Cocanada, 31st May 1876, No. 81.

WITH reference to your letter of the 7th 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—
1st—to cover all current charges for establishments, repairs, &c.;

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2nd—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 as per 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:—

Delta.	Number of Miles of Canal.	Number of Locks.	YEARLY CHARGES, AVERAGE OF 4 YEARS.			Charges per Mile.	LICENSE FEES, AVERAGE OF 1871, 1874, AND 1875.				Receipts per Mile.
			Estab-lish-ment.	Mainte-nance.	Total.		Cargo Boats.	Passen-ger Boats.	Rafts.	Total.	
Eastern	132	17	7,272	11,167	18,439	RS.	25,577	5,359	3,302	34,238	81
Central	104	9	3,192	12,806	15,998	RS.					
Western	187	19	7,644	13,725	21,369	RS.					
	423	45	18,108	37,698	55,806	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	77	5,260	3,302

4. By the amended rules sanctioned for adoption in G.O., 4th March 1873, No. 691, which will there be found in juxtaposition with the old rules, the license fees were fixed at for—

	RS.	A.	P.
* Maximum. Cargo boats—Rule III	...	...	...
Passenger boats " VI {1st class	...	1	14
" " {2nd "	...	0	15
Rafts	...	1	0

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 Central 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—

Average tonnage of the boats at	20 tons.
The mileage traversed at 200 a month	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 $1,229 \times 32,000 = 39,328$ millions, and the abstract traffic statements give this at 39,741 millions for 1875-76.

Administration Report, paragraph 12.

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 Rupees 150* with the present license fee, and Rupees 110† if that be trebled, while, if the charge for carriage be increased to $3\frac{1}{2}$ pies a ton a mile, the net income in the latter case will be 193½ 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.

* 30 per cent.
† 22 do.

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,

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 the 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 $1\frac{1}{2}$ pies a mile, the charge is 3 annas a square foot. Statement D shows that there were in—

1871, 82 boats carrying 5,333 passengers.

1874, 76	do.	5,255	"
1875, 73	do.	5,193	"

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 $1\frac{1}{2}$ 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 a ton...	...	78,000
Passenger boats, No. 80, at 70 "	...	5,600
Rafts, No. 3,500	...	3,500
		87,100

	Charges.	Rs.
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 passenger boat license fees, while possibly some reduction of maintenance charges may be secured.

12. The District Engineer has made proposals for hutting the lock establishments, which in this Delta, equally with the Kistna, for which an estimate for huts has recently been sanctioned, are at present very miserably lodged. These proposals are being revised to correspond generally with those allowed for the Kistna, and will be submitted to Government in due course.

13. It is recommended that no change of license fees in the Kistna Delta should be made until the canals there have been materially improved and the length of good navigation increased.

OOTACAMUND,
26th July 1876.
To the Secretary to Government, Public Works Department.

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

No. 661-B. Endorsement of the Chief Engineer for Irrigation, dated Ootacamund, 13th September 1876, No. 324 W.

From Lieutenant D. McNEIL CAMPBELL, R.E., Executive Engineer, in charge Godavery District, to Lieutenant-Colonel J. MULLINS, R.E., Chief Engineer for Irrigation, dated Dowlaishweram, 26th August 1876, No. 1,473.

With reference to your memorandum 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 Statements H and I that the license fee can be very considerably increased without diminishing materially the profits of boat-owners, while at the same time the returns from navigation will be augmented by a large sum.

3. From Statement L the profit to Government, by increasing the license fee on cargo boats from Rupee 1 to Rupees 3 per ton, as proposed by Major Beatty, R.E., in his letter, No. 109, dated 17th April 1876, as well as by raising the passenger boat license fee from Annas 3 to Annas 9 per square foot of deck-room, as now proposed can be seen. This profit amounts to Rupees 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 6 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 passenger has been taken as pies 2 per mile, and I think this is correct; the charges are pies 1½ per 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.

6. Transit boats travel continually; the owners employ coolies by the month, who are posted at the several stages, so that there is no delay. Boats leaving Dowlaishweram a 5 P.M. one day arrive at Cocanada at 7 the next morning, leave again at 5 P.M. and return to Dowlaishweram at 10 A.M. the following day, and so on throughout the time the canals are open; they thus do 66 miles in 39 hours, or over 40 miles a day, so I have been on the safe side in allowing that they travel 36 miles a day.

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

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

9. I believe you have now all the information you can require to enable you to lay the question of increased license fees before 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, it will be submitted to you.

II.

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-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 1,000.

	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. do. for 10 years	14,760	0	0
Add original cost of boat, Rupees 1,000	15,760	0	0

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

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, and if canals are open for 9 months in the year = 9,720 miles a year = 291,600 passengers carried 1 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 1461 per cent. on original cost of 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.,
Executive Engineer, in charge Godavery District.

26th August 1876.

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 1,000.

	RS.	A.	P.
Annual expenses	100	0	0
Pay of crew at Rupees 26 per month	312	0	0
„ towing coolies at Rupees 75 per month	900	0	0
Increase license fee	191	4	0
Occasional expenses	50	0	0
Interest on original cost at Rupees 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 H, 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 such 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 3, 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 17th April 1876.

	CARGO BOAT.			PASSENGER BOATS.			RAFTS.		Remarks.
	No.	Ton-nage.	Fee at Rs. 1 per ton.	No.	Passen-gers.	Fee at 3 As. per sq. foot.	No.	Fee at Rs. 1 per lock.	
Average of the 3 years ..	1,229	25,577	25,577	77	5,260	4,931	3,302	3,302	1 passenger = 5 square feet deck-room in licensing.

Total receipts, Rupees 33,810. The difference 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.		Remarks.
	No.	Ton-nage.	Fee at Rs. 3 per ton.	No.	Passen-gers.	Fee at 9 As. per sq. foot.	No.	Fee.	
Average of 3 years..	1,229	25,577	76,731	77	5,260	14,793	3,302	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.

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.

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

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.
<i>Eastern Delta.</i>								
1872-73	Rs. A. P. 109 9 6	Rs. A. P. 825 7 0	Rs. A. P. ...	Rs. A. P. ...	Rs. A. P. 1,192 4 7	Rs. A. P. 10,229 1 11	Rs. A. P. ...	Rs. A. P. 12,356 7 0
1873-74		92 13 9			409 12 3	12,441 2 11		12,943 12 11
1874-75		5,412 1 4			283 5 9	4,219 10 8		9,631 12 0
1875-76		2,336 15 3			1,885 6 7	7,115 2 3		9,735 7 3
Total ...	109 9 6	8,667 5 4			471 5 8	34,005 1 9		44,667 7 2
Average ...	27 6 4	2,166 13 4			...	8,501 4 5		11,166 13 9
<i>Central Delta.</i>								
1872-73		995 12 3	330 14 0	207 8 7	...	9,885 4 3	...	11,419 7 1
1873-74	272 8 2	1,047 13 2	235 9 3	...	...	17,850 0 2	...	19,405 14 9
1874-75	202 10 9	295 9 6	...	...	...	7,403 10 5	107 14 6	8,009 13 2
1875-76	569 8 6	824 11 6	...	276 3 7	...	10,717 10 0	...	12,388 1 7
Total ...	1,044 11 5	3,163 14 5	566 7 3	483 12 2	...	45,856 8 10	107 14 6	51,223 4 7
Average ...	261 2 10	790 15 7	141 9 10	120 15 1	...	11,464 2 2	26 15 8	12,805 13 2
<i>Western Delta.</i>								
1872-73	1,691 10 11	847 7 9	4,024 5 4	...	1,915 2 1	8,230 11 5	414 2 9	17,123 8 3
1873-74	1,790 0 3	538 15 0	3,109 7 8	...	1,133 9 9	3,414 5 1	1,415 14 11	11,402 4 8
1874-75	4,143 2 2	1,829 8 9	2,242 13 6	...	652 10 6	4,625 4 8	442 0 8	13,935 8 3
1875-76	2,112 1 6	978 9 7	1,625 14 7	...	403 12 2	6,064 12 5	1,255 7 5	12,440 9 8
Total ...	9,736 14 10	4,194 9 1	11,002 9 1	...	4,105 2 6	22,335 1 7	3,527 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	1,02,196 12 2	3,635 8 3	1,50,792 10 7
Average ...	2,722 12 10	4,006 7 2	2,892 4 2	120 15 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 1875-76 was shown, whereas the average in this statement has been taken on the actual expenditure of that year.

DOWLAISHWERAM,

July 1876.

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

STATEMENT of Receipts and Charges — Delta Navigation for the Year 187 .

RECEIPTS.			CHARGES.		
Description.	Amount.	Remarks.	Description.	Amount.	Remarks.
License fees for passenger boats, 1st class ...	Rs.		Lock establishments ...	Rs.	
Do. do. 2nd do. ...			Lock and lock weir repairs...		
Do. cargo boats ...			Repairs of navigation buildings.		
Do. private do. ...			Tow paths maintenance..		
Tolls for passenger boats			Dredging. { Lock channels.		
Do. cargo do. ...			{ Sundry ..		
Do. private do. ...					
Do. rafts ...			Miscellaneous.		
Miscellaneous.			Interest for the year on Capital outlay on navigation works proper.		

STATEMENT of Capital Outlay on Navigation Works proper of the — Delta from the Year 1870-71 inclusive.

Sections of Delta.							To end of 1876-76.	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.

(Signed) JOHN MULLINS, Lieut.-Colonel, R.E.,
Secretary to Government.

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

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

2. The information given in the letter from the Executive Engineer in charge Godavery District, and its accompani-
No. 1,473, dated 26th August 1876. ments, indicates that the license fees of

passenger boats might be raised without pressing too heavily on the traffic, the present fee being only $\frac{1}{23}$ 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 not as remunerative as Statements II and J show. Repairs, for instance, if costing only Rupees 100 per annum, take time to execute, and it is probable that for paint or tar, 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 the present license fee and with one-tenth of the value of the boat 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 Dowlaisweram and Cocanada traverse only about 34 miles a day at most, so 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 $1\frac{1}{2}$ Pies, for probably there are three or four passengers at the lower for one at the higher rate. Adopting $1\frac{1}{2}$ Pies as the average, the calculation of gross returns becomes—

Period.	Number.	Miles.	Pies.	
9 x 30 x 30 x 30 x $1\frac{1}{2}$ =	...	...	...	Rupees 2,278
and the net returns would then be, with the present fees,				
3 Annas a square foot	...	...	...	„ 552
do. do. with trebled fees, 9 Annas	...	...	...	„ 425

or 55 and $42\frac{1}{2}$ 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 68 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,	„ 16th „ „
	No. 144 G. D. & 52 K.S.	
No. 661-J	Telegram to Superintending Engr., Godavery,	„ 16th „ „

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

No. 662.

ORDER THEREON, 27th February 1877, No. 662.

IRRIGATION, No. 68.

Account.

HIS GRACE the Governor in Council having given full consideration to the papers which have been laid before Government on the subject of increasing the fees for the use of the Godavery Delta Canals, is of opinion that the license fees for cargo boats may properly be raised from 1 Rupee to 2 Rupees a ton, and this enhancement of the fees would have been introduced from the 1st January 1877, but for the desire of Government to avoid a possible increase of the cost of transport at a time when the uninterrupted flow of grain to the coast was of much public importance. It has been decided, therefore, to postpone the introduction of the higher fees until the 1st January 1878, from which date they will be levied.

2. It is not considered expedient to make any alteration in the license fees for passenger boats; but the District Engineer will consider and report whether any modification of the last clause of Rule VI will be necessary to prevent boats licensed as passenger boats of the second-class being used principally as cargo boats with, as a result, inconvenience to the travelling public.

3. The District Engineers, Godavery 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—

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

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

3rd,—ordinarily ply on the river above Dowlaiswaram 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 to raise the license fees in the Kistna Delta.

5. It is the desire of Government that in due course the navigation of the canals in the deltas shall be made self-supporting. It is clear that the charges are at present considerably in excess of the receipts, but it is not evident that the former have been correctly ascertained. For the future the annual report of the working of the navigation rules and bye laws must be accompanied by full information as to the receipts, charges, and working expenses; it is therefore important that the indirect charges should be assessed on a recognized system. The direct charges for establishments, lock repairs, maintenance of tow paths, dredging, &c., are readily ascertainable, but the share of cost of canal maintenance properly chargeable to navigation has to be determined. Each District Engineer will forthwith consider and report what proportion of the average annual cost of canal clearances and maintenance should be debited to navigation, the calculation being based upon the additional outlay rendered necessary, owing to the increased section required in consequence of the water being carried at a

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

low, instead of a considerably greater, velocity, and upon any other causes of increased expenditure due to the use of the canals for purposes of navigation. A reasonable approximation only is expected.

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

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

(True Extract.)

(Signed) JOHN MULLINS, Lieut.-Colonel, R.E.,

Secretary to Government, P.W.D.

To the Superintending Engineers of Godavery and Kistna.

- „ Collectors of „
- „ Chief Engineer for Irrigation. „
- „ Examiner of Public Works Accounts.
- „ Revenue Department.
- „ Judicial „

Exd. E. C. Shunker.
Spare Copies

C 20-2177

His No 186 of 21/5/74
80 No 1097 of 5/7/75
" 253 of 29/7/74
" 1021 of 20/4/74
" 998 of 14/4/75
" 1485 of 28/5/75
" 478 of 22/2/76
" 691 of 4/3/73
" 2074 of 11/8/76
His No 15 of 2/11/76

C no: 10 63

Statement showing the cost of repairs of locks, lock channels, towing paths, clearing silt, dredging shoals, repairing canal banks per for 4 years.

Years.	Eastern Delta.	Central Delta.	Western Delta.	Total for each year.
1872-73	12356-7-"	11419-7-1	17123-8-3	40899-6-4
1873-74	12943-12-11	19405-14-9	11402-4-8	43752--4
1874-75	9631-12--	8009-13-2	13935-8-3	31577-1-5
1875-76	9358-4-2	13673--"---	11660-1-7	34691-5-9
				(2)
			Total. Rupees.	150919-13-10
			Average Rupees-	37729-15-6

L. Beatty - Major R.E.
District Engineer Godavery District

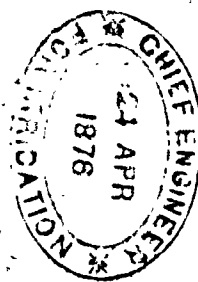
12

Estimate of the probable annual cost of establishments and repairs for the maintenance of Navigation in the Delta of the Godavery.

13

Particulars.	Amount.
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 Rupees	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

P. Beatty. Major R.E.
District Engineer Godavery D.



Statement showing
the cost of maintaining
the Godavery Locks.
Rs. 37,730.

C.

14/13

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.
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

Beatty. Major R.E.
District Engineer Godavery Dist.



Estimate of the cost of maintaining navigation, repairs and lock establishments only.

Rs. 55,838.

A circular black ink stamp. The outer ring contains the text "CHIEF ENGINEER" at the top and "IRRIGATION" at the bottom, separated by two small stars. In the center of the stamp, the date "1876" is printed, with "APR" written above it.

Years.	Cargo boats.		Passenger boats.		Passenger boats.	Rdts.	Fees collected.
	No.	Tonnage.	No.	Tonnage.			
1871	✓ 1221	24,794	✓ 82	5333	✓ 50	Not known	34,486-9-3
1874	✓ 1220	25,003	76	5255	3	3136 $\frac{1}{4}$	32,649-6-11
1875	✓ 1256	26,934	✓ 73	5193	✓ 2	3468	35,579-1-3

- Total -	3687	76,731	231	15781	6604	1,02,715-1-5
-----------	------	--------	-----	-------	------	--------------

Average-	1229	25,577	77	5260	3302	34,238.5-5
----------	------	--------	----	------	------	------------

13.

Average of 1874 & 1875 Re. 34.114.

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

*W. Peattycallay D. E.
District Engineer Godavery D. S.*

14

15

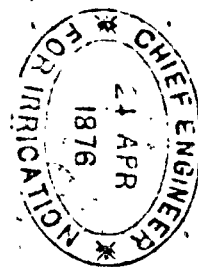
Statement shewing the expenditure on purely
Navigation works from 1870/71 to end of February
in 1875/76.

Names of works	Amount of Expenditure on each work from 1870/71 to 1875/76
----------------	--

Mogultin Lock	29742 14 11
Palcol do	8160 11 8
do weir	2461 2 "
Havitam Lock	22309 "
Itampudi do	18866 14 4
do weir	
Marter Lock	1130 "
Peravelli do	19134 13 2
<u>Under Canal</u>	
Soodhantam Lock	13027 5 11
do weir	1710 "
Noder Lock	14438 1 "
do weir	3152 1 11
Doodipatta Lock	1308 12 "

Under Canal

Under Canal Head Lock	14736 6 4
Total	150472 1 2



Statement of

Expenditure on

Navigation

works from 1870/71 to

end of February 1875/76

Rs. 34,114.

17

Head Canal	B.O.	1504721	2
Godichera Lock		11928	
do Weir		3995	10
Gummainpadi Lock		12313	25
do Weir		1846	3 1/4
Head Lock Gostanadi		14857	8
Mamudur Lock		6706	11 7/8
do Weir		2265	8 2
Junction Canal		20985	12 1
Double Lock at Muddapuram		40062	8 1
		265412	" "

No 3 or 4 D. Range }
 Godavery Dist. }
 30 March 1876 }
 A.R. H. Command Lieut. R.E.
 Asst. Engr No 3 Range R.E.

H. B. Hewson Expenditure on Navigation
 works in Connection with the Project
 Period 1870-71—
 J. Beatty Major R.E.
 District Engineer

Statement shewing the
Expenditure on purely
Navigation works from
1870/71 to end of February
1873/74.

Date 30th March 1874

J. S. Ditchburn
Survey District

Henry
The Officer in charge
Horseshoe Range

E

Eastern Delta Division Godavery District.

Statement shewing the Outlay on purely Navigation original works prepared with
reference to District Engineer's Memo No. 3747 dated 21st March 1876.

Purely Navigation Original Works.	1870/71	1871/72	1872/73	1873/74	1874/75	Total 1875/76 from 1870/71 1875 to 1876	Remarks.
Locks	18054 1 5 46184 9 5 32135 . 8 18532 1 . 26000 15 2 12189 15 5 153096 11 1						
Lock Weirs	" " 4010 9 . 10044 3 7 4438 6 . 6489 6 2 8180 15 . 33162 1 9						
Total	18054 1 5 50195 2 5 42179 14 3 22968 7 . 32490 5 4 20370 14 5 186258 12 10						

Dowlaismaram—
23rd March 1876

J. S. Ditchburn
Executive Engineer Godavery

True Copy

H. Seary Major R.E.

District Engineer God. Dist.

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	3500

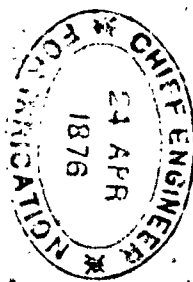
A boat travels 200 miles per mensem
= 2400 miles per annum, carrying
48,000 tons over one mile.

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

Deducting total outlay from total earnings,
we get net profit in ten years = 4000 Rs
or 400 Rs per annum = 80 per cent on the
original cost of the boat.

L. Beatty. Major R.
District Engineer Godavery

Comptd
G.D.



Statement showing
the expenditure on funds
Navigation & Godavari
1870/71 to end of Dec.
- during 1876 inclusive

Calculation of
present return
to boat owners.



F

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 10 years	500 Rs.
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	3400
Add original cost of boat	500
Total outlay in ten years	3900

A boat travels 200 miles per mensem
= 2400 miles per annum

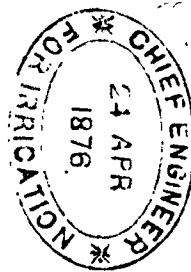
Carrying 48,000 tons over one mile. A boat
owner can easily get 3 pies per ton per mile;
therefore income = 12,000 annas = 750 Rupees
∴ income in ten years = 7500 Rupees.

Deducting total outlay from total income we
get the net profit in ten years = 3600 Rupees or
360 Rupees per annum = 72 per cent on original
cost of boat.

L. Beatty. Major R.
District Engineer Godavari

pub 82

Calculation of
probable returns
to boat owners
when license fees
are raised to 3 Rs.



G

No. 81.

Godavery District
Collector's Office
Cocanada 31 May 1876

From,

James Hope Esquire
Acting Collector.

To
The District Engineer
Dowlaiswaram

Sir,

With reference to your letter of the
7th March last, No. 3679 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 Govern-
ment think it advisable to recover interest
on the outlay and so make it necessary

treble

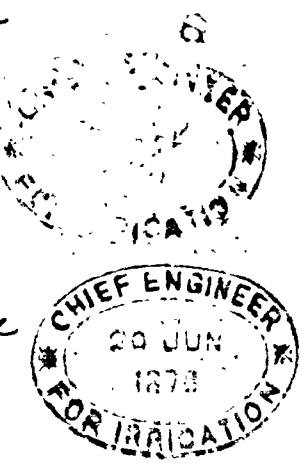
trouble the present fees, I think the boat owners and the public between them should be quite able to bear the burden.

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.

I have seen
/s/ James Hope.
Ag. Collector

True Copy

J. M. W. Campbell Lieut. Col.
Executive Engineer in charge
Gody Dt



N^o 109

District Engineer's Office
Dowlaiswaram. 17th April 1876

From,

Major J. Beatty R.E.
District Engineer Godavari

To,

Lieutenant Colonel J. Mullins R.E.
Chief Engineer for Irrigation

Sir,

I have the honor to report on the subject of boat licensing with reference to G.O. N^o 478 of 22nd February 1876.

2. I may first observe that this has been by no means an exceptional year in respect except as regards length of closure in the Head sluices of the Eastern Delta have been closed as follows, in order to carry out the works provided for in the completion projects:-

In 1874, from 15th April to 1st July.
" 1875 " 20th February to 5th May
" 1876 " 21st January, and will be reopened on 16th April.

The Head sluices of the Western Delta have

have been closed as follows:-

- In 1874, from 15th January to 31st March
- 1875. 15th January to 15th April
- 1876, 19th January, and will be reopened 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 *or only for carried out without closing the Canal. a few days

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 strength are a source of danger to the works in the Delta, being liable to be burst in on the occasion

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 1st crop irrigation in that Delta has ~~been~~ 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.

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

	Miles of Canal	No of locks	Cost of Establishments per month	Rs per annum
Eastern	137 1/2	17	606	7272
Central	114 1/2	9	266	3192
Western	206 1/4	19	637	7644
Total	452 1/4	45	1509	18108

4. The expenditure on clearances of lock channels, repairs of locks, clearing towing paths, dredging &c. is shown on the accompanying Statement marked A.

The average cost for the last four years has been Rupees **37,730**.

5. The total cost of establishments and repairs, for maintenance of navigation, is therefore now about Rupees **55,838** per annum, and the accompanying Statement marked B shows the returns from boat licenses in 1874 and 1875, which have yielded an income of Rupees **34,114**.

* Average of two years

I am unable to give similar information for 1872 and 1873 as parts of the records of those years is missing.

6. The outlay for purely navigation purposes since 1871, i.e. on the reconstruction and improvement of old locks, and for new ones and new lock weirs, has been Rupees **451,671**; 5 per cent on this sum would be Rupees **22,584**, which added to the annual cost of Establishments

* vide Appendices
E

and

and maintenance gives a total of Rupees **78,422**.

7. It has frequently been represented to me by the Range Officers that no class of the community has benefitted more largely by the construction of the canals than boat owners, and that they could well afford to pay 3 or 4 Rupees a ton out of the hand - some profits now made by working their boats. In my calculations of a boat owner's returns I have assumed that he can easily get 3 pies a ton per mile.

⊙ vide
Appendices
E & G

The fact is that this Department cannot hire boats to carry gravel or other materials, in the Eastern and Central Deltas, under 6 to 8 pies per ton per mile; in the Western Delta they probably do it for 3 pies.

I am informed that there is a large amount of boat building going on just now and that the rates of carriage by boats are falling. At the same time, owing probably to the scarcity of handies, cart hire is at 3 to 4 annas a ton per mile.

3. The sum realized by fees on boats and rafts last year was Rupees 35,579. while of this sum Rupees 26,934, or about $\frac{3}{4}$ of the whole, was paid by cargo boats only, paying a licence fee of one rupee per ton. I would propose to raise the fee on cargo boats from one to three Rupees; and to make no change in the licensing of passenger boats and rafts.

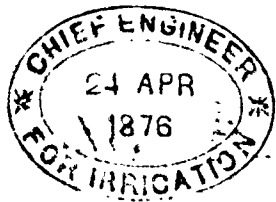
9. I have consulted with the Collector, who is now considering the matter and will give me his opinion as early as practicable. I have shown him this report, and will forward you his letter as soon as I receive it.

I have the honor to be
Sir,

Your Most Obedt. Servt.

L. Beatty Major R.E.
District Engineer G. D. Dist.

- A. Statement showing the cost of navigation repairs Rs. 37,730. ✓
- B. Estimate of the cost of maintaining navigation, repairs and establishments only Rs. 55,838.
- C. Estimate of the cost of maintaining navigation including interest on Capital sunk Rs. 78,422.
- D. Statement of Licence fees collected average of last two years Rs. 34,114.
- E. Statement showing the expenditure on purely navigation works from 1870/71 to end of February 1876 inclusive.
- F. Calculation of present return to boat owners.
- G. Calculation of probable return to boat owners, when license fees are raised to 3 Rupees.



To Mr. D. D. D.
 Secy. of the
 Office District Engineer
 Godavari District
 Chief Engineer
 for Irrigation
 Madras
 Dated 17th April 1876
 Recd
 No 109
 Enclosure 1
 3 out licensing—
 Report on— with
 Reference to G.O. No.
 478 of 22nd February
 1876

No 661.

No 323 W.

Notes by the Chief Engineer for Irrigation

Encls. 11.

In G.O. No 478 of the 22nd February 1876 the District Engineer, Godavari, 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.

- 1st to cover all current charges for Establishments, repairs &c.
- 2nd 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 109-17 April 2
 " " 1047-12 July

The District Engineer in the letters as per margin has afforded tolerably complete information, and has forwarded also a communication from the Collector on the subject. From the information given in para 3 of the District Engineer's

letter and in statements A and D
with the appendix to A the following
particulars are obtained.

Delta	Number of miles of Canal Lock	Yearly charges average of 4 years. Established names	Charges per mile	Licence fees average of 1874 & 1875.	Receipts per mile				
						Cargo Boats	Passenger Boats	Rafts	Total
Eastern	132	17	7272	11167	18439				
Central	104	9	3192	12806	15998				
Western	787	19	7641	13725	21369				
* 423 45 18108 37698 53806						132	25577	5359	3302 34238 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	Receipts
1229	25,577	77	5260	3302	34,238

By the amended rules sanc-
tioned for adoption in G.O. 4th March
1873, which will there be found
in juxtaposition with the old rules,

the licence fees were fixed at for
maximum Cargo boats. Rule III. 1 Rupee a ton
Passenger boats. VI. 1st class 14 -- per passenger
do. 15 -- do
Rafts 1 -- per raft.
The expenditure on works for

navigation purposes since 1870-71
and up to February 1876 has been:-
Eastern Delta. Rupees 1,86,259.
Western do. 2,65,412
4,51,671

and there was some expenditure pre-
viously. 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 Central Delta,
and altogether it may be assumed
that about 8 lakhs will be the outlay.
The current interest, which has to be considered

The foregoing information
demonstrates tolerably clearly it is
sincerely, 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. & G.

average tonnage of the boats at 20 tons
the mileage traversed at 200 a month — 2400 miles
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 1600
+ the ton mileage — 32,000

The license fee being 20 Rupees on a 20 ton boat, the charge amounts to less than 1/8 of a pie a ton mile.

The above calculation would give a ton mileage for the Delta of $1229 \times 32000 = 39.328$ millions, and the abstract traffic statements give this at 39.741 millions for 1875-76 and Administration Report para 12

This District Engineer in statements F. & 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 1600 the net income per annum becomes Rupees 150 with the present license fee, and Rupees 110 if that be trebled, while if the charge for carriage be increased to 3 1/2 pies a ton a mile, the net income in the latter case will be 193 1/3 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,

x 30 percent
xx 22 do

the Government are practically
subsidizing 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 factor
artificially the carriage of produce
when it can be conveyed as 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
boatowners 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,
the addition to the actual cost of
carriage will be very small, but
on the other hand boatowners 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
Bratty would make no change
in them. No reasons have been
adduced for either opinion. Prior
to 1874 the 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 2 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 2nd class in which passengers must be taken irrespective of caste and at a fare not exceeding $1\frac{1}{2}$ pies a mile, the charge is 3 annas a square foot. Statement D shows that there were in 1871-82 Boats carrying 5333 passengers 1874-76 do do 5255 1875-73 do do 5193 and neither in 1874 nor 1875 were any licences 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 Rs. 15.94

5 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 $1\frac{1}{2}$ to 2 pies a mile.

To
The Secretary to Govt A.P.W.

Public Works Dept

for 4 months - No 691
 20 April 74 - 1021
 14 April 75 - 998
 28 May - 1486
 22 July 76 - 470
 16 May - 115
 The Chief Eng. for Eng.
 Dated 26 July 1876
 323 - W.

License Fees - Godavery
 District - Note. Recor. under
 heading that the of Cargo
 boats using the Delta Canal
 be merited.

Recd. 12-9-76
 Recd. 28-8-76
 Cui - 1-8-76
 O.L. Phut 5 July
 N-661A

Recd. 11 1870.

5 The Madras Govt may fix and, from time to time, alter the rates at which such tolls or license fees shall be levied. Provided that no toll or fee shall be levied, and no alteration of any rate of toll or fee shall have effect, until notice shall have been published in the Fort Saint George Gazette and the Gazette of the District to which such notice applies, for such period as the said Govt may fix, of the intention to levy or alter such toll, or to impose or vary such fee, and of the rate and place at which such toll or fee is to be levied or made payable.

6 Notification of the rates of toll to be exhibited at every tollhouse and license fee, and of the places of collection, in English and in the Vernacular language of the District, shall be at all times exhibited to public view at every toll-house where toll is levied under this Act.

W.A.

Papers to be printed in Times on boat
licenses. Godhavn

Dr. W. 109 of 17 April 1876 + all its
accompaniments. Also appended to
Statement A (vide R. W. 989D.
~~See also Statement B. for 26 July 1876.~~

Letter no 81 - 21 May 1876 from the Collector

Walt Whitman Briefing - on 26 July 1876.

W 1473-26 Aug.
Letter from Mrs. and G.D. to accompany
trunk.

Endorsement dated 13 Sept. 1876.

The following to be recorded but not printed
minutes by H. L. The President dated 14 August 1901.

~~Explanatory memorandum~~ dated 18 do.

1 minute by the President dated 3 Dec. 76.

~~Handwritten text~~ 16 " "

Islyants S. L. Gaboring 16 " "

44. 30/1/77

Memorandum dated 27 Oct 76

Telegrams D.C. Sudowicz 2 Nov. 76.

certification of 7 Nov. 76.

No 1473

District Engineering Office G.D.
Dowlaisluwaram 26 August 1876

From,

Lieutenant D McNeil Campbell R.E.
Executive Engineer in charge G.D. Dist.

To,

Lieutenant Col. P. Mullins R.E.
Chief Engineer for Irrigation, & Joint Secretary
to Government P.W.D.

Sir,

With reference to your Memo No 73 G.D.
dated 26th July 1876, I have the honor to forward
Statements as per margin, giving you the in-
formation you require regarding passenger
boats -

2. It will be seen from the Statements
H and **I**, that the license fee can be
very considerably increased, without dimi-
nishing materially the profits of boat
owners, while at the same time, the returns
from navigation will be augmented by a
large sum -

3. From Statement **L** the profit to go
to Government.

Government, by increasing the license fee on Cargo boats from Rupees 1 to Rupees 3 per ton, as proposed by Major Beatty R.E. in his letter No ¹⁰⁹ ~~10~~ dated 17th April 1876, as well as by raising the passenger boat license fee from Annas 3 to Annas 9 per square foot of deck room as now proposed can be seen.

This profit amounts to Rupees 16,404 per annum.

4. It will be observed that I have made no mention of 1st class passenger boats, the license fee of which is now Annas 6 per square foot of deck room, the reason for this is, that it is believed there are only two 1st class passenger boats in this District, so I have thought it unnecessary to include them in the calculations, though of course their license fees on these will have to be proportionately increased, that is, to Rupees 1-2- per square foot.

5. The average fare per passenger has been taken as pice 2 per mile, and I think this is correct: the charges are 1½ pice per mile for the

the general cabin, and pice 3 ^{for the fore} and aft cabins; giving an average of pice 2¼: but as there are always more general cabin passengers than others, I have taken pice 2 as the average.

6. Transit boats travel continually, the owners employ coolies by the Month who are posted at the several stages so that there is no delay. Boats leaving Dowlaishwaram at 5 P.M. one day, arrive at Cocanada at 7 the next morning, leave again at 5 P.M. and return to Dowlaishwaram at 10 A.M., the following day and so on throughout the time the canals are open; they thus do 66 miles in 36 hours, or over 40 miles a day, so I have been on the safe side in allowing that they travel 36 miles a day.

7. As regards the errors in Major Beatty's letter and Statement pointed out by you, I would observe, that the lengths of the Canals will make an almost imperceptible difference in the results, consequently, whether you adopt the figures given in the letter, or

Government, by increasing the license fee on Cargo boats from Rupees 1 to Rupees 3 per ton, as proposed by Major Beatty R.E. in his letter No ¹⁰⁹ ~~10~~ dated 17th April 1876, as well as by raising the passenger boat license fee from Annas 3 to Annas 9 per square foot of deck room as now proposed can be seen.

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the general cabin, and pice 3 ^{for the fore} and aft cabins; giving an average of pice 2¼: but as there are always more general cabin passengers than others, I have taken pice 2 as the average.

6. Transit boats travel continually, the owners employ coolies by the Month who are posted at the several stages so that there is no delay. Boats leaving Dowlaishwaram at 5 P.M. one day, arrive at Cocanada at 7 the next morning, leave again at 5 P.M. and return to Dowlaishwaram at 10 A.M., the following day and so on throughout the time the canals are open; they thus do 66 miles in 36 hours, or over 40 miles a day, so I have been on the safe side in allowing that they travel 36 miles a day.

7. As regards the errors in Major Beatty's letter and Statement pointed out by you, I would observe, that the lengths of the Canals will make an almost imperceptible difference in the results, consequently, whether you adopt the figures given in the letter, or

in the Administration report, is immaterial. The ton mileage given in that report cannot I think be taken as a proof of the distance travelled by a 20 ton boat, because the number of miles entered therein only represents the distance travelled on Canals in this District: the same boats may have been employed for months in the Krishna District, or on the river &c. &c.

It certainly seems absurd to suppose that a 20 ton boat only travels 1600 miles a year, or about $4\frac{1}{2}$ miles a day, and I think that even the distance mentioned by Major Beatty, viz 2400 miles, or about 7 miles a day, is below the mark. It may be objected that that Officer has assumed, that a 20 ton boat always carries 20 tons, which I should say is not the case; but on the other hand he has entered the charge per ton as only 3 pie per mile, while in this Eastern Delta it is at least 6 pies -

8. Major Beatty recommended that the

This is not true
to be sure - but
that is only
one of the
many things
which are
not true.

23
the license fee on passenger boats should not be raised: but I do not know for what reason, as the profit made by the owners of these boats is certainly greater than that made by Cargo boat owners -

9. I believe you have now all the information you can require to enable you to lay the question of increased licenses before 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, it will be submitted to you.

I have the honor to be
Sir

Your Most Obedt. Servant

J. M. Campbell Lieut. R.E.
Executive Engineer in charge G.D.

4 March/72 No. 691.
 21 March/74 - 186.
 20 April - 1021.
 14 April/75 - 998.
 28 May - 1485.
 22 July/76 - 478.
 11 Aug - 2074.



P.W.D.
 1 FEB 77
 No. 106

From
 The Executive Engineer
 In charge Madanpeth
 No. 1473
 Dated 26th August 1876
 Received
 Port Licence-
 Passengers-Submits
 further information on
 the subject of increasing

H

24

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

An average sized transit boat can carry about
 68 passengers Vide Major Doatty's Statement **D.** that
 is, it has 340 square feet of deck room: but the average
 number of passengers carried is found to be 30. The pro-
 bable original cost of a boat of this size is Rupees 1000.

Annual repairs	Rs 100
Pay of crew at Rs 26 per Month	312
Do. towing coolies at Rs 75 per Month	900
License fee	63-12
Occasional expenses	50
Interest on original cost at 5 per cent	50
Total expenses for 1 year	1475-12
Say	1476
Do. Do. for 10 years	14760
Add original cost of boat Rupees 1000	15760

At a moderate computation, a transit boat travels 3 miles
 an hour for 12 hours in the 24, i.e. 36 miles a day = 1080
 miles a month, and if Canals are open for 9 months in
 the year = 9,720 miles a year = 2,91,600 passengers carried
 1 mile: the average fare being 2 pice per mile, this repre-
 sents Rupees 5,832 per annum = Rupees 58,320 for 10 years.
 Deduct

Cir-15-9.76
 O.L. Shukla 17 Sept

Deduct total outlay from total earnings result =
 Rupees 14,610 or Rupees 14,61 for 1 year which
 gives a net profit of Rupees 14,61 per cent on assigned
 cost of boat —

P.W.D.
 FEB 77
 No 1060

N.B. Though a boat capable of carrying 80 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 liberal one as far
 as boat owners are concerned —



26 August 1876. J.M.W. Campbell Lieut R.E.
 Executive Engineer in charge G. & D. Dist.

Campbell

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 sq. ft. of deck room.

An average size transit boat can carry 68 passengers, that is,
 has 340 sq. ft. 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 Rs 1000.

Annual expenses	100
Pay of crew at Rs 26 per month	312
Pay of towing coolies at Rs 7.5 per month	900
Increase License fee	191.4
Occasional expenses	50
Interest on original cost at Rs 5 per cent	50
Total expenses for 1 year	1603.4
Say	1604.
D: D: for 10 years	16040
Add original cost of boat Rs 1000	17040

The returns are the same as given in statement II

consequently net profit to boat owner - 30,370 - 17,040 - Rs 13,330

- Rs 1,333 for 1 year - Rs 133.3 per cent on original cost.

N.B. The cost of license fee bears such 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

to Rs 1½ per sq. ft. instead of Rs 3. The profits would still be over 100 percent.

J. M. W. Campbell Lieut. R.E.
Executive Engineer in charge Godavery Dist.
P.W.D.

1 FEB 77
No 1060



J 26

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 17th April 1876.

	Cargo boats			Passenger boats			Rafts		Remarks
	No	Tonnage	Fee at Rs 3 per ton	No	Passen- gers	Fee at Rs 9 per foot	No	Fee at Rs 1 per sq ft	
Average of the 3 years.	1229	25577	25577	77	5260	4931	3302	3302	1 passenger = 5 sq. ft. deck room in licensing

Total receipts Rs 33,810, The difference between this, and the figure given by Major Beatty viz Rs 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 Rs 3 per ton & passenger boat Rs 9 per sq. ft. deck room.

	Cargo boats			Passenger boats			Rafts		Remarks
	No	Tonnage	Fee at Rs 3 per ton	No	Passen- gers	Fee at Rs 9 per sq ft	No	Fee	
Average of 3 years.	1229	25577	76731	77	5260	14793	3302	3302	

Total receipts Rs 94,826

J. M. W. Campbell Lieut. R.E.
Executive Engineer in charge God. Dist.

Camp. J. M.



P.W.D.

1 FEB 77

NO. 1060

L 29
Statement showing profit to Government
if License fees are raised as proposed -

Total cost to Government for keeping
up Navigation - Vide Major Beatty's
Statement **E** } = Rs. 78,422

Returns after licenses are increased

Vide Statement **K** = 94,826

Difference or profit. = 16,404

J. M. W. Campbell Lieut. R.E.
Executive Engineer in Charge Godz. Dist.

Campbell

Appendix to statement A. shewing the details of expenditure on Navigation repairs from the year 1872-73 to 1875-76.

Years.	Clearance of Lock Channels.	Repairs to Lock and Lock weirs.	Clearing Repairs to tow paths Lock Stalls Dredging -ment sheds.	Repairs to Main Canals.	Miscellaneous.	Total.
1872-73.	109 9 6	825 7 "	" " "	1192 4 7	10229 1 11	" " 12356 7 "
1873-74	" "	92 13 9	" " "	409 12 3	12441 2 11	" " 12943 12 11
1874-75	" "	5412 1 4	" " "	" " "	4219 10 8	" " 9631 12 "
1875-76	" "	2336 15 3	" " "	283 5 9	7115 2 3	" " 9735 7 3
Total	109 9 6	8667 5 4	" " "	1885 6 7	34005 1 9	" " 44667 7 2
Average.	27 6 4	2166 13 4	" " "	471 5 8	8501 4 5	" " 11166 13 9
1872-73						
1872-73	" "	995 12 3	330 14 "	207 8 7	" " "	" " 9885 4 3
1873-74	272 8 2	1047 13 2	235 9 3	" " "	17850 " 2	" " 11419 7 1
1874-75	202 10 9	295 9 6	" " "	" " "	7403 10 5	" " 19405 14 9
1875-76	569 8 6	824 11 6	" " "	276 3 7	10717 10 "	" " 8009 13 2
Total.	1044 11 5	3163 14 5	566 7 3	483 12 2	" " "	" " 12388 1 7
Average.	261 2 10	790 15 7	141 9 10	120 15 1	" " "	" " 10714 6
1872-73						
1872-73	1691 10 11	847 7 9	40245 4 "	" " "	82307 15 5	" " 2144 2 9
1873-74	1790 " 3	538 15 "	3109 7 8	" " "	30711 12 4	" " 2215 14 11
1874-75	4143 2 2	1829 8 9	224213 6 "	" " "	48225 4 8	" " 11402 4 8
1875-76	2112 1 6	978 9 7	162514 7 "	" " "	606412 5	" " 1255 7 5
Total	9736 14 10	4194 9 1	110029 1 "	" " "	41052 6	" " 22335 1 7
Average.	2434 3 8	1048 10 3	275010 4 "	" " "	10264 7	" " 558312 5
Grand Total.						
Grand Total.	10891 3 9	1602512 10	11569 " 4	483 12 2	59909 1	10219612 2
Average.	2722 12 10	4006 7 2	2892 4 2	120 15 7	149710 3	255493 " 908 14 1

This sum does not agree with the total (37130) shown in the statement B in which average on the basis of the year 1875-76 was shown whereas the average in this statement has been taken on the actual expenditure of that year.

District Engineer's Office - }
Dowlaiswharan July 1876 }
Comd
J. W. Campbell Lieut. Col.
Executive Engineer in charge Godavery Dist.

Statement of Receipts and charges

Delta Navigation for the year 187

22

Receipts

Charges

Receipts			Charges		
Description	Amount	Remarks	Description	Amount	Remarks
License Fees for Passenger boats 1 st class do do 2 ^d do Cargo boats Private do Tolls for Passenger boats Cargo do Private do Rafts			Lock Establishments and Lock wear repairs Navigation Buildings and repairs Low water maintenance Lock Channels Dredging & Sanding		
Miscellaneous			Miscellaneous Interest for the year on capital outlay on navigation works proper		
	4	6		4	6

Statement of Capital outlay on navigation works proper of the Delta from the year 1870-71 inclusive.

Sections of Delta	So end of 1875-76	For 1876-77	Total
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.

This Capital amount will require commutation when sent in

1000

From District Engineer, Godavery. N^o 1473-26 Aug/76

N^o 324-W

Encls. 5.

Submitted for the consideration of Government in continuation of the papers reviewed in this office note N^o 323-W of the 25th July last.

2. The information given in the letter from the Executive Engineer in charge Godavery District and its accompaniments, indicates that the license fee of passenger boats might be raised without pressing too heavily on the traffic, the present fee being only $\frac{1}{3}$ 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 not as remunerative as statements H and J show. Repairs for instance if costing only Rs. 100 per annum take time to execute

W. 26/2

and it is probable that for paint or
tar, sails and gear the real cost
of upkeep of a boat must be from
200 to 250 Rupees. Taking the latter
amount the outgoings would be annually
in round numbers, with the
present licence fee and with
one tenth of the value of the
boat added —————

Rs 1726
with the licence fee trebled they
would be —————

— 1853
On the other hand by Lt Campbell's
showing 3 miles an hour is too
high a calculation of speed, and
the boats plying between Dowlaish-
warum and Jaganada traverse
only about $3\frac{1}{4}$ miles a day at most,
so 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 pias a mile as the passenger fare
the two fares being 3 and $1\frac{1}{2}$ pias for

probably there are 3 or 4 passengers at
the lower fare one at the higher rate.
Adopting $1\frac{4}{5}$ pias as the average the
calculation of gross returns becomes

$$\begin{array}{ccccccc} \text{Period} & \text{Number} & \text{Miles} & \text{Pias} & & & \\ : & 9 \times 30 & \times 30 & \times 30 & \times 1\frac{4}{5} & = & \text{Rupees } 2278 \end{array}$$

and the net returns would then be.

with the present fee 3 annas a square foot — " — 552

do — do — with trebled fee 9 annas do — " — 425

or 55 and $42\frac{1}{2}$ per cent respectively
on the Capital sunk in the boat.

3. On the whole there seems to be
no reason why the licence fee 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
68 passengers and usually carry-
ing about 30 passengers and some
cargo.

Dataramund
13th Sept. 1876

William Lewis St. Colonel
Chief Engineer for S.S. 88.

From 27 Feb/77

P.W.D.

1 FEB 77

NO. 1066

From
The Chief Engineer for Irry

Dated 13 Sept. 1876

Encls 5

N. 324-10

Lucien Fee - Godavery Distⁿ
- Submits for consideration
D.E.'s letter recommending that
the - on passenger boats using
the Delta Canals, be raised.

N. 661 B.
N. 661 B.

Explanatory Memorandum.

Godavery Delta With reference to the remarks
Navigation in the minute dated 14th August by
Lucien Fee His Grace the Governor.

Navigation charges The only subhead of
Appendix to Statement A charge in this statement
which may probably have been
over-estimated would seem to
be that under "Repairs to main
Canals" which ^{item} averages for the
whole Delta Rupees 25049 annually.
It is believed that this is not the
whole charge under this subhead
but the District Engineer not having
explained on what principle the
charges on this account have been
distributed between Irrigation and
Navigation, it is not practicable to
show whether this distribution is
equitable or not.
In the Budget of 1876-77 the pro-
vision made for repairs of main

Canals and Branches, the corresponding subhead is as follows: -

Eastern Delta —	Rspees 14,000
Central — do —	" — 15,000
Western — do —	" — 11,000
Total ..	40,000

and the Rspees 25,549 above mentioned would be about $\frac{16}{25}$ th of this.

The whole charge for dredging appears to be properly debitable to navigation, because dredging is done entirely in the interests of navigation.

It is necessarily impracticable to determine accurately the real additional cost of maintaining irrigation canals due to their being used also for navigation. That such additional cost is considerable is however demonstrable and is due chiefly to 2 causes,

1st The low velocity at which water for irrigation is conveyed, thereby materially increasing the quantity

of silt to be removed, 2ndly the limitation of time during which clearances can be effected, the result being that instead of the deposits being nearly dry when they are taken out they have to be removed when wet and soft, thereby adding to the rates at which the work can be done.

The proportion of charge on this account debitable to navigation must it is thought be fixed arbitrarily for the data for a proper determination would be 1st the difference in the amount of deposit from water running at the actual velocity of the water in the several canals which is on the average perhaps 1.25 feet a second, and at a velocity of about $2\frac{1}{2}$ feet a second, which would probably have been adopted had there been no navigation to be taken

into account, 2^{ndly}, the difference in the cost of removing a given quantity of silt when done leisurely after the canals have been in watered for some time, and in as rapid a manner as possible directly the silt is capable of being moved.

These data are not available and could not be made so without a series of observations extending over a considerable period.

Assuming however that the amount of silt to be removed is doubled, and that the cost of removing any given quantity is increased 25 percent, the figures would stand thus

1st 1000 cubic yards of silt at $1\frac{1}{4}$ annas.
 recd — 78. 2. 0

2nd 500 — do — do — at 1 anna. 31. 4. 0

or 46. 14. 0 out of 78. 2. 0 would in this case be due to navigation.

It is thought that the rate would approximate nearer to 50 per cent additional than to 25 per cent.

Statement D

Although the number of rafts in 1871 is stated not to be known this number can be approximated to. Of the Rupees 34,480. 9. 3 collected the sum due to Cargo boats was Rs. 24,794

Signature paid at 4 annas. — " — do — to Passenger — do — " 6,666
 5,333 Passengers at $1\frac{1}{4}$ — 31,460

Left Rs. 3027 at 1 Rupee each. — 3,027
 Total collections 34,487

The receipts of 1871 exclusive of Rafts were therefore Rs. 31,460

— " — 1875 — do — do — " — " — 32,111
 Increase 651

but in the latter year the reduced fees on passenger boats have to be taken into account according to the rates of 1871 they would have been

5193 Passengers at $1\frac{1}{4}$ — Rupees 6491

at the rates of 1875 they were

5193 Passengers at 15 annas — " — 4,868
 Difference 1623

The increased receipts of 1875 over 1871 were therefore practically 2274

Surplus instead of a decrease of
 Shippers 2375. The increase was per-
 haps smaller than might have
 been hoped for, but the development
 of traffic must be ascertained rather
 from the ton mileage than from
 either the number of boats using
 the canals or from the license
 fees paid. Where tolls levied at one
 or more places on each canal
 then the receipts would be an
 index of the traffic.

The diminution of the number of
 pleasure boats cannot, it is thought,
 be due to the fees levied. Prior
 to 1874 the fee was 2 annas per
 annum per square foot of deck
 room. It is now just half that charge.

The construction of additional locks, Statement II
 and to a great extent that of new
 locks which are not additional, was
 undertaken to improve the navigation
 by the reduction of current. The effect

	Ton mileage	Percent
1873-74 - 869,688	31,091,461	
1874-75 - 1,087,529	31,971,314	
1875-76 - 1,134,229	39,440,575	
Increase of ton mileage of 1875-76 on that of 1873-74		32.7
" " " " " "		28.0

Chambers in
 the clear

1873-74
 1874-75

is the diminution of cost of con-
 veyance in two ways, first by
 reducing cost of haulage, and
 by increasing the distance which
 can be traversed in a given time.
 The dimensions of the locks were
 not fixed to provide for larger
 boats but chiefly to admit of
 a larger number of boats being
 locked up or down at once. The
 old locks were generally 16 feet
 wide, and there were variations in
 their length. The new locks on 1st class
 canals where the traffic is greater
 or expected to be greater, are 150x20
 and on 2nd class canals 105x15 and
 the smaller of these locks will
 take in the largest steamer it is
 proposed to use and the head
 locks being only 15 feet wide the
 beam of all vessels will necessarily
 be limited to something less than
 that width.
 The canals throughout the Delta
 are equally available for all sizes
 of boats which are in use. There
 are no boats as large as the

smallest of the locks. There has been no
 great extension of mileage of navigation
 in the Eastern Delta. On the Bank
 Canal some additional miles of
 navigation will be made available
 before the end of 1876, and the
 part which was formerly navigable,
 but with very considerable difficulty,
 will have been rendered perfect. Its
 length is ^{miles chains} 37.23 and about 25 will be 23.40 completed
 a good navigation. The Cascadia ^{to end of 1875-76}
 Canal ^{m ch.} 25.24 has been entirely re-
 constructed. 3 locks have been recon-
 structed, and an additional lock
 given. The Chundapett Canal ^{m ch.} 13.35
 had had one lock reconstructed.
 The Eastern Delta navigation is, or will
 be by the end of the year, complete
 except about 12 or 13 miles of the
 Bank Canal.

In the Central Delta the navigation
 has not been improved. The completion
 estimates have not yet been can-
 celled. The lower parts of the two

Bank Canals are inferior navigation.
 Of the total of 142 1/2 miles about
 two-thirds are fairly good. In
 the Western Delta very much has
 been done. The principal extensions
 of navigation have been on the Bank,
 Gastanuddy and Velpur, Jimatton,
 Undi and Attite canals and out
 of ^{m ch.} 203.52, ^{m ch.} 186.44 were complete at
 the end of 1875-76.

In the Note from the Chief Engineer
 for Irrigation the outlay for navigation
 purposes on which it may be con-
 sidered desirable to recoup the
 interest is taken as about 5 lakhs,
 and in the near future this amount
 is supposed to be likely to be in-
 creased to 8 lakhs. This latter sum
 however is by no means the total
 expenditure on account of navigation.
 There are many old locks which
 have been retained with or
 without improvement and their
 cost has been left out of

account.

2nd The cost of every navigable canal has been largely increased by its adaptation to navigation, and this item has not been brought forward.

It is only necessary to compare the mileage of navigation with the sum, 8 lakhs, on which it is proposed to recoup interest, to see how small is the practical debit to navigation. Taking 450 miles as the length of navigable Canal available or shortly to be so, the above sum is under 1800 Rupees a mile, and it is, it is thought, certain that the same length of navigation in the most economical way possible could not have been provided for less than Rupees 6000 a mile, or 27 lakhs the interest alone on which sum would be 1,35,000 Rupees annually or more than one and a half times

the sum proposed to be raised by licence fees, which are to cover maintenance, establishments and interest.

Earnings of Boats.

A reliable estimate is difficult to make out. Major Beatty bases his estimate on a charge of 3 pice a ton a mile, a charge which, it is thought, can be raised without interfering with materially if at all the transport of any article of traffic. Major Beatty estimated the returns or net earnings at 72 per cent with a trebled licence fee and a charge of 3 pice a ton a mile. This estimate was reduced to 22 per cent on a consideration of the actual, apparently reasonable average ton mileage. It is probable, if not certain, that laden boats are not always fully loaded, but on the other hand there is no information to show that rates charged by boat owners for conveyance of goods are not

such as will under any exceptional circumstances either of distance or quantity afford them a fair profit. It is anticipated that the raising of the license fees will increase the cost of carriage, probably at first considerably, and that there after the charges will come down to something more than will be sufficient to cover the additional fees.

It is considered that there may be lock establishments for a reduction of the

cost of lock establishments and the subject has recently been referred to the District Engineer in connection with a reduction of the similar

establishments in the Kistna. It has to be remembered that at nearly all locks there are lock weirs that these have to be carefully regulated and their machinery kept in order and that there must always be some one on duty. Petty repairs

G.O. No 1115 A dated 6th May 1876.
vide also para 7 of notes in above Proceedings.

51
and the conveyance of the lock surroundings are undertaken by the lock lascars. A native lascar is not the equivalent of a European lockman, and 2 or 3 lascars would be necessary to do the work of one European.

Relative cost of lock establishments in 3 sections of delta.

The difference noticed is due 1st to differences in extent of traffic involving in the Eastern and Western deltas.

(a) a higher rate of pay to the lock Superintendent

(b) a greater number of lascars, especially when there is night traffic

At the same time it is believed that a reduction of establishments is feasible, and the District Engineer's report, when received, will be reviewed and laid before Government with such recommendations as may appear proper.

He will be instructed in making this report to show for each lock

1st The number of boats which passed
the lock in the previous year;
the number of months the lock
was in use being mentioned.

2nd The greatest number of boats which
passed the lock in 24 hours.

3rd The work to be done by establish-
ment besides locking boats.

Some of the items will be

1st regulating lock weir

2nd cleaning lock and lock weir
gear

3rd Calkking and painting or tarring
gates and woodwork

4th petty repairs to earth works

5th do do to weir aprons
and revetments

6th Conservancy of ground near

locks and other work occasionally
done in each case.

4. 1876

Mr. R. S. Ellis C. S.

No 13 of 2^o Nov 76.

Memorandum.

At the last Council held
at Botacamund before His
Grace the Governor left it was
decided that the licence fee
for the navigation of the Godavery
Delta Canals should be doubled
for Cargo boats from the 1st
January next, the licence fee
for Passenger boats remain-
ing as at present.

2. The file not having been
returned to the office, the Joint
Secretary has been unable to
draw up the necessary order.
As it may be sometime before
the file becomes available, and
as it is of importance that
notice of the change should not
be any longer delayed, the fol-
lowing telegram and notice
are proposed.

To

Mr. P. W. Dept.
 Secy to the Govt.
 for Irrigation.

Copy to the
 Govt. Secy.
 for
 the
 Secy to the Govt.
 for Irrigation.

Miss No 13 of 22 November
 1878

Refer to the
 Govt. Secy.
 for the
 Govt. Secy.
 for Irrigation.

For the
 Govt. Secy.
 for Irrigation.

P. W. Dept.
 58

Notification.

Notice is hereby given that under Section
 5 of Madras Act No. I of 1870, the fees of cargo
 boats licensed to navigate the Canals of the
 Coleroon Delta will from the 1st January
 1877 be raised from 1 rupee to 2 rupees a
 ton. The fees for Passenger boats will be
 the same as at present.

(By order of the Governor
 in Council) *C. Walker* Secretary to Govt. Secy.
 for Irrigation.

X. 11/11/78

For the
 Govt. Secy.
 for Irrigation.

113

113

Line No 13 of 2nd Nov 1912

3rd Nov 1912

Decided

in to pay for a mixture of the
same kind on the assumption
of continued trips -

It seems probable that a
system of boat dues should
be combined with a
system of toll taking at
a moderate rate to meet
such cases as I have put on
them of boats not ordinarily
trading seeking to make for
special reasons a trip on
the canal -

If it were arranged to take
a toll at Down's Locks -
Elmore locks - perhaps
also at the locks near
Corbridge - at a moderate
rate - the canal would be met-
but detail arrangements would
need some consideration

Ref. 3/12

Sum of the matter I think
anything but a main income
the canal is to be used

be considered as the
use of the canal on 22
that having the canal
should be the main

113 3/11

1-11-26

Godavay Boat Licenses

When at Comada
I found from the
alleged practice of the
Portmen that the
Godavay system would
require modification -

E.g. a boat from Upper
Godavay comes down
twice a year perhaps
a license fee calculated
on the assumption of
continuous trade is not
applicable to such a case -
Yet that case is one which
I should desire to see
multiplied -

again a Comada boat
having ordinary & regular
gets an engagement for
Peshwara or beyond & so
but one trip would not be

No. I had not seen these
papers. I took the papers
specially to Godavay to
ascertain as to some points -

I am clearly of opinion
the other should be
suspended even for
circumstances - for 12 months
16/12

No 13 - 2 November 1876
Notification

Memorandum
The accompanying note,
on Godavay Boat licenses,
by His Grace the Governor,
reached the undersigned,
with the file of papers, late
last evening, and as it
is doubtful whether His
Grace is aware of the
measures which were taken
in November last for
raising the Cargo boat
fees from the 1 January
1877, the accompanying
papers are submitted for
His Grace's consideration
& orders

John Lubbock
16 December 1876 Joint Secretary to Govt.

The following telegram
will be sent to the
Superintending Engineer,
Godavery

Cancel notice doubling
Cargo boat license fees
from first January
eighteen seventy seven.
Give notice that licenses
will be issued for next
year at present rates

by 16/12

M. M.

Copies of the above telegram
to be sent by post to the
Superintending Engineer,
Kistna.

The notification published
in the Fort St. George Gazette
of the 7th November 1876
to be cancelled

by 16/12

God License fees on

Mr. Parsons

The file of Godavery License
Fee papers which have just been sent to
me do not contain the Memorandum
which I wrote from Ooty and the telegram
which was thereupon sent to the District
Engineer or the notification which was
made in the Fort St. George Gazette that
the Cargo Boat fees would be doubled from
the 1st January. It will be necessary to inform
His Excellency the Governor what has been done
as he appears to be unaware of it & I must
take His Grace's orders as early as I can tomorrow
I will have the papers at the Club as early
as possible.

W

7/12/76

The file of papers referred
to within was not seen
by me & signed before
despatch to the Joint
Secretary so that
it is not known what
papers it contains.
The Indexes do not
show that the subject
has been finally disposed
of. The only papers
brought on record
are those now submitted
which appear to be
those taken for.

R. J.

For St. George
16 Dec 76

7:30 AM

N. 661/1

referred

by 16/12

C No 1860

The order on this
file can wait until

the order on this

16 Dec 76

Godavery License fees on
Canals.

89

I think the fee will bear
raising.

It is proposed to treble
the tolls now charged on
Cargo boats leaving Passen-
ger boats at present rates.

It is estimated that this
will leave a boat owner 72
per cent on his capital &
will still leave a deficiency
of 12,900 to be covered by de-
velopment of traffic.

I think however the es-
timate of charges is too high
and that some of the charges
taken to account are not in-
deed the circumstances pro-
perly due to navigation.

The navigation is largely
upon the main dials and
principal Canals. It ap-
peared to me when visiting

visiting Godavery district
that the sectional area of
these canals was fixed
much more with reference
to the quantity of water
needed for purposes of ir-
rigation and supply than
with reference to the draft
of water or width of boats
using it. If this be so
that the maintenance of
that sectional area is necessary
for the purposes of irrigation
and the dredging 5990

Repairs to the canal - 102196
Average 108186 Statement A
Rs 27046

is not chargeable to navigation.

That the subject requires

careful consideration is evi-

dent from the return D which

shows that the fees collected

in 1875, omitting the profits

for comparison, are less by

2375 Rs. than in 1871, that

the total number of boats

is less in 1875 by 22-⁸⁷
That Pleasure boats have
practically vanished from
the list having dimin-
ished from 50 to 2. That Pas-
senger boats have dimin-
ished from 82 to 73. while
Cargo boats have only in-
creased from 1221 to
1256

While I agree that there
is no ground for subsidising
the trade. I think the above
facts show that there may
be danger of checking, not
only its development, but
its present flow.

As I think some of the
maintenance charges in
Statement A are not fairly
chargeable to navigation, so
I think in Statement E
the Capital account is un-
duly weighted against the
costs of navigation now under
consideration.

E includes, if I mistake
not, not only new additional
locks, but reconstruction
and enlargement of others,
for the purpose of allowing
vessels of a totally different
class and steamers to use
the Canals. If this be so
I do not think the whole
of this expenditure fairly
chargeable to the boats now
under consideration. Indeed
I believe the locks have not
been even yet so completed
that a large class vessel
can pass uninterruptedly
over the whole series of Canals
for which the license extends.

I think that the earnings
of the boats are over estima-
ted.

The Calculations of the
District Engineer have
been modified by the Chief
Engineer for Irrigation, but
the latter officer has still
based

based his calculations on
the boat being fully loaded
throughout the mileage.
I do not think this can
be assumed.

There is also I believe a
fact which is not referred to,
viz. that last year the fee
was indirectly raised by limit-
ing the area of the license.
Previously one license at a
rupee a tow covered Godavery
and Krishna Canals. Last
year it was restricted to the
one delta. Thus a boat carry-
ing goods from Rajahmundry
to Masulipatam, or even to
Ellore was made to pay 2
Rupees instead of 1 Rupee.

I think therefore unless I
am altogether mistaken that
an increase of more than
double is not justified. and
I would suggest that the fee
be fixed at 2 Rupees per tow-
that Passenger boat fees & fares
be

be not altered. - That it be
intimated that the fares
will not be increased for
a certain number of years.
That if any main commu-
nication Canals be closed
(such as the Dowlaishwaram
and Coconada. Lollone and
others to be named) for a
continuous period exceeding
14 days - or broken periods
exceeding 28 days in the
same year; a permission at
the discretion of the Collector
will be made ^{of a part} of the license
fee.

I should not object to a
higher fee upon boats exceed-
ing a certain size and which
could not pass the older locks.

This arrangement ^{only}
leaves a deficiency apparently
larger than the 12,900 esti-
mated on the triple fee; but

I think there will be a better
hope

hope of that being counter-acted by
increased traffic at 2 Rupees
than the 12,900 at the higher
rate of 3 Rs., and I think also
from some notes I have of
number of boats on some
Canals, that Establishment
may be reduced.

The return given in the
District Engineer's letter shows
that the cost per lock is in

Eastern Delta	Rs 35 ³ / ₄	per annum
Central Delta	- 29 ¹ / ₂	— " —
Western Delta	. 33 ³ / ₄	— " —

This shows a difference of
which the cause is not im-
mediately apparent.

Locks that pass only 10 or
12 boats daily can only need
one man - while others
need 2 or even 3 men to at-
tend the gates and valves.

A return from each of the
45 locks - showing the number
of



7

Bl 14/6

[Faint, illegible handwritten notes]

1. The first part of the document is a letter from the President of the United States to the Senate, dated March 10, 1845. The letter is signed by James K. Polk and is addressed to the Senate. The letter is a copy of the original letter and is not a draft.

navigation amount to Rupees 55,806
and the receipts from the traffic to 34,238

If the interest on recent
expenditure on purely
navigation works be added
the charges would be
enhanced by 25,000 Rs.
and would become in round numbers 80,000

much for 2 R. as 3 R.
The Mafungu Boats
fees should be raised
also as 1000 Rs. The
information is complete
M.L.G.
4/5

so that the receipts are at
present less than half
the cost at which navigation
has been provided, and
is maintained. Moreover
even long the charges are
likely to be as follows.

Establishment, maintenance & Rupees 6,000
Interest on cost of navigation works 40,000

and then were the present
scale of license fees
retained the receipts from
navigation would be but
little more than $\frac{1}{3}$ of the
cost of its provision.

2. It appears from

$\frac{1}{4}$ of a penny or $\frac{1}{80}$ at
present rate of exchange

$\frac{7}{1200}$ of a penny or
 $\frac{1}{28}$ - do -

the traffic accounts
of 1875-76 that the present
license fee of 1 Rupee
a ton per annum in
cargo boats represents
a charge on the traffic
of rather less than $\frac{1}{80}$ of
a pica ton a mile, and
the proposal is to raise
the fee to Rupees 3 a ton,
which would make the
charge for the use of the
canals $\frac{9}{80}$ of a pica ton a
mile. It is clear that
this latter charge cannot
be burdensome, and
the Government believe
that the introduction
of a rate of license fee
more in proportion to
the cost of maintaining
the navigation will not
prevent the continued
development of traffic.

which has been carried
on during the last 20
or 25 years under con-
ditions of much greater
facility than was the
case before the many
new locks, which have
been constructed since
1870-71, were built. It is
observed moreover that
this enhancement of
fees will, without a further
development of traffic,
not be likely to cover
current and interest
charges as soon as the
improvement of the
Central Delta is taken
up, and for this the
estimates are with
the Chief Engineer for
navigation, while at pre-
sent the receipts will, if
they reach the figures given

in para 12 of the fore-
going note, afford an
excess of 5 to 7 thousand
Rupees. The licence fees
for cargo boats will from
the 1st January 1877 be
raised to Rupees 3 a ton,
and Rule III of the Rules
sanctioned for adoption
in G.O. of the 4th March
1873, No. 691, will be as re-
gards the Godavari Delta
navigation, revised as
follows:-
Revised Rule III. The capacity
of any vessel for the
conveyance of cargo
will then be ascertained
according to the rule
below mentioned, and
the owner or owners
will be required to pay
before receiving a licence

Notices in English and
the Vernacular will be
printed and pasted up
at all locks in the
Godavery and Krishna
Reltas, and will be fur-
nished also to the serangs
of boats passing the

x not less than in 3 successive Gazettes

xx do do do.

hopeful

b. No change of fees for licenses issued for the Krishna Delta navigation will be made [until the canals of that Delta have been materially improved, and intimation to this effect will be given at the foot of the printed notices of alteration of cargo boat fees in the Godavery Delta.]

7. The District Engineer, Godavery, will take care that special attention is paid to the efficiency of the navigation, and to the speedy removal of all impediments thereto which may from time to time arise.

S. E. Jackson
- - - - -
C. E. Jr
Recd Sept
Sept. gave the Puro with
notarization -

44. 29/7

PROCEEDINGS OF THE MADRAS GOVERNMENT.

Under date the 27 Feb 77
Read the following:—

- From the District Engineer Kodavery (H.E. No 109 of 17 April 1876)
- The Collector Kodavery (H.E. No 81 of 31 May 1876)
- Note by the Chief Engineer for Bridges (H.E. No 3234 of 26 July ")
- From the Chief Engineer in Charge Kodavery (H.E. No 1473 of 26 Aug 76)
- Endorsement of the Chief Engineer for Bridges (H.E. No 3244 of 13 Sept 76)
- Note by His Grace the President (H.E. No 14 Aug 76)
- Explanatory Memorandum by Chief Engineer for Bridges (H.E. No 18 do ")
- Memorandum do do (H.E. No 27 Oct 76)
- Telegram to Chief Engineer Kodavery (H.E. No 2 Dec 76)
- Notification (H.E. No 7 do ")
- Note by His Grace the President (H.E. No 3 Dec 76)
- Memorandum by Chief Engineer for Bridges (H.E. No 452 H.S. 144 of 16 do ")
- Telegram to Chief Engineer Kodavery (H.E. No 16 do ")

Md 21/2
Mr 24/2

His Grace the Governor
in Council having given
full consideration to
the papers which have
been

been laid before Govern-
ment on the subject of
increasing the fees for the
use of the Godavery Delta
Canals, is of opinion that
the License fees for cargo
boats may properly be
raised from 1 Rupee
to 2 Rupees a ton, and
this enhancement of the
fees would have been
introduced from the
1st January 1877 but for
the desire of Government
to avoid a possible
increase of the cost of
transport at a time
when the uninterrupted
flow of grain to the coast
was of much public
importance - It has
been decided therefore
to

Pro. Madras Code 4th March
1873 No. 691

to postpone the intro-
duction of the higher
fees until the 1st January
1878, from which date
they will be levied.

2. It is not considered
expedient to make any
alteration in the license
fees for passenger boats,
but the District Magi-
ster will consider and
report whether any modi-
fication of the last
clause of Rule VI will
be necessary to prevent
boats licensed as passenger
boats of the 2nd class
being used principally
as cargo boats with,
as a result, incon-
venience to the travelling
public.

The

3. The District Engineers Godavery and Krishna 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

1st only occasionally need to pass the Ellore lock.

2nd generally ply only at Cocanada or below the Seltia Canals, but which occasionally may want to make use of the Delta Canals.

3rd Ordinarily ply on the river above Dawlaishwaram or Rajahmundry, but which may sometimes want to carry a cargo through the Delta.

A settlement of the arrangements at an early date

452 L.S.
No. 14, L. S. dated 16th Oct 74.

is desirable, and the subject should therefore receive prompt consideration.
4. It is not intended at present to raise the License fee in the Krishna Delta.

5. It is the desire of the Government that in due course the navigation of the Canals in the Delta shall be made self supporting. It is clear that the charges are at present considerably in excess of the receipts, but it is not evident that the former have been correctly ascertained; and as for the future

it will be necessary that
the annual report of the
working of the navigation
rules and bye laws ~~must~~
~~should~~ be accompanied
by full information
as to the receipts ~~and~~
charges and ~~into the~~
working expenses; it is ~~the~~
~~of~~ importance that the
indirect charges should
be assessed on a re-
cognized system. The
direct charges for estab-
lishments, lock repairs,
maintenance of tow paths,
dredging &c are readily
ascertainable, but the
share of cost of Canal
maintenance properly
chargeable to navigation
has to be determined, ~~and~~
~~and~~

main section against
the Mississippi

Each District Engineer
~~will~~ ^{must} consider and report
what proportion of the
average annual cost of
canal clearances and
maintenance should be
debited to navigation,
the calculation being
based upon the ad-
ditional outlay re-
quired necessary owing
to the water being carried
at a low instead of a
considerably greater
velocity, and upon any
other causes of increased
expenditure due to the
use of the Canals for
purposes of navigation.
A reasonable approxi-
mation only is
expected.

The

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

In order to facilitate the preparation of the accounts the financial year will be substituted for the calendar year from 1878, and to allow of this being done Licenses will be issued for the 1st quarter of 1878 at one fourth of the annual charge, and then for 1878-79 at the full charge for 12 months.

I doubt this change very much -
The tendency is to bring matters in all departments nearer to the calendar year - I submit not change
JH

To those boat owners who wish to take out licenses for 15 months from the 1st January 1878, licenses up to the 31st March 1879 may be issued at 1/4 times the annual charge; otherwise fresh licenses will be issued on the 1st April 1878.

W. 19/2

7. The charges, ^{to be} entered in the account for Statement of Receipts & Charges for any Calendar year will be those of the official year ended on the 31 March of that calendar year -

S. G. Kistna and Sadanay
Collectors do
Ch. for I
S. P. H. A. W. A
Ch. Res. Dept.
Jud. Dept.

or spd. 17th March 77

W. 26/2

10000

Dist. of 11377 Madras.
PUBLIC WORKS.

To The S. & G. D. Agency

Dated

Issued

Recd.

Encl.

G. O. 27 February 1877, No. 662

Nos. 661-62

Rodavery Natta Canals

Passing orders in papers
in the subject of increasing
the fees for the —

Encl. in Reg.