M.R.O. 1—77,000—8-6-37.

(1) Number of pages 152

(2) Date of repair 1945

(3) Initials of the Referencer

MADRAS RECORD OFFICE.

Government of Madras.

Public Works DEPARTMENT.

G.O. No. 662 Press / Mis.

Dated 27 - 2 1877.

Original

Not to be folded or roughly handled

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 Dowlaishweram, 17th April 1876, No. 109.

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

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

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

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 Dowlaishweram and Cocanada will continue all the year. One bay of the head sluices has still to be fitted with the new shutters and gearing, but arrangements will be made to have this work carried out without† closing the canal.

† Or only for 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 of extraordinary floods, as happened at Vejaishweram in 1861. It is therefore most necessary that the new shutters and gearing should be supplied as early as practicable.

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

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

Deltas.	No. of Miles of Canal.	No. of Locks.	Cost of Establishments per month.	Cost of Establishments per annum.
			RS.	RS.
Eastern	131½	17	606	7,272
Central	114½	9	266	3,192
Western	206¼	19	637	7,644
Total ...	452¼	45	1,509	18,108

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 n 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:

A. Statement showing the cost of navigation repairs, Rupees 37,730.
B. Estimate of the cost of maintaining navigation, repairs and establishments, only Rupees 55,838.
C. Estimate of the cost of maintaining navigation, including interest on capital sunk, Rupees 78,422.
D. Statement of license fees collected, average of last two years, Rupees 34,114.
E. Statements 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.

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

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, strenthening canal banks, &c., &c.; average expenditure of four years	37,730
Pay of lock establishments	18,108
Total ...	55,838
Deduct present revenue from navigation; average of last two years...	34,114
Additional income to be raised to cover all expenses	21,724

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

C.

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

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

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

D.

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

Years.	Cargo Boats.		Passenger Boats.		Pleasure Boats.	Rafts.	Fees collected.
	No.	Tonnage.	No.	Passengers.			
							RS. A. P.
1871	1,221	24,794	82	5,333	50	Not known.	34,486 9 3
1874	1,210	25,003	76	5,255	3	3,136½	32,649 6 11
1875	1,256	26,934	73	5,193	2	3,468	35,579 1 3
Total ...	3,687	76,731	231	15,781	...	6,604	102,715 1 5
Average ...	1,229	25,577	77	5,260	...	3,302	34,238 5 5

Average of 1874 and 1875, Rupees 34,114.

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

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

E.

Statement showing the expenditure on purely navigation works from 1870-71, *to end of February in* 1875-76.

	Amount of Expenditure on each work from 1870-71 to 1875-76.
EXTRAORDINARY.	
Narsapur Canal.	RS. A. P.
Mogultur 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 Railway.
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

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

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

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

GODAVERY,
30th March 1876.

(Signed) A. R. F. DORWARD, Lieut., R.E.,
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	26,000 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,
28th March 1876.

(Signed) R. R. E. BROCKMAN, Captain, R.E.,
Executive Engineer, Godavery.

F.

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

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

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

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

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

(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, Dowlaishweram, 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—

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

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

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

Letter No. 109, 17th April.
" " 1,047, 12th July.
No. 81 of 31st May.

2. The District Engineer, in the letters 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:—

Deltas.	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.
			Establishment.	Maintenance.	Total.		Cargo Boats.	Passenger Boats.	Rafts.	Total.	
					Rs.	Rs.					
Eastern ..	132	17	7,272	11,167	18,439	...	25,577	5,359	3,302	34,238	81
Central ..	104	9	3,192	12,806	15,998	...					
Western ..	187	19	7,644	13,725	21,369	...					
	*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. Viz., 5 square feet of deck at 6 annas and 3 annas per square foot respectively.	Cargo boats—Rule III	... ...	1 0 0	a ton.*
	Passenger boats „ VI	1st class	1 14 0	per passenger.
		2nd „	0 15 0	„
	Rafts		1 0 0	per raft.

Vide Statement E.

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

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

and there was some expenditure previously. It will suffice to take the outlay there at 5 lakhs. There will also ere long be a considerable outlay on works for the improvement of the navigation in the 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—

Statements F and G.

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 $1,229 \times 32,000 = 39{\cdot}328$ 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 $193\frac{1}{3}$ 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.

* 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,

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

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.		
Establishment and maintenance charges, allowing for extra lock establishments, as new locks now under construction are completed, &c.	Rs. 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.

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

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.

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

To the Secretary to Government, Public Works Department.

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 $1\frac{1}{2}$ per mile for the general cabin, and pies 3 for the fore and aft cabins, giving an average of pies $2\frac{1}{4}$; 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 $4\frac{1}{2}$ 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

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 146·1 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 1¼ 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.	Tonnage.	Fee at Rs. 1 per ton.	No.	Passengers.	Fee at 3 As. per sqr. foot.	No.	Fee at Rs. 1 per lock.	
Average of the 3 years ..	1,229	25,577	Rs. 25,577	77	5,260	Rs. 4,931	3,302	Rs. 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.	Tonnage.	Fee at Rs. 3 per ton.	No.	Passengers.	Fee at As. 9 per sqr. foot.	No.	Fee.	
Average of 3 years.. ..	1,229	25,577	Rs. 76,731	77	5,260	Rs. 14,793	3,302	Rs. 3,302	

Total Receipts Rupees.. 94,826

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

L.

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

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

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

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

Years.	Clearance of Lock Channels.	Repairs to Locks and Lock Weirs.	Clearing Tow-paths.	Repairs to Lock Establishment Sheds.	Dredging.	Repairs to Main Canals.	Miscellaneous.	Total.
Eastern Delta.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.
1872-73	109 9 6	825 7 0	...	...	1,192 4 7	10,229 1 11	...	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	...	...	...	4,219 10 8	...	9,631 12 0
1875-76	...	2,336 15 3	...	...	283 5 9	7,115 2 3	...	9,735 7 3
Total ...	109 9 6	8,667 5 4	...	...	1,885 6 7	34,005 1 9	...	44,667 7 2
Average ...	27 6 4	2,166 13 4	...	...	471 5 8	8,501 4 5	...	11,166 13 9
Central Delta.								
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
Western Delta.								
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.
	Rs.			Rs.	
License fees for passenger boats, 1st class			Lock establishments ...		
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.			Dredging { Sundry ...		
Do. private do.			Miscellaneous.		
Do. rafts					
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 1875-76.	For 1876-77.	Total.
	Rs.	Rs.	Rs.
Eastern Delta			
Central do.			
Western do.			

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

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

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 accompaniments, indicates that the license fees of passenger boats might be raised without pressing too heavily on the traffic, the present fee being only $\frac{1}{23}$ 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 H and J show. Repairs, for instance, if costing only Rupees 100 per annum, take time to execute, and it is probable that for paint 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 Dowlaishweram 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 $1\frac{1}{3}$ Pies as the average, the calculation of gross returns becomes—

No. 1,473, dated 26th August 1876.

Period. Number. Miles. Pies.
$9 \times 30 \times 30 \times 30 \times 1\frac{1}{3} =$ ... ... 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 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 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, No. 144 G. D. & 52 K.S.	„ 16th „	„
No. 661-J.	Telegram to Superintending Engr., Godavery,	„ 16th „	„

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.

Proceedings, Madras Government, dated 4th March 1873, No. 691.

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—

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

1*st*,—only occasionally need to pass the Ellore lock;
2*nd*,—generally ply only at Cocanada or below the Delta Canals, but which occasionally may want to make use of the Delta Canals;
3*rd*,—ordinarily ply on the river above Dowlaishweram or Rajahmundry, but which may sometimes want to carry a cargo through the delta.

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

4. It is not intended at present 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

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

Years.	Eastern Delta.	Central Delta.	Western Delta.	Total for each year.
1872-73	12356-7-0	11419-7-1	17123-8-3	40899-6-4
1873-74	12943-12-11	19405-14-9	11402-4-8	43752-0-4
1874-75	9631-12-0	8009-13-2	13935-8-3	31577-1-5
1875-76	9358-4-2	13673-0-0	11660-1-7	34691-5-9
Total. Rupees.				1,50,919-13-10
Average Rupees.				37,729-15-6

(2)

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

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	37730
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

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

Statement showing the cost of proving Lock Inspectors.

Rs. 3,1,730.

CHIEF ENGINEER 24 APR 1876 PUBLICATION

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.
Repairs of lock, clearing lock channels, clearing towing paths &c &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

C. Beatty. Major R.E.
District Engineer Godavery Dt.

B.

Estimate of the cost of maintaining navigation; Establishment and Establishments only.

Rs 55838.

CHIEF ENGINEER FOR IRRIGATION 21 APR 1876

CHIEF ENGINEER
GODAVERY
1876
FORTIFICATION

C

Estimate of the cost of maintaining navigation inside Coringa mouth. No. 78422. Q

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

Years.	Cargo boats. No.	Tonnage.	Passenger boats. No.	Passengers.	Pleasure Boats.	Rafts.	Fees collected.
1871	1221	24,794	82	5,333	50	Not known	34,486-9-3
1874	1210	25,003	76	5255	3	3136	32649-6-11
1875	1256	26,934	73	5193	2	3468	35579-1-3
Total	3687	76,731	231	15781	-	6604	1,02,715-1-5
Average	1229	25,577	77	5260	-	3302	34,238-5-5

N. B. Average of 1874 & 1875 Rs. 34,114.

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

G. Beatty Major R.E.
District Engineer Godavery Dt.

15
121

Statement shewing the Expenditure on Purely Navigation works from 1870/71 to end of February 1875/76.

Names of works	Amount of Expenditure on Each work from 1870/71 to 1875/76		
Mogulteir Lock	29742	14	11
Palcol do	8160	11	8
do weir	2461	2	.
Havelaw Lock	22809	.	.
Stempidi do	18866	14	4
do weir			
Marter Lock	1130	.	.
Peravelli do	19134	13	2
Pech Canal.			
Seshantaw Lock	13027	5	11
do weir	1710	.	.
Kodèr Lock	14438	1	.
do weir	3152	1	11
Doddipalla Lock	1308	12	.
Undi Canal.			
Undi Canal Head Lock	14736	6	4
C.C.	130472	1	2

CHIEF ENGINEER FOR IRRIGATION 24 APR 1876

Statement of Licensed Pass collected.

Amount of Licensed Pass collected during the year 1874/75			
Do. do. 1875/76			

Statement of Licensed Pass collected.

Amount of Licensed Pass collected during the year 1874/75			
Do. do. 1875/76			

B.C.	150412	1	2
Madras Canal			
Godicherla Lock	11928	.	.
do Weir	3995	.	10
Jummampàdu Lock	12313	2	5
do Weir	1846	3	4
Kistna Godavery Canal			
Head Lock Gostanadi	14857	6	.
Mamidur Lock	6706	11	7
Do Weir	2265	8	2
Godavery & Kistna Canal			
Junction Canal	20985	12	1
Double Lock at Muddàpuram	40628	1	
	265412	"	"

No 3 or W. D. Range
Godavery Distr.
3a March 1876

A R H Ormond Lieut. R.E.
Asst. Engr. No 3 Range R.E.

N. B. Sheet on Expenditure on Navigation
Works in Connection with the Project
during 1870-71—

J. Beatty. Major R.E.
District Engineer

E

Annexure to Statement

Abstract of Outlay on purely Navigation Original Works prepared with reference to District Engineer's Memo No 3747 dated 21st March 1876.

1875/76 Viz from April 1875 to March 1876

Purely Navigation Original Works.	1870/71	1871/72	1872/73	1873/74	1874/75	1875/76 Viz from April 1875 to March 1876	Total	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	4436 6 .	6489 6 2	8180 15 .	33162 1 4	
Total	18054 1 5	50195 2 5	42179 14 3	22968 7 .	32490 5 4	20370 14 5	186258 12 10	

Dowlaishweram
28th March 1876

True Copy
J. Beatty - Major RE.
District Engineer Godry Dist.

Lt. C.R.R.E. Brockman Capt. RE
Executive Engineer Godavery

12

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 annas = 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.E.
District Engineer Godavery

Compd

H 1

Statements showing the expenditure on Annuity Navigation Works from 1870/71 to end of Dec. 1876 including

CHIEF ENGINEER FOR IRRIGATION 24 APR 1876

F

Calculation of present return to boat owner.

CHIEF ENGINEER FOR IRRIGATION 24 APR 1876

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	3,400
Add original cost of boat	500
Total outlay in ten years	3,900

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.

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

pd GB

No. 81.

Godavery District
Collector's Office
Cocanada 31st May 1876

From,

James Hope Esquire
Acting Collector.

To

The District Engineer
Dowlaishweram

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 licence 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 treb

G

CHIEF ENGINEER FOR IRRIGATION 24 APR 1876

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

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

I have &c &c

(Sd) James Hope.

Ag Collector

True Copy

J. M. N. Campbell Lieut R.E.

Executive Engineer in charge

Gody Dt

Compared

CHIEF ENGINEER FOR IRRIGATION

CHIEF ENGINEER 29 JUN 1876 FOR IRRIGATION

No 109 District Engineers Office Gy Dt.

Dowlaishweram 17th April 1876

From,

Major J. Beatty R.E.

District Engineer Godavery

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. No 478 of 22d February 1876.

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

× except as regards length of closure in the Eastern Delta

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 carried out without* closing the Canal.

*or only for 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 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.

2. 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	Do per Annum
Eastern	137½	17	606	7272
Central	114½	9	266	3192
Western	206¼	19	637	7644
Total	458¼	45	1509	18,108

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 part of the record 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 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 handsome profits now made by working their boats. In my calculations ⊕ in boat owner's returns I have assumed that he can easily get 3 pies a ton per mile. 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 hands, cart hire is at 3 to 4 annas a ton per mile.

⊕ Vide Appendices F & G

8

8. The sum realized by fees on boats and rafts last year was Rupees 25,579, while of this sum Rupees 26,934, or about 9/10ths 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.

I have the honor to be
Sir
Your Most Obed't Servt.
L. Beaty Major R.E.
District Engineer Gya Dist.

List of accounts.

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 784122.

D Statement of License fees collected Average of last two years Rs 34,114

E Statements 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.-

No. 323 dated

Note. Copy the Chief Engineer's Irrigation

Guide. II.

In G.O. No. 478 of the 22nd February 1876 the Madras Engineer, Godavery, was instructed to report in connection with the Boat licenses for the navigation of the Delta canals and point out all matters which he considers should be regulated.

1st to remove all causes of complaint in the Establishments, especially as to the abuse of power to seize, on addition to the above, private property, cannot interest all matters, prior to the beginning of 1877, for finally navigation purposes.

The District Engineer in the letters of 12th July 1876 has offered the following remarks on the margin has offered fairly complete information, and has furnished also a communication from the Collector on the subject.

No 81 of 31st May

To The Secretary
from the Chief Engineer
for Irrigation
Madras

Dated 17 April 1876
Rec'd 22 April 1876
No 109
Enclosure 7 G.O.
Boat licensing—
Report on— with
reference to G.O. No.
478 of 22nd February
1876

CHIEF ENGINEER * MADRAS * FOR IRRIGATION
24 APR 1876

No. 198.

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

	Number of miles of Canal	Number of Locks	Yearly charges average of 4 years. Establishment	Maintenance	Total Rupees	Charges per mile Rupees	Licence fees average of 1874 & 1875. Cargo Boats	Passenger Boats	Rafts	Total	Receipts per mile.
Eastern	132	17	7272	11167	18439						
Central	104	9	3192	12806	15998						
Western	187	19	7644	13725	21369						
							25577	5359	3302	34238	81
	*423	45	18108	37698	55806	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
1,129	25,577	77	5260	3,302

By the amended rules, canctioned for adaption in G.O. 4th March 1873, Rs. 6,91,000 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

viz 5 square feet of deck at 6 annas 3 annas per square foot respectively vide Statement E — Passenger boats - VI { 1st class 1-14 per passenger; 2nd 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 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 of Rupees 48,000 on which has to be considered

6. The foregoing information demonstrates tolerably clearly it is considered, that it will be only rights & matters very considerable

addition to the amount to be charged for the use of the canals of the Delta. In the first place the District Engineer calculates the average tonnage of the boats at 20 tons. Statements F. & G.

the mileage traversed at 200 a month 2,400 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 1,600

& the ton mileage 32,000

The licence 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 1,229 + 32,000 = 39.328 millions, and the abstract traffic statements give this at 39.741 millions for 1875-76. Administration Report para 12

7. The District Engineer in statements F. & G. estimates the returns obtained

by a boatowner with the licence 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 32 per cent in the other. Correcting these for the lower mileage of 1600 the net income per annum becomes Rupees 150 with the present licence fee, and Rupees 110 if that be trebled, while if the charge for carriage be increased to 3½ pies a ton a mile, the net income in the latter case will be 193⅓ Rupees or nearly 39 per cent on the capital invested in the boat. Whatever margin it may be thought proper to allow for contingencies, there appears to be no room for supposing that a material enhancement of the fees will affect prejudicially the trade.

× 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 licence 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 gradually 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 Beatty would make no change in them. No reasons have been addduced 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 fee 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 1½ 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 5,255 —— " ——
1875-73 —— do —— do 5,193 —— " ——

and neither in 1874 nor 1875 were any licenses taken out for first class boats. There had practically been a reduction of license fee, which was not intended, and which in 1875 involved a loss of Rupees 1594

without exercising any influence on the development of this kind of traffic. The figures appear to indicate that an increase to the number of passenger boats is not to be expected at present, and it may therefore be advisable not to alter the license fees without further information. It would not be objectionable to return to the rate of 4 annas per square foot seeing that the introduction of two classes of boats to meet a supposed want of caste travellers has been shown to be unnecessary, but the financial result of this alteration would not be very considerable, and it may be postponed until more is known on the subject. At the same time it may be considered, should it be proposed to raise the fee, whether it would be proper to raise at the same time the maximum fare leviable from 1½ to 2 pies a mile.

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

Income.

Cargo boats 26,000 tons at 3Rs. a ton — 78,000
Passenger boats Nr. 80 at 70 Rupees — 5,600
Rafts — Nr. 3,500 — 3,500
87,100

Charges

Establishment and maintenance charges allowing for extra lock establishments, as new locks now under construction are completed to — 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 putting 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.

G.O. Nr. 1115-A 6th May 1876.

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.

Vdalacamund 26th July 1876.

Wm Hudleston Lieut. Colonel R.E. Chief Engineer for Irrigation

To

The Secretary to Govt P.W.

(5)

Public Works Dept

fr 4 March/73 - No 691

20 April/74 - 1021

14 April/75 - 998

28 May — 1486

22 July/76 - 478

6 May — 1185

Date 26 July 1876

No 323-W

License Fees - Godavery District. - Note Recommending that the — of cargo boats using the Delta Canals be remitted.

Rec'd 2/12/76
Rec'd 28-8-76
Rec'd 1-8-76 No 6618.
O.L. Phub 54 July

Sent to Chief Engr. for Irrg.

From Secy Govt 11/77

Sent to Chief Engr. for Irrg.

Sent to Chief Engr. for Irrg.

Sent to Chief Engr. for Irrg.

Papers to be printed in Book on boat licenses Gokarn

33

[illegible] No. 109 of 17 April 1876 & all its accompaniments. also Appendix to Statement A (vide P. No 98 G.D.

~~Letter from Collector of [illegible] dated 26 July 1876.~~

Letter No 81 - 31 May 1876 from the Collector

Letter from Executive Engineer dated 26 July 1876.

No 1673-26 Aug.

Letter from Executive Engineer with G.D. & its accompaniments.

Endorsement dated 13 Sept. 1876.

The following to be recorded but not printed

Minute by the President dated 14 August 76.

Explanatory Memorandum dated 18 do.

Minute by the President dated 3 Oct. 76.

Memorandum & Telegram " 16 " "

Telegrams S.L. Gokarn " 16 " "

Ag. 30/1/77

Memorandum dated 27 Oct. 76

Telegrams D.C. Gokarn 2 Nov. 76.

Notification of 7 Nov. 76.

No 1473

District Engineer's Office G.D.

Dowlaisliveram 26th August 1876

From,

Lieutenant D'Mc. Neil 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 973 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. 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

Government, by increasing the license fee on Cargo boats from Rupees 1 to Rupees 3 per tow, as proposed by Major Beatty R.E. in his letter No 102 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 pies 2 per mile, and I think this is correct: the charges are 1½ pie 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 at 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

Government, by increasing the license fee on Cargo boats from Rupees 1 to Rupees 3 per tow, as proposed by Major Beatty R.E. in his letter No 102 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 pies 2 per mile, and I think this is correct: the charges are 1½ pie 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 at 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

in the Administration report, is immaterial. The tow mileage given in that report can-not 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 Sea. It certainly seems absurd to suppose that a 20 ton boat only travels 1600 miles a year, or about 4½ 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 pie -

8. Major Beatty recommended that the

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 Obed. Servant
J. W. Campbell Lieut. R.E.
Executive Engineer in charge G.D.

Quantity

Ft. 4 March/72 No. 691.
21 March/74 - 186
— 1021. 24 July/74-253.
20 apl
14 apl/75 - 998.
28 May — 1485
22 Feby/76 - 478.
11 Augt — 2074.

CHIEF ENGINEER
4 SEP
1876
FOR INFORMATION

C.P.W.D.
1 FEB 77
No. 1066

From
The Executive Engineer
Ellore Irrigation Division
To
The Chief Engineer
for Irrigation
Dated 26th August 1876
Received 30th August 1876
No 1473
Encls: Four

Boat Licences-
Passenger Cabin to
Further information on
the subject of increasing

Ci-15-9-76
O.L. Shubbridge Secty

H

24

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

(30)

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
Annual repairs	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	1,475 — 12 —
Say	1,476
Do — Do — for 10 years =	14,760
Add original cost of boat Rupees 1,000 =	15,760

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 pice per mile, this represents Rupees 9,037 per annum = Rupees 30,370 for 10 years.

Deduct

Deduct total outlay from total earnings result =
Rupees 14,610 or Rupees 1461 for 1 year which gives a net profit of Rupees 14.61 per cent on assigned cost of boat —

P.W.D.
1 FEB 77
No. 1066

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 —

CHIEF ENGINEER
4 SEP
1876
FOR IRRIGATION

J. M. N. Campbell Lieut RE
26 August 1876. Executive Engineer in charge Gor. Dist.

Comp. 66

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. 75 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	1,603-4
Say	1,604-
D. D. for 10 years	16,040
Add original cost of boat at Rs. 1000	17,040

The returns are the same as given in statement H
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 Sqr. ft. instead of Annas 3. The profits would still be over 100 per cent.

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

P.W.D.
1 FEB 77
No. 1066
CHIEF ENGINEER
4 SEP
1876
FOR IRRIGATION

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 boats			Passenger boats			Rafts		Remarks.
	No	Tonnage	Fee at Re1 per ton	No	Passengers	Fee at 3 Annas per Sqr. ft.	No	Fee at Re1 per raft	
Average of the 3 years.	1229	25,577	25,577	77	5,260	4,931	3,302	3,302	1 passenger = 5 Sqr. ft. deck room in licensing
	2	3	3	2	3	3	3	3	3

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 shewing the return to Government if Cargo boats are charged Rs. 3 per ton & passenger boat As 9 per Sqr. foot deck room.

	Cargo boats			Passenger boats			Rafts		Remarks.
	No	Tonnage	Fee at Rs. 3 per ton	No	Passengers	Fee at As 9 per Sq. ft.	No	fee	
Average of 3 years.	1229	25577	76731	77	5,260	14793	3,302	3,302	

Total receipts Rs. 94,826

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

Compd. W.

Compd. W.

CHIEF ENGINEER
4 SEP
1876
FOR IRRIGATION

C

P.W.D.
1 FEB77
No. 1060

L

D/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 Sy Statement K	=94,826
Difference or profit.	=16,404

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

CHIEF ENGINEER
4 SEP
1978
IRRIGATION

P.W.D.
I 13377
63.1061

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

Years.	Clearance of Lock Channels.	Repairs to Locks and Lock weirs.	Clearing tow paths.	Repairs to Lock Establishment sheds.	Dredging.	Repairs to Main Canals.	Miscellaneous.	Total.
Eastern Delta.								
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
Central Delta.								
1872-73	" " "	995 12 3	330 14 "	207 8 7	" " "	9885 4 3	" " "	11419 7 1
1873-74	272 8 2	1047 13 2	235 9 3	" " "	" " "	17850 " 2	" " "	19405 14 9
1874-75	202 10 9	295 9 6	" " "	" " "	" " "	7403 10 5	107 14 6	8009 13 2
1875-76	569 8 6	824 11 6	" " "	276 3 7	" " "	10717 10 -	" " "	12388 1 7
Total.	1044 11 5	3163 14 5	566 7 3	483 12 2	" " "	45856 8 10	107 14 6	51223 4 7
Average.	261 2 10	790 15 7	141 9 10	120 15 1	" " "	11464 2 2	26 15 8	12805 13 2
Western Delta.								
1872-73	1691 10 11	847 7 9	402454	" " "	1915 2 11	8230 7 5	414 2 9	17123 8 3
1873-74	1790 " 3	538 15 "	310978	" " "	1733 9 9	6424 3 "	1215 14 11	11402 4 8
1874-75	4143 2 2	1829 8 9	224213 6	" " "	652 10 6	4625 4 8	442 " 8	13935 8 3
1875-76	2112 1 6	978 9 7	162514 7	" " "	403 12 2	6064 12 5	1255 7 5	12440 9 8
Total	9736 14 10	4194 9 1	1100291	" " "	4105 2 6	22335 1 7	3527 9 9	54901 14 10
Average.	2434 3 8	1048 10 3	275010 4	" " "	1026 4 7	5583 12 5	881 14 5	13725 7 8
Grand Total	10891 3 9	16025 12 10	11569 " 4	483 12 2	59909 1	102196 12 2	3635 8 3	150792 10 7
Average.	2722 12 10	4006 7 2	2892 4 2	120 15 7	1497 10 3	25549 3 "	908 14 1	37698 2 7

District Engineer's Office -
Dowlaishweram July 1876

Compared

J. M. N. Campbell Lieutt R.E.
Executive Engineer in charge Godavery Dt.

* This sum does not agree with the total (37730) shewn in the statement B. of which average on this page of the year 1875-76 was shewn whereas the amount of statement B. has been taken on the actual expenditure of that year.

Enclosure to letter from the Executive Engineer in charge Eastern Circle to the Chief Engineer for Irrigation dated No. 1047 dated 12 July 1876

Statement of Receipts and Charges Delta Navigation for the year 187

2

Receipts

Description	Amount	Remarks
License Fees for		
Passenger boats 1st class		
do do 2d do		
Cargo-boats		
Private do		
Tolls for		
Passenger boats		
Cargo do		
Private do		
Rafts		
Miscellaneous		
	4	6

Charges

Description	Amount	Remarks
Lock Establishments and Lock wait repairs		
Navigation Buildings and repairs		
Low pratic maintenance		
Dredging { Lock Channels / Landing		
Miscellaneous		
Interest for the year on Capital outlay on Navigation works proper		
	15	4 6

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

45

Sections of Delta	To 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 account will require connection with sent in BK

PD
CH.

1060

From District Engineer, Godavery. No. 1473-26 Aug/76

No 324-W.

Submitted for the consideration of Government in continuation of the papers reserved in this office Note No. 323-W of the 26th July last.

Encls. 5.

2. The information given in the letter from the Executive Engineer in charge Godavery District and its accompaniments, indicates that the licence fee of passenger boats might be raised without pressing too heavily on the traffic, the present fee being only 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 H and I show. Repairs for instance if costing only Rupees 100 per annum take time to execute

No. 1473-26 Aug/76.

No. 36/2

and it is probable that for paint or tar, rails 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 license fee and with one tenth of the value of the boat added _____ Rs 1,726

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 Dowlaishwaram and Cocanada traversed only about 24 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 1½ pies for

probably there are 3 or 4 passengers at the lower fare one at the higher rate. Adopting 1 4/5 pies as the average the calculation of gross returns becomes

Period Number Miles Pies
9 × 30 × 30 × 30 × 1 4/5 = Rupees 2,278

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 42½ 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 carrying about 30 passengers and some cargo.

Dolacamund
13th Septr: 1863

Colin Jenkins Lt Colonel R.E.
Chief Engineer for Irrign.

From 27 Feby/77

P.W.D.
1 F377
No. 1066

From The Chief Engineer for Irrig.

Dated 13 Sept. 1876.

Encls 8.

No. 324-W

Navigation Charges
Appendix to Statement A

Godavery Delta Navigation Licence Fees

Explanatory Memorandum.

With reference to the remarks in the minute dated 14th August by His Grace the Governor.

The only subhead of 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 provision made for Repairs of main

Licence Fees — Godavery Distt. — Submits for consideration his letter recommending that the — on passenger boats using the Delta Canals, be raised.

No. 6613.
No. 6613.

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

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

and the Rupees 25,549 above mentioned would be about $\frac{16}{25}$ths 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 2½ feet a second, which would probably have been adopted had there been no navigation to be taken

into account, 2ndly the difference in the cost of removing a given quantity of silt when done decently after the canals have been unwatered 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 per cent, the figures would stand thus

1st 1000 cubic yards of silt at 1¼ annas.
2nd ditto — do — do — at 1 anna.
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 34,460.9.3 collected the sum due to Cargo boats was Rs. 24,794
— " — do — to Passenger-do — " " 6,666
5,333 Passengers at 1¼ 31,460
Rafts 2,027 at 1 Rupee each — 3,027
Total collections 34,487

Separate fee at 4 annas.

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 fee on passenger boats have to be taken into account according to the rates of 1871 they would have been
5193 Passengers at 1¼ — Rupees 6491
at the rates of 1875 they were
5193 Passengers at 15 annas — " — 4,868
Difference 1,623

The increased receipts of 1875 over 1871 were therefore practically 2,274

Rupees instead of a decrease of Rupees 2876. The increase was perhaps 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 licensee fees paid. Were 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, 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

	Tonnage	Ton mileage	Per cent
1873-74 -	809,688 -	31,091,481	
1874-75 -	1087,529 -	31,971,314	
1875-76 -	11,54,229 -	39,440,575	
Increase of 1875-76 over that of 1873-74			32.7
" " do			28.0

Statement E

is the diminution of cost of conveyance in two ways, first by reducing cost of haulage, 2nd 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, are 150×20 and on 2nd class canals 100×15 and are expected to be greater, if necessary.

Chambers in the clear

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 some thing 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

ensuable 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 37 miles 28 chains and about 25 will be a good navigation. The Cocanada Canal 25 miles 27 chains has been entirely re-modelled. 3 locks have been reconstructed, and an additional lock given. The Mandapett Canal 13 miles 35 chains has had one lock reconstructed.

* 23.40 completed to end of 1875-76

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 sanctioned. The lower parts of the two Bank Canals are inferior navigation. Of the total of 142½ 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 Vellpur, Jimatoor, Undi and Attili canals and out of 203 miles 52 chains, 186 miles 44 chains were complete at the end of 1876-76.

In the Note for the Chief Engineer for Irrigation the outlay for navigation purposes on which it may be considered 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 increased to 8 lakhs. This latter estimate 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, & lakhs, on which it is proposed to recarge 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 1,800 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 6,000 a mile or 27 lakhs the interest alone on which sum would be 135,000 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 pies 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 on net earnings at ½ per cent with a bribed license fee and a charge of 3 pies 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 undergo 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 room 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 and the conservancy 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.

Lock establishments.

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

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 establishment 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 establishment besides locking boats.
Some of the items will be
[a] regulating lock weir
[b] cleaning lock and lock weir gear
[c] caulking and painting or tarring gates and woodwork
[d] petty repairs to earthworks
[e] —do— do. to weir aprons and revetments
[f] conservancy of ground near locks & any other work usually done in each case.

W. 18/8/76

Office
Lr. to
Mouth R.S. Ellis Co.

No. 13 of 2d Nov/76.

Memorandum.

At the last Council held at Rotacaumund before His Grace the Governor left it was decided that the Licence fees for the navigation of the Godavery Delta Canals should be doubled for Cargo boats from the 1st January next, the Licence fees for Passenger boats remaining 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 following telegram and notice are proposed.

To

To Major Beatty

District Engineer, Godavery.

Issue notice at once that cargo boat Licence fees are to be doubled from 1st January. Passenger boat fees to remain as at present. The following notification will be published in the Fort St. George Gazette and should be published also in the Godavery and Kistna District Gazettes.

Notification.

Notice is hereby given that under Section 5 of Madras Act No I of 1870, the fees of Cargo boats licenced to navigate the Canals of the Godavery 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 Command of
Joint Secretary
Lt Colonel R.E.
to Govt
P.W.D.

Rajahmundry
27th Oct: 1876

No 661 S.

Rg Cir - 13-9-76
Cir - 23-9-76
O.K. Rev 5th July

P. W. Dept

58

Notification.

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

(By order of the Governor in Council) C. Walker Brigade Genl
Secretary to Govt P. W. Dept.

X. Addl

Mis No 13 of 2nd November 1876

Mr Dejay Jr a Mistress della
Lecine Verdon Ste aspumption
of centennial trips —
It seems essential that a
System of boat Accom should
be combined with a
system of toll taking at
a moderate rate to meet
such cases as I have put. or
Steam 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 Dow's Lawrence
Ellore locks. Perhaps
also at the locks Grand
Courad — at a moderate
Late. The cars would be sent
but detail arrangements remain
Read Some considerations

Ref. 3/12.

Sim Horsemanship Ottawa
Any[illegible] Ottawa
Ste [illegible]

Ref. 3/1

Proceedings of Provincial Parliament
Session 1856
Vol. 14
113

1-11-26.

Memorandum

The accompanying Note, on Godavery 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

Colin Bradley
Lt Col R.E.
Joint Secretary to Govt.

16 December 1876

Godavery Boat Licenses

When at Cocanada I found from the alleged practice of the boatmen that the Licensed system could require modification - E.g. a boat from Upper Godavery comes down twice a year perhaps a license fee calculated on the assumption of continued trade is not applicable to such a case. Yet that case is one which Govt would desire to see multiplied - again a Cocanada boat having ordinary dealings gets an engagement for Rajahmundry & beyond. Ellore but on this account has

No. 13 - 2 November 1876
Notification

Geo. Shaw Lefevre
Papers. I took the papers specially to Godavery to see as to some points suspended circumstances

I saw clearly I think the latter should be removed under present

16/12

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

Wy. 16/12

A copy 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

Wy. 16/12

Godavery License fees ou

61

Mrs 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. I think it necessary to inform His Excellency Government what has been done as he appears to be unaware of it. I must take His Excellency's orders as early as I can tomorrow & will come down with the papers at the Club as early as you can.

Wy 2/12

The file of papers referred to within was not seen by undersigned before despatch to the Govt Secretary as that 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 submitted which appear to be those called for.

R.J.

Fort St. Louis
16th Dec 76

7:30 Am.

C No 1866

Order on this file can wait until [illegible]

[illegible] Commissioner

Godavery Licensed fees on Canals.

I think the fees will bear raising.

It is proposed to treble the tolls now charged on Cargo boats. leaving Passenger 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 development of traffic.

I think however the estimate of Charges is too high and that some of the charges taken to account are not under the circumstances justly due to Navigation.

The Navigation is largely upon the Main deltas and principal Canals. It appeared 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 as necessary
for the purposes of irrigation
and the dredging 5990
Repairs to the Canal - 102196
Average 1,08,186 Statement A
Rs 27046

is not chargeable to navigation -
That the subject requires
careful consideration is evi-
dent from the returns D which
shows that the fees collected
in 1875, omitting the rafts
for comparison, are less by
2375 Rs than in 1871, that
the total number of boats

is

is less in 1875 by 22 - 67
That Pleasure boats have
practically vanished from
the list having diminish-
ed from 50 to 2 - That Pas-
senger boats have diminish-
ed 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
Chargable to Navigation, so
I think in statement E
the Capital account is un-
duly weighted against the
claps 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 estimated.

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 limiting the area of the license. Previously one license at a rupee a ton covered Godavery and Kistna Canals - last year it was restricted to the one delta - thus a boat carrying 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 ton - 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 communication Canals be closed (such as the Dowlaishweram and Cocanada - Ellore and others to be named) for a continuous period exceeding 14 days - or broken periods exceeding 28 days in the same year, a remission 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 exceeding a certain size and which could not pass the older locks -

This arrangement may leave a deficiency apparently larger than the 12,900 estimated on the treble fee; but I think there will be a better hope of that being covered by increased traffic at 2 Rupees than the 12,900 at the high toll 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 returns given in the District Engineers letter shows that the cost per lock is in

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

This shows a difference of which the cause is not immediately apparent.

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

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

of boats passing during the last year, and the greatest number in 24 hours, would be an useful guide in forming an opinion as to Lock Establishment.

The want of the particulars for 1872/73 is most unfortunate, and needs Explanation.

B.L. 14/8

P. W. Dept.

Note by the Secretary to the Board of Revenue, Irrigation &c.

Dated 21st Feby 1877.

Godavery License Fees on Canal

Lapse with Interest

Let the increase Rent exceed 2½ per Cent per annum for the present = Some reasonable time may be allowed after which the Capital cost by Lapse incurred

24/8 Pol.

I think there is much force in H.E. the Governors remarks, founded on personal inspection, but I think H.E. will like to see the Chief Engineers views before laying down principles of charges in Navigation

MLE 27/8

PUBLIC WORKS DEPARTMENT.

67

Endorsement of the Chief Engineer for Irrigation No. dd. 13th Septr. 1876.

FOR ORDERS.

Circulated for consideration and orders in connection with papers on Licence Fees, Godavery Delta Navigation, now in circulation.

Undersigned Lt. Colonel R.E. Jt Secretary to Govt P.W.D.

No 661 C. L

Rec'd - 13-9-76 No 661 P.
Cir - 23-9-76
O.L. Shuttleworth No 661 Fin

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

Establishment maintenance &c Rupees 60,000
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 1/3 of the
cost of its provision.

2. It appears from

mark for 2 R. as 3 R.
The Passenger Boat
fees should be raised
also as soon as the
information is complete
H.C.
4/15

1/64 of a penny at 1/80 at present rate of Exchange

9/200 of a penny or
1/28 - do -

the traffic accounts
of 1875-76 that the present
licence fees of 1 Rupee
a ton per annum on
cargo boats & recipients
a charge on the traffic
of rather less than 1/6 of
a pie a 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 9/20 of a pie a ton a
mile. It is clear that
this latter charge cannot
be burdensome, and
the Government believe
that the introduction
of a scale 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 2 or 3 years under conditions 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 on even the improvement of the Central delta is taken up, and for this the estimates are with the Chief Engineer for divigation, while at present the receipts will, if they reach the figures given

- 11. -

in para 12 of the foregoing note, afford an surplus of 7 Thousand Rupees.

13. The licence fees for cargo boats will from the 1st January 1877 be raised to Rupies 3 a ton, under Order III of the Rules sanctioned for adoption in G.O. of the 4th March 1873, No. 691, will be applied towards the Godavery Delta navigation, provided as follows - Rules 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

~~rate of Rupees (3)~~

~~Irrigations etc~~

~~4. Further information~~ will be awaited regarding ~~the sufficiency or otherwise~~ of the ~~licence~~ fees charged for ~~Passengers boats~~ ~~under Rule VI~~ ~~etc~~

5. ~~The alteration in the rates of Cargo Boats~~ Licence fees will be ~~notified in the Fort~~ ~~Saint George Gazette~~ and in the Godavery and Kistna District ~~Gazette~~, and similar ~~notices in English and the Vernaculars will be printed and posted up~~ at all locks in the Godavery and Kistna Deltas, and will be furnished also to the Serangs of boats passing the

× not less than in 3 successive Gazettes

×× do do do.

head lock at Dowlaishwaram.

6. ~~It~~ A change of fees for licences issued for the Kistna 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.

Ly. 29/7

to pass

D. E. Godavery
" Kistna
C. E. for I
Revenue Dept
Supt. Gazette Press with
intimation.

Irrigation 16

No. 662 Public Works Department.

PROCEEDINGS OF THE MADRAS GOVERNMENT.

72

Under date the 27 July 77

Read the following:—

From the District Engr. Godavery (H.C. Do. 109 dy 17th April 1876)

The Collector Godavery	(H.C. Do. 81	dy 31st May 1876	)
Note by the Chief Engr. for Irrign.	("	" 323 H dy 26th July "	)
From the Exr. Engr. in charge Godavery Dn.	("	" 1473 " 26th Augt. "	)
Endorsement of the Ch. Engr. for Irrign.	("	324 H dy 13th Septr. 1876	)
Note by His Grace the President	("	" 14th Augt. 1876	)
Explanatory Memorandum by Chief Engr. for Irrign.	("	" 18th Do. "	)
Memorandum do	("	" 27th Octr. "	)
Telegram to Dy. Engr. Godavery	("	" 2d. Novr. "	)
Notification	("	" 7th Do. "	)
Note by His Grace the President	("	" 3d. Decr. "	)
Memorandum by Ch. Engr. for Irrign.	("	1449 dy 16th Do.	)
Telegram to Supg. Engr. Godavery	("	" 16th Do.	)

452 R.S.

MB 21/2. Bx 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 Govt. dt. 9th 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 Engi
-neer 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 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 Dowlaishwaram or Rajahmundry, but which may sometimes want to carry a cargo through the Delta

& settlement of the arrangements at an early date

No 1164 R. D. dated 16 Dec 76. *52 R.D.

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 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, is for the future

it

~~it will be necessary that~~ the annual report of the working of the navigation rules and bye laws ~~must~~ be accompanied by full information as to the receipts ~~and~~ charges and ~~in to the~~ 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, ~~and~~

~~each~~ District Engineer will consider and report what proportion of the average annual cost of canal clearance and maintenance should be debited to navigation, the calculation being based upon the additional outlay rendered 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 approximation only is expected.

~~In~~ the ~~second~~ section ~~of~~ the ~~regulations~~

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.

I don't like this change very much — The tendency is to bring matters in all departments nearer to the Calendar year — I consider Ind. charges BH

7. 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 Licences 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.

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 1¼ times the annual charge; otherwise fresh licenses will be issued on the 1st April 1878.

Ly. 19/2

7. The charges, to be entered in the ~~accounts~~ Statements of receipts & charges for any Calendar year will be those of the Official Year ended on the 31 March of that Calendar year —

S.I. Kistna and Sadanery ✓
Collectors do ✓
Ch. for I ✓
~~Ch. P.H.~~ Ch. P. W. A ✓
Ch. Rev. Dept. ✓
Jud. Dept. ✓

ordered 17th March 77

Ly. 26/2

FH.

Govt. of {1877} Madras.

PUBLIC WORKS.

To The S. G. Godavery &c

Dated

Issued

Recd. Encl.

G. O. 27 February 1877. No. 662

Nos. 661-62

Godavery Delta Canals

Passing orders on proposals in the subject of increasing the fees for the ——

Supdt Anicut Ry