(1) Number of pages 24.

(2) Date of repair 21.11.81.

(3) Initials of the Referencer

TAMIL NADU ARCHIVES

GOVERNMENT OF TAMIL NADU

Revenue DEPARTMENT

G.O. No. / ~~B.P. No.~~	5184	Press. / Mis.
Dated	28. 9. 1977	~~197~~ .

Not to be folded or roughly handled.

Archives 1—10,006—19-4-79.

5684/1

FORM OF TOLL TICKET.

5684/1

	Up-stream.	Down-stream.
Godavery	Red.	Blue.
Kistna	Green.	Yellow.

No ——	Toll Station.
Date ——	——
Toll Station.	No ——
	Date ——
	Down or Up Stream Pass.
	Rupees 6.

No ——	Toll Station.
Date ——	——
Toll Station.	No ——
	Date ——
	Down or Up Stream Pass.
	Rupees 6.

Rev 1113/77.

5784
2

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

28th August 1877, No. 262 I.

Irrigation.

Read the following papers:—

No. 99. From Major J. BEATTY, R.E., Officiating Superintending Engineer, Godavery District, to the Chief Engineer for Irrigation, dated Dowlaishweram, 24th February 1877, No 3,414.

With reference to your memorandum No. 101 GD, I have the honor to forward you two statements of repairs to navigable canals, one of which (marked A) shows the various items under this head in each of the three deltas, and the other (marked B) shows the manner in which I now propose to divide the expenditure between the two sub-heads of navigation and irrigation.

Two Statements A and B.

2. The statements are the best approximations that I have been able to obtain as yet from the accounts, and some of the inequalities of expenditure I am unable to explain. These may be due partly to the accounts kept not admitting of a correct separation of the different items, partly to the unimproved state of many of the canals, and partly also to the fact that completion projects are being worked out in two of the deltas, while in the Central Delta, though no completion works have been begun, the ultimate area of irrigation provided in the project has nearly been reached, and will doubtless be greatly exceeded in the season of 1877. In that delta, owing to the absence of proper means of regulation, such as sluices and surplus weirs, there is much unavoidable waste of water, leading to larger repairs of earthworks.

3. Statement A shows in small type how the expenditure stood as first reported from the ranges, and in large type the alterations subsequently made as the result of further inquiry.

4. The totals of the Eastern and Western Deltas are not affected by the revision; part of the outlay previously shown under "repairs of canal banks," Eastern Delta, having been transferred to "clearing towing-paths;" and part of that shown before under "clearance of lock channels," Western Delta, having been transferred to silt "clearances in canals" and "repairs of canal banks."

5. In the Central Delta I have found some expenditure charged to repairs of navigable canals, which I think should be left entirely out of this account. Under the head "silt clearances in canals" in the original statement was included the cost of the large annual clearances of sand from the main duct of that delta. The other two main ducts will very rarely require any clearance; but owing to the incomplete state of most of the works in the Central Delta, and the consequent great waste of water for irrigation, vast quantities of sand are swept into and deposited at the head of its main duct, and the total cost of the removal of this sand in the four years was Rupees 12,183-6-9. If the canals had been constructed for navigation only, this sand might have been almost entirely excluded; I have therefore you will observe struck this out entirely in the column, "silt clearances in canals."

6. In that delta there had been two items of outlay brought under the head "repairs to other masonry works" (meaning aqueducts, under-tunnels, and surplus weirs) which did not properly belong to repairs, and which I have therefore removed from the list. One of these was a sum of Rupees 2,770-4-1 spent on repairing and improving the aprons of Gunnaram aqueduct on an estimate framed by Major Hasted; further expenditure under this head will probably never, or at most very rarely, be needed, and it is more of the nature of an extension and improvement. The other item was of the same nature, viz., "filling in the spandrels of Gunnaram aqueduct with concrete," which cost approximately Rupees 1,812-13-8. A further deduction of Rupees 357-11-2 is found to be necessary, as this was spent on repairs to head sluices of distributaries. Making these deductions the item "repairs to aqueducts, under-tunnels, and surplus weirs" is reduced to Rupees 1,105-0-10.

7. In Statement B I have shown how I would propose to allot the expenditure to navigation and irrigation. The total of repairs of navigable canals as now ascertained appears to be about 34,248 Rupees annually, and I think for the present it will be best to charge one half to navigation and the remainder to irrigation. Also of the half allotted to navigation, I would charge one-third to masonry works, and the remainder to earthworks.

8. With regard to paragraph 4 of your memorandum, suggesting some alteration in the mode of showing the cost of maintaining navigation in Part IV of the Budget, Class I B, "Maintenance and Repairs," I consider we have not at present sufficient information to show this in any great detail. The cost of maintaining the canals now may be taken at Rupees 35,000 annually, of which about half is fairly chargeable to navigation, and the other half to irrigation; also I would show one-third of the amount under C Works, and the remainder under L Earthworks. With our present limited knowledge of the average expenses, I consider it would be useless attempting to show the charges in greater detail. They would of course be shown separately for each Delta, but I think it quite useless for the present showing the proposed expenditure by canals.

A.

Statement showing the Expenditure on repairs of Navigable Canals in the Godavery District in the four years 1872-73 to 1875-76.

Names of Divisions.		Navigation repairs proper.					Repairs to Navigable Canals.				Totals for 4 years.	Number of Miles of Navigable Canals in each Delta.	Average Cost of repairs per Mile per Annum.	
		Clearance of Lock Channels.	Repairs to Locks and Lock Weirs.	Clearing Tow-paths.	Repairs to Lock Establishment Sheds.	Dredging.	Repairs to Canal Banks.	Silt clearances in Canals.	Repairs to Aqueducts, Under-tunnels and Surplus Weirs.	Tanks, closing Breaches, &c., dependent on Canals.				
1		2	3	4	5	6	7	8	9	10	11	12	13	
		Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.			
Eastern Delta ..	As revised ..	1,543 8 5	9,083 9 1	3,408 0 0	..	1,885 6 7	12,767 8 2	15,606 13 3	3,347 3 2	..	47,642 0 8	132	90	Averages by deltas.
	As originally given ..	1,543 8 5	9,083 9 1	..	..	1,885 6 7	16,175 8 2	15,606 13 3	3,347 3 2	..	47,642 0 8	..	..	
Central Delta ..	As revised ..	1,044 11 5	3,163 14 5	566 7 3	483 12 2	..	14,758 6 2	12,967 12 8	1,105 0 0	..	34,447 12 1	104	83	
	As originally given ..	1,044 11 5	3,163 14 5	566 7 3	483 12 2	..	14,758 6 2	25,151 3 5	6,054 13 9	..	51,223 4 7	..	..	
Western Delta ..	As revised ..	5,102 5 8	4,194 9 1	11,002 9 1	2,201 11 4	4,105 2 6	20,263 7 7	4,385 5 0	2,360 4 0	1,286 8 7	54,901 14 10	186	74	
	As originally given ..	9,736 14 10	4,194 9 1	11,002 9 1	2,201 11 4	4,105 2 6	19,899 3 5	115 0 0	2,360 4 0	1,286 8 7	51,901 14 10	..	..	
	Total ..	7,690 9 6	16,442 0 7	14,977 0 4	2,685 7 6	5,990 9 1	47,789 5 11	32,959 14 11	7,170 3 2	1,286 8 7	1,36,991 11 7	422	80	Average for the district.

a. The greater expenditure on "clearance of lock channels" in the Western Delta is due to the greater number of locks and to the heavy clearances required annually in the channels of approach to the head-lock, particularly the long channel below the lock.
b. The principal item in clearing tow-paths, Western Delta, is due to the unimproved state of the lower part of the Ellore canal.
c. The low expenditure on "silt clearances in canals" in Western Delta can only be accounted for by the large amount of new work in progress in these years in that delta.
d. One large item in this was "clearing silt from Aulapoor canal" in 1873-74, the canal was resectioned for a length of 11¼ miles to an average width of 20 yards, and an average depth of 4 feet.
e. The heaviest item in this sum of Rupees 9,083-9-1 was that of supplying new lock gates and shutters to the Samulcotta double lock in 1874-75 at a cost of Rupees 4,112-3-7.
f. The Samulcotta canal was last cleared out in 1873-74 at a cost of Rupees 8,600-14-11.
g. This sum of Rupees 3,347-3-2 includes the cost of rebuilding the surplus weir above Thapeswaram at a cost of Rupees 1,258-10-1.

ELLORE,
27th February 1877.

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

E.

Statement showing how the proportion of repairs to Navigable Canals not allotted to Navigation, &c., has been arrived at.

Number of Column in accompanying Statement.	Items of Charges.	Total for four years.	Average of four years.	Portion charged to Navigation.	Portion charged to Irrigation.	Remarks
	Repairs to Masonry Works.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	
3	Repairs to locks and lock weirs	16,442 0 7	4,110 8 3	4,110 8 2	...	
9	Repairs to aqueducts, under-tunnels, and surplus weirs	7,170 3 2	*1,792 8 9	448 2 2	1,344 6 7	* One-fourth charged to Navigation and three-fourths charged to Irrigation.
8	Silt clearances in canals	32,959 14 11	*8,239 15 9	2,986 13 4	8,960 8 2	
4	Clearing tow-paths	14,977 0 4	3,744 4 1	2,059 15 11	6,179 15 10	
2	Clearance of lock channels	7,690 9 6	1,922 10 4	3,744 4 1	...	
6	Dredging	5,990 9 1	*1,497 10 3	1,922 10 4	...	
5	Repairs to dock establishment sheds ...	2,685 7 6	671 5 10	374 6 7	1,123 3 8	
10	Tanks closing breaches dependent on canals...	1,286 8 7	321 10 2	671 5 10	...	
		1,36,991 11 7	34,247 14 10	16,318 2 5	17,929 12 5	

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

ELORE,
26th February 1877.

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No. 99-A. From Major J. BEATTY, R.E., Officiating Superintending Engineer, Godavery District, to the Chief Engineer for Irrigation, dated Camp at Dowlaishweram, 17th April 1877, No. 170.

WITH reference to your memorandum No. 62 GD of 7th instant just received, I have the honor to report on the points referred to in paragraph 3 of the G.O. No. 662 of 27th February 1877.

1 Letter in original, No. 324, dated 19th February 1877, from the Superintending Engineer, Kistna.
1 Letter in original, No. 53, dated 31st March 1877, from the Collector of Godavery.

§ 2. The first case, that of boats requiring "to pass the Ellore lock," has I think arisen solely out of the inconvenience felt by the public in consequence of boats licensed to ply on Godavery water not being allowed to proceed through the Ellore lock and up to the town of Ellore, which is about a mile above the lock, unless they are provided with a license to ply on Kistna water. This inconvenience is common to all Godavery boats that go to Ellore with and for cargoes. Rather than take out a license for the Kistna, they stop below the lock and oblige the public to employ carts to convey goods and cargo to and from the town of Ellore. I quite agree with Major Hasted that "while the Kistna license fees are so insignificant no concession should be made, especially as such concession would necessitate the employment of extra establishment, and open the door to attempts to evade the legitimate tolls."

3. In the other two cases, those of Cocanada port boats and boats that ordinarily ply on the river above Dowlaishweram, there is somewhat more reason for a modification of the rules. The want of some change in the rules in this direction has arisen in two ways.

(1). A few months since, owing to the great demand for rice, all classes of boats were pressed into the service, river boats, port boats, transit boats, as well as the ordinary canal cargo boats, and many must* have then taken out licenses which would not otherwise have required them. Such exceptional times may occur again.

* See postscript.

(2). Trade with the Upper Godavery is increasing, and there may be cases of river boats which have not hitherto used the canals, but finding a demand for salt in the Upper Godavery desire to proceed occasionally by canal to the salt-pans of Penugduru or Linganaboyenacherla for a cargo of that article to take up the river.

4. The only way to meet these cases appears to be by the issue of tickets entitling boats to use the canal for periods of ten days, and a 5-rupee rate as proposed by Major Hasted may be suitable, both for the reason suggested by him and because it is undesirable to fix so low a charge that many boats would take tickets instead of licensing. I am now inclined to think that the rate of 5 Rupees will be found too low. It may, however, be tried for a few months and increased if necessary.

5. These tickets should, I think, only be issued by the Delta Range Officers or persons authorized to issue for them. Boat-owners requiring tickets should apply in person or by letter stating the periods for which the tickets are required (*i.e.*, from what date to what date) and forwarding the sum of 5 Rupees. It is not desirable that the issue of tickets should be left with the Lock Superintendents. Anyhow these tickets will often prove a temptation to the Lock Superintendents to act dishonestly.

6. I send the replies I have received from the Superintending Engineer, Kistna, and the Collector. Mr. Foster, you will observe, points out that boats plying both on the canals and in the port of Cocanada will have to pay fees to the Marine Department as well as to this department, and he seems to think that a boat licensed

for the canals should be at liberty to use the port also free of charge. But the fees proposed for the use of the canals are so trifling that I do not think such boats should be exempted from port charges.

P.S.—The remark made in paragraph 3 that, during the time that great demand existed for rice for export, many river and port boats must have been licensed seems borne out by an examination of the accounts of license fees collected.

In 1874 the Eastern Delta Range Officer collected Rupees 13,599, in 1875 Rupees 14,718, and in 1876 Rupees 24,838; of which, however, Rupees 4,336 was the sum collected on account of Kistna licenses.

From W. S. FOSTER, Esq., Collector of the Godavery District, to Major J. BEATTY, R.E., Officiating Superintending Engineer, Godavery District, dated Camp at Peddapur, 31st March 1877, No. 53.

In reply to your letter No. 3,625 of the 15th of March 1877, asking my opinion on the subject of levying tolls on cargo boats that require to use the canals for short periods, I have the honor to inform you that I agree with you in objecting to the proposal to levy tolls.

I regret the decision that Government have arrived at to charge different fees on the two sets of canals. I should be glad to have the licenses for boats not ordinarily plying on the canals of this district able to be given for as short a period as possible, but I would give them for different periods at different rates; it would be necessary to charge on short licenses a higher proportional rate than on long licenses.

2. I may observe that, if the fees are higher in our canals than in the Kistna canals, it would be impossible to have tolls only on boats passing from one canal to the other, as the owners would all get their boats licensed in the Kistna District and then pay the toll and ply on our canals; to save ourselves from loss by this means if we have only tolls we should have to make the tolls very high, the Lock Superintendent might give a receipt showing the day on which the boat passed through the canal, and the boat might be considered liable to pay the license fee for our canals after a certain time from the date of receipt; but this course I consider opens to serious objection, chiefly from our not being able to find out when the period for which the receipt was given has expired.

3. I consider therefore that licenses must be adopted instead of tolls.

4. I think a fee of 5 Rupees would be rather high for a ten days' license, taking the figures in Enclosure F of your letter to Government recorded in G.O. No. 662 of February 27th, 1877, the average size of a cargo boat is 20 tons, the fee for such a boat for a year would be now Rs. 40; I should therefore think that payment of Rupees 5 might entitle the owner to a license for a month.

5. A matter very nearly connected with the subject under consideration has lately been the subject of correspondence between the Master Attendant and me, and I have written to the Board of Revenue about it. Should boats usually plying on the canals and licensed by you be required to be registered and to pay the usual fees to the Marine Department if they wish to bring goods into the port of Cocanada either to the shipping or elsewhere?

6. I thought they should be registered, because it would not be always safe to allow the boats to carry out to sea so large a cargo as they might safely carry on the canals, but I thought no charge should be made for this, the man in charge of the boat depositing the license given by you with Master Attendant and receiving a port license from him while the boat is using the port.

7. I believe a great many boats come from the Kistna District to Cocanada; almost all these boats come into the port; so, if it is decided to charge port fees on these boats, it will be necessary to take all these matters into consideration together, or the total amount of fees that may be ordered to be paid will be found to be too heavy.

8. Also there are boats, though not many, which are employed in carrying salt up the river; these would have to pay canal fees and port fees; they should certainly all be taken into consideration together.

9. As the fees on the Godavery canals are to be higher than those on the Kistna, I think that Godavery canal boats should pay less for the use of the Kistna canals than Kistna boats for the use of the Godavery canals.

10. Under the old rules a boat licensed by you could ply on the Kistna canals without any more payment; now it will have to pay fees on both canals as well as in the ports. To save the

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owners of boats as much trouble as possible, I would suggest that when you issue licenses for boats for Godavery canals you should be authorized to issue licenses for the Kistna canals. I suppose this would not cause any difficulty in the accounts.

11. A boat licensed by you and requiring a license for use on the Kistna canals would have to pay 1 Rupee per ton more, let him take out, if he wishes, monthly licenses at (say) 1 Anna 8 Pies per ton or 2 Annas, and fix a minimum fee of say 5 Rupees. Boats licensed by you might be allowed to use the ports on payment of half fees, and licenses might be issued for periods of a month as proportionate rates.

12. Boats ordinarily plying in the port might pay the same monthly fee for use on the canal that those licensed for the Kistna canal pay.

13. I suppose licenses could be issued by the Executive Engineer at Ellore for boats wanting to pass the Ellore lock, and at Cocanada by the Master Attendant for port boats wanting to pass into the canals.

From Major J. O. HASTED, R.E., Superintending Engineer, Kistna, to J. HOPE, Esq., Acting Collector of the Godavery District, dated Masulipatam, 28th September 1876, No. 168.

With reference to your letter, No. 256, dated 16th September 1876, I have the honor to inform you that a similar petition to that enclosed was forwarded to me, and that I endorsed it to the effect that under the existing rules I was unable to exempt boats passing the Ellore lock from toll, and that public opinion should force the boat-owners to study the public convenience more than they do.

2. Looking to the heavy expenditure in past years for the benefit of navigation, and to the large expenditure now proposed to be made, I do not think that while the license fees are so insignificant as they are at present, any concession should be made to boat-owners who wish to use but a mile or two of these canals; more especially as such concession would necessitate the employment of extra establishment and open the door to attempts to evade the legitimate tolls.

From Major J. O. HASTED, R.E., Superintending Engineer, Kistna, to Major J. BEATTY, R.E., Superintending Engineer, Godavery, dated Masulipatam, 19th February 1877, No. 324.

In reply to your letter No. 3,166, dated 6th February 1877, I have the honor to inform you that I am of opinion it would be well to fix a toll to be levied at the first lock through which the boat would pass, on payment of which a cargo boat could make use of the canals within the district for a short time, even though as you suggest the Lock Superintendents might occasionally be tempted by the opportunity to act dishonestly.

2. I do not see any reason why the amount of toll charged should not be the same at the tidal locks, the head locks, and the Ellore lock; the amount of toll, I think, might be even more than you suggest, as much as Rupees 5 per boat; for this reason, the average tonnage of boats using the canal is certainly above 10 tons, and a toll of Rupees 5 on a 10 ton boat would amount only to Annas 8 a ton, which is the road toll levied by Municipalities or Local Fund Boards on two laden bandies. The time during which the boat could use the canals might, I think, be extended to ten days, because the distance between the principal markets at each end of the canals is generally about 40 miles, and supposing a boat to travel on an average up and down stream 20 miles a day, a week would hardly allow time for loading and unloading.

3. As regards boats passing through Ellore lock who are wanted only to go to Ellore town, the Collector of Godavery District has already called my attention to the subject. I regret that a copy of my reply was not sent to you, but I enclose a copy for your perusal.

4. As the hope expressed in the last paragraph of my letter No. 217, dated 13th November 1876, has not been fulfilled, I shall be glad to hear what you have done in regard to the proposed alterations in the rules and bye-laws for navigation. I would suggest your submitting the correspondence with your remarks to the Chief Engineer for Irrigation.

No. 99-B. From Major J. BEATTY, R.E., Officiating Superintending Engineer, Godavery District, to the Chief Engineer for Irrigation, dated Camp at Dowlaishweram, 18th April 1877, No. 173.

In continuation of my letter No. [illegible] 17th instant, and with reference to paragraph 2 of G.O. No. 662 of 27th Feb[illegible]ruary 1877, which I inadvertently omitted to notice when writing yesterday, I have the honor to inform you that passenger boats

now pay somewhat higher license fees than cargo boats, and consequently they are not interfered with in carrying cargo when they do not do so to the inconvenience of passengers.

2. When however the license fees for cargo boats are raised from 1 to 2 Rupees a ton, the fees on passenger boats will be less than those on cargo boats, and all the boat-owners will apply to have their boats licensed as passenger boats, unless Rule VI be modified prohibiting passenger boats from carrying any goods but the *bonâ fide* baggage of passengers.

3. I would therefore propose to alter the last clause of Rule VI as follows:—

Passenger vessels will be allowed to carry one passenger for every 5 square feet deck room; when passengers and their goods are carried together in the same vessel, 5 maunds of 25 pounds each will be considered equivalent to one passenger. The goods carried must be *bonâ fide* the baggage of the passengers.

No. 99-C. Telegram from the same Officer, dated 7th May 1877.

YOUR telegram of 4th. 42 tons.

No. 13 I.

No. 99-D. *Note by the Chief Engineer for Irrigation.*

IN anticipation of the issue of the orders* of Government on the subject, the Superintending Engineer, Godavery, was in September 1876 requested to re-examine the charges debitable to Navigation, and his letter of the 24th February contains the result of his inquiries.

* No. 662, 27th February 1877.

2. For the whole delta the direct and indirect charges are on the average of the four years 1872-73 to 1875-76 estimated as follows. The indirect charges have been taken as one-fourth of the total of the items concerned, it not being considered practicable to fix this part of the charge otherwise than arbitrarily. The Superintending Engineer's letter shows that care has been taken to relieve navigation from any share in expenses with which it is unconnected:—

Direct Charges.

	RS.	A.	P.
Repairs to locks and lock weirs	4,110	8	2
Clearing tow-paths	3,744	4	1
Clearance of lock channels	1,922	10	4
Repairs to lock establishment sheds	671	5	10
	10,448	12	5

The direct charges may therefore be taken to amount in round numbers to Rupees 12,000.

Proportion or share of charges arbitrarily fixed.

	RS.	A.	P.
Repairs to canal masonry works other than locks and lock weirs	448	2	2
Do. do. banks	2,968	13	4
Silt clearances in canals	2,059	15	11
Dredging of canals	374	6	7
	5,851	6	0

The indirect charges may be [illegible] therefore to be in round numbers Rupees 6,000.

3. Taking these figures in substitution of the corresponding entries in this office note No. 323 W of the 26th July 1876, the total yearly charges become—

	RS.
Establishment	18,108
Maintenance	18,000
	36,108

instead of Rupees 55,806.

And the following will be the comparison of income and charges after 1878, allowing as before for additions to establishment as new locks are completed and brought into use.

The license fees are shown as sanctioned in G.O. No. 662 of the 27th February 1877.

Income.

		RS.
Cargo boats, 26,000 tons, at 2 Rs. a ton		52,000
Passenger do., No. 80 at 70 Rs.		5,600
Rafts, No. 3,500 at 1 Rupee		3,500
		61,100

Charges.

			RS.
Establishment	21,000		
Maintenance	18,000		
		39,000	
Interest on cost of Navigation works...		40,000	
			79,000
	Deficit ...		17,900

4. In paragraph 2 of the order of Government of the 27th February last, it was intimated that it was not considered expedient to alter the scale of license fees for boats, and the District Engineer was directed to report whether any modification of Rule VI would be necessary to prevent passenger boats of the second-class being used principally as cargo boats. Major Beatty states that at present passenger boats pay somewhat higher fees than cargo boats of corresponding tonnage, and consequently they have been left to carry passengers or cargo as occasion required; but after the 1st January next the circumstances will be changed and it will be more profitable to take out a license as a passenger boat and then to carry cargo than to register a boat as a cargo boat. The passenger boats average* 42 tons, and the cost of a license is on the average Rupees 70; while therefore at present the fee is 1⅞ Rupees a ton compared with 1 Rupee for cargo boats, it will if unaltered be, after the 1st January 1878, 1⅞ against 2 Rupees. To place the passenger boats therefore on the same footing as the cargo boats it will be necessary to raise the fee of second-class boats from 3 to 3⅞ Annas a square foot or from Annas 15 to Rupees 1-2-0 per passenger, and to preserve the existing proportion between the fees would necessitate the increase of the charge from Annas 15 to Rupees 1-9-0 per passenger.

* *Vide* telegram, dated 7th instant.

Until the boats were divided into two classes, with and without the option respectively of carrying or refusing to carry passengers of all castes, all passenger boats paid a fee of Annas 4 a square foot or Rupees 1-4-0 per passenger. The rates subsequently became for boats of the first-class Rupees 1-14-0, and for second-class Annas 15 per passenger, and no first-class licenses are taken out, so that a considerable loss of revenue has resulted.

Under the circumstances above stated it will be advisable, it is thought, to raise the second-class rate to Annas 4-6 a square foot, or Rupees 1-6-6 per passenger, which will make the average fee Rupees 105, and will obviate the inconvenience which would result from the issue of licenses on terms so favorable as compared with those of cargo boats.

At present.

Cargo boats, 1 Rupee a ton.
Passenger boats, $\frac{7}{4}\frac{0}{2} = 1\frac{3}{4}$ Rupees a ton. Extra $66\frac{2}{3}$ per cent.

In future.

Cargo boats, 2 Rupees a ton.
Passenger boats, $\frac{1}{4}\frac{0}{2} = 2\frac{1}{2}$ Rupees a ton. Extra 25 per cent.

Major Beatty has indeed proposed* a modification of Rule VI to guard against passenger boats carrying cargo to the exclusion of passengers, but the rule as revised could not be worked without detailing an establishment to work it, and it would involve much interference with trade, which it is in every way desirable to avoid. Moreover, if there be no or but few passengers desiring to be carried, there can be no objection to a passenger boat being filled up with cargo, whether belonging to passengers or not.

* Letter No. 173.

If the recommendations here made be approved, the license fees for passenger boats will become from 1st January 1878—

First-class, 6 Annas a square foot,

Second-class $4\frac{1}{2}$ do. do.

and possibly with this more moderate difference some few first-class licenses may be taken out.

5. The other question referred by Government for consideration was the arrangements to be made to suit casual as distinguished from regular traffic on the delta canals. This subject has been considered by the Collector of the Godavery and by the Superintending Engineers, Godavery and Kistna, and their conclusions are stated in the papers as per margin. The points to be attended to are—

Superintending Engineer, Godavery, No. 170, 17th April, and its accompaniments.

1*st*.—That the tolls or fees levied should be so fixed as to offer no inducement to boats plying regularly to give up taking out annual licenses.

2*nd*.—That the system should offer as little temptation as possible to extortion.

3*rd*.—That the arrangements should be as convenient to the public as may be practicable.

One important matter is not directly noticed in the papers, but it practically narrows the limits of possible arrangements. The license fees of cargo boats are based upon tonnage and of passenger boats on deck space, and these particulars are ascertained on a special system of measurement. The boats are all numbered, and the numbers as well as the tonnage or number of passengers are painted on the boats. License fees or tolls on boats casually using the canals cannot be based on such data, because the tonnage of the boats may and often will be unknown, and the charges must therefore be irrespective of the size of the boats. They will consequently be necessarily somewhat high for small boats.

6. To avoid inconvenience to trade it seems to be essential that a permit to make use of the canals for a short period should be obtainable at any time and at the point of entry to the delta system concerned. Major Beatty considers that tickets should be issued only by Delta Range Officers or by persons authorized to issue for them, and he objects to the issue being left to Lock Superintendents. The objections entertained by Major Beatty are shared in by other officers who are or have been connected with the deltas, and their experience of the difficulty of controlling Lock Superintendents effectively should have due weight; but practically it would be very inconvenient for boat-owners to have to apply in all cases in person or by letter to the Range Officer. Take the instance of a boat coming down the Godavery and wishing to go to Ellore. The boatman would have to get a license from Chettipett, 6 miles from the head of the Western main canal, before he could enter that canal, or he would have to go several miles out of his way and lose many hours in obtaining a permit from Dowlaiswer[illegible] or (2) say a Cocanada boat were offered a

cargo to Rajahmundry, there would be a delay of two or possibly three days in getting a permit, and the money has to be paid as well as application for a permit made. It is considered therefore that Lock Superintendents must be allowed to issue permits for short periods,* and it may be hoped that there will be no great difficulty in obviating irregularities. Permits, which will be a convenient name for licenses for short periods, should therefore be obtainable for periods not exceeding one month from the Superintendents of all terminal (head or tail) locks and of the Ellore lock. They should be on printed forms on paper of the same color as the annual licenses, but of a different (widely) size, and each termial Lock Superintendent should have a book of permits, the counterfoil of which shoul show—

* One month.
Fifteen days.
Ten days.

(*a*). Period
(*b*). Date—From
Do. To
(*c*). Fee, Rupees
(*d*). Number

The permit may run thus:—

Godavery Delta.

No.——
Permit a { Cargo / Passenger } boat owned by _____
of _____ (place.)
Name of Serang _____ to navigate the Godavery Delta canals.
From the _____
To the _____
Fee paid, Rupees _____
Issued by the Superintendent of _____ Lock.
Date _____ 187

Permits for more than a month can with any inconvenience of consequence be made issuable only by Range Officers, and can then be based on the size of the boats. With regard to the fees to be paid for permits premising that boats may be assumed to work for nine months in the year, and that boats of various sizes will apply for permits. The following scale will probably met the requirements in the Godavery Delta:—

Description of Boats.	Periods.	1877. Permit Fees.	1877. Normal Average.	1878. Permit Fees.	1878. Normal Average.	Remarks.
		RS.	RS.	RS.	RS.	
Cargo ...	10 days ...	3	$\frac{4}{27}$	6	$1\frac{3}{27}$	The normal average is the license fee of a 20-ton boat for the proportion of nine months.
	15 „ ...	4	$1\frac{1}{9}$	8	$2\frac{2}{9}$	
	1 month ...	6	$2\frac{2}{9}$	12	$4\frac{4}{9}$	
		PER TON.	PER TON.	PER TON.	PER TON.	Do. license fee per ton for do.
	2 „ ...	* 5 As.	$\frac{2}{9}$	* 10 As.	$\frac{4}{9}$	* 2½ and 5 Annas a ton a month.
	3 „ ...	†7 „	$\frac{3}{9}$	† 14 „	$\frac{7}{9}$	† 2½ and 4½ Annas do.
	Above 3 „	2 „ a month.	$\frac{4}{9}$	4 „ a month.	$\frac{9}{9}$	
		RS.	RS.	RS.	RS.	
Passenger, 2nd class	10 days ...	6	$2\frac{1}{27}$	9	$3\frac{8}{27}$	
	15 „ ...	8	$3\frac{3}{9}$	12	$5\frac{6}{9}$	
	1 month ...	12		18	$11\frac{1}{3}$	

Description of Boats.	Periods.	1877. Permit Fees.	1877. Normal Average.	1878. Permit Fees.	1878. Normal Average.	Remarks.
		Per Passenger.				
Passenger, 2nd-class.	2 months...	AS. 6	AS. 3⅓	AS. 9	AS. 5	
	3 „ ...	8	5	12	7½	
		Per mensem per Passenger.				
	Above 3 „	2	1⅔	3	2½	
Passenger, 1st-class.	10 days ...	RS. 12	RS. 5 5/7	RS. 12	RS. 5 5/7	
	15 „ ...	16	7 1/7	16	7 1/7	
	1 month ...	24	15 3/7	24	15 3/7	
		Per Passenger.				
	2 months...	AS. 12	AS. 6¾	AS. 12	AS. 6¾	
	3 „	16	10	16	10	
		Per mensem per Passenger.				
	Above 3 „	4	3⅓	4	3⅓	
Private or pleasure.	15 days ...	RS. 3	RS. ...	RS. 3	RS. ...	
	1 month ...	4½	...	4½	...	
	2 „ ...	8	...	8	...	
	3 „ ...	10	...	10	...	
		Per mensem.				
	Above 3 „	3	...	3	...	

The permit fees for the Kistna Delta should be, until further orders, the same as those for the current year for the Godavery.

7. As soon as the orders of Government on these questions have been passed, the corresponding alterations in the navigation rules and bye-laws will be drawn up and submitted for approval.

8. It is not considered desirable that any exemption from, or alteration of, permit fees for the use of the Delta canals should be made in the case of port boats which are licensed in the Marine Department, or that canal boats should be exempted from port fees if they make use of the port. A canal boat, however, should not, it is thought, be required to take out a port boat license for merely carrying cargo to or from Cocanada (the town) without in any sense becoming a port boat. Were such a boat to convey cargo to or from the shipping in the harbour, it would be properly liable to take out a port license. Should there be any technical difficulty in the matter, it would be easy to provide a landing place for canal boats above the limits of the port of Cocanada.

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

No. 99-E. Memorandum by the Chief Engineer for Irrigation, dated 18th June 1877, P. 59 I.

N. 87 I.

No. 99-F. MEMORANDUM.

THE Chief Engineer for Irrigation having been instructed by Government to consider whether the requirements of canal traffic on the canals of the Godavery and

Kistna Deltas might not be met in a more simple manner by levying tolls at fixed points instead of issuing permits for limited periods, the following observations on the subject are submitted.

2. Tolls have, in this Presidency, been hitherto levied only on ghauts, bridges, and at the entrance to towns. The payment of the prescribed toll clears the vehicles or animals for which toll has been paid either for a certain distance or for the day.

3. Tolls on the canals must be so arranged as to prevent the possibility of the pass issued to a boat on payment being used to clear the boat for more than a limited time and distance. Otherwise the payment of a toll might result in a boat being enabled to navigate many of the canals for an indefinite time, thus obviating the necessity for taking out a license.

4. The Godavery Delta system is at its head enterable at three points, viz., at the head locks of the main canals of the three sections* of the delta.

* Eastern.
Central.
Western.

The Eastern Delta can be entered on the lower border at the—

(1). Tidal lock, Samulcottah canal.
(2). Covoor lock, Cocanada do.
(3). Munjair lock, Coringa do.

In time there will be a fourth entrance at the tail lock of the Bank canal near Yanam.

Tolls can be levied at all these points by the Lock Superintendents, but such tolls alone would not prevent a boat plying for six months on any or all of the Eastern Delta Canals, on the pass obtained for the one payment, so long as it did not leave this section of the delta.

5. Take again the Western Delta.

The points of entrance are—

(1). The head lock.
(2). The Ellore do.
(3). The Weyair lock from the Colair lake.
(4). The Yalurpad lock from the Ujuteru.
(5). The Yennamaduru drain and thence when the communications are complete to the Undi canal on the one hand and the Gostanaddi and Velpur canal on the other hand.
(6). Nursapur canal by Mogultur lock.
(7). Do. by Nursapur lock from Vasista Godavery.

A boat paying toll at, say, Ellore would get a pass which, in the absence of other toll stations within the delta, would enable it to ply for a year or any number of years between numerous important towns and villages, *e.g.*, Ellore, Chettipett, Undi, Attali, Nursapur, &c.

6. Similarly in the Eastern Delta of the Kistna a boat could ply between Masulipatam, Bezwadah, and Ellore for an indefinite time on payment of a single toll, if payment on entering a section of a delta system be alone demanded.

7. It appears to follow then that tolls on unlicensed boats must be leviable, if necessary, at the first lock of every individual canal as well as at the entrance locks of a section of a delta. This, it will be seen introduces a complication. It may be considered reasonable that a single toll should clear a boat from end to end of a section of a delta for a trip in one direction, *e.g.*, a boat paying toll at Dowlaishweram might be cleared to Cocanada, Coringa or Yanam, and a boat paying toll at either of the tidal locks might be cleared to Dowlaishweram, but this arrangement could not be permitted without some special supervision, seeing that a boat entering at Dowlaishweram could go to Samulcottah, then return to the head of the Samulcottah canal and then go down the Cocanada canal, the Coringa or the Bank canal without interference, or may be down the Coringa canal to the Ujeram canal some miles down it, back to the Coringa canal and then down to Coringa.

Similarly on the Ellore canal in either delta there would be nothing to prevent many trips being made on one payment of toll.

8. The toll system would consequently require the establishment of a toll station at the head of those canals on which there is no lock near the head and at the first locks on other canals.

In the Eastern Delta, Godavery, the Samulcottah canal would need a station of the former kind, and in the Western Delta the Ellore canal.

The toll stations in the Godavery would then become—

Eastern Delta.

(1). Head lock, Dowlaishweram.
(2). Do. of Samulcottah canal.
(3). Tail lock do.
(4). Medapad lock, Cocanada canal.
(5). Covoor do. do.
(6). Thapeswaram lock, Mundapett canal.
(7). Chopella lock, Bank canal.
(8). Yanam do. do. (hereafter).
(9). Alamur lock, Coringa do.
(10). Munjair do. do. do.
(11). Yerrapotharam lock, Injeram canal.

Under the permit system payments would be leviable at Nos. 1, 3, 5, 8, and 10 stations.

Western Delta.

(1). Head lock, Vijéshwaram.
(2) Do. of Ellore canal, Chettipett.
(3). Ellore lock.
(4). Double lock, Junction canal.
(5). Weyair do. into Colair lake.
(6). Yelurpad lock, Venkiah canal.
(7). Head lock, Undi canal.
(8). Lock into Yennamadurru drain.
(9). Head lock, Attili canal.
(10). do. Gostanaddi and Vulpur canal.
(11). do. Nursapur cana.
(12). Nursapur lock, do.
(13). Mogultur lock. do.
(14). Head lock, Bank canal.
(15). Doddiputla lock, Bank canal.

For permits the stations would be Nos. 1, 3, 5, 5, 8, 12, 13, and 15.

There would have to be a distinction between the toll passes given for traffic up-stream and down-stream respectively; different colored passes would suffice.

The passes would be taken from the boats at the next toll station they might pass, and would be sent by the Superintendent daily to the Range Office. The passes would require to bear a number and the name of the station at which issued. Many of the stations would be preventive and would only occasionally take tolls and issue passes. The terminal toll stations would have passes of only one color; the preventive stations would require to have passes of both colors.

9. Government wish tolls to be made so high as to prevent their being paid by any boats which ply at all frequently and which ought therefore to take out annual licenses. It remains therefore to consider what the toll should be, and as there is to be but one rate of toll for all boats, whether cargo or passenger or large or small, it would seem to follow that the toll must be a certain proportion of the charge for the annual license fee. The average license fee for a cargo boat is now 20 Rupees, and will be from 1st January 1878 in the Godavery 40 Rupees.

The license fee for passenger boats averages 70 Rupees.

With boats coming from different localities and distances, say, from Madras on one side and the Upper Godavery on the other, or from towns in or in the vicinity of the deltas, it is difficult to say what number of trips* should be taken as equal to the annual license fee, but probably the

i.e., from head to end of delta and back again or *vice versâ*.

number should not exceed six, and, if so, the toll leviable on the journey in one direction will need to be one-twelfth of 70 Rupees, or say Rupees 6.

A boat wishing to go from the East Coast Canal to Cocanada and back, and probably this will be the traffic on which most tolls will be taken would have to pay at—

	Rs.
Commamur canal tidal lock	6
Bezwadah	6
Ellore	6
Dowlaishweram	6
Total	24
Return journey	24
Total for trip	48

The distance is—

	Miles.
Commamur canal	56½
Main canal, Kistna Western Delta	13
Main and Ellore canal, Kistna Eastern Delta	40
Main and Ellore canal, Godavery Western Delta	46
Main and Cocanada canal, Godavery Eastern Delta	32½
Total	188

For trip altogether miles 376, or the tolls would amount to just over 2 Annas a mile, a moderate charge perhaps for a passenger boat carrying 60 passengers, being two-fifths of a pie a passenger a mile, or for a 60-ton cargo boat being two-fifths of a pie per ton a mile, but however will, at the expense of some necessarily prohibitive for small boats which annual licenses which will be cheaper inconvenience and delay, be able to take out ned for all boats of less than 16 tons for even a single trip of the kind above menti- lls and permits have to be based on measurement. It will be noticed that both f- ay, and tolls, when no distinction is what rather large boats must be required to e between passenger and cargo boats, ma- e to be based on passenger boat fees, has ch boats average 42 tons* while cargo which ts average 20 tons only.

There are besides about—
1 mile of river Kistna.
5 miles of river Godavery.
2 „ „ Cocanada.

* They will pay on 35 tons only in Godavery after 1877.

10. Under the table of permit fees shown in the note as per margin, the fees on No. 13 I of 8th May 1877. the trip above mentioned would be as month would be needed for the Kistna and for fifteen days in the Godavery. The rates are those which it was supposed would rule after 1877:—

	Rs.
Cargo Boat, 1st Class.	
Kistna fee, one month	6
Godavery fee, fifteen days	8
Total	14
Passenger Boat, 2nd class.	
Kistna fee, one month	12
Godavery fee, fifteen days	12
Total	24

The difference is very marked, being as 14 to 48 for cargo boats, 24 to 48 for passenger boats.

A uniform rate for widely differ ng boats and circumstances must be a high one, and only by more or less classificatio n can charges be proportioned to circumstances. Even in the scale of permit fees the pportionment was rough, and would have varied much for boats of different sizes, but for classes of boats which average 42 and 20 tons respectively, there is practically no co mmon factor.

This office has no information at the present moment regarding the variations in the size of passenger boats, but prob ably they do not vary more than from 30 to 60 tons. With regard to cargo boats, th e numbers and tonnage are in the Godavery—

	NO.
Under 5 tons	68
Between 5 and 10 tons	266
Do. 10 and 20 „	471
Do. 20 and 30 „	439
Do. 30 and 40 „	247
Do. 40 and 50 „	33
Do. 50 and 60 „	25
Do. 60 and 70 „	11
Do. 70 and 80 „	...
Do. 80 and 90 „	4
Total ...	1,564

11. Boats taking out annual lic nses could, even if they plied regularly over the whole distance between Madras and Cocanada, make one trip* there and back in—

* 800 miles.

	DAYS.
For cargo boats, average 12 miles a day	67
For passenger „ „ 30 „ „	27

The former therefore could make four trips a year, and the latter ten trips which would make the Delta canal charges t —

$$\frac{40 + 20}{4} = 15.$$

$$\frac{70 + 70}{10} = 14.$$

Per cargo boats, Rupees 15 a trip.
„ passenger „ „ 14 „
Against 48 Rupees for each for tolls and 14 for the former and 24 for the latter for permits.

12. Government have determin ed to keep the license fees for passenger boats at the present rates, but the table of permits for these boats for 1878 would have, it is thought, to remain unaltered for the Godavery, were a system of permits introduced, for otherwise passenger boats averagi ng 42 tons would, for a permit for one month, pay just the same as cargo boats aver aging 20 tons and the anomaly would be great and may, with advantage, be avoided.

FORT ST. GEORGE,
5th July 1877.

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

To the Joint Secretary to Government, Publ ic Works Department, Irrigation Branch.

No. 100. ORDER THEREON, 28th August 1877, No. 262 I.

THE discussion relating to the n avigation on the canals of the Godavery Delta, which is continued in the papers record ed in these Proceedings, has had for its object the determination upon adequate infor mation of the arrangements most suitable for working—

1*st*.—The passenger traffic.

2*ndly*.—The casual traffic whi not be conveniently provided for by the issue of annual licenses.

2. These questions having now been fully inquired into, His Grace the Governor in Council directs the following instr ctions to be acted upon.

3. The license fees for passenger boats will remain unchanged, but in order that in the Godavery it may not, after the 1st January 1878, when the cargo boat license fees will be increased, be more profitable to take out passenger boat license fees for boats intended to be used to carry cargo, a condition of the issue of a license to carry passengers will be that under all circumstances, and whether the passengers be few or none, a part of the boat must be reserved for passengers and must not be occupied by cargo. The reserved space will be one-third of the entire length of the boat, as measured for determining the full number of passengers to be carried. The further details required will be laid down in the revised rules.

4. All boats, whether cargo or passenger, which have not taken out annual licenses for the navigation of the Delta canals, will be required to pay a toll of Rupees 6 for a single journey between the head and end of either the Godavery or the Kistna Delta or *vice versâ*, such toll being leviable at the head or terminal lock. The pass or toll ticket granted on the toll being paid will clear the boat through the section of the delta for which it may be issued for a single journey only in one direction, and a second toll of like amount will have to be paid by any boat holding a pass for a journey up-stream, and wishing to proceed down-stream on the same or another canal or *vice versâ*. Every head and tail lock will be a toll station, and when as on the Ellore canal there is no head lock, a toll station will be established at the head; and at such stations, as well as at the head locks of individual canals other than main canals, tolls will be leviable only on boats unprovided with passes for the direction in which they may wish to proceed.

The following examples will serve to illustrate the system to be introduced :—

(1). An unlicensed boat paying toll at the Covoor lock on the Cocanada canal or at the tail lock of the Samulcottah canal will be cleared up-stream to the river above the Godavery anicut, but cannot without payment of another toll pass through the Mundapett canal or down the Bank canal, or any other canal.

(2). A boat paying toll at a main canal head lock will be cleared through that section of the delta by any canal by which it may wish to proceed, but it cannot change the direction of its journey without paying toll at the first toll station passed going up-stream, and cannot make a second change without paying a third toll, *e.g.*, a boat paying at the head lock, Eastern Delta, and proceeding to Yanam could not return to Dowlaishweram without paying a second toll at the lowest lock on the Bank canal, nor thereafter could it proceed down the Coringa canal to the Coringa river without paying a third toll at the Alamur (the head) lock of the Coringa canal.

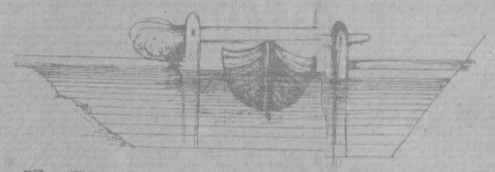
(3). A boat entering the Commamur canal, Western Delta, Kistna, by the tidal lock would be cleared to the Kistna above the anicut, but could not enter the Nizamapatam canal without paying a second toll at Dugirala lock or the Bank canal without paying at its head lock, or re-enter the Commamur canal, after leaving it, without paying at the head lock of that canal.

5. No new licenses will be issued for passenger boats after the 31st December next except on the condition named in paragraph 3 of the Order.

6. The Superintending Engineers, Godavery and Kistna, will have complete lists of toll stations for canal traffic made out, and will apply for sanction for toll-takers for those stations at which there are no locks. They will also submit estimates for toll-

houses for such stations, in which will be included under Tools and Plant chains and tackle or bars* necessary to prevent unlicensed boats passing without having paid toll entitling them to proceed; also cash-chests for all stations. The toll tickets or passes on different colored paper for up and down-stream traffic will be prepared in the Government Office, and will be supplied to the Superintending Engineers in books of 50. The name of the toll station will be entered in manuscript under the Superintending Engineer's orders before a book is issued to a toll-taker.

* *Vide* sketch appended.



The Dutch plan of a bar would be cheaper and not require a lascar, The bar is balanced and only needs a foot placed on it when the stop is with drawn.

These arrangements will come into force from the 1st January 1878. The Chief Engineer will revise and submit to Government for approval the rules and bye-laws required for carrying them into effect, and the Superintending Engineers will make all necessary subsidiary arrangements in concert so far as may be necessary, so that nothing may remain to be settled after the 1st December, and that all toll-takers may clearly understand their duty both as regards the levying of tolls and the remittance of money taken, and of lapsed passes received from the boats.

(True Extract.)

Colonel, R.E.,
Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Superintending Engineer, Godavery
" " " Kistna.
" Chief Engineer for Irrigation.
" ~~Public Works Department~~.
" Revenue Department.

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Revenue Department

No 4113.

IRRIGATION.

Godl. of {1877} Madras

PUBLIC WORKS.

To

THE SUPERINTENDING ENGINEER,

GODAVERY,

&c., &c. &c.

Dated August 28th,

Issued

Rect. 22 September Encl.

G. O., 28th August 1877, No. 2621.

AUGUST.

Nos. 99-100.

12 Aug 1879

No. 5654

Godavery and Kistna Deltas.—Issues instructions for working the navigation on the canals of the

Commissioner &c

the Board of Revenue,

&c. &c. &c.