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TAMIL NADU ARCHIVES

GOVERNMENT OF TAMIL NADU

Revenue DEPARTMENT

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GOVERNMENT OF MADRAS.
PUBLIC WORKS DEPARTMENT.

20th July 1877, No. 182 L.

Irrigation.
Account.

Read the following papers:—

No. 108. From Captain L. CONWAY-GORDON, R.E., Examiner of Public Works Accounts, to the Secretary to Government, Public Works Department, dated Fort St. George, 7th September 1876, No. 213 W.

I HAVE the honor to address Government regarding the subject of paragraph 2 of G.O., No. 1,971, dated 2nd August 1876.

2. The Chief Engineer for Irrigation, in paragraph 7 of his note printed with the above order, raises a question which promises—and I think perhaps unnecessarily—to complicate still further the already sufficiently complicated question of the Capital and Revenue Accounts of Irrigation Works.

3. The question raised is one of accounts, and, as it appears to me a most important one, I venture to address Government on the subject at once.

4. It seems to have been recently discovered that some of the tanks brought into connection with the Srivaikuntam anicut system were in a very dilapidated condition when the connection was made, and the Chief Engineer for Irrigation is of opinion that the cost of making good the dilapidations which occurred prior to that event should not be charged to the Srivaikuntam anicut system. In this opinion I find myself unable to agree. Whether the charge should go to Capital or to Revenue may be a question for discussion, but that the charge should go to the system itself I cannot myself entertain a doubt.

5. The Srivaikuntam anicut scheme was a scheme for irrigating a certain tract of country having a certain natural configuration and certain hydrographical and geological features, and possessing moreover certain artificial advantages in the shape of tanks and channels already existing. On a careful consideration of all the circumstances of the case based as far as possible on actual investigations, estimates were framed which showed that for such and such expenditure the irrigation system of this tract of country could be so improved as to yield such and such an increase to the average revenue, and on the strength of this estimate the works were undertaken.

6. The condition of the channels and tanks in this tract of country was one of the elements in the estimate. It is now found that with regard to this particular element a mistake was made. The condition of those artificial advantages, the tanks and channels, turns out to be not so good as it was supposed to be. The Chief Engineer for Irrigation is of opinion that the cost of bringing the tanks into proper condition should not be a charge against the scheme, but I fail to see why this additional charge however unexpected should not be treated in precisely the same way as would be the extra cost resulting from erroneous levels, or from meeting with rock when the ordinary soil was looked for, or from any other contingency not provided for in the estimate.

7. I am also unable to follow the argument which leads the Chief Engineer for Irrigation to the conclusion that every rupee spent on these dilapidations, if charged to the revenue of the system, will diminish the net returns by 2 Rupees. It may possibly be so, but at present I must confess I am unable to follow the arguments which have led the Chief Engineer for Irrigation to this result.

8. The question is now raised only in connection with the Srivaikuntam ancient system; but, if the principle now advocated is correct, there is no reason why it should not be applied in all cases, indeed, if correct, it *should* be acted upon everywhere and always. The Srivaikuntam ancient system is not the only instance of the remodelling of an old irrigation system; most of the new irrigation schemes in this Presidency are more or less mixed up with old tanks and channels, and the decision come to in this case may affect most seriously the accounts of all systems for which Capital and Revenue Accounts are to be kept.

9. The principle which Government has hitherto accepted as the basis of the Revenue Accounts of Irrigation Work is clear and intelligible. The orders of Government are to ascertain the "average gross revenue" and the "average cost of maintenance" for a certain number of years, prior to the commencement of the works of which the financial results are to be exhibited. From the "average gross revenue" and the "average cost of maintenance" the "standard net revenue" is to be deduced; and the difference between "net revenue" of future years and this "standard net revenue" is to be taken as the return yielded by the works in future years.

10. If these orders of Government are followed, the ascertainment of the returns from works is simply a question of facts, the returns are to be deduced from the recorded figures. But, if the views now put forward be adopted, it will not be sufficient to take the average cost of maintenance as it actually was, we shall have to take it as it *should* have been, as it *would* have been if the old works had been kept up to some standard of efficiency which for all practical purposes of account is altogether undefined. On this point I can only say that although we may possibly be able to ascertain what the average cost of maintenance actually was; to attempt to determine what it ought to have been in any given case will probably lead to nothing but differences of opinion and ultimate disappointment.

11. Furthermore, if we estimate in each case what the cost of maintenance in former years *ought* to have been, instead of simply ascertaining what it actually was, we may fairly expect that the Revenue Officers will take up a similar position with respect to the revenue side of the question. They will argue that it is obviously unfair to base the standard revenue on what the revenue actually was when the necessary repairs to tanks were habitually neglected, and that it must be based on what the revenue would have been if the tanks had been properly maintained. Such claims would be quite as reasonable as that of the Chief Engineer for Irrigation. Indeed if the claim of the Chief Engineer for Irrigation be conceded, Government will be compelled, in consistency, to concede the counterclaim of the Revenue Officers.

12. I earnestly trust that Government will not give their support to these principles. I had begun to hope that the question of the Capital and Revenue Accounts of Irrigation Works was at length in a fair way of being placed upon a satisfactory basis, and I should be deeply grieved to see any views adopted which tend to substitute for this solid foundation of fact, the uncertain and shifting sands of mere conjecture and hypothesis.

13. In conclusion, I may add that as the principles to be adopted for the preparation of the Capital and Revenue Accounts of Irrigation Works after years of discussion have only lately been finally decided upon, it seems to me perhaps inadvisable to reopen the discussion of these essential principles, and more especially to reopen them without fully pointing out to Government all that in an accounts point of view is involved if the new basis proposed be accepted.

No. 249 W.

No. 108-A.

Note by the Chief Engineer for Irrigation.

THE subject of the reference is the way in which the cost of repairs of tanks which have been brought into connection with the Srivaikuntam ancient system, and which may have been out of repair at the time of this connection should be dealt with. The question is one which does not affect the Account Department as such, as will be presently shown. It is a question, moreover, which has yet to be decided on the merits when the necessary information comes to be laid before Government, until then the discussion raised by the Examiner appears to be premature.

2. *Examiner's paragraph 2, complication involved.*—The complication, so far as the Accounts Office is concerned, is imaginary. If an estimate for the repair of a tank be sanctioned, and if it be ordered that any given proportion of the expenditure is to be charged to Revenue and the rest to Ordinary Agricultural, the procedure will be simple enough.

3. *Paragraph 4.*—This paragraph begins with an assumption for which there is no foundation. The tanks of the part of the Tinnevely District affected by the Srivaikuntam ancient are much in the same state as those of the district generally. Nearly all are far from being either safe or efficient for the duty expected from them.

4. *Paragraph 5.*—The expenditure on old Irrigation works required to enable them to secure an increase of revenue is undoubtedly chargeable to the Srivaikuntam ancient system. The question raised by the undersigned was whether the expenditure necessary to the security of the old or former revenue, no part of which is credited to that system, should also be charged to it.

5. *Paragraph 6.*—The assumptions in this paragraph are incorrect.

6. *Paragraph 7.*—A rupee spent on repairs required in connection with the tanks and their former irrigation would have been deducted from the former revenue. If charged to the present revenue the difference between the former and the present revenue will be decreased by 2 Rupees. Perhaps a simple example will render the matter plain to the Examiner's comprehension. If A earn 5 shillings a day and B 6 shillings a day, the difference between their receipts will be 1 shilling. If a shilling be spent in refreshments and A undertake the expenditure, A's balance will be 4 shillings and the difference between A's and B's balance 2 shillings in favor of B. If, on the other hand, the refreshments be paid for by B, A and B will each have 5 shillings left, showing a variation of 2 shillings in the results. The remark was not written in the first instance for the Examiner's information, or it would have been more fully explained.

7. *Paragraph 8.*—Most questions have a commencement; and whenever in connection with other systems—

1st.—The amount involved may be of importance.

2nd.—The division of outlay may be practicable, whatever orders Government may think fit to pass with regard to one system will be deemed applicable to other systems.

8. *Paragraphs 9 and 10.*—The Examiner has either not read recent papers on the method of ascertaining increase of revenue due to outlay on Irrigation works, or if he has done so he has unfortunately referred to arrangements which have been decided to be inapplicable to those systems, the results of which are to be ascertained accurately. He has recently compiled an approximate general abstract of financial results of the Godavery Delta system, and he should have been aware that the revenue credited to that system was not deduced in the way he supposes.

9. *Paragraph 11.*—The assumption that Revenue Officers have any desire to take up any position in connection with the question referred to is probably unfounded. It may be taken for granted that they do not desire the Examiner to advocate their

supposed views, or to put forward any claim on their half. Were that officer better acquainted with the old Irrigation Works of this Presidency, he would be aware that they may be out of repair for many years without materially affecting the revenue.

10. Paragraph 12.—The idea that the Capital and Revenue Accounts are to be in any sense consistently based on facts is one in which the Examiner is probably the sole believer. The expenditure side of the accounts is to include all sorts of charges which never had a connection in fact with the works. The revenue side is to contain various adjustments, none of which will correspond to facts. Both sides are to be made to approximate as nearly to the truth as possible, and, as facts are hard to find, this arrangement is reasonable. Naturally under such circumstances the Examiner objects to a fact when it is proposed to act with reference to it. If a tank be out of repair and if at any given time its full supply level be ascertainable it is easy to demonstrate exactly what work it is needful to carry out in order to make the tank better fit to hold that supply. The F.T.L. of any of the tanks to which the Examiner's letter refers can be ascertained conclusively. Again, if a tank received the drainage of a given area of country, the means of disposing of surplus necessary are capable of being decided, and so on for other details. Consequently it is demonstrable on the one hand what work the tank needed to have done to it to enable it to continue to perform its former irrigating duty, and if the conditions are changed it is equally easy to show what the additional work involved would be. It is possible to suppose an extreme case of a tank which though now connected with the ancient channels will irrigate no more land than before and yield no more revenue; for, as the Government are aware, some assessments would, it is reported, have been reduced, but for the improved supply, and the reduction averted, though approximately stated by the settlement officers, has not been credited to the works. The supposed tank may have had nothing spent upon it for fifteen or twenty years, and may have been brought into the ancient system just as a heavy expenditure had become unavoidable. The case of the Aroomoogamungalum tank, though not so extreme as that just supposed, was sufficiently marked to attract the attention of the undersigned, who in consequence referred to it in the note which has induced the Examiner to state his views at length on a subject regarding which he had no accurate information.

11. Paragraph 13.—The principles here referred to are perhaps connected with those facts supplemented by adjustments which are to be elaborated in the Examiner's Office. The principles are not likely to suffer from being more closely approximated to fact in whatever way this approximation may be brought about. Possibly had the Examiner substituted "practice" or "procedure" for principles, the term would have been more correct. Whichever word be taken, on the revenue side at any rate Mr. Wilson is still engaged in determining how the results which are to be shown in the Capital and Revenue Accounts are to be ascertained.

OOTACAMUND,
19th September 1876.

(Signed)

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

To the Secretary to Government, Public Works Department.

No. 86 I.

Note by the Chief Engineer for Irrigation.

No. 108-B.

The District Engineer, Tinnevely, 1

No. 38, dated 28th May 1877.

ards, with his letter marginally noted, an estimate in connection with the Aroomoogamungalum tank situated in the Tenkarai Taluk, Tinnevely Range.

2. The nature of the work proposed for execution and the heads of account to which it is chargeable are as follow:—

IRRIGATION.

STRIVAIKUNTAM ANICUT SYSTEM.

(2). MAIN CANALS AND BRANCHES.

North Main Channel.

N. Tanks and Reservoirs.

Aroomoogamungalum Tank.

Revenue.

Extensions and Improvements.

	RS.
Extending and improving surplus weirs	2,190
Reconstructing No. 10 or Kalloo sluice	1,585
Constructing steps at the inner slope of tank bund	198

Maintenance and Repairs.

Raising and repairing the bund including planting nanel	1,366
Repairing nine Irrigation sluices	5,501
Total ...	10,840

Local Fund.

Forming road along the top of the bank	4,300
Total ...	4,300
Grand Total ...	15,140

3. The following particulars of this tank are recorded:—

Ayacut area	Aores	1,759
Assessment	Ruppes	13,606
Average revenue	Not stated.	
Highest do.	Ruppes	21,408
Expenditure during the previous four years	"	2,431

4. The area of the catchment basin is 42 square miles, the maximum flood supply is calculated at 4,950 cubic feet per second, for discharging which as surplus there are two calingulabs aggregating 336 feet in length. It is proposed to connect these two calingulabs, making the total length of weir 392 feet with crest at F.T.L.

The tank is provided with eleven Irrigation sluices; one of these, No. 2, is not required and will be closed. No. 10 is in ruins and needs to be reconstructed. All the other sluices will be provided with new heads, as the existing heads are low and are submerged when the tank is half full; they are also without the means of regulation.

Steps are to be constructed on the inner slope of the tank bank for the convenience of the villagers as well as to save the bank and nanel planting from being trodden down.

The bund needs to be raised and widened, the top width where it carries the road will be 18 feet, and the remainder 6 feet, the inner slope will be 2 to 1 and the outer 1½ to 1. The height of the bund will be 2½ feet above M.W.L., and nanel planting will be done where required.

The cost of the road formation will be met from Local Funds.

The estimate provides for the afore-mentioned improvements and repairs.

The tank is supplied from the Tambr. orney river by the North Main Channel.

5. A question was raised in connection with this tank as to whether a part of the outlay on it should not be charged to the period prior to the Srivaikuntam Anicut

coming into operation—*Vide* paragraph 2 of G.O., 2nd August 1876, No. 1,971. The solution of this question may be aided by the following facts:—

From 1865-66 to 1870-71, the expenditure on Agricultural Repairs averaged ...	RS.
From 1871-72 to 1876-77 ... do. ...	65,303
The average Irrigation revenue of Tinnevely for the years 1871-72 to 1874-75 was ...	92,656
So the outlay on repairs in the 1st period amounted to per cent. ...	14,71,370
And in the second period to per cent. ...	4.44
Coming now to the Aroomoogamungalum tank the expenditure already incurred since the anicut was built is ...	6.29
That provided for in the present estimate ...	2,431
	10,840
Total ...	13,271

The average revenue has not been given in the papers, but the highest is stated to be ...	Average yearly ...	2,654
The outlay in five years will therefore average per cent. ...		21,408
		12.40

Now this large expenditure is not intended to enable the tank to hold more water, but to bring it to that state of efficiency and safety with reference to its circumstances, which have not been altered by the anicut works so far as the conditions to be satisfied are concerned.

6. It appears to require little argument to show that if this large expenditure be made a revenue charge against the Strivaikuntam anicut system, and if other tanks now connected with that system be similarly dealt with, the net revenue will not be comparable with the standard net revenue of the period prior to the construction of the anicut. As therefore the results of the expenditure on the system can be obtained only from such comparison, it appears to follow that some adjustment must be made, and the undersigned considers that it will be reasonable once for all in the case of each tank or other old Irrigation work brought into connection with the system to see what it has or will cost to render it efficient, without of course adding to its capacity or radically altering its circumstances, and to charge to the Anicut system such part of the total as will amount to 6 per cent. on the average revenue, the balance being debited to the period prior to the construction of the anicut. This once done all subsequent charges will be debitable to the anicut system.

The arrangement will of course not be without its attendant inconvenience, because it will prevent the final settlement of the standard net revenue until every old work has been at any rate estimated for, but this need not take more than a year or so. On the other hand without such an adjustment no even approximately reliable conclusions can be arrived at.

7. The Board of Revenue have not yet reported what period is to be taken for the determination of the standard gross revenue. Thereafter the maintenance charges of that period have to be ascertained and if the recommendations made in this note be approved, to the charges as already recorded will have to be added half the cost of putting the several old works to rights, or such sum as in dealing with the estimates may be considered proper, for of course these estimates may contain items which ought not to be halved.

8. The estimate is recommended for sanction. Some slight modification of the sluice shutter is required, 1stly there should be no cross bar in front of the upper part of the shutter when down on the sill; 2ndly the shutter spear should not be reduced to 1 inch in thickness where fastened to the shutter, but should be of the same or nearly the same dimensions as the rest of the rod and should be fastened to the tank side of the shutter; 3rdly the spear must be held perfectly vertical, and must, therefore, pass through a hole or collar at the platform not more than $3\frac{1}{2}$ inches square, the spear being 3 inches square; without this precaution there would be great risk of the shutter jamming; 4thly to the same end all the corners of the shutter should be rounded

off so that there may be no sharp points to catch. 5thly there must be a stop to prevent the shutter being raised too high and leaving the groove.

(Signed) G. T. WALCH,
Ag. Dy. Chief Engr. for Irrigation,
for Chief Engr. for Irrigation.

FORT ST. GEORGE,
4th July 1877.

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

No. 109.

ORDER THEREON, 20th July 1877, No. 182 I.

THE following estimate from the Tinnevely Range forwarded by the Officiating District Engineer, Tinnevely, is sanctioned:—

IRRIGATION.	
Strivaikuntam Anicut System.	
(2).—Main Canals and Branches.	
North Main Channel.	
N. Tanks and Reservoirs.	
Aroomoogamungalum Tank.	
Revenue.	
1. A.—Extensions and Improvements.	
Extending and improving weirs ...	RS. 2,190
Reconstructing No. 10 or Kallic sluice ...	1,585
Steps at the inner slope of bund ...	193
1. B.—Maintenance and Repairs.	
Repairing bund ...	1,366
Repairing nine sluices ...	5,501
Total ...	10,840

2. This sanction has been registered as No. 105 I of 1877-78. The formation of the road is approved provided funds be made available by the Local Fund Board, and this part of the work will then be carried out.

3. His Grace the Governor in Council is of opinion that the principle of the adjustment of maintenance charges of tanks, which were in a state of disrepair when brought into connection with the Strivaikuntam anicut system, recommended by the Chief Engineer for Irrigation is correct and should be adopted. Before deciding the specific proportion of charges to be debited to the anicut system, the Examiner will be requested to submit any remarks he may desire to make on this point.

(True Extract.)

G. T. Walch

Colonel, R.E.

Ag. Dy. Secy. to Govt., P.W.D.,
Irrigation Branch.

To District Engineers concerned.
To the Collector of Tinnevely.
" Chief Engineer for Irrigation.
" Examiner of Public Works Accounts.
" Revenue Department.
" Board of Revenue.

Exd. E. C. Shunker.
Spare Copies

Revenue Department

No 3530

IRRIGATION
ACCOUNT

Govt. of [1877] Madras.

PUBLIC WORKS.

DISTRICT ENGINEERS
CONCERNED.

cc. cc. cc.

Dated July 20th

For

By *B. Chinn*

Eng.

G. O., 2nd July 1877, No. 182 I

to Mr.

JULY.

Nos. 108-109.

Arconogamungalam Tank, Tanjore District. — The estimate of Rupees 10,845 for certain works to the —, sanctioned with remittances.

No. 4324

Lodged

to Mr.