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Government of Madras.

Public Works DEPARTMENT.

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209-310

Dated 19-2- 1862.

Not to be folded or roughly handled

No. 309. Read the following letter from Lieutenant-Colonel A. J. M. BOILEAU, Deputy Chief Engineer, Central Circle, to Lieutenant-Colonel W. H. HORSLEY, Secretary to Government, Public Works Department, dated Chepauk, 15th January 1862, No. 9,337:—

1 Letter No. 936, with four enclosures.
1 Letter No. 1,017
1 Report on south Pálár Project
2 Reports on the Anicut-Works, by the District Engineer North Arcot
1 Memorandum of tanks.
1 Extract of letter, No 1,088, dated 4th December 1861.
1 Extract of Memorandum.
1 Detailed Memorandum of expenditure, 1-12,546.
1 Letter from the Acting Collector of Madras, with one enclosure.
1 Estimate, Rupees 4,000.
1 Do. " 95.
1 Letter from District Engineer North Arcot, No. 1,094, dat-d 6th December 1861.
4 Plans marked A, B, D and W.

SIR,

1. I have the honor to forward herewith my report on the south Pálár project, and to express my regret that so great a length of time has been allowed to elapse since my inspection, before submitting it.

2. The fact is that while inspecting the project I was out, I may say, nearly all day, and the short time I was in my tent I was engaged in inking in my notes. On my return to the Presidency I resumed my regular duties immediately, and soon found myself in charge of both the Northern and Central Circles, the work of which engaged my attention for nine and ten hours every day, and it was only when the Christmas Holidays arrived that I found time to put the report into shape.

3. I take this opportunity of forwarding for the information of Government the Special Reports of the progress of the Anicut works in the North Arcot District for the months of September, October and November 1861.

4. The present seems also a favorable occasion for submitting to Government an extract of a letter, as per margin, from the District Engineer North Arcot, forwarding a Memorandum on the alterations proposed by me in the Pálár project, as originally designed. The reason that an extract only is sent, is, that the District Engineer's remarks regarding the Poiney project are in the same letter, but they cannot be treated of by me in this communication which has reference only to the Pálár works. I need hardly inform Government that had Captain Prendergast's views been before me at the time of sending in my former reports, or had I, during the several weeks during which I was with him, or in his immediate neighbourhood, heard from that Officer any word that might have led me to suppose that his opinion was adverse to mine, I should of course have stated so in my reports.

No 1,088, dated 4th December 1861.

5. My former report showed, I think, pretty clearly why I proposed to have wider heads for the channels. When a flood does come, let us be prepared to take in all we can. Captain Prendergast writes that "when the Anicut scheme was matured, observations were no doubt made of the periodical rises of the river," and he goes on to say that Colonel Bell wrote "that water was likely to flow on sixty days during the year to the *height of the Anicut*." The District Engineer has unfortunately misquoted Colonel Bell, who in paragraph 9 of his letter to Government, dated 12th May 1853, spoke of sixty days of a delivery of water flowing 6 *or* 7 *inches over* the crest of the Anicut, and what I want is to have that surplus body of water flowing down our channels, instead of to the sea; that is all.

6. My replies to Captain Prendergast's queries at the end of his Memorandum are:—

(1.) That it is worth while to incur a large expense for the great and remunerative benefit of tanks filled, some with a two and three years' supply, as they would be, by an exceptional flood, and which if not seized upon, and turned to advantage, might leave beds dry, land uncultivated, and people starving. In fact, I would say get water any how, '*quocumque modo, aquam*,' cheaply if possible, if not it is always worth paying highly for. My impression is, that the broad heads, although involving present outlay, afford the only chance of rendering the project remunerative.

(2.) That we should not be contented with the present means of securing the water.

7. A detailed Memorandum of expenditure on the Pálár project in the North Arcot District is herewith forwarded. It will be found to differ but slightly from the total given in the tabular statement enclosed in my former report.

	Rs.
Kandam Chettori to Melbuden tank	4,000
Nambarthe to Seragatur tank.....	95
Total	4,095

8. The statement which in that report I observed had been applied for from the Collector of Madras is also herewith sent.

No. 1,094, dated 6th December 1861.

Proceedings of Government, No. 2,311, dated 14th December 1861.

9. Two estimates amounting in the aggregate to Rupees 4,095 received in the District Engineer's letter, No. 1,017, dated 23rd November 1861, are enclosed; the third item referred to in the letter requires re-consideration, as the more proper line of channel will be from No. 10 (survey B) to the Arambarti tank. Captain Prendergast proposed to obtain Rupees 4,000 from the Pútúr and Nagalapuram road, but that sum has been sanctioned for execution this year; however, money will be available from the other sources named by him, viz., Istly, the balance of an estimate Rupees 5,400 for a road from Nágari to Bálpilli (for execution out of general funds) submitted to the Central Office, and forwarded to the Consulting Engineer of Railways with a view to ascertaining if the Railway Department are prepared to sell to this Department a private road which they have made; and 2ndly, from the general funds at his disposal.

10. Sanction is solicited for the expenditure of the amount Rupees 4,095, the work having been already authorized for execution by me under the assurance that it could be done by savings out of other estimates for channels, but this has proved to be not the case.

SOUTH PÁLÁR PROJECT.

This report promised.

1. In paragraph 16 of my report on the Pálár project, wherein I dwelt chiefly on the works which had been executed, or remained for execution on the left bank of the river, I promised a more precise report on the operrations on the right bank after I had seen them, the little information which I then gave regarding them having been based upon a report of the District Engineer.

South side thoroughly inspected.

2. Between the 26th October and the 2nd of November, I was enabled to inspect almost every tank and channel in connection with the project on the south side, and I propose here merely to state what has been effected, and to point out what I think should be done at once, in the way of carrying on work which was placed under an arbitrary restriction, which forbid the Officer in Engineering charge of the District from completing works, in several cases already almost finished, and which were calculated to bring in immediate returns to Government, and I shall append a tabular Statement showing the condition of each of the tanks visited.

Works stopped under an arbitrary restriction.

Tabular Statement of condition of tanks, appended.

3. In order that no time should be lost in rendering them, *i. e.* tanks, efficient, the District Engineer has been requested to depute the Executive Officer of the Range to inspect each and all of them throughout, and to estimate for rendering them in every way capable of holding the full supply of water which may be looked for when the Pálár does come down in force. To effect this a much larger allotment for repairs than usual must be granted in the District of North Arcot, (and the remark applies to that of Madras also) in the coming official year.

Executive Officer ordered at once to estimate for all requirements to tanks.

A much larger repair allotment required.

Character of south side head works to be seen on plan.

4. The nature of the head works on the south side may be seen by referring to the plan marked A. It will be observed that the head Sluice is set nearly at right angles to the axis of the Anicut, in lieu of being almost in continuation of that work as is the case with the similar works on the north side.

Main Channel.

Main branch.
The Dúsi Channel.

5. In rear of the Sluice the channel is revetted with masonry on both banks, it is 40 yards broad in a length of 200 yards, when it bifurcates, one branch, the main one, passing nearly due east, and sometimes called the Chuckramellúr Channel from the name of the first tank which it feeds, but more properly the Dúsi Channel, as it is in fact what they call in Bengal a 'Rajbuha,' and what we term a 'Raja Válwa' or 'Voikal,' and is primarily intended to supply the fine reservoir of that name, situated 22 miles south east of the Anicut.

Secondary branch.
The Kálavai Channel.

6. The other branch is called the Kálavai Channel. It is a mere cut about 1,000 yards long by 10 yards broad, intended to convey the Pálár water into the large Madoogoo, shown in the printed map as draining about 50 square miles of the hilly country south-west of, what is now generally termed, old Arcot, and which, after passing south and east of that place to the neighbourhood of the Anicut, and at the distance from it above stated, discharges itself into the Cheyar at a point about 15 miles to the south.

Kálavai tank.

7. At the distance of 8 miles from the Anicut and to the southward is the fine large tank of Kálavai, and it was chiefly for the replenishing of this reservoir that the small branch of which I am speaking was excavated. In fact the only other tank supplied from this source is that of Kúgundi for which a small branch Channel is taken off from the new Kálavai cut. I shall say therefore no more regarding this except that some rock in its bed should be removed, but shall follow up the Dúsi Channel reporting on its general condition and its requirements present and future.

Kúgundi tank.

Some rock to be removed from bed of Kálavai Channel.

Seventy Tanks supplied by Pálár waters on south side.

8. It will be seen by referring to the map that no less than seventy tanks are or will be, when all the branches are completed, (with the exception of what they receive from high ground local drainage) supplied from this Channel, and thus a large revenue is dependent upon its efficiency, and of course the sooner it can be brought to that state the better.

First section of Dúsi main Channel, 3 miles to Chuckramellúr tank.

9. To the head of the Channel to the Chuckramellúr tank (now quite dry) a distance of about 3 miles, it has been well completed to a width of 10 yards, much of it in deep cutting; the bank is cut open with a view of supplying the tank abovenamed, as well as a dozen others lying below it, and an earthern dam has been thrown across for this purpose. There is a small branch, also without a head work, to Pápéri tank on the south side of the Channel. It may here, at the outset, be stated once for all, that the completed project will of course provide suitable masonry works for all branches, that the raising of dams across the main Channel must be strictly interdicted, and that under the proper regulations which will, it is to be hoped, then hold, condign punishment in the shape of a heavy fine must be made to fall upon any village, the inhabitants of which are found playing tricks with the Channel, cutting open the banks, and damming up the stream according to their pleasure, as is at present done.

Branch to Pápéri tank.

When suitable masonry works have been provided strict rules must be enforced to prevent Channel being dammed or cut open, &c.

Second or Arumbákam section of Dúsi main Channel.

10. The next section of the main or Dúsi Channel is shown in the plan (B) as the Arumbákam Channel. This section like the above was excavated at the time of the construction of the Anicut. The fall in parts is very great, and the Channel which was dug originally only 8 or

10 yards broad has widened in parts to 30 yards, its course, moreover, being diverted in parts by dams thrown up nearly across the Channel by the Ryots, the banks have become greatly eroded, and the artificial bank will probably be soon carried away. In some places there are cuttings 3 and 4 yards deep in hard soil. On the whole this section needs much careful attention on behalf of the District Engineer. An estimate has already been framed for this and the remaining sections, but the Supervisor who prepared it, and who accompanied me in my inspection, reported to me that owing to the self-widening of the Channel, it is quite inapplicable to present wants. Wants, however, there are, as I have above shown, and they should receive attention in the current official year.

This section requires much careful attention.

Its length and its branches.

11. This section is 3 miles long and throws off branches to Anay tangal [rented I am informed from Government by a Mr. Potter of Arcot], Kuruman tangal and Arumbákum tanks on the north side, and to the Caddapan tangal, and a succession of eight tanks below it, the Múlivádi [one branch to which is unfinished, but should be cut, and all other branches for that tank closed] Mélcheri, and in fact one after the other, to the whole group of tanks in the south-east portion of the project (*vide* plan B).

The third or the Tennampett section of the Dúsi main Channel.

12. The third section of the Dúsi main Channel is called in the plan the Tennampett Channel, from the tank of that name which it first supplies, for the Belárapetta tank, shown in the map, is in ruins, and there is no use in restoring it, for there are no lands lying under it, the water spread of the Tennampett tank covering, when the tank is full, the land formerly cultivated under the Bélarapetta tank.

Its length and width.

13. The Tennampett section is 2 miles long, and though cut originally, I am told, only to 8 yards width, has now owing to the rottenness of the soil widened to 12, 16 and even to 20 yards.

The fourth or Alluvadai tangal section of the Dúsi main Channel.

14. The next to this is what is shown in the drawing as the Alluvadai tangal section (Ivery baucum in printed map); it is about 4 miles long, and is the last portion of the Dúsi main Channel which has been cut, though it has not been completed, but there is no reason why it should not be carried forward at once, as the Supervisor informs me that he has abundance of labor available, and as nearly in the whole length, it passes through country covered with low jungle, and utterly without water in the hot season, the present is about the most favorable time for resuming operations upon it. The District Engineer promises to forward shortly an estimate for this portion.

Its length.

Should be at once completed.

Width of 4th section.

15. I found the Channel in places 3, 4, 8 and 10 yards broad. For a considerable distance it follows the line of a very old native Channel, dug by the Nair of Teruparambur, the course of which it would have been better, I think, to have more freely made use of.

Its course.

Recent work on this section.

16. The only excavation that has been recently made on this section of the Channel is that maked red in the first mile east of Tennampett tank, and passing out of a small tangal, which last requires some attention.

Two branches to this section.

There are but two branches from this section of the Channel, one is to the Méléri tank on the north side, for which a masonry head work is required. The tank was a ruined one, and has been recently restored. The Calingulah is now under construction.

Méléri tank restored.

The other branch is a very short one for the small tank of Mélpermál, but is only partly dug. The surplus of the Méléri tank flows into that of Kútanúr (not shown in the survey).

The 5th Section of Dúsi Channel.

17. The only portion of this main feeder of Dúsi tank which remains to be spoken of, is a length of 3 miles not yet commenced. It is ihdicated in red on the survey. I saw the ground at several points, and it looked very favorable on the whole, thergh the cutting through the ridge in the first mile

Its length as proposed, work not commenced.

Its course shown on survey.

west, will be rather a heavy job. Branches must be given northward for the Venpakam tank, and southward for the Terupanambúr large tank. The main Channel itself will fall into the Nelli tank, the surplus of which now flows through the fields of Surualverám (Shrotrium) in to the Dúsi tank, but to avoid the damage by inundation at present occurring to the Shrotriumdár's cultivation, a new channel is to be cut (as indicated in red in the survey) into the Ariarapákam tank, the overflow of which passes into the Dúsi or Dúsimamundúr tank, a magnificient reservoir not at all correctly indicated in the survey map as the bund is formed almost entirely by a small ridge of hills, the openings between which alone are closed by an artificial bank. This section will be undertaken in the next official year.

Proposed termination of main Channel.

Dúsi Tank.

Incorrectly shown.

18. Such then is the state of the main Channel on the south side, and such are its immediate and prospective requirements.

The branches to be now more fully considered.

19. I must now follow up some of the branches, before only generally spoken of, to enable me to point out what was done before restrictions were laid on the works, and what the District Engineer has been effecting during the past and present official years, and indeed what he is now doing. These branches will be found to establish a very complete concatenation between the tanks, and if the latter are only brought into a condition to bear a full supply of water without risk, and if that water do not fail, the very happiest results may be confidently anticipated.

They chain the tanks effectually together.

The Easanúr branch going north from eastern end of Dúsi Channel first section.

20. Reverting them to the eastern extremity of the Chuckramellúr or first section of the Dúsi main Channel, it will be seen that numerous tanks in the northern part of the project, and not very far distant from the river, depend for their supply of water upon the overflow of the calingulah of the Chuckramellúr tank, and it will be readily understood that the outcry is great against the declared-to-be excessive height of that work. In that I cannot concur. It is but fair that in a chain of tanks the uppermost shall have its full fill before a drop of water, except what may be gathered from the drainage of the cultivated area, passes into the lower tanks. The Easanúr Channel going first to the Chittrapákam, and afterwards to the Easanúr tank forms the first link of the northern branch of the main Channel; it was cut as portion of the old project, and is 1½ miles long, and ten yards broad; it requires a little clearing; that part numbered 16 on the sketch is half a mile long, and was improved on recent estimates; this portion of this branch I could not manage to see. Here, I may observe, that the Channels marked 16, 17, 18, 19, 20, are termed group A by the District Engineer in his Subdivision of present work. From the Easanúr tank, the improvement of which was carried out as part of the original project, the north branch Channel now passes by an old circuitous natural water course, about one mile long, which was improved sometime ago; the Channel, estimated as part of the original project, was cut more direct towards the Púntandalum tank, but seems to have been never completed. The people of the eastern tanks say that the levels of the present Channel bed are not correct, and that the water gathers to a considerable depth at the west end of the Channel before it begins to flow. Mr. Supervisor Howard promised me that he would run a line of levels down the Channel with a view of ascertaining this point. They complain also of the number of 'Madais,' or openings, cut in the bank by the Easanúr people. This should

Northern tanks bordering on river dependent thereon.

Complaints against height of Chuckramellúr tank calingulah.

Not just.

Length and breadth of Easanúr branch.

Sub-division of works recently undertaken grouped and marked A.

Continuation of Easanúr or northern branch Channel to Púntandulam tank.

Estimated Channel cut more direct but not completed.

Complaints of level of bed of present course.

This matter will be tested by Mr. Howard.

Undue number of openings cut in Channel bank.

Branch from Easanúr tank to Sattavantangal.

receive the attention of the District Engineer. From the southern 'Kodi' or extremity of the Easanúr tank, I followed up another branch whereby the Sattavantangal, and other tanks are fed. I found a narrow Channel with a deep cutting skirting, at starting, the "earthy remains" of a very old fort, all the stones having been long ago removed, no doubt for revetting some of the numerous neighbouring tanks. In the sketch (B) received from the District Engineer No. 17 is marked as though only a few yards had been cut new; the channel however exhibits signs of having been recently improved all the way down to the Battéri Chittêri, and across to Sattavantangal. There are here the same complaints as before, of incorrectness in the levels at the head of this branch, and Mr. Howard assured me he would see to it.

Further complaints of bed levels being wrong.

Double discharge from Púntandalum tank. What becomes of that on north side.

Further recent cuts in group A.

21. After the Púntandalum tank is filled, the water discharges from both its northern and southern extremities. The surplus Channel on the north side I followed up the whole way to the Nátéri tank, as I was desirous of seeing the cuts marked 18, 19, 20 which have been carried out not many months ago. No. 18 is a cut only a few yards long into the Chittéri, or small tank of Púntandalum; No. 19 is a Channel 400 yards long, with a sole of 3 yards, and a depth of 1 yard in cutting, and leads into the Púlivalam tank; No. 20 has also a width of 3 yards, its depth is stated to be quite insufficient; here again the levels are reported at fault. The sketch at this place is not correct. The Channel might all be in red on the sketch, for evidently there has been new work all along it; and its waters are not derived so much from the Púlivalam tank as from a Channel (which I have dotted in) drawn from the river about one mile north where it has a head. There are differences amongst the people of the villages hereabouts, viz., those of Púlivalam, Sonepett and Nátéri, which should be settled by the District Engineer. Cuts are made, as I saw, *ad libitum*, in No. 20 for Púlivalum, Chettéri and the Sonepett small tank. There is also a dispute between Nátéri and Púlivalum about the the undue proportions of water taken off by the first named from a spring channel, which runs parallel to the Púlivalam tank bank, the spring head of which is 4 miles off.

Levels again stated to be at fault.

Disputes among Villagers regarding Channels requiring to be settled.

What becomes of discharge from south end of Púntandalam tank.

22. The overflow of the new Calingulah at the south end of the Púntandalam tank finds its way by a Channel, cut as a part of the original project, first to the Manjúrpett, and afterwards to the fine Nátéri tank, which again surpluses into the Kútanúr and Valuganúr tanks (the latter marked in printed map Chianoor and Umiáveram), which discharges into the river Channel (of which more hereafter) which feeds the Dúsi Mamandúr tank.

First southern branch from Dúsi main Channel,

23. Reverting once more, to the south end of the Chuckramellúr tank on the sketch, it will be seen that a branch, touched upon in paragraph 10, leaves the Dúsi main Channel about a quarter mile south east. As a good deal of work in the shape of completing the connecting links between tanks had been recently carried out, I resolved to follow up this branch the whole way.

Masonry head to branch nearly completed.

24. At the head of this branch a dividing dam was almost completed, requiring probably only two or three days work, when the restrictive orders came, and summarily put a stop to it. This should now be finished off at once, as also should the channel which has been cut through high ground to fall into the old natural Channel which leads into the two Cuddapantangal tanks. A natural, circuitous water course leads from the lower end of the southern of the abovenamed tanks, into the Másamtangal, and a branch leads also eastward to the Múlvadi tank, which had a fair supply of water when I saw it.

Commencement of recent cuts grouped B.

Country formed of ridges and valleys.

25. From the south end of the Másamtangal commences Captain Prendergast's group B, the whole of the surplus waters of that tank formerly escaped to the Múlvádi tank, until the Channel No. 3 was excavated through a ridge (I may observe, in passing, that all this part of the country consists of a series of undulating ridges and valleys, a bund closing every valley) first for quarter of a mile into a little tangal close to the road which leads from Arcot to Trivatúr,

Further course of first southern branch.

and then continues (No. 4) in deep cutting 2, 3, 4 and 5 yards for nearly a mile into the old feeder of the Nágaléri and Chinnaléri tanks, throwing off a small branch (No. 5) also in deep cutting, to the Kircumtangal, from which last a deep and narrow cutting has been made for about quarter mile through a ridge to direct the surplus into the natural Channel feeding the Chinnasamudram tank. I was very glad to be able to see the whole of that group.

Second southern branch from the Dúsi main Channel.

26. The next is the last and most important branch Channel from the Dúsi main feeder, and like all the others excepting only the small one spoken of in the last paragraph, will be found to terminate in that fine reservoir.

Its point of commencement.

27. It may be said to commence about one mile down the Arambákam section of the Dúsi Channel, though it certainly also derives a supply from the Cuddapantangal branch by receiving the discharge of the Múlvadi surplus waters, and is first led into the upper of the two tanks of Mélchéri, having been excavated as part of the original project, and afterwards

Its course.

into the large or lower tank from the south end of which again, it passes by a ruined Calingulah into the Ráندam large and small tanks. Here the channel diverges into two branches, the one passing over the calingulah at the east end of the small tank, and by a Channel 10 and 12 yards broad with a considerable fall into the Nayentangal, and thence by an excavation through a ridge 1½ mile long,

Some rock to be removed.

10 yards broad and in parts 2 yards deep to the Manapákam tank. In the bed of this Channel some rock remains, which has diverted the water so as to cause it to erode the Channel banks, and which must be removed.

Original surplus from north end of Manapákam tank abandoned.

From this last named tank the channel was originally cut by improving an old water course from the northern extremity of the bank, for nearly one mile to the Perangattúr tank, but it was afterwards abandoned, and a Channel taken from the southern end

Channel taken from south end, and a branch to two tanks.

and a branch (No. 8) has lately been drawn from it for the Kanmantangal, and (Aradri) Vélúr tanks. The remaining link of this branch, viz., the 2 miles of Channel from the last named tank to the Sumangili tank, and the one mile Channel from this last to the Káganam tank are merely the old natural water courses,

Remaining links of branch to Sumangili tank

To Kaganam tank.

and I cannot bear that they were in any way improved at the time of building the Anicut, nor do I see any allowance for them in the old estimate. From the Kaganam tank calingulah, the water, after passing by a regular drainage Channel between the rear of the bund of that tank, and that of Maryanur, spreads over the cultivation. An

To Chittatúr tank; cut yet to be made.

estimate has been prepared and sanctioned for cutting a well defined course, No. 15 (group D), for about half a mile to meet the old feeder of the Chittatúr tank, and it will be carried out as soon as the crops are cut. The

To Dúsi tank.

drainage of the Chittatúr tank passes by an old Madoogoo 1½ mile long into the Dúsi Mamandúr tank.

28. Such is the course of the upper or northern of the two branches into which the main branch from the Arambákum section of the Dúsi channel divides itself at the Ráندam Chittéri.

Southern branch from Randam Chittéri.

29. The southern branch is taken from above that tank, and the first link of it, No. 7, group C, has been quite recently cut in a length of half a mile through the ridge which divides the Rándam Chittéri from the Mélbúderi tanks. The sole of the channel is only two yards broad, and the depth of cutting is in places as much as six yards in hard gravel. This channel requires to be much widened, and as Mr. Supervisor Howard has informed me that he can do it out of savings on other items of the channels in progress, I have given him authority to do so. From the tank last named, there is a connecting channel with the Moranam large tank, which lies just immediately to the south of it (and over which the Trivatúr road passes), but its levels are not correct, and it is not wide enough; as this also can be effected out of the balances remaining after carrying cut the other channels, the Supervisor was instructed to undertake it at once.

to Mélbudéri.

to be widened

to Moranam tank, to be widened and levels to be corrected.

Natural line of discharge eastward.

30. The natural line of discharge from the Moranam tank is eastward into the Búdéri tank, but the branch channel which I am now describing is continued from the upper and south end of the Moranam tank by cutting in a length of half a mile through a ridge, No. 9, group C, the maximum depth of cutting being five yards, and the breadth of channel at sole only 1½ yard. It falls into the jungle stream which fills the Púlandi tanks, and thence passes south-west by old channels into the Nelli and Erangúr tanks, and south-east by a cutting through a ridge of about 400 yards long and 1½ yard sole (No. 10) from which some stones have to be removed (into the old natural supplying channel of the Yenadivaddi tanks, and by a small excavation, No. 11, which unfortunately I could not arrange to see) into the Murrakatampúndi, and thence into the Talarapádi tank, which is the most southern of those contemplated to be affected by the project. There would seem by the printed map, however, to be other tanks still more south, and south-east, which look as if they could be brought under Anicut influence, and I have asked the District Engineer to satisfy himself on this point, though it may be advisable at present to limit our operations to completing the net work already embraced in the project, nearly all of which is exhibited in the accompanying survey (B).

Branch however continued south.

to Púlandi tanks.

South-west to Nelli, tanks, &c.

South-east to Yenadivaddi,

and to the Murrakatampúndi and Talarapadi tanks.

Other southern tanks may perhaps be brought under Anicut influence.

31. Looking back at excavation No. 10 it will be seen that at about 1 mile east of it is the Arambarti tank, which is not at present connected with the tanks above. This must be done either by continuing No. 10 eastward, or by excavating 1¼ miles through the ridge, dividing it from the Moranum tank. For this last the District Engineer has sent in an estimate Rupees 5,000, but I have requested him to ascertain whether the other may not be more economically carried out. The importance of this connnecting link will be seen by a reference to the map, which shows at least a dozen tanks, which are being now joined together, dependent on it.

Arambarti tank to be linked with other tanks.

Its importance.

32. From the south end of Arambarti tank, the D or 4th group of the channels which have either been recently done or are now being excavated commences. At No. 12 I found the laborers employed cutting the channel about half a mile long, sole 3 yards, depth 1 yard; from the south end of the Arambarti into the Chengattan colum tanks. The soil in parts is very hard, and the Wudders complained much of the insufficiency of the rates.

D group commences east of Arambarti tank.

Cut No. 12.

Wudders want rates increased.

Aramborti tank surpluses into Sirangatúr.

33. The Arambarti tank surpluses from the north side by an old circuitous channel into the Sirangatúr (or as the people called it Sirratúr, marked Shrivilúr in printed map) tank, and the villagers demand a more direct and better defined channel which may perhaps eventually be given to them. At the east end of this tank a new channel, which I have marked No. 12½, 100 yards long, 1½ yards broad and 1 foot deep has been cut into the Sirangatúr tangal, whence again the water will be led into the Pápan tangal by an excavation, No. 13, only lately completed, 800 yards long, 4½ feet broad at base and with a maximum depth of cutting of 9 feet, and thence again to the Jadaiyéri, Nedumbara, Perumbadi and Márianur tanks, the latter draining into the Chittatúr and, as before shown, into the Dúsi Mamandúr reservoir, by a channel No. 14, group D, which was in progress when I walked down it, 2,083 yards long, 2 yards sole, with a maximum depth of cutting of 5 yards; branches will be given for the Dúli and Periacoil tanks, which discharge into the Púdúpákam and (I am told) Pilliarambákam tanks, though this last does not appear in the survey.

A more defined course applied for Sirangatúr tangal.

Pápan tangal.

800 yards long, 4½ feet broad

Jadaiyéri, &c., tanks.

to Chittatúr and Dúsi tanks as before shown.

Channel No. 14 nearly 1½ mile long.

Main Channels thus far have been delineated.

34. Thus far I have endeavoured to delineate the course of the main channel, and to show the ramifications of its branches, embracing an area of upwards of 100 square miles of country, a great part of which is eventually drained into the fine reservoir of Dúsi Mamandúr. I will only add that apart from all these sources of supply, that fine tank has an independent river channel, which I took care to inspect for several miles of its course. It is correctly shown in the printed map, as having its head about 1½ miles north-east of the Vengalatúr tank, and having a course of 6 miles. As I reported in the case of a very similar river channel, viz., that of Outramelloor, I consider it a sources of danger. Its head I did not see, but I came up on it at a point where it is 70 yards broad, and verges upon the river and where there is only a paltry bank of sand as an embankment; there is no regulating sluice in it, though there is a fine surplus Calingulah to aid in throwing an excessive supply back into the river. I cannot yet recommend the closing of this head, and the cost of regulating sluice and embankments would be very great, but I think it should be closed, when it is found that the other numerous sources of supply to the Dúsi tank above enumerated, prove a steady and constant means of replenishing that magnificent reservoir.

Dúsi tank has a separate supply channel from the river.

Correctly shown in printed map.

The Channel a source of danger.

Should be continually closed.

The utilization of the Dúsi surplus water to be carefully looked to.

35. It should be the care of the District Engineers of Madras and North Arcot to see that the surplus of this tank is economically utilized, and it would be well that their careful attention should be given to all the tanks and channels lying in the triangular space of about 50 square miles east of the Dúsi tank which is bounded on the north by the Pálár, on the east and south by the Chéyár, and on the west by the Conjeveram and Wandiwásh road.

36. There is not much that suggests itself to me in the way of improvements to be effected on the south side of the Pálár river. Carrying out, however, the principle I adverted to in my report on the works north of the Pálár, and which should always hold good in rivers of its kind, viz., the necessity of *broad heads* to take in, in the event of a flood, limited in its duration, as much as can be received consistently with a due and economical working of the sluices, I would advocate that an old river channel, which now has its head just below the Anicut and which was in fact the original supplying channel of the

New head should be given to Chuckramellur river channel above Anicut.

Chuckramellúr tank, should have a head given to it above the Anicut. To this end it will be necessary to pierce the wing wall connecting the south end of the Anicut with the present Dúsi main head sluice, by two additional vents of 20 feet each. The safest mode of effecting this in detail will be a matter for the District Engineer's consideration. Fortunately there is abundance of room to effect this object, as will be seen by the accompanying plan marked (W), in which I have dotted in what appears to me to be the best way effecting it, without leading to any apprehension on account of the Anicut and existing head works. The old channel, the present head of which is 900 yards eastward, must be widened and generally improved throughout.

Additional vents to be opened in south side head work.

37. By affording these additional vents at the head, the Dúsi main channel will be relieved of a great draught upon it, which now takes place through the first north branch reported on above, the head of which may be closed, when the new head is given, and thus an earlier and fuller supply will be ensured to the tanks under the main channel and under its branches.

38. One other suggestion I have to make, which is, that by degrees almost every one of the channels recently cut, linking the various tanks together should be widened. They have been made narrow at first, because the excavations are chiefly, as I have shown, through ridges composed of very hard soil, and their first cost would have been very great had their full width been afforded to them at once.

39. Nevertheless, I am of opinion that sooner or later the expenditure must be incurred, and breadth of sole (and full slope of sides) given to each channel suited to its fall, and to the number of tanks to be supplied, considerations which seem hardly to have been taken into account by the designers of the present excavations.

40. The system which I found in force of having one Executive Officer in charge of the channels and another in charge of the tanks is objectionable, and the whole should be placed under the Range Officer.

41. The time has come, I think, for the constitution of a special Range, called the Anicut Range, to embrace all the works on the North Arcot District being executed or to be executed next year, and the District Engineer should be allowed at once to organize a full establishment to meet all requirements.

42. The Tank Register should be kept separate for the north and for the south side.

(Signed) A. J. M. BOILEAU, Lieut.-Colonel,
Deputy Chief Engineer, Central Circle.

Madras,
13th January 1862.

Memorandum of Tanks visited on the south side of the Pálár Anicut.

Name of Tank.	Condition and requirements.
Cuddapan táng l south bank ...	Bank to be strengthened.
Má-am tangal	Do. do.
Mélbudéri tank	Do. do.
Móranam tank	As the Trivatúr road passes over the bank of this tank, its top surface should be gravelled, and the bank widened.
Móranam Permál Chittéri ...	A breached tank. The people ask for its restoration, promising to cultivate 40 cawnies.
Arambarti tank	Bank to be strengthened.
Sirungatúr or Siratúr tank ...	Stone work required at east end, also a sluice.
Do. do. tángal ...	A sluice required and bank to be improved.
Pápantángal tank	Stone work required at east end, said not to have been repaired for twenty years. The name of the Range Officer not known in the village.
Ieddauéri two tanks	In fair order.
Káganam tank	In excellent order except north calingulah, which requires to be re-built. Estimate made some time ago by Mr. Howard, and bricks burnt, but work not carried out.
Káganam 1*st small* tank ...	In fair order.
Do. 2*nd small* tank ...	Needs much repair, also a sluice.
Chitttaúr tank	In fair order. South calingulah requires to be repaired, and to be reformed in part.
Sholapúram western tank ...	In fair order.
Do. eastern do. ...	Requires much repair. People ask to have the bund extended north eastward up to a certain palmirah tree, with a view of enlarging the capacity of the tank.
Dúsi tank	In fair order. Under repair.
Namúndi tank	New sluice left half built, and bank cut so that if rain falls a breach will happen, such is the complaint of the people, but I did not see the tank.
Saruvalávaram tank (Thiravaddi Royapuram) tank.	A shrotrium tank.
Nelli tank	Wing walls of north east calingulah to be partly re-built; rear earth retaining walls to be made up. Tank bank to be brought up to proper section, and generally raised. Palla sluice leaks greatly. High level sluice at west end out of repair.
Kárendan three tank	I did not see these, but the people are very urgent about them. One they say has been repaired; for the other two they beg that estimates may be formed.
Tunparambúr tángal... ..	Good bund.
Do. tank	Generally in fair order. Stone facing in parts requires replacing. A good deal of work appears to have been done to this tank lately.
Sáléri tángal	In fair order.
Alti tángal	A sluice is asked for in lieu of present Anicut.
Vénpákam tank	High level sluice applied for. Stone and earth work required here and there.
Vengalatúr tank	Said to be a shrotrium tank. Repairs however being done under Sircár. A good deal of earth-work done, but much more is required. This tank has a better supply of water than almost any other I have seen; one of the two calingulahs at north-west end requires its apron to be reformed and extended. The body also might I think be raised, as it is now filled in 1½ yards in depth with mud to keep up the water.
Cheyanoor spring channel ...	The people are very urgent regarding having their channel and its head thoroughly cleared.
Trepemgád tank	Sluice leaks. Stone and earth-work required. Masonry foundation with upright stones fixed in it, is applied for by the people to be built across the Dúsi Channel where the present mud dam is. This I should think may be granted, as otherwise the people will continually build an earthen dam.

Memorandum of Tanks, &c.,(Continued).

Name of Tank.	Condition and requirements.
Méleri tank...	New calingulah being built at south end. Work good, bricks of poor quality, but the best they say to be got in the neighbourhood. Great complaints of want of payment. The second complaint of this kind I have received in this Vellore Range. Tank bank has been restored. More earth required at south end. The bank at the deep part of the tank has been faced with stone, which may be advantageously extended by degrees to the other parts.
Manapákam tank	North sluice requires to be renewed. A calingulah at south end asked for. Bank in fair order.
Perangatúr tank...	A very fine reservoir. Stones of apron of south calingulah to be replaced. Stone work required to bund in parts. A new channel of supply is applied for from Tennampett tank, south end.
Aivady tángal	Bund in very good order, a little levelling required. Stone facing displaced here and there. A spring head not far off which the people ask to have cleared.
Permál tángal	Much work required to the tank.
Tennampett tank	Stone facing to this tank much needed. A calingulah should also be built at south end.
Náteri (Otéri) tank	Some additional protection required to wing walls of the very fine south calingulah, and a few stones required to its apron. The south end of bund is very poor and needs greatly to be strengthened. The large sluice leaks much. At north end stone facing should be extended and the bank improved. I believe however that this is a shrotrium tank.
Nátéri (large) tank	Stone work in progress at several parts of the tank. Complaints of extreme tardiness in carrying on the work. South sluice requires to be defended with stone work. Cistern of old sluice in south wing wall of calingulah carried away. South end of bund is weak, and is being gradually cut away. Bad soil being used in places on repairs. The head of one of the sluices requires to be renewed.
Bramadévam tank	I only saw this from its west end. The bank looks generally low, but there were no complaints about it.
Púlivellam tank	Calingulah requires repairs.
Púntandalum Chittéri ...	A sluice wanted, also stone facing.
Púntandalum tank	In fair order.
Arambákam tank	South sluice to be renewed. South calingulah to be repaired.
———— Chittéri	The Dúsi main channel passes close along the edge of the bank of this tank. Stone facing required in channel to prevent its 'eating' any further. Calingulah requires some attention.
Nayen tángal	A good strong bund.
Rándam Chitteri	Good bund, fair order, has no stone work.
Rándam large tank	In excellent order. The calingulah at the west end has however, been carried bodily away. Its re-construction appears to me to be *unnecessary*, as all overflow should pass into the channel leading into the Chittéri and the other numerous tanks.
Melchéri (Palléri) tank ...	Half the calingulah in ruins, but it may easily be repaired. The tank is otherwise in good order. There is stone facing only in the middle of the tank.
Chuckramelloor tank ...	The top of the bank is overgrown with jungle cane and a width should be cleared sufficient for purposes of inspection. Stone and earth work required in many places. The centre and northern sluices leak.
Kalambády tank	In fair order.
Amurtha spring channel ...	A calingulah required at a point where it constantly breaches.

(Signed) A. J. M. BOILEAU, Lieut.-Colonel,
Deputy Chief Engineer, Central Circle.

Madras,
18th January 1862.

No. 310. ORDER THEREON, 19th February 1862, No. 257.

1. With this letter Lieutenant-Colonel Boileau forwards a report on the south Pálár Project, in continuation of that on the Anicut and its subsidiary works on the north bank of the river, reviewed in the Proceedings of Government, No. 1,928, dated 21st October 1861.

2. The report enters fully into the details of the several sections in which the works on the south or right bank of the Pálár are grouped, and which are lettered in the accompanying plan B, as A, B, C, D, sections or groups. The main channel is intended primarily for the supply of the Dusi Mamandoor tanks, a fine reservoir situated 22 miles south-east of the Anicut, but on its way it throws off numerous branch channels to other tanks. The other branch is called the Kalavai channel, which is described as a mere cut 1,000 yards long by 10 yards broad, intended to convey the Palár water into a large natural drainage channel by which the large tank of Kalavai is fed. Regarding this latter channel Colonel Boileau says nothing more than that some rock in its bed should be removed. His remarks on the Dusi channel, which when fully completed will supply water to seventy tanks in addition to the local drainage, they now receive show that there is much still remaining to be done to effect the desired object and ensure the realization of the looked for return for the outlay which has already taken place on the Anicut and head works.

3. It is unnecessary for the Government to notice each particular channel or connecting link from tank to tank in the several sections, but they desire that the District Engineer's careful attention should be directed to Colonel Boileau's remarks on each work, and that no time should be lost in completing what remains to be done to render the whole scheme effective.

4. Suitable masonry works should be provided at the head of all branch channels to regulate the flow of water down them, and when these are provided, the cutting open of banks and the raising of earthen dams across channels must be entirely put a stop to, and suitable punishment awarded to those who are found breaking the rules on this head.

5. From the description given of the section of the main channel known as the Arambákam channel, it would seem that it requires much careful attention on the part of the District Engineer, and this it should receive without delay, and estimates should be forwarded for putting it in proper order throughout its whole length of three miles, if possible, within the present official year. The Tennampett section should also be carried on at once, as it appears that abundance of labor is available. An estimate for this portion, it is observed, is promised shortly. The remaining section of the Dusi channel is not yet commenced, but is intended to be undertaken in the next official year.

6. The calingulah of the Chuckramelloor tank, at which the Easaoour branch channel commences, is complained of as being too high. The Deputy Chief Engineer does not concur in the objection raised against this work, and considers that the uppermost tank has a right to a full supply of water before any is allowed to flow on to those below. As a general principle this may be nothing more than fair, but it may so happen that the tanks below are dry, when the Chuckramelloor tank has water enough and to spare, and it is desirable therefore that the means should exist of passing on some of this water to the lower tanks; and this probably might be effected by means of under sluices in the body of the calingulah, to be opened only at such seasons, and with the knowledge and consent of the Collector. The District Engineer will give this matter his careful consideration.

7. Colonel Boileau mentions several instances in group A of incorrectness of levels, causing a deficiency in the supply of water to the tanks to the eastward. This matter should receive early attention, and no work should be entered upon until a series of levels has been taken along the line of channel to be excavated. A section of levels should invariably accompany the estimate when the latter is submitted for sanction. It is observed that this essential point has been overlooked by the District Engineer in forwarding estimates for the channels from Randamchetteri to Melbuden tank,* and for that from Aramburthi to Serangatoor tank, received with the

* Rupees 4,009
" 05

above letter. The various matters in dispute between the people of Easanoor and those holding lands further to the eastward should be fully inquired into by the District Engineer, and, where possible, settled in communication with the Collector.

8. The Government agree with Colonel Boileau that it is desirable at present to limit operations to the completion of the several sections or groups of works included in the original project, and exhibited for the most part in plan B. When this is done it will be seen whether there is water to spare for tanks further eastward and southward.

9. Colonel Boileau points out that the large Dusi Mamandur reservoir has at present an independent river channel to itself, apart from the supply derived from the Anicut and the drainage of upwards of one hundred square miles of country, a great part of which eventually finds its way into it, but that there is no regulating sluice at its head. He does not recommend any work of the kind being undertaken at present, but rather looks forward to closing the channel altogether when it is found that the other sources are sufficient to afford a steady and constant means of supply. The Government, however, doubt the propriety of ever closing this channel. With a head sluice to regulate the quantity entering it during freshes, there can be no danger to the reservoir, and it may so happen in scarce seasons that an additional means of supply from the river is essentially necessary. The District Engineer should be directed to inquire further into this subject and report the result. He should also, in conjunction with the District Engineer Madras, see that the necessary measures are taken to utilize the surplus of the Dusi tank throughout the area comprehended between the Pálár on the north, and the Cheyar on the east and south, as suggested by Colonel Boileau.

10. The only improvement on the original project for the south Pálár works, proposed by the Deputy Chief Engineer, is that the old supply channel of Chuckramelloor tank should have a head given to it above the Anicut by opening additional vents in the space now occupied by the wing walls connecting the south end of the Anicut with the Dusi head sluice. By this means the main channel will be relieved of a great draught upon it, and an earlier and better supply will be ensured to the tanks under it and its numerous branches.

2 Vents of 20 feet each.

11. Concurring in the view taken by Colonel Boileau, and which is the same in principle as that advocated by him for the works on the north bank, the Government direct that a plan and estimate be prepared for a head sluice in the position shown on plan W, and for a channel from thence to join the old supply channel of Chuckramelloor tank, provision being made therein for widening and improving the latter throughout its course. The District Engineer will also bear in mind Colonel Boileau's further suggestion that the various channels recently cut to connect the series of tanks on the south side of the Pálár should be eventually widened to a section suitable to the requirements of each.

12. As respects the Deputy Chief Engineer's proposal to construct a special range to be called the Anicut Range, the Government are not prepared to add to the present number of ranges in the North Arcot District; but they are ready to consider any change in the position and extent of those now existing which may be deemed desirable, and likely to expedite the completion of the Pálár project in all its branches. They think, however, that it would be better to keep the southern portion of the project distinct from the northern, and to have a separate Executive Officer for each.

13. Colonel Carpendale will be so good as to consider and report upon this point.

14. The Tank Registers for the north should, as suggested, be kept entirely distinct from those for the south side of the river.

The Progress Reports for the months of September, October and November 1861, submitted with the above letter, show that fair progress has been made in the works, and the Government trust that every effort will be used to press them forward during the remainder of the working season. If more funds are required they will be supplied by the Chief Engineer by transfer from other Districts, or, if necessary, from the one per cent. Income tax.

15. The Government have considered the subject adverted to in the extract from a Memorandum by Captain Prendergast on Lieutenant-Colonel Boileau's proposed alterations on the Poiney and Pálár Anicut projects, which forms one of the enclosures of the above letter, and are of opinion that to ensure the realization of the full benefits contemplated, it is absolutely necessary that the head works and the main ducts proceeding from them should be on such a scale as will ensure our being able to draw off as large a supply as possible during the continuance of freshes in the Pálár, more especially as these appear to be of rare occurrence and short duration. An exceptional flood fully availed of and utilized would go far to make up for any loss which may occur from bad seasons. They approve therefore of Colonel Boileau's proposition to widen the heads of the main ducts and construct additional head sluices to the above works.

16. The two estimates referred to above, amounting in the aggregate to Rupees 4,095, are sanctioned, the funds to be provided from the balance of the estimate, Rupees 5,400, for a road from Nagari to Balpilli and from the general allotment of the District for the current year.

17. The attention of the District Engineer should be directed to the condition and requirements of the several tanks and channels situated on the south side of the Pálár, as described in the Memorandum forwarded with the above letter, and particularly to those noted in the margin, regarding which explanation should be obtained and laid before Government.

Pápanthangal tank.
Namiondi tank.
Vengalatúr tank.
Mileri do.
Nátéri (large) do.
Rándam (large) do.
Melchéri (Palléri) do.

(Signed) W. H. HORSLEY, Lieut.-Colonel,
Secretary to Government.

Mississippi Delta Office
Vicksburg Miss. Nov 15th 1867

21 No 195

From

C. H. Reeves Esqr
Acting Collector 4th Mississippi

To

Lieut Col H. G. Gaston
Chief Engineer
Cincinnati.

Sir,

I have the honor to forward herewith letter No 49 of the 15th of September last from Lieut Col Comstock Corps of Engineers U.S. Army relative to the Improvement of Raccourci Cut Horse Island Pass and Walnut Bend Crevasse, and to request that you will favor me with your opinion in the premises.

Very respectfully
Your Obt Servt
Chas H. Reeves
Acting Collector

Copy in a letter to Douglas
dated 8th May 1868. 829.

7740

Enclosure in a letter from
Lieut A. Bricken Deputy
Chief Engineer C.C. to Lt Col
F. D. Atkinson Secretary to Genl
G.W.D. dated 15th January
1867 329.

Extract from Memo
in Lieut Col Comstock
proposed alterations on
Mr Coney and Cat
Island Projects.

Extract from Memo: on Lieut.t Colonel Baikie's proposed alterations on the Pennicy and Pálar Annicut-Projects

* * *

Regarding the Pálar Annicut-

The experience of the last 3 years shews, that the capacity of the main Sluices, is such as to carry off very nearly the whole of the river water in unfavorable seasons: the water having passed over the crown of the Annicut, for only a few hours in the Monsoon of 1859. By the opening of the Mahindravaddi Channel, a considerable volume of water will be taken off, and there will be the same effect from the extension of the Minor Channels on the South bank, and the further cutting of the Peroy main Channel- Water has been wanting in the Madura District, because there has been a scarcity of water in the River above the Annicut, not from the Channels being insufficient to carry it off.

The expense of enlarging the head Sluices, and the Mahindravaddi Channel, is a very heavy item added to the original project- Sir Lead Deanes, no benefit will be

be gained, for the Channels can now take off the available water: (and their requirements are becoming greater, by the additional branch Channels) so that the outlay can become remunerative, only when there are heavy Monsoons, and exceptionally high floods in the River.

When the Anicut-Scheme was matured, observations were no doubt made, of the periodical rises of the river- Colonel Bell in forwarding the project to Government in 1851. wrote, that water was likely to flow in 60 days during the year, to the height of the Anicut- The river, as far as I have had experience, comes down in repeated small freshes, and latterly has not had any extreme flood of water. This what would naturally be expected, from the very wide spread of the bed, and the low ill-defined, banks: and I have never heard of the country being any where flooded, by the Palar river. If then the main Channels have sufficient capacity, to carry off moderate freshes, the river water will all run down the Channels so long as the freshes continue; and the question suggests itself, is it of advantage, to incur a large expence; for the benefit to be gained by an occasional extreme rising of the river, which may now and then occur? or should we be contented with the present means of securing the water, and trust to a recurrence of favorable seasons, when there will be a much more continued flow of water, than there has latterly been?

/Signed/ A. S. Pendergast Capt
District Engr. N. Arcot

/A true Extract/

Lt Col
Dy Chief Engr C.C.

Copy sent to Engineer
Chief in a letter to England
dated 8th May 1862 — Encl.
Sent Despatch 1862
Q 1524

Encl. to Govt. Colony Madras
Recd 28th Novr

Paramakudy 1861
No. 195

1277

Encl. 2 to
Recd 28th

Lieut. P.W.D. 8th/62

Transmits statement
Remunerative Works for
85-0-61

No. 1091

Arcot
6th December 1861.

From Capt: H. L. Pierdepoint
District Engineer of North Arcot

To. Colonel A. Boileau
Dep. Chief Engineer Centre Circle

Sir, In reply to Letter No. 7870 of the 2nd inst, I have the honor to inform you, that no portion of the sum of Rs 9095 can be met, out of the funds already sanctioned, for the Southern Salur project. There being a reduction made of Rs 510 only, by taking credit for that amount, in the estimate for the Melbunderi channel, from savings effected in other channels. The regular funds are not at present available, from other sources; but I can make them so, in the following manner.

In Statement A, that accompanied my letter No. 832 of 28th October; Rs 4.000 is set down for expenditure in this year, on the road from Putur to Kagalapuram, which if it will not now be sanctioned till next year. In Statement B, a sum of Rs 5.400 is proposed for the Cuddapa road thro' Naggery; should this not be sanctioned, the money would be available, and make up the required 9095 Rs. But if the estimate is sanctioned for the current year, it would not now be all worked out, and there would be an unexpended balance of from 1 to 2 thousand rupees; the remainder could, I think, be obtained from the General funds for repairs

To the Collector of Customs Chittagong

Royal Alliance Steam Navigation Co

To Expenses of Steam Pilot Service - Rs 4.000

Chittagong Pilot Service Fund (Rs 5400)

Mutassuddy and Bakshy ditto - Salary 1.000

Steam Vessel Expenses Funds 3.095

Rs 9.095

Fort William the 20th Nov. 1862

Sir,

I am Directed by the Right Hon'ble the Governor General of India in Council to transmit to you the accompanying Bill of Exchange for Rupees Nine Thousand and Ninety five, drawn by the Secretary to the Government of India in the Military Department, in favor of the Royal Alliance Steam Navigation Company, or Order, and to request that you will cause the amount to be paid to the Agent of the Company, on receipt of the Bill duly endorsed.

I have the honor to be,
Sir,
Your most obedient Servant
H. Taylor
Offg Secy to the Govt of India

To the Collector of Customs
Chittagong

Gen. Dept. 9 15 Jany 62.
B 9305.
Copy in ret Letter to England
dated 8th May 1862. No 29.
12-9-764

From the Assistant Engineer
of Salt Agent
To the Asst. Chief Engineer
Cuttack Circle

Dated 6th December 186
Received 9 — " ———

Re 1094

P. W. 87/62

States the way in which he can provide Rs. (Rs 9095) for the Salt Golahs Chittagong.

Statement of Remunerative Works for the Official year 1860/61 in the Madras District

Name of Works	Capital — Outlay on Construction and Dead Stock Valuation — Description	Amount expended in the past years	Amount for the Current Year	Total	Charges — Description	Amount up to end of past year	Amount for the Current Year	Total	Revenue — Description	Amount up to end of past year	Amount for the Current Year	Total	Remarks
1	2	3	4	5	6	7	8	9	10	11	12	13	14
Palar Amicut proper & excavating Cumbum Channel and Constructing Masonry works in the District of Madras	Outlay on original works and Reconstructions	39283	179	39462	Interest on the Capital Rupees 39283 at 4 Rs. p. Cent	6077	1571	7670	Gross proceeds from all Sources	36813	"	36813	Average of 5 years prior to the construction Rupees 4364 — Revenue of Fasli 1270 — 1578 — Decrease — 2794 — The decrease of Rupees 2,294 under this work in Fasli 1270, as compared with the average of the last 5 years shown in the Margin, prior to the construction of the Amicut, was consequent on the Lease for supply of water received in the Amicut Channels in the last named Fasli.
	Deduct deterioration by wear and tear 4½	"	"	"	Maintenance and Repairs	"	"	"					
	Balance of Capital	39283	179	39462	Total — Balance of Charges	6077	1571	7670	Balance of Income	30714		29120	
Cavetteor & Coveram Amicut in the District of Madras	Outlay on original works and Reconstructions	16430	"	16430	Interest on the Capital Rs 16430 at 4 Rs. p. Cent	3258	657	3915	Gross proceeds from all Sources	79514	"	79514	The Average term of the years prior to the Construction of this work, amounts to Rupees 41841. The present years Revenue is Rupees 41207. This decrease of Rs. 634 was occasioned chiefly by the Lesser Crops in the Palar river.
	Deduct deterioration by wear and tear 4½	"	"	"	Maintenance & Repairs	"	"	"					
	Outlay on original works and Reconstructions	20316	"	20316	Interest on the Capital Rs 20316 at 4 Rs. p. Cent	2502	812	3314					
	Deduct deterioration by wear and tear 4½	"	"	"	Maintenance & Repairs	"	1102	1102					
					Total	5760	2571	8331					
	Balance of Capital	36746	"	36746	Balance of Charges	"	2571	"	Balance of Income	73754		71183	
Eastern Coast Canal in the District of Madras	Outlay on original works & Reconstructions	497417	"	497417	Interest on the Capital Rs 497417 at 4 Rs. p. Cent	59595	19896	79491	Gross proceeds from all Sources	663412	43095	706507	The Revenue derived is from the old Cootamé Canal. The Government having recently ordered the levy of Tolls on the boats plying in the Canal to & fro Madras, they will be collected from the Current Fasli.
	Deduct deterioration by wear and tear 4½	"	"	"	Maintenance & Repairs	171781	32066	203847					
					Total	231376	51962	283338					
	Balance of Capital	497417	"	497417	Balance of Charges	"	8847	"	Balance of Income	432036	"	422659	

District Engineers Office
Camp Atchasawaram
31st August 1861

Captain
District Engineer of Madras

A. Cadell Revenue
Collector

12-9-82

From
The District Engineer
of Madras

To
The Deputy Chief Engineer
Central Circle Dpm

Dated
Recd

Statement of Remunerations
Works for the Official Year
1860/61 in the Madras District

Expenditure on the Palaur Anicut Project upto October 1861.

Names of Works.	Amount of Estimate	Expenditure	Balance of Estimate
South Side of the Palaur River.			
1st Section.			
Filling Sluice Channel from Vayanur Chittani to Vayanur large Tank	30 0 0	24 10 10	5 5 2
Do from Vayanur large Tank to Pullivenal Channel Vengalairi	1015 0 0	1007 13 9	57 2 3
Do from Pullivenal large Tank to Pegulendalum Chittani and filling up ancient Channel to the former Tank	140 0 0	133 15 1	6 0 11
Do from Perattumdalum Chittani to Perlevalum large tank	140 0 0	131 6 5	8 9 11
Do from Perlevalum Chittani to Arramputti Chittani	150 0 0	147 9 2	7 6 10
	1525 0 0	1440 7 3	84 8 9
2d Section.			
Filling new Channel from Padapuntangle branch Channel to Vayalayalangiley	240 0 0	236 4 3	3 11 9
Do from Vayalayalangiley to Vagaiari Tank	2150 0 0	2126 0 6	23 15 6
Do from Palayatangal to Vagaiari Tank	580 0 0	569 6 0	13 10 0
Do from Vagaiari Channel to Kurumbangle tank	910 0 0	725 6 8	184 9 4
Do from Vagaiari Channamanadum Tank via Channalai large Tank	3880 0 0	3657 1 5	222 14 7
3d Section.			
Filling New Channel from Randum Chittany to Morandum large tank via Mailboolairy Tank	1040 0 0	1020 5 7	19 10 5
Do from Kuramdum large Tank to Perlumbay Chittani	990 0 0	34 0 0	956 0 0
Do from Perlumbay Chittany (Arumbooliy Anicut) Channel to Kualthavadi Chittani	880 0 0	824 8 11	55 7 1
Do from Kualthavadi Chittani to Kurrucalthumjundi	830 0 0	511 10 10	318 5 2
large tank	500 0 0	460 3 7	39 12 5
	4240 0 0	2830 12 11	1409 3 1
Do from Parangatur Channel to Kummunlangle Tank	**4th Section.** 620 0 0	415 0 2	204 9 10
Filling New Channel from Arcotumbooliy Tank to Thingarenum	430 0 0	0 0 0	430 0 0
Do from Kerangatur Chittani to Pauputtangle Tank	4400 0 0	0 0 0	4400 0 0
Do from Pauputtangle to Jadaiari Tank	410 0 0	0 0 0	410 0 0
Do from Jagamanu Tank to Chittatoor Tank	5860 0 0	415 0 2	5444 9 10
Total for South Side	16075 0 0	8343 11 9	7661 4 3

Examined

Superintending Engineer

Examined & Passed

Accountant General

Examined & Passed

Secretary to Government

Public Works Department

Examined & Passed

Chief Secretary to Government

Fort St George 12th May 1862

Examined & Passed

Secretary to Government

Public Works Department

Fort St George 19th May 1862

Examined & Passed

Accountant General

12-7-62

Names of Works	Amount of Estimate			Deficiencies			Balance of Estimate		
South Side of the Palaru									
Cutting Malindravadi Channel	13320	0	0	3086	8	9	10233	7	3
Completing the South Calingulah of the Malindravadi Tank	2800	0	0	0	0	0	2800	0	0
Constructing the North Calingulah of the Malindravadi Tank Amount sanctioned for the current Fm Gov't Order No 1928 of 21st October 1861	7000	0	0	0	0	0	7000	0	0
Total for South Side	23120	0	0	3086	8	9	20033	7	3

North Arcot
District Engineer's Office
Arcot 18th November 61

Lieut Sandyate Captain
Dist. Engineer. N.A.

Schedule of the Public Buildings Erected & Repaired at Aden during the year 1861.

Name of Work.

Estimate Amount.

Expenditure during the year.

Balance remaining to complete.

Remarks.

Name of Work.	Estimate Amount.	Expenditure during the year.	Balance remaining to complete.	Remarks.
Aden the Seat of the Political Resident.				
Building a New Quarantine Ground on the Western Side of the Harbour.	30 " "	24 10 10	5 5 2	
Repairing Quarantine Hospital.	1065 " "	1057 13 7	57 2 3	
Building a Range of Stables for Camels.	140 " "	133 15 1	6 " 11	
Building a Range of Cattle Sheds.	150 " "	142 2 5	7 6 10	
	1525 " "	1440 7 3	84 8 9	
Building a New Custom House.	240 " "	230 4 3	3 11 9	
Repairing Old & Building New Magazine.	2150 " "	2126 " "	23 15 8	
Repairing Magazine & Building Quarantine Sheds.	570 " "	560 " "	10 10 "	
Repairing Hospital & Building Quarantine Sheds.	910 " "	725 5 8	184 9 4	
	3880 " "	3657 1 5	222 14 7	
Building New Custom House.	1040 " "	1020 5 7	19 10 5	
Repairing Quarantine Hospital & Building Quarantine Sheds.	990 " "	34 " "	956 " "	
Repairing Hospital & Building Quarantine Sheds.	880 " "	10 " "	870 " "	
Repairing Old & Building New Magazine.	830 " "	511 10 10	318 5 2	
Repairing Hospital & Building Quarantine Sheds.	570 " "	440 3 7	59 12 5	
	4240 " "	2016 4 "	2223 12 "	
Building New Custom House.	620 " "	" " "	620 " "	
Repairing Quarantine Hospital & Building Quarantine Sheds.	430 " "	" " "	430 " "	
Repairing Hospital & Building Quarantine Sheds.	4900 " "	" " "	4900 " "	
Building New Custom House.	410 " "	" " "	410 " "	
	6360 " "	" " "	6360 " "	
	15625 " "	7113 12 8	8891 3 1	

Certified correct Aden

To Genl 15 Jan/62 No 9337
Copy sent to Settlement Rec.
3/8 Dec 1862 No 29.

1861/62 D.W.

Contractors

Firm
Capt H. F. Prendergast
Assistant Engineer
&
Lieut Colonel A. Bell
Deputy Chief Engineer
Madras.

Dated 18th June 1861.
Received.

P.W. 8/1/62

Expenditure on the
Public Buildings
Projects ended Oct 31/61.

Name of Works.	Estimate for 1st Estimate	Expenditure	Estimate for 2nd Estimate
North side of the Palaur Anicut.			
Cutting Mahindravadi Channel	13320 0 0	1206 0 1	12113 15 1
Completing the South Kalingulah of the Mahindravadi Tank	2800 0 0	0 0 0	2800 0 0
Constructing the North Kalingulah of the Mahindravadi Tank amount sanctioned for the current fair Weather season by G.O. dated 19th & 21st October 1801	7000 0 0	0 0 0	7000 0 0
Total for North side	23120 0 0	1206 0 1	21913 15 1

North Arcot.
District Engineer's Office
Arcot 18th November 1811

Asst Secretary to Govt
Dist Engineer

37

Specific Report on the Kaulin Annicut
for the Month of September 1861.

Southern Division. The Annicut channel
on the South Branch were cleared in 4 sections
in the month, and in last Official
year Rupees 3266-7-1 was expended on
Sections 1 and 2 up to the 4th of February;
these works have been carried on, and also
those works Rupees 283-4-4 - No Expenditure
have of Section No 3 & 4 - No Expenditure
shown to have been made on Section No 4; as
most Roads being not been measures
on hand for Clearance of Section No 1 extends
from the Large Channel Constant, in an
Eastern direction as far as the Large Rocky
tank; and the Centre of the intervening
of Tanks with each other, the contract
Cleared up to the 5 months of this Section is Rupees 1440-7-3;
1825 and the Expenditure is Rupees 1440-7-3;
a little more is still to be done in finishing
up their branch -
just beyond the Quarry Nevin
2 tank; there is a Cart path from the Quarry Nevin
Channel to Cuddapah Tank, and the
Channel of the 2nd Section consists of 4 Channels
work of the 2nd Section consisting of four as
tanks on South & Eastern direction, as far as
the Chinnavanumdurin Large tank; the
Estimated amounts for this Section is Rs 13880;
and the Expenditure has been Rs 13657-1-5;
leaving but a very little required to complete

× Rec'd at the Board 1860.

Fol Govt 15 Jan/62 No 937
Copy sent to Collector Engr.
Dy 8th Jany 1862 No 29

1861/62 Div No

Southern Circle

From
Captain H. S. Cleveland
Circle Superintendg

To
Lieut Colonel A. Cotton
Deputy Chief Supt
Madras

Dated 18th Dec 1861.
Received 2 Jan 1862.

P. W. 8 1/62.

Respecting the
Palaur Annicut
Project estimate
September 1861.

3 In continuation of the branch Channel to Cuddapentangle, the works of the 3d Section Commence with the Randum Chittairy tank, and take a Southerly direction, there being 5 branch Channels as far as the Nuroo Kathempoondy tank. The amount of the estimates is Rupees 4240, and the expenditure is Rupees 2016-4-0.-

4 The 4th Section consists of 4 Channels from the Arumbarathe tank in an Easterly direction, as far as the Chittatoor tank, so as to throw the water from the Ancient into the Doosy Kammudur tank, the Estimated amount is Rupees 6360, of which no Expenditure is shewn as yet.-

5 Up to this time, the Palar water has been thrown only through Section 2: a small rise of the river took place in the month of August, and as the branch Channel to Cuddapentangle, strikes off on the same level as the Doosy main Channel, any water in the latter finds its way along this section of Channels.-

6 The Channels of Section No. 4. were at that time quite ready to convey water, but their head is the Calingula of the Chuckrammullur tank, and a large supply of water is required to fill this tank, before any is thrown further on Eastward.-

7 Additional minor works

are intended, to connect the Melladen tank with the Mosamum tank, the latter with the Arumparithe tank, and that again with Seringattoor.

8 As yet the Southernmost branch of the minor channels, is that to the Murkuthampadi tank, and it is proposed to examine the Country more to the South, and prepare Estimates for a further extention, as also in a South Easterly direction beyond the Papentangle tank. It is also intended to ascertain, what may best be done with any surplus water from the Doosy Kammudoor tank, towards Carrying the benefits of the Paular Ancient, further East into the District of Gradras.-

9 But the main Channel to the Doosy tank remains still incomplete, estimates will be furnished for completing this Channel, from Seringattoor tank to Arivadytangle, and on from Arivadytangle to the Nellitank.- The Estimate for the former portion, is expected to be received shortly, so that application may be made for funds to Carry it on

ow in the Current year - The main Channel so far as the Swamp tank has to be improved & Remise, there should be a permanent work to admit water into the Chetpauncherry tank, as at present, the bank of the Channel is just cut thro; a very short distance on, the bed has been left rough & not thoroughly cleared of stone; and division sluices for the Reddapentungle tank branch, are nearly finished, but upright grooved stones are wanting to hold the shutters -

Northern bank - Mahindravaddi Channel - Work has been commenced on carrying on the excavation of the Channel, between the Read sluices and the Poondy tank, and a little beyond Poondy towards the Parvady Village. Labor is also begun, in removing the rocks. Mahindravaddi tank N. Southern Calingulah - Work is just begun, towards finishing the incomplete Body of the Calingulah; materials being partly collected for other portions - Mahindravaddi tank Northern Calingula; arrangements made for preparing materials.

From the Southern Calingula a Main Channel has been commenced but work Carried on, for only a few hundred yards, and that very incomplete - As there are no records, either of plans or Estimates, for the extension of works, a Survey is now being made of the Country below the tank. -

North Arcot
Dist. Engrs Office
Arcot 15th Novem. 1861.

How Wendegast. Capt.
Dist. Engineer of N.A.

Special Report on the Paular Anicut Project for the month of October 1861.

For General Consulting Engineer's report of September 1861.

Southern Canal C. Work has been Carried on during the month on the 3d & 4th sections, in the 3d section R.1724 has been expended on the Channel from Pillunde-Chittauny to Eriadivad. Chittauny, and in the 4th section R.4156 on the Channel from Eeringaltoor to Pauperungalle tank C. A considerable deal more work has been done, in the month, not measured & therefore not paid for, for which account, some Rupees 5,000, will be paid in the next month.—

North Canal C. Earth and Masonry work have been Carried on, over 2 miles of Channel, from the Head Sluice of the Madrindravadde Channel C, the expenditure paid being R.s 1,880—— the removal of stone is in progress. the foundations are laid for the Condum

1st Division

From Lieut. Col. Pasley C.E. Chief Engineer & Secretary to Govt. Public Works Department

To Captain H.St.P. Lovell Executive Engineer 1st Division Southern Canals

Dated Fort St. George 18th January 1862

No. 29

Sir,

I have the honor to acknowledge the receipt of your Letter No. 2337 of the 8th ultimo, with its enclosures.

Lieut. Col. R. Pasley C.E.
Chief Engineer & Secretary to Govt.
Public Works Department

Fort St. George
18th January 1862.

leading out of the Coondytaun R.—Rough stone is being collected for revetting the side of the Channel below the Nooserytaun R, and other materials in preparation—

Mahindravaditaun R Southern Caligula—

The body of the Caliguluh with upright grooved stones, very nearly Completed; materials for the apron & Wing walls being got together. No payment made as yet for Contract work R.—

North Caliguula— 200 Cubic yards of Laminia stone, and the same quantity of rough stone brought in, Chunam in preparation &c— More exposition has been urged in the Carrying on of these works; the number of labourers employed has not been sufficient, it is hoped more exertions will be made in the next month—

Estimates are in preparation for building the Bridge over the Anicut, for — culargning the adjacent head sluices and other works proposed by Colonel Boileau

Boileau; these will be mentioned in detail in the next report.—

H.M.'s Engrs Office } Asst Surgt Capt
Arcot 18th November 1861 } Distt Engineers &c.

Memorandum of Tanks visited on the South side of the Palar. Arcot

Name of Tank	Condition and requirements
Cuddapakam Tangal Chitty Tank	Bank to the along stones.
Mattam tangal ———	do. do. do
Melbuderi tank ———	do. do. do.
Moranam tank ———	No the Irrigation Road passes over the bank of this Tank, its top surfaced should be granulated, and the bank widened.
Moranam Pamal Chitteri	Mallacked Tank. The sluice wants for its restoration hereinafter to cultivate 40 cawnies
Arambakkè Tank ———	Bank to be along stones
Siringattèri or Siratur Tank	Stonework required at each end, also a sluice
do — do ——— Tangal	Repairs required to the waste weir and bank with stone
Pattantangal Tank ———	Stone revetment for 30 feet in length on the upper side of the tank
Chittèri 2 Tanks ———	Sluice repairs and stone revetment for 20 feet. The name of them resumed
Kaiyanam Tanks ———	Repairs of fifteen net known in the Village
Kaiyanem Small Tank	Sluice repairs
do Small Tank	Sluice repairs also a sluice
Chittatur Tank	Bank must be repaired, also a sluice
	Sluice repairs
	Excellent tank. Stones required to be rebuilt. Islands marked some time ago by the Forward, and Bank burnt, but work not executed yet.
Pallapuram Small Tank	Sluice repairs
— Do — Eastern do	Repairs required. Sluice to have the bank strengthened by stone revetment. Islands marked by Forward, and Bank to be restored, with a view of enlargement.
	No Cultivation of the tank —
Duri Tank ———	Sluice repairs

Fo Govt 15 Jany/62 No 9337
Cessyn as Lettin to Engr
3/8 May 1867 No 29

1861/62 D.P.Ws.

From Captain H.E. Saunders
Divisional Engr. Arcot Dn

To Lieut Colonel C. A. Pollard
Chief Engineer &c &c

Dated 18th November 61
Received

P.W. 5/1/62

Special Repairs
to the Palaur Anicut
Project for the Month
of October 1861

Name of Tank	Condition and requirement
Nánéndi Tank	New Sluice left half built, and bank cut so that if rain falls a breach will happen. Such is the complaint of the people, but I did not see the Tank
Saruvalávaram (Thiravaddi Royapuram) Tank	A Shrotrium Tank
Néli Tank	Along walls of North East Calingulah to be partly rebuilt; Rear earth retaining walls to be made up. Tank bank to be brought up to proper section, and generally raised. Palla sluice leaks greatly. High level sluice at west end out of repair
Karendan 3 Tanks	I did not see these, but the people are very urgent about them. One they say has been repaired, for the other two they beg that Estimates may be formed.
Tirupparambúr Tángal	Good bund.
do. Tank	Generally in fair order. Stone facing in parts requires replacing. A good deal of work appears to have been done to this Tank lately.
Sáléri Tángal	In fair order
Sitti Tangal	A Sluice is asked for in lieu of present Anicut
Venpákam Tank	High level sluice applied for. Stone and earth work required here and there.
Vengalatúr Tank	Said to be a Shrotrium Tank. Repairs however being done under Sirkár. A good deal of earth work done, but much more is required. This Tank has a better supply of water than almost any other I have seen. One of the 2 Calingulahs at north west end requires its apron to be reformed and extended. The body also might I think be raised, as it is now filled in 1½ Yards in depth with mud to keep up the water

Name of Tank	Condition and requirements
Cheyanoor Spring Channel	The people are very urgent regarding having their Channel and its head thoroughly cleared.
Irupinqád Tank	Sluice leaks. Stone and earth work required. Masonry foundation, with upright stones fixed in it, is applied for by the people to be built across the Dúsi Channel where the present mud dam is. This I should think may be granted, as otherwise the people will continually build an earthen dam.
Méléri Tank	New Calingulah being built at south end. Work good, bricks of poor quality, but the best they say to be got in the neighbourhood. Great complaints of want of payment. The second complaint of this kind I have received in this Village Range. Tank bank has been restored. More earth required at south end. The bank at the deep part of the tank has been faced with stone, which may be advantageously extended by degrees to the other parts.
Manapákam Tank	North sluice requires to be renewed. A Calingulah at south end asked for. Bank in fair order.
Perahgatúr Tank	A very fine reservoir. Stones of apron of south Calingulah to be replaced. Stone work required to bund in parts. A new channel of supply is applied for from Jennampett Tank south end.
Sivady Tángal	Bund in very good order, a little levelling required. Stone facing displaced here and there. A spring head not far off which the people ask to have cleared.
Permál Tángal	Much work required to the Tank
Jennampett Tank	Stone facing to this Tank much needed. A Calingulah should also be built at south end
Nátere (Otéri) Tank	Some additional protection required to wing walls of the very fine south Calingulah, and a few stones required to its apron. The south end of bund is very poor and needs greatly to be strengthened. The large sluice leaks much. At north end stone facing should be extended and the bank improved. I believe however that this is a Shrotrium Tank

Name of Tank	Condition and requirements
Nátóre (large) Tank	Stone work in progress at several parts of the Tank. Complaints of extreme tardiness in carrying the work. South sluice requires to be defended with stone work. Cistern of old sluice in south wing wall of Calingulah carried away. South end of bund is weak, and is being gradually cut away. Bad soil being used in places on repairs. The head of one of the sluices requires to be renewed.
Bramadésam Tank	I only saw this from its west end. The Bank looks generally low, but there were no complaints about it.
Pulivellam Tank	Calingulah requires repairs
Puntandalum Chittéri	A sluice wanted also stone facing
Puntandalum Tank	In fair order
Srambákam Tank	South sluice to be renewed. South Calingulah to be repaired
Chittéri	The Dúsi main channel passes close along the edge of the bank of this tank. Stone facing required in Channel to prevent its eating any further. Calingulah requires some attention.
Nayen Tangal	A good strong bund
Kandam Chittéri	Good bund, fair order, has no stone work
Kandam Large Tank	In excellent order. The Calingulah at the west end has, however, been carried bodily away. Its reconstruction appears to me to be unnecessary, as all overflow should pass into the Channel leading into the Chittéri and the other numerous Tanks.
Melchéri (Palléri) Tank	Half the Calingulah in ruins, but it may easily be repaired. The Tank is otherwise in good order. There is stone facing only in the middle of the Tank.
Chuckramellum Tank	The top of the bank is overgrown with jungle cane and a width should be cleared sufficient for purposes of inspection. Stone and earth work required in many places. The centre and northern sluices leak.
Kalambády Tank	In fair order
Amurtha Spring Channel	A Calingulah required at a point where it constantly breaches.

Madras
13th January 1862

A Morleau Lt Col.
Dy Chief Engr C C

Copy in ∞ Letter to England
Dated 8th May 1862 No. 29.

Central Office of Work
Chepauk
15th January 1862.

No. G.387.

From
Lieutenant Colonel A. Boileau
Deputy Chief Engineer C.C.

To
Lieutenant Colonel W.A. Hartley
Secretary to Government P.W.D.

Sir,

I have the honor to forward herewith my report on the Santhe Palar project, and to express my regret that so great a length of time has been allowed to elapse since my inspection, before submitting it.

2 The fact is that while inspecting the project I was out, I may say, nearly all day, and the short time I was in my tent I was engaged in writing in my notes. On my return to the Presidency I resumed my regular duties immediately, and soon found myself in charge of both the Northern and Central Circles, the work of which engaged my attention for 9 & 10 hours every day, and it was only when the Christmas Holidays

Enclosure 22.
1 Letter ... 985 ...
1 Letter ...
1 Report on the Santhe Palar
2 Plans on the same
1 Plan of Santhe
1 Pl. of Letter Press
Estimate thereof
1 Pl. of Plans
1 Estimate thereof
1 Letter from ... Madras with
1 Estimate thereof
1 Do Do
1 Letter from Do
Estimate thereof
1 Plan of Anicut
Estimate thereof

Holidays arrived that I found time to put the Report into Shape.

3 Take this opportunity of forwarding for the information of Government the Special Reports of the progress of the Annicut works in the North Arcot District for the Months of September, October and November 1861.

4 The present seems also a favorable occasion for submitting to Government an Extract of a letter, as per Margin, from the District Engineer N. Arcot forwarding a Memorandum on the alterations proposed by me in the Palár project, as originally designed. The reason that an Extract only is sent, is, that the District Engineers remarks regarding the Pinney project are in the same letter, but they cannot be treated of by me in this communication which has reference only to the Palár works. I need hardly inform Government that had Captain Prendergast's views been before me at the time of sending in my former Reports, or had I during the several weeks during which I was with him; or in the immediate neighbourhood, heard from that Officer any word that might have led me to suppose that his opinion was adverse to mine, I should of

Course

No. 1088 dated 4th Dec. 1861

5 course have stated so in my Reports.

5. My former Report shewed I think pretty clearly why I proposed to have wider heads for the Channels. When a flood does come, let us be prepared to take in all we can. Captain Prendergast writes that "when the Annicut scheme was matured, observations were no doubt made of the periodical rises of the River" and he goes on to say that Colonel Bell wrote "that water was likely to flow on 60 days during the year to the height of the Annicut." The District Engineer has unfortunately misquoted Colonel Bell, who in para 9 of his letter to Government dated 12th May 1853 spoke of 60 days of a delivery of water flowing 6 or 7 inches over the crest of the Annicut, and what I want is to have that surplus body of water flowing down our channels, instead of to the sea; that is all.

6. My replies to Captain Prendergast's queries at the end of his Memo are:

1st That it is worth while to incur a large expense for the great and remunerative benefit of tanks filled, some with a two and three years supply, as they would be, by an exceptional flood

flood, and which if not seized upon, and turned to advantage, might leave sheds dry, land uncultivated, and people starving. In fact, I would say get water any how, quocumque modo, aquam, simply if possible, if not it is always worth paying highly for. My impression is, that the broad heads, although involving present outlay, afford the only chance of rendering the project remunerative.

2ndly That we should not be contented with the present means of securing the water.

7 A detailed Memorandum of expenditure on the Palar project in the North Arcot District is herewith forwarded. It will be found to differ but slightly from the total given in the tabular Statement enclosed in my former Report.

8. The Statement which in that Report I observed had been applied for from the Collector of Madras is also herewith sent."

9 Two Estimates amounting in the aggregate to Rupees 4095 received in the District Engineer's letter No. 1017 dated 23d November 1861 are enclosed; the third item referred

Wandam Cottoor to Mallandoor Tank Rs. 1000-
Mallandoor to Langalur Tank " 95
Rupees 1095.

57

referred to in the letter requires consideration, as the more proper line of Channel will be from No. 10 (survey B) to the Arambaree Tank— Captain Prendergast proposed to obtain Rupees 4000 from the Pattur and Nagalapuram Road, but that sum has been sanctioned for execution this year; however, money will be available from the other sources named by him viz the balance of an Estimate Rupees 5400 for a Road from Nagari to Balpilli (for execution out of general funds) submitted to the Central Office, and forwarded to the Consulting Engineer of Railways with a view to ascertaining if the Railway Department are prepared to sell to this Department a private road which they have made and from the general funds at his disposal.

No. 1094 dated 6th Dec. 1861

Ex. of Govt. No. 2311 dated 14 Dec. 1861.

Sanction is solicited for the expenditure of the Amount Rupees 4095, the work having been already authorized for execution by me under the assurance that it could be done by savings out of other estimates for channels but this has proved to be not the case.

I have the honor to be
Sir
Your Most Obedient Servant

A Wilcox
Dy Chief Engr & C.C.

Central Office of C. Works
Chintadrepet
15th 4th January 1862.

To
Lt Colonel W.H. Horsley
Secretary to Government
P.W.D.

Recd 16 Jan

Public Works Dept.

No 257.

Proceedings of the Madras Government
Under date the 10th February 1862.

Read the following -

Letter from the Chief Engineer Central Circle. -

Forwards the Report of
the South Cellar Project, with
with 2 Estimates (Amounting to
Rupees 4095 for improving certain
works thereon and
requests sanction for the
same.

Letter from
Lieut. Colonel A. Cotton
Chief Engineer Central
Circle.

Madras Public Works Dept.

Read Letter from
Lieut. Colonel A. Cotton
Chief Engineer Central
Circle, dated 15th January 1862
forwarding Report, Plans and Estimate
for improving certain works
thereon and requesting sanction
for the same.

Ordered, that the Report, Plans and Estimate be submitted to the Board of Revenue for report.

Madras Public Letter
dated 26th January 1862
to the Board of Revenue
forwarding Report, Plans and Estimate
for improving certain works thereon and requesting sanction for the same.

Madras Revenue Department

Read Letter from the Board of Revenue dated 8th May 1862 No 29, submitting Report, Plans and Estimate for improving certain works thereon and requesting sanction for the same.

Ordered, that the Report, Plans and Estimate be submitted to the Board of Works for report.

Madras Public Works Dept.

Read Letter from the Board of Revenue dated 8th May 1862 No 29, submitting Report, Plans and Estimate for improving certain works thereon and requesting sanction for the same.

Ordered, that the Report, Plans and Estimate be submitted to the Board of Works for report.

Revenue

12th Sept. 1833 Proc. [illegible]

13th Dec. 1861 No. 185-189

14th " " " 200-201

21st " " " 232-235

Copy in Letter to Engr. in Chief 8th May 1862 No. 29.

12-7-74

Published 1862. Returned Proc: of Govt. for February No 87.

From
Lieut. Colonel A. Cotton
Gr. Chief Engineer &c
To
Lieut. Colonel H. H. Hardy
Secretary to Government
P.W.D.

Dated 15th January 1862.
Rec'd 17th " "
No 22.

C. 15. Read 16/5/62

Report Returned see Cl. 332/63
26 8/63

Forwards his Report in the South Cellar Project with 2 Estimates (Amounting to Rupees 4095 for improving certain works thereon and requests sanction for the same.

No 309 Feby. 1863

No 309-310

Feby 1863

never received in the
Proceedings of Govern-
ment No 1928 dated
21st October 1861.

2 The report enters
fully into the details of the
several sections in which
the works on the south
or right bank of the Pa-
lar are grouped, and
which are lettered in
the accompanying plan
B viz A, B, C, D. Sections or
groups. The main chan-
nel is intended primar-
ily for the supply of
the Doré Mannandoor
tanks, a fine reservoir
situated 22 miles South
East of the Arcotch, but
on its way it throws off
numerous branch chan-
nels to other tanks.
The other branch is
called

called the Kalaveri
Channel which is design-
ed as a mere cut 1000
yards long by 10 yards
broad, intended to con-
vey the Palar water
into a large natural
drainage channel by
which the large tank
of Kalaveri is fed.
Regarding this latter
channel Colonel Baldwin
says nothing more than
that some rock in its
bed should be removed.
His remarks on the
Doré channel, which
when fully completed
will usefully render be-
20 tanks in addition
to the local drainage
they now receive, show
that there is much

little

still remaining to be done to effect the desired object and ensure the re-
-alization of the Contract for returns for the outlay which has already taken place on the Ganeshbund Head Works.

3 It is unnecessary for the Government to notice each particular channel or connecting link from Tank to Tank in the several sections, but they desire that the District Engineer careful attention should be directed to Colonel Baillaud's remarks on such Works, and that no time should be lost in completing what remains to be done to render the whole scheme effective.

4 Suitable masonry works should be provided at the head of all branch Channels to regulate the flow of water, always when there are provided, the cutting open of banks and the raising of earthen dams across Channels must be ensuring punished by fine or both, and suitable punishment awarded to those who are found breaking the Rules on this head.

5 From the description given of the Sections

of the main Channel
known as the Aram-
-bákam Channel,
it would secure that
it requires much
careful attention on
the part of the
District Engineer,
and that it should
receive without delay
such Estimates should
be forwarded for
putting it in proper
order throughout
its whole length
of 8 miles, if
possible, within
the present official
year. The
Tennicum/Pelt Section
should

Should also be
carried on at
once as it appears that,
abundance of
labor is avail-
-able. The
Estimate for
this portion,
it is observed,
is pronounced
shortly. The
remaining
Section of the
Divi Channel
is not yet
commenced

commenced, but it intended to be undertaken in the next Official year.

6 The Ecclinpee-Cole of the Chuckeranneeoor Tank, at which the Eccanur Branch Channel commences, is complained of as being too high. The Deputy Chief Engineer does not concur in the objection raised; agreeing this

67 this work, and considers that the Upper most tank has a right to a full supply of water before any is allowed to flow on to those below. As a general principle this may be nothing more than fair, but it may so happen that the tanks below are dry, & how the Chuckrameeoor tank has water enough and to spare, and it is desirable therefore that the means should exist of passing on some of this water to the lower tanks, and this probably might be effected by means of under sluices in the body of the Calingulah, to be opened only at such seasons, and with the knowledge and Consent of the Collector. The District Engineer will give this matter his careful consideration.

Colonel

7 Colonel Boileau mentions several instances in group A of incorrectness of levels, causing a deficiency in the supply of water to the Tanks to the Eastward. This matter should receive early attention, and no work should be entered upon until a series of levels has been taken along the line of Channel to be excavated. A section of levels should invariably accompany the Estimate when the latter is submitted for sanction. It is observed that this essential point has been overlooked by the District Engineer in forwarding Estimates for the Channels from Randamchetteri to Melhuden Tank[x] and for that from Aranburthi to Perangatoor Tank, received with the above letter. The various

[x] R. 4

R. 9

matters in dispute between the people of Pasanoor and those holding lands further to the eastward should be fully Enquired into by the District Engineer, and, where practicable, settled in communication with the Collector.

The Government agrees with Colonel Boileau that it is desirable at present to limit operations to the completion of the several sections or groups of works included in the original project and exhibited for the most part in Plan B. When this is done it will be seen whether there is water to spare for Tanks further

further eastward and Southward.

9 Colonel Boileau points out that the large Dwiellaman-dus Reservoir has at present an independent river channel to itself, apart from the supply derived from the amount and the drainage of upwards of one hundred square miles of country, a great part of which eventually finds its way

way into it, but that there is no regulating sluice at its head. He does not recommend any work of this kind being undertaken at present, but rather looks forward to closing the channel altogether when it is found that the other [illegible] and sufficient to afford a steady and constant means of supply. The Government however doubt the propriety of ever closing this channel. With a head sluice to regulate the

quantity entering it during freshes, there can be no danger to the reservoir, and it may be hazarded in years) seasons that an additional means of supply from the river is essentially necessary. The District Engr should be directed to enquire further into this subject and report the result. —

— He should also in conjunction with the Dist Engr Madras see that the necessary measures are taken to utilise the surplus of the Ouse Sank throughout the

area

area comprehended between the Palár on the north, and the Cheyaur on the east and south as suggested by Col. Barbaud. The only improvement on the original project for the South Palár would be proposed by the Deputy Chief Engr is that the old supply channel of Chuttra Mudeer Tank should have a head given to it above the Amicut by opening additional vents in the space now occupied by the wing walls connecting the South end of the Amicut with the

2 Vols of 30 Jan 1861

Dussi

the Head Sluices. By this means the main channel will be retained of a good draught upon it, and an harbour and boiler supply will be ensured to the Docks under it and its numerous branches.

" Concurring in the views taken by Colonel Boileau, and which is the same in principle as that advocated by him for the works on the north bank, the Government direct " that a Plan and Estimate be prepared for a Head Sluice in the position shewn on Plan IV, and for a channel from thence

to

to join the old supply channel of Coromandel Dock, provision being made therein for widening and deepening the latter throughout its course. "

" The District Engineer will also bear in mind Colonel Boileau's further suggestion " that the various channels recently cut to connect the series of Docks on the South side of the Pallavaram should be eventually widened to a section suitable to the requirements of Docks.

As

12th As respects the Deputy Chief Engineer's proposal to construct a Special Range, to be called the Arsenal Range, the Government are not prepared to add to the present number of Ranges in the North Area District, but they are ready to consider any change in the position and extent of those now existing which may be deemed desirable, and

and likely to expedite the construction of the Palace Project in all its branches. They think however, that it would be better to keep the Southern portion of the project distinct from the Northern and to have a separate Executive Officer for each.

13 Colonel Carpendale will be good as to

to consider and report upon the subject.

14 The Surveyor Registers for the North should as suggested, be kept entirely distinct from those for the South side of the River.

The Progress Reports for the months of September October and November 1861, submitted with the above letter, shew

that fair progress has been made in the works and the Govt trust that every effort will be used to press them forward during the remainder of the season. If more funds are required they will be supplied by the Chief Engineer by transfer from other Districts, or, if necessary, from the one per cent. Income Tax.

15 The Government have considered the subject

subject adverted to in the Extract from a Memorandum by Capt.n Prendergast on Lt.t Col.l Boileau's proposed alterations on the Poiney and Palár Anicut Projects which forms one of the enclosures of the above letter, and are of opinion that to ensure the realization of the full benefits contemplated, ~~by the Projects of these works~~, it is absolutely necessary that the head works and the main ducts proceeding from them should be on such a scale as will ensure

our being able to draw off as large a supply as possible during the continuance of freshes in the Pálár; more especially as these appear to be of rare occurrence and short duration. Over exceptional flood fully availed of and utilized would go far to make up for any loss which may occur from bad seasons. They approve the proposition to widen the heads of the main ducts and construct additional Head Sluices to the above works.

6 The two Estimates referred to above, amounting in the aggregate to Rupees 1,09,5, are sanctioned, the funds to be provided from the balance

of

Abstract
for main channels of
Poiney & a very low proposal
for Head works &c

of the Estimate, Rupees 5,400, for a road from Nagani to Balpuli and from the general allotment of the District for the Current year.

7 The attention of the ... District Engineer should be directed to the conditions and requirements of the several Yandis and Channels situated on the South Side of the Palar, as described in the Memorandum forwarded with the above letter, and particularly to those noted in the margin x regarding which explanation should be called for and laid before Government.

x Pl. Pulpanthangal Tank. Nunsandi Tank. Vengalatur Tank. Melani ... do. Attéri (Large) do. Bandaru (Large) do. Ilakkéri (Small) do.

13 Copies.

25

X-81-3.

No. Dy. Chief Engr. & Secy. with 16 Encls. & 4 plans. Dated 29
" Accountant

On
the South Polar Project

12-9-94
18-7-18
27
27-2-23

Public Works 1862 Departt
Pro: of Govt for February

No 257.

Proceedings of the Madras
Government

Dated 19th February 1862.

From Mr Cl 1353
of 1864

From the Sy. Ch. Engr C.P.
14th March 1862 Cir
609.

Do Do 2 Dec
1862 Cir 3643.

Letter from the Deputy
Chief Engineer Central
Circle forwarding a Report
on the South Polar Project
with orders thereon.

No 309 & 311

C3 Feby 1810