M.R.O. 14-5,450—22-10-25.

MADRAS RECORD OFFICE.

Government of Madras.

Revenue DEPARTMENT.

G.O. No. 1395 Press ~~Mis.~~

437-38
Dated 18-5- 1868.

Not to be folded or roughly handled

Proceedings of the Madras Government, Revenue Department,
18th May 1868.

No. 437. Read the following Proceedings of the Madras Government in the Public Works Department :—

Passing orders on the project for the supply of drinking water to Ootacamund. } (Here enter 12th May 1868, No. 1,508.)

No. 438. ORDER THEREON, 18th May 1868, No. 1,395.

Miscellaneous.

Communicated to the Revenue Board.

(True Extract.)

(Signed) H. SEWELL,
Acting Under Secretary to Government.

To the Board of Revenue, with Proceedings Public Works Department, No. 1,508.

Exd. S. T. Augustin.

Read the following letter from the Superintending Engineer, 7th Division, to the Secretary to Government, Department Public Works, dated Coonoor, 15th April 1868, No. 11:—

1. In submitting Major Farewell's report on the subject of supplying Ootacamund with water, accompanied by the necessary survey and other plans, and by estimates, I have to observe that the general plan of operations to be carried out was laid by him before Mr. Grant, some time back, and carefully discussed

		Rs.
4	Surveys and Levels.	
1	Estimate of water-supply to north of the Lake, No. 1	8,000
1	Estimate do. to south of the Lake No. 2	4,000
	Major Farewell's report, No. 2 of 6th April 1868.	

on the ground, with special reference to the Minute by His Excellency the Governor, recorded with G. O., No. 3,430, of 20th December 1866. And I had hoped and understood that the Collector would have reported our views generally on the subject, pending the preparation of the necessary detailed papers, which have taken much time, there being a great deal of similar work in hand in the Range.

2. Major Farewell's report gives the correct history of the existing monsoon channels of Ootacamund, regarding the capabilities of which His Excellency the Governor appears to have formed exaggerated ideas, from not having been accompanied on his inspection by any one possessing full local and professional knowledge of the subject. Full enquiry has shown that they cannot be depended upon for perennial supply of any practically useful quantity of water for general purposes. That if by the "two houses which belong to the Reverend Mr. Griffiths," be meant "Shedden house" and "Shedden cottage," such houses cannot be supplied with water from Garrard's land. That the only feasible method of providing Ootacamund with an adequate supply of water, is by construction of a reservoir in which to accumulate the rain-fall of the catchment basin of the swamps known as Mr. Ouchterlony's and Colonel Morgan's. But that the level of discharge of such reservoir could not be economically laid higher (or more than two or three feet higher) than that of the little tank forming the head of "Farewells's channel." And, consequently, that the level of such channel can be but slightly raised, to the extent shown by the dotted blue lines of the survey.

3. As to details of the supply to be afforded by the reservoir, I look upon Major Farewell's rain-fall of 36 inches as a most moderate estimate likely to be exceeded in ordinary years; while, if his estimate of population be correct, it will fully supply the demand likely to be made for water. He has shown in the survey three other smaller reservoirs, by which that supply can be augmented when required. And a fourth and much larger augmentation is also obtainable by damming up the swamp under Gayton Park, which I suppose he has not included, as likely to cost a good deal in compensation for plantations submerged. The statement in paragraph 5 of Major Farewell's letter, that his reservoir will hold the entire surplus is inaccurate, owing to his not having allowed for the whole rain-fall occurring in ten out of the twelve months. Allowing for a delivery, including wastage of 300,000 gallons daily in those ten months, there would be a surplus of over 71 millions of gallons. As, however, there will remain available storage for more than double the quantity of water required to tide over sixty rainless days, I do not think it will be necessary to provide increased capacity by raising the height of the bund. It will be more to the point to see in carrying

out the work, that ample provision is made for escape of surplus water during any heavy storms that may occur when the reservoir happens to be full in the rainy season, especially in October. And Major Farewell has himself suggested that it may be advisable to pitch the upper portion of his dam with rough stone, to protect it in windy weather. To provide which and shelter for Dam Lascars, I would recommend an increase of sanction on both estimates, from Rupees 6,450 to Rupees 8,000, and from Rupees 3,300 to Rupees 4,000. For the current official year it may suffice to allot the former sum only at first, for outlay on one or both works, as may be found most convenient. Time must elapse in obtaining possession of the ground, and the sluices from England; and I am not hopeful that it will be possible to store the rain-fall of the current year.

4. The project for the southern water-supply has been worked out to complete all information on the subject, but does not require further special remark by me to supplement Major Farewell's report and survey. I would only add my opinion, that a water-rate on some such moderate scale as that suggested be *permanently* adopted to repay the cost of compensation, to maintain an establishment to look after the dams, channels, and distributing sluices; to provide for fencing off the most exposed parts with stone walling, and to form a reserve fund from which eventually to lay down iron piping to any extent that may be found advisable.

5. Major Farewell and I have had the pleasure of explaining to Mr. Wedderburn on the ground all details of the project, and he has countersigned the more important papers shown him in token of his general concurrence with our views.

From Major W. FAREWELL, Executive Engineer, Neilgherry Range, to the Superintending Engineer, 7th Division, dated Ootacamund, 6th April 1868, No. 2.

1. Agreeably to Orders conveyed in paragraph 19, of G. O., No. 745, dated 26th March 1866, accompanying G. O., No. 1,046 of 5th April 1866, and His Lordship the Governor's Minute, accompanying G. O., No. 4,071, dated 22nd December 1865, and your endorsement thereon, I have the honor to submit a survey plan, section, and estimate, for supplying the houses of the residents laying north of the Ootacamund lake with water.

2. The springs on the hills of late years, presumably from a series of monsoon failures, have not yielded one-eighth of what they did in 1859; when, at the request of the Collector of Coimbatore, I originally planned and estimated for the existing channels, which plan and estimate never appears to have gone further than the Collector's Office.

3. The only mode in which a constant supply of water can be maintained, is by the construction of a reservoir as estimated for, calculated to contain a sufficient supply for the dry and rainless portion of the year at Ootacamund: this reservoir being filled during the monsoons and occasional showers prevailing during the other portion of the year. The site selected is the only catchment basin of any size that exists, at a suitable level, for the purpose; sites for three other small reservoirs are marked on the plan: these, however, are too small to contain of themselves the quantity of water required; but should the main reservoir be found insufficient, these can easily hereafter be made at a small cost, while the existing channels can, at the cost estimated for, be thoroughly repaired and made water-tight, thus supplementing to, however, but a small extent, the supply from the main reservoir.

4. The gathering ground of the catchment basin of the reservoir is estimated at 200 acres, which is certainly below the mark; supposing what may be considered a very fair average of rainfall, due to the locality in which it is situated, to be 36 inches, according to Beardmore's formulæ, the quantity of water available for storage and daily use would be equivalent to 445,600 gallons per day, giving, after supplying the wants of the station, as shown in the margin, a surplus of 154,200 gallons to go towards filling the reservoir for distribution during the average number of sixty consecutive rainless days during the year.

	Gals.
1,000 Europeans, 5,000 Natives including general Bazaars, at 30 Gallons per diem	180,000
Wastage ⅓th of 445,600 gallons	111,400
Surplus...	154,200
Total ...	445,600

5. The capacity of the reservoir amounts to storeage for 46,566,000 gallons of water, giving exactly space sufficient to contain the daily surplus above noted, of which, however, after deducting cubical space in the reservoir below delivery sluice level, which will eventually be silted up, will leave in case of a greater number of consecutive rainless days than that calculated for, an ample margin of further supply.

6. With reference to His Excellency Lord Napier's Minute, I beg respectfully to bring the following to notice. It will be observed from the levels accompanying the plan, that the little tank referred to commands all the properties to the north of the lake, except Tudor Hall, Gayton Park, Sheddon house, Sheddon cottage, Mrs. Rae's house, and Mr. Hodge's house, which cannot any how be reached, and a few other houses which are cut off by low saddles; the water-supply project noted in paragraph 2 of this letter not having been sanctioned, the object of the tank being constructed, in the first instance, was to collect sufficient water to allow of the construction of the Court-house at Ootacamund, and to utilize a portion of an old channel which had been made to convey water from the swamp below the copsewood known as "Garrard's land," to two houses occupied by Mrs. Coombs and Mr. Higgins, and thus save compensation for a new channel; this channel was simply cleared and enlarged by me, and taken on to the Court-house, and was subsequently continued to the Civil Hospital to allow of the construction of this building; this little tank was dependent only on the water from the swamp and a channel measuring 1,800 feet from Snowdon, which after filling a little pond at North Downs, Dr. Pope's School, flowed into the tank. The supply of water being found insufficient even for the works above noted, with the view of combining the Public Works requirements with those of the proprietors of the properties commanded by the channel, I traced a new channel from the Dodabet side above the Government Gardens, and a new channel round Snowdon, beyond the then existing head of the North Downs channel. Mr. Grant, the Collector, having gone over the ground with me, suggested that the traces should be opened out at once, as an experiment, to supplement the supply of water, and in G. O., No. 3,294, of 16th November 1864, Rupees 400 were sanctioned for this purpose, and subsequently in G. O., No. 2,768, of 19th September 1865, a further grant of Rupees 250 was made, and the work carried out, the most expensive portion of which consisted in the lengthy drains that had to be made in crossing roads, and in constructing a cistern in the bazaars, the channel having been continued to that point.

7. During the rains there was an ample supply of water, but immediately that the water became scarce, it was frequently turned off at North Downs and above the Government Gardens, to the serious inconvenience of every body concerned, and in the dry weather the supply of water was found to be totally insufficient for even building purposes; it was, therefore, necessary to shut the sluice of the little tank for several days together, leaving only a rill to run to the houses of those who had a right to the water originally, and once or twice a week to fill the cisterns constructed to receive the required water for building purposes.

8. The tank being a very small one, it was necessary to provide it with an escape channel to prevent its being breached during heavy rains, and, to prevent the supply channel being breeched and destroyed by too great a discharge from the supply sluice under pressure, the sluice was always closed in the evening, and not opened much before 9 or 10 in the day; consequently, when His

Lordship the Governor saw the tank, the water was running to waste: the leakage is owing to the swampy nature of the soil on which the dam is constructed, which, however, was dug out to some depth and puddled before the dam was made. When His Lordship saw the tank, it was the most favorable season of the year, i. e., during the rainy one, for in September and October last the quantity of rain gauged was 11 I. 6 T. 2 A., so all the springs were yielding twenty times as much as in the rainless months of the year, when many of them hardly yield a drop.

9. The houses belonging to Mr. Mclver and that occupied by the Female Asylum were never at any time supplied from this source, but from a little stream flowing from the swamp below Shellen house, shown in the survey; above this swamp, in the Guyton Park ground, is a small cholay, from which a channel appears to have been made to Shellen house, on examining which I am of opinion that no water ever flowed in it except during very heavy rains.

10. The survey will show that a channel has been cut from the head of the swamp below the cypress wood known as "Garrard's land," to a length of 1,320 feet, beyond which it has never been taken. The line of levels from the head of the swamp along this incomplete channel ending at Shellen house, shows Shellen house to be 21 ft. above the head of the channel, so water could never have flowed to Shellen house or cottage, from any portion of "Garrard's land:" a line of levels was run from Shellen house to see if it were possible to give water to that property from any portion of the swamps selected for the site of the main reservoir, but it was found that no water could be had from that quarter. The level of Shellen house in these swamps, as also on the Guyton Park swamp, is shown on the survey: the new channel runs through a portion of the fields belonging to the Reverend Mr. Griffiths, as shown in the survey.

11. The existing channels, which go off to Mr. Mclver's house, to the Asylum, and other dwellings, are now covered with wooden aprons, and these channels can easily be supplemented from the new channel waters of these streams be turned into the new channel, the areas of their catchment basin being considerable during heavy rains. The influx of water from these small ice into the new channel would breach it.

12. The existing channels being unprotected by a fence, are constantly breached by cattle being driven across them; the owners have on more occasions than one been brought before the Magistrate for allowing their cattle to stray and destroy the channels, and on one occasion when the cattle of one of the residents were pounded by the Overseer in charge of the channel, the party concerned threatened the Cantonment Overseer with an action for damages if the pound fee was not repaid to him. The case came in the Magistrate's Court, and the Magistrate directed the refund of the fine, noting that the channel ought to be fenced, which I need hardly say would cost a very considerable amount, and, to my mind, would very soon be stolen for fuel.

13. Turning now to the water supply of the south side of the Lake, I have to state that the Lake Head Aqueduct having been completed, and in use for some time past, at present supplies only three or four houses; the position which built was, however, selected with the view of eventually utilizing it for supplying all the properties south of the lake with water: I therefore take this opportunity of submitting a survey and estimate for this work also. It having been determined to construct the head aqueduct for the female branch of the Lawrence Asylum on the Strathmore site, a large supply of water will be necessary for that institution, which can also be made available for all the Europe lying under its influence, a reservoir is, therefore, again for this project also the area has been surveyed and is shown on the plan, its capacity is 21 millions of cubic feet or 1,800,000 gallons, while the requirements for the properties are 105,000 gallons, none of the low-cost gallons, while the requirements for the properties are 105,000 gallons, none of the low-cost shown in the survey at the east-western end of the channel are cut off from actual supply by low and the intervening, but water will be brought conveniently near to them.

South side Lake	... ...	£1,150
South side do.	... ...	1,150

14. The estimate for the works submitted is Rupees 9,751 as per margin.

15. To provide funds for, or to cover the cost of, these works, I beg respectfully to bring to notice the following proposal: the number of European properties that will have a constant

supply of water is 150, and Native houses 800, if a monthly water-rent, as follows, was charged it will be seen that the estimated amount can, without any undue pressure, be cleared off:—

100 European houses renting for more than 50 Rupees per month, at 2 Rupees each per month	200
50 Do. do. under 50 Rupees at 1 Rupee do....	50
800 Native houses at 2 Annas each per mensem	100
Total for a month ...	350
Total for a year ...	4,200

Therefore if this water-rate were continued for two or three years the whole cost would be cleared off, and after this the channels, reservoirs, &c., can be handed over to the Municipal authorities, and water enjoyed rent-free.

16. Finally, I have to observe that though an enclosed water service is of course far preferable to the open channel provided for in the estimate, yet its cost makes it quite prohibitory at present; though, if the water-rates above noted be continued, there is no reason why a pipe service should not eventually be laid down; nothing is estimated for for cutting distributing channels to each property, small outlet sluices commanding each property alone are provided, from which little channels can at a very small cost be cut.

No. 322. Read the following letter from the Superintending Engineer, 7th Division:—

Submits Surveys, Estimates of, and Report on, Ootacamund Water Supply Project. } (Here enter 15th April 1868, No. 11.)

No. 323. ORDER THEREON, 12th May 1868, No. 1,508.

CIVIL WORKS, No. 35.

1. With reference to the Proceedings of Government Nos. 1,046 and 4,074, of the 5th April and 22nd December 1866 respectively, the Superintending Engineer of the 7th Division now submits plans and estimates which have been prepared by Major Farewell for the supply of drinking water to Ootacamund.

2. Major Farewell's project consists of two parts: first, the supply of the bazaars and the public buildings, as well as the private residences situated north of the lake, from the high ground about Snowdon and Dodabet, and, second, the utilization of the stream passing over the Elk Hill aqueduct, for the supply of a large number of private houses south of the lake, including the new Female Asylum at Stonehouse.

3. The first of these objects Major Farewell proposes to effect, partly by collecting the drainage of Dodabet and Snowdon by catch-water channels, and partly by the construction of a reservoir in a favorable situation where a catchment basin of about 200 acres in extent exists a short distance to the west of Northdown. He shows that the supply to be derived from the perennial springs of Dodabet and Snowdon and the adjacent high ground is not sufficiently copious nor reliable to meet the requirements of the Settlement, and that it is necessary to provide the means of storage, for which the site alluded to affords the requisite facilities. With this view Major Farewell proposes to form a reservoir to contain 46,566,000 gallons, which he estimates will be ample to meet all demands, but may be further increased by the addition of three small reservoirs below the springs at the head of the Dodabet and Snowdon channels.

4. To equalize the supply throughout the season on the south side of the lake Major Farewell proposes to construct, on that side also, a small reservoir to contain 1,800,000 gallons. Both these reservoirs will be furnished with surplus weirs, and the heads of the channels will be fitted with properly constructed sluices.

5. The scheme, as recommended by Colonel Walker and Major Farewell, differs from that referred to in the orders above quoted and is rather more elaborate and costly than was contemplated by Government. This, however, His Excellency in Council considers to be a small matter as compared with the object in view, viz., the supply of good and pure water to the Settlement. The Government approve of the plan proposed by Major Farewell, and, in sanctioning the estimates amounting in the aggregate to Rupees 12,000, they resolve to place a sum of Rupees 8,000 at the disposal of the Superintending Engineer from the Reserve under "Miscellaneous Public Improvement," to which head a corresponding sum will be transferred from the Reserve under "Communications," to admit of the immediate commencement of the work.

6. The question of levying a moderate water rate, as proposed in paragraph 4 of Colonel Walker's letter, with the view to the Government indemnifying themselves at least to the extent of the interest of the money laid out on these works, will be considered in the Legislative Department.

(True Extract.)

Colonel, R. E.,
Secretary to Government.

To the Superintending Engineer, 7th Division.
" Controller of Public Works Accounts.
" Accountant General.
" Legislative Department, with copy of the President's remarks.
" Public Department.

Ltd. S. T. Augustin.

Revenue 1868. Oct.
Pro. of Grant for Bay
No. 1623.

Proceedings of the
Govt. &c. No. Oct.

Dated 12th May.
Received 13th 1868.
No. 1508.

Papers in reference to the
project for the
supply of drinking
water to Potsdam

No. 437 & 438

With Order
of No. 1295 - 18 May

No 1295

Comm^d to the
Revenue Board

18 May 68.

14 Copies To the Bd of Rev with Pro Ord No 1508 Desp No 37