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TAMIL NADU ARCHIVES

GOVERNMENT OF TAMIL NADU

PUBLIC WORKS DEPARTMENT

G.O. No.	286 - 87 - W	Press.
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GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

1st February 1882, No. 286 W.

Buildings and Roads.
Civil Works.

Read the following paper:—

No. 1. REPORT of the Committee appointed under G.O., 6th June 1881, No. 1408 W., to consider and report on the measures deemed necessary for the improvement of the Station of Ootacamund, and to frame an approximate estimate of the cost of the needful work.

No. 2. ORDER THEREON, 1st February 1882, No. 286 W.

The attention of Government having been drawn to the requirements of Ootacamund, more especially from a sanitary aspect, the consideration of the whole question was by G.O., No. 1408 W., dated 6th June 1881, remitted to a Committee under the presidency of the Chief Engineer.

2. The Committee were engaged on the work from June to the end of October 1881, and having submitted their report recorded at the head of these Proceedings, the Right Honorable the Governor in Council desires that the thanks of Government be conveyed to them for their valuable and complete Report.

3. The proposals of the Committee embrace improved water-supply and drainage schemes, a new market and other town improvements, both sanitary and general, and are estimated to cost in the aggregate nearly 10 lakhs.

4. Of this sum it is suggested that 4 lakhs shall be advanced in the form of a loan to the Municipality, repayment being provided by increasing the present taxation from 7 to 12 per cent. on the rental of properties in the station, and that the balance of 6 lakhs be met by a grant to the Municipality from Imperial and Provincial Funds in equal shares. These grants would be spread over three or four years, as might be requisite for carrying out the works.

5. The Right Honorable the Governor in Council has given the Report of the Committee and the several suggestions contained therein his careful consideration, and after personal inspection of the localities named, by himself and by His Excellency the Commander-in-Chief, has come to the following conclusions.

6. Improved drainage and water-supply works are, in his opinion, most essential, but the former should take precedence of the latter in point of urgency. In this connection he deems it essential to note—

(1) that the Main Bazaar Kandal and other collection of native houses should be given a proper system of surface drains;

(2) that the sewage from the bazaar should on no account be allowed to flow into and contaminate the lake as it does at present; and,

(3) that the level of the lake should be lowered as suggested by the Committee.

This latter measure can, he is convinced, be carried out without creating any perceptible nuisance, and should, when completed, reclaim nearly all the ground east of the Willow Bund, thus adding to the extent and sensibly improving the healthiness of the recreation ground.

7. If the lake level be lowered gradually the small portions of exposed margin would soon be covered by vegetation, and the natural action might be quickened by sowing rapidly-growing water weeds.

8. It may possibly be found desirable hereafter to carry away the sweepings of the bazaars, &c., by a canal taken from the waste weir round the hill at the extremity of the lake to the *poudrette* dépôt, but the scheme will be expensive, and will not provide for removal of liquid sewage. Meanwhile, it would appear clear that no nuisance will be created by adopting the plan proposed by the Committee for discharge of the latter into the stream below the bund if, as may fairly be assumed, the tank waste weir or sluice can always furnish a sufficient body of water for flushing.

9. Among the detailed measures of conservancy requiring attention the following may be indicated:—

Where such accessories do not at present exist, owners of houses should at once be required to build latrines according to a plan approved by the Municipality, and of sufficient size to accommodate the number of servants on the premises, as also to provide receptacles which should be removed or emptied daily.

10. Pits for stable-litter which cannot readily be removed should be constructed, the contents of which should be either burnt periodically or used, under the sanction of the Municipality, in gardens or plantations where no contamination to the water-supply is likely to ensue.

11. The measures of sanitary improvement recommended by the Committee and others, which will readily suggest themselves to the Commissioners and the Health Officer of the station, should be kept constantly in view.

12. As regards the water-supply, considerable improvement in the existing state of things is also essential, mainly in the protection of the catchment areas, and in providing closed instead of open channels for conveyance to the points of final distribution.

13. While admitting the extreme difficulty of securing thoroughly satisfactory water-supply, the main source of which is an artificial lake or tank, there is in this instance no other alternative as the natural springs are both too few in number and too uncertain as to their yield. It is all the more necessary, therefore, that the ground forming the catchment areas should be most scrupulously preserved from any possible pollution, and the water carefully conserved in its distribution. The several proposals made by the Committee with those objects appear to be well worthy of adoption.

14. The cost of the water-supply project is approximately estimated at Rs. 2,50,000, and the money would, in the opinion of His Excellency the Governor in Council, be well spent in providing the station with a plentiful supply of pure water if the precautions above adverted can be ensured.

15. The construction of the aqueduct proposed through the Snowden House property, for increasing the water-supply and the removal of the polluted drainage from the Tudor Hall estate, are both measures which recommend themselves to Government.

16. The expense of distribution by pipes will be considerable, and will probably have to be soon met, but may, nevertheless, come last in order of the proposed works should the grants prove insufficient to meet the whole charges at once.

17. An analysis should be made by the Chemical Examiner at Madras of all water now in use at Ootacamund, from tanks, wells, the lake and the various streams running through the station. Some of these sources of supply will, it is believed, be found quite unfit for use, and such measures as may be feasible should immediately be adopted as will effectually prevent the water being employed for drinking or cooking.

18. One source of contamination is due to dhobies being allowed to wash clothes in the centre of the station and the water thus used flows into the lake. It is essential that this practice should be stopped without delay, and a place assigned

to these people at the lowest level of the station, where the water cannot possibly be used for drinking by the inhabitants.

19. As regards the minor improvements recommended by the Committee, the Right Honorable the Governor in Council concurs in the suggestions as to the removal of the slaughter houses and all other objectionable occupations, and remits this subject, together with the other matters dealt with in the Committee's Report, to the early attention of the Municipal Commissioners.

20. He is, however, unable to give his full concurrence to the proposals on the subject of the work to be assigned to the Superintendent of the Botanical Gardens. His Excellency in Council has no doubt that Mr. Jameison will help the society of Ootacamund in horticultural matters as far as may lie in his power, and trusts to his good sense to aid in the improvements indicated by the Committee as being allied to his own special occupation. If it were found feasible for the Municipality to engage the services of a really good landscape gardener, it is considered that the cost would be amply repaid by the enhanced value which would be thus given to property in the station.

21. While approving of the suggestions of the Committee as above specified, it remains to consider what portions of the schemes should be first taken up, and how the requisite funds should be provided.

22. His Excellency in Council has no doubt that the whole scheme of improvements is very desirable, and that the objects in view would be most economically attained by complete action at once, but he is not prepared to admit that the whole is of equal urgency; the Committee, however, propose that the grants, if made, should be spread over three or four years, and that period would, in the opinion of Government, be at least required for carrying out the works.

23. Taken in order of urgency, the Right Honorable the Governor in Council considers that the works stand as follows:—

(1).—*Drainage Works*—

- (a) Surface drainage of the bazaar.
- (b) Do. do. Kandal town.
- (c) Do. do. minor collection of houses.
- (d) Main sewer along north margin of lake.

(2).—*Water-supply Works*—

- (a) Improvements as recommended for both the Marleymund and Doda-betta reservoirs.
- (b) Distribution of supply by closed channels and pipes, do. northern area.
- (c) Do. do. do. southern area.

(3).—The several items included under Remunerative "urgently required improvements," page 7 of Report, modified and if possible reduced.

(4).—Do. Unremunerative do.

24. The Inspector-General of Jails will be requested to state his opinion as to the desirability of employing convicts generally on the works of reclamation, &c., and especially with reference to the clearance of "wattle" scrub, paragraphs 36 to 42 of the Report. He should state what number of prisoners might be conveniently accommodated at Ootacamund, and what have been the general results of the clearances of "wattle" in the neighbourhood of the present jail, giving the cost per acre, &c.

25. In the opinion of the Right Honorable the Governor in Council an expenditure of 4 lakhs in the first instance would admit of material improvements being effected, and he is disposed to recommend that half of the amount as a grant-in-aid from Provincial Funds, and the remainder from Imperial, be granted and held available as the progress of the work may render necessary. With this view the Government of India will now be addressed.

26. For the remaining outlay the Municipality might be called on to accept the charges, raising from time to time such small loans as may be needed. This can be done without any additional legislation.

PUBLIC WORKS DEPARTMENT, 1ST FEBRUARY 1882, No. 286 W.

27. Further orders will issue in the Financial Department as to the provision of funds as above alluded to, also regarding any change that may be desirable in the Municipal Act, as advised by the Committee, when this Government have been placed in possession of copies of the Acts relating to the Municipalities at other hill stations in Northern India.

(Here enter No. 287 W., dated 1st February 1882.)

(True Extract.)

(Signed) R. H. SANKEY, Colonel, R.E.,
Secretary to Govt., P.W.D.

To the Improvement Committee.
" Superintending Engineer, Fourth Circle.
" Financial Department.
" Judicial do.

BUILDINGS AND ROADS.
CIVIL WORKS.

Gabt. of (1882) Madras.
PUBLIC WORKS.

THE IMPROVEMENT COMMITTEE.

&c., &c., &c.

Dated February, 1st.

Issued.

Encl.

Recd.

G.O., 1st February 1882, No. 286 W.

FEBRUARY.

Nos. 1-2.

Improvement of the Station of Ootacamund.
—Passing orders on the Report of the Committee appointed to consider and report on the measures deemed necessary for the —

PUBLIC WORKS DEPARTMENT.

Buildings and Roads.
Civil Works.

No. 287 W.

No. 3.

FROM

THE SECRETARY TO THE GOVERNMENT OF MADRAS,
Public Works Department,

TO

THE SECRETARY TO THE GOVERNMENT OF INDIA,
Public Works Department.

SIR,—I am directed to submit, for the favorable consideration of His Excellency the Governor-General in Council, the Proceedings of this Government, with the Report and plan (to be returned) noted in the margin, having reference to the improvements of Ootacamund.

G.O., No. 286 W., dated 1st February 1882.

2. The subject of improving the drainage, water-supply, &c., of this which by general assent is considered the most important sanitarium in India, has from time to time forced itself on the attention not only of this Government, but also of that of the Government of India, as will be observed from the correspondence closing with Colonel Dickens' letter, No. 792 C., dated 2nd November 1867.

3. It is not now, I am to say, considered either desirable or necessary to enlarge on the claims which were so cogently urged by Lord Napier when Governor of this Presidency, and which from the correspondence quoted met, it will be observed, with so ready a response from the Supreme Government.

4. The Municipal Commission of Ootacamund, although charged with the creation of all the needful sanitary machinery, have hitherto found it impossible to enter upon the necessary works without imposing a burthen on the resident community which would be quite intolerable, while, on the other hand, the provincial resources at command of this Government have been inadequate for meeting any of the needful demands.

5. The Right Honorable the Governor in Council is of opinion that after years spent in fruitless reporting, the time for taking action has arrived, and on the eve of what he confidently believes will be an improved era as regards the provincial assignments for this Presidency, is very desirous of making a moderate grant-in-aid to the Municipality, stated in the Proceedings at 2 lakhs, and would now venture to solicit that a similar sum be contributed from Imperial Funds on the same account.

6. I am here to state that owing to a variety of circumstances unnecessary now to dwell on, the grant of Rs. 74,000 promised from Imperial towards the construction of the main sewer at Ootacamund in Colonel Dickens' letter, was never availed of by this Government; and looking to the large sums contributed by the Supreme Government towards similar needs elsewhere, the acknowledged requirements of Ootacamund,

and the position it occupies as a sanitarium for all India, His Excellency in Council hopes that the request now put forward may not be looked on as in any sense unreasonable. The grant if conceded might be lessened in its incidence by being given in instalments of Rs. 50,000 per annum for the next four years.

I have the honor to be,

Sir,

Your most obedient servant,

(Signed) R. H. SANKEY, Colonel, R.E.,
Secretary to Govt., P.W.D.

FORT ST. GEORGE,
1st February 1882.

Exd. S. T. Austin.
Spare Copies



BUILDINGS AND
CIVIL WORKS.

Gobt. of (1882) Madras.
PUBLIC WORKS.

To

THE SECRETARY TO THE
GOVERNMENT OF INDIA.

Dated February, 1st

Issued

Recd.

Encl.

1st February 1882, No. 287 W.

FEBRUARY.
No. 3.

FORWARDING Proceedings on Report of the
Committee appointed to consider and report
on the measures deemed necessary for the
improvement of the Station of Ootacamund.

REPORT.

The Committee appointed under G.O., 6th June 1881, No. 1408 W., to consider and report on the measures deemed to be urgently required for the improvement of the station of Ootacamund, and to give an approximate estimate of the cost of the needful works, have now the honor to submit their views for the favorable consideration and orders of Government.

2. Before doing so they beg to explain that the delay which has occurred in submitting their report, has chiefly been due to the necessity for personal examination of the various localities, and discussion of details of plans for water-supply and drainage, before a final decision could be arrived at.

3. It may also be mentioned that Colonel Hasted, Major Mead, and Mr. Walch, owing to the calls of their respective duties, have been obliged to absent themselves from the later meetings; they, however, afforded valuable assistance to the Committee in the early stages of the inquiries. Mr. Minchin also had to leave for England without taking part in the discussions.

4. The work of the Committee was confided to two Sub-Committees, who, in addition to minute personal inquiry, have thoroughly considered all the important reports bearing on the sanitation of Ootacamund which have previously been submitted to Government; and the following conclusions, in which the members are unanimously agreed, will, for the sake of convenience, follow much the same order in which the various subjects of inquiry have been taken up by the Sub-Committee alluded to:—

I.—SUITABILITY OF THE EXISTING SUPPLY OF WATER IN QUANTITY AND QUALITY.

5. Ootacamund is divided into two distinct areas, each of which has its storage reservoir, one the Marlimund tank, north, with a calculated capacity of 50,000,000 gallons; the other the Dodabetta tank, south, capable of containing 3,000,000 gallons.

6. Allowing 10 gallons per head per diem, and under the supposition that it is necessary to store a five months' supply to meet the requirements of exceptionally dry seasons, the Committee consider the storage capacity of the Marlimund reservoir ample for the present inhabitants, about* 11,000, and for reasonable future increase, as 16½ million gallons is all that would be consumed in that time.

* By the last census the total population north and south of Ootacamund has been shown to be 12,396.

7. Major Morant has, it is true, in his report, as per margin, calculated that the supply is inadequate, and with a view to counteract this suggested the construction of another reservoir below Snowdon House, but adds that at least nine-tenths of the volume is now wasted in distribution. If, as will presently be shown, the drainage of not less than 300 acres can be counted on for storage, 68 millions of gallons would be received each year by the reservoir, assuming that only 10 inches out of the average annual rainfall of 42 inches be intercepted, and the Committee therefore are satisfied that with due precautions the existing supply should prove ample.

8. The quality of the water collected in the reservoir is not, however, satisfactory. A large proportion of the area of the catchment, even at the time of its construction, was under tea cultivation, which, as the plants need considerable manuring, renders this part of the supply unfit for drinking.

9. To buy out the owner of the Tudor Hall estate would prove too expensive, but the Committee have had under consideration an alternative plan which, though not worked out in all its details, affords *prima facie* evidence of a less costly solution of the difficulty.

10. By excavating a catch-drain immediately below the Tudor Hall tea estate, it is hoped that all the impure supply from this source can be led off and delivered below the reservoir into the waste channel.

11. At the same time, in order to make good the area thus cut out (188.65 acres of the catchment, 268 acres in all) and if necessary add considerably to the supply, it is proposed to collect the drainage of not less than 200 acres of the upper part of Snowdon Hill (an area which is probably more free from all sources of contamination than any other) and lead it past Snowdon House in the manner indicated in the annexed survey and estimate, *Appendix A*.

12. To the Snowdon area will also be added the drainage from 35 acres immediately north, and 53.42 acres south, of the reservoir, to be led in by simple catch-drains.

13. The total catchment area thus secured will be as follows:—

	ACRES.
From present catchment	79.35
From Snowdon (available)	150.00*
From the new area North	35
Do. do. South	53.42
	88.42

Total Acres (say) ... 318.00

* One-fourth of the Snowdon area is thrown out as the 24 inch diam. pipe would not pass the whole drainage of the 200 acres on that side. At any future time by simply adding one or more pipes the drainage of an additional 150 acres or as much more as may be needed can be added to the catchment.

14. As regards the reservoir on the south side below Dodabetta, although the number of inhabitants which it will have to supply will probably not exceed in future 2,000, the present capacity, 3,000,000 gallons, is considered insufficient, and the Committee propose to increase this by 3,375,000 gallons, raising the bund 6 feet. *See Appendix B*.

15. But here again much of the catchment area being under high cultivation, such portion as cannot be readily acquired or effectively controlled must be cut out, and a fresh supply from a thoroughly reliable source brought in. Fortunately there will be neither difficulty nor any appreciable expense in effecting this. *See Appendix A*.

16. The Committee would here venture to express an opinion that the measures above recommended for insuring a perfectly pure source of water-supply for Ootacamund will have but little practical effect, unless the most stringent rules are not only laid down but enforced, for preventing in future all contamination of the catchments.

17. Already injunctions on this subject have been issued by Government; but it is feared that owing to various causes, these have not been complied with so strictly as could be desired, and it would appear essential that in the yearly Administration Report of the Municipality, the manner in which the purity of these areas is maintained, should be invariably and specially dwelt on for the information of Government.

18. Not only should the catchment areas be properly fenced off, but even grazing of cattle should be prohibited.

19. In immediate connection with the supply of water for the station, and as a possible substitute for storage reservoirs, the Committee have had under consideration proposals for an extensive construction of wells, both public and private, and in reply to a circular addressed to house-holders with this object have elicited the fact that there exist already not less than 208 wells and 69 springs of water, many of the latter being perennial. Although this points to the existence of a large supply of drinking water in ordinary years, the Committee are inclined to think that neither on the score of purity nor of permanency in exceptionally dry seasons, can either or both of these sources be implicitly relied on.

† Well water in the bazaar is very impure. These wells will have to be filled in or permanently covered over.

20. From evidence before them the Committee consider that well water in Ootacamund is not always† pure, and as regards quantity and permanency of supply, several wells, which on first construction gave good promise, are shown to have subsequently run dry.

21. Whether special encouragement should be held out to construct wells may be a matter for future consideration; but for the present the Committee think on the whole that the construction of wells may be left to private individuals.

II.—BEST MEANS FOR ECONOMISING THE SUPPLY OF WATER.

22. There can be no doubt that, as at present distributed in open channels, an immense percentage of the water, estimated as shown by Major Morant at no less than nine-tenths of the total volume, is lost. The remedy for this is simple, and the Committee are of opinion that the only proper way to conserve the water, which in addition to loss in volume is subject to all kinds of contamination, is to conduct the supply to its destination in masonry conduits and pipes.

23. The general features and probable cost of the scheme are given in Appendix B, from which it will be observed that, as regards the northern area, the water is to be conveyed in a closed masonry channel from the Marimund reservoir to a point immediately above St. Stephen's Church. Here there will be a pipe head reservoir, from which the distribution will be made in iron pipes of varying capacities, to all the most suitable points.

24. For the southern area the distribution would be wholly by iron pipes carried from the Dodabetta reservoir to the most distant points of supply.

III.—DRAINAGE WORKS REQUIRED.

25. Under this head the drainage of the bazaars claims first attention. In the opinion of the Committee the scheme framed by Mr. O'Shaughnessy for the drainage of the main Ootacamund bazaar, estimated to cost Rs. 86,400, if supplemented by gullies with gratings, and with short lengths of pipe, to drop the scourgings of the houses and backyards into the street drains, will prove suitable, particularly if everywhere stone surfaces are provided as a protection against the rough usage to which all such drains are necessarily exposed in effecting the daily cleansing, &c.

26. There is every reason to hope that, after the proper levelling and sloping of all the backyards, as contemplated by Mr. O'Shaughnessy's scheme, the provision at intervals throughout the streets of receptacles for filth and rubbish, and the strict enforcement of all conservancy rules by the municipal servants under the lately appointed Health Officer, the formation of a rotten soil should be impossible in future.

27. In addition to the special drainage works above for the main bazaar, analogous but less costly measures must be carried out for Kandal Town, which is now in a very filthy state.

28. The drainage also of one or two small localities like Bandi Shola, which cannot conveniently be brought into any large system, should be dealt with by cess-pits, which will have to be cleaned periodically.

29. Next in importance to the proper provision of surface drains for the several bazaars, &c., is the removal of the sewage, which is at present, with the exception of that from Kandal, discharged into the lake, the water of which thus becomes more foul year by year. The upper portion, east of the Willow Bund, is now in great measure a sedge pond, covered with much floating weed, and with sewage accumulations at the extremity of all the bazaar drains. Instead of the beautiful feature which it might easily, with a little care and taste, be made, the lake is rapidly becoming a disgrace to Ootacamund.

30. Some slight modifications in the details of Captain Tulloch's project have been recommended by the professional officers on our Committee, and it is also thought that instead of commencing the sewer near the head of the lake, a sewage pipe of small capacity, (preferentially of iron,) should be carried up as far as the Madras Carrying Company's premises, as a good deal of foul matter is now discharged into the supply channel from that quarter, which it would otherwise be difficult to dispose of. These slight modifications would approximately raise the estimated cost from Rs. 74,000 to Rs. 90,000.

IV.—OBJECTIONABLE OCCUPATIONS.

31. At various places throughout Ootacamund objectionable occupations have been allowed to spring up. Though the removal of such is only matter for compensation, as the provisions of the Land Acquisition Act can be put in force, the cost will be heavy, and should be undertaken with discrimination, and be only resorted to in the most urgent cases.

32. Among the most needful measures in this respect will, the Committee consider, be the following:—

- (1) The acquisition for public purposes of Toppa Moodelly's lines and bungalow (at foot of Bombay House hill) and the land attached thereto.
- (2) Do. do. Tom's bungalow and site at foot of Shoreham hill.
- (3) The acquisition, drainage, and cleansing of—
 - (a) Joachim Petta, a collection of filthy houses.
 - (b) Charcoal village, do. do.
 - (c) The long unused Forest Department timber-yard, near Charing Cross, a great eye-sore in the heart of Ootacamund.
 - (d) Tirroovangadam Moodelly's land near Crewe Hall, most unsightly in its present condition.
 - (e) Other objectionable spots in scattered localities.

33. For the persons removed under (1), (2), and (3), fresh buildings sites, &c., should be found in Kandal and the necessary compensation paid. In most of these cases the amount of the latter has been sufficiently ascertained.

34. As a rule the future extension of native occupation should be allowed only in the last-named locality—Kandal town—where land may be acquired by the Municipality and laid out on a well-arranged plan.

35. In immediate connection with this subject, the Committee desire to bring to notice that the municipal authorities have apparently no sufficient powers, under the existing Act, to prevent the erection of unsightly tenements, and that if expenditure is now to be incurred as recommended for the removal of objectionable occupations, it would appear equally necessary to legislate with this object for the future.

V.—OBJECTIONABLE VEGETATION AND NEGLECTED LANDS.

36. The excessive growth of the Australian acacia ("wattle") has become a most serious evil in Ootacamund, and from the fact that in the form of a jungle or dense "bush", it has proved itself of value to house-owners as fire-wood, the nuisance threatens to be perpetuated indefinitely.

37. The Committee are satisfied that nothing short of complete extirpation of the "wattle" from the station will answer or should be aimed at, and they beg to press the necessity of this most earnestly on the consideration of Government. The medical officers are very pronounced in their condemnation of this overgrowth, which, stops the free circulation of air, and affords shelter for nuisances of all descriptions.

38. The Municipal Commissioners are understood to have under contemplation, the necessity of imposing such a rate on the cultivation of the wattle, as will prevent the areas so occupied being looked on as a valuable firewood preserve.

39. This measure may be deemed oppressive by house-holders, but the magnitude of the evil is such that, in the public interests, some sacrifice is called for. To minimise as much as possible the objections that may be entertained to the proposed action, the Committee would venture to recommend that Government meet the house-holders half way, by some such arrangement as the following:—

40. It is generally understood that to eradicate the wattle costs about Rs. 200 per acre, and that even with this outlay it is difficult for private individuals to ensure that the work is thoroughly done, as coolies on daily hire, unless very closely watched, fail to remove the roots which are the source of the evil.

41. The work can, in fact, be only done satisfactorily by prison labor, and the Committee would suggest that Government maintain an adequate body of convicts to meet the requirements of private individuals in this respect, and that the jail authorities be prepared to contract for the thorough eradication of the wattle, at the rate of Rs. 100 per acre.

42. By this means alone the Committee are convinced can this evil be met, and, should Government adopt the suggestion, they are of opinion that with due notice it would be perfectly equitable to enact that the retention of the obnoxious plant in any compound after a period of ten* years should be illegal, and subject house-owners to penalties, in addition to meeting the full cost of its eradication.

* Some members of our Committee consider that a grace of only five years should be granted.

43. In a minor degree other classes of vegetation, allowed to run into excess, are very objectionable, added to which heaps of paper, broken glass or china, with the thousand and one objects which, though not actually injurious to health, are in civilized countries prohibited as nuisances, meet the eye at every turn in parts of Ootacamund. For the removal of these and for securing proper attention to the tidy and neat appearance of the various private properties, the Committee consider the Act requires strengthening.

VI.—SLAUGHTER HOUSES.

44. The mutton, beef, and pork slaughter houses should, in the opinion† of the Committee, as strongly urged by many medical authorities on previous occasions, be moved from their present site, closely adjoining the Main Bazaar, to a spot beyond Kandal on the Pykara road.

† Some members of the Committee would be satisfied with the less expensive proceeding of simply improving the present slaughter houses.

VII.—A GOOD DAILY MARKET.

45. Public opinion being unanimous as to the necessity for this, as lately evinced by the movement so heartily responded to, of associating the name of the late honored Governor with the work, that the Committee feel it would be superfluous to record their reasons for considering this to be perhaps one of the most urgent necessities of the station. They merely observe that the butchers' shops would all be transferred to this building, and that such removal would put an end to one of the most offensive sights in Ootacamund. Moreover, from information received, the work is certain to be remunerative.

46. Legislation will be necessary to compel butchers and persons of certain other callings to confine the sale of their wares exclusively to this new market.

VIII.—MISCELLANEOUS BUILDINGS, &c., NEEDED.

47. (a) A public cattle and bandy-stand with proper shelter for the animals close to the market.
 - (b) Permanent lines for municipal coolies and bandy-men.
 - (c) More public latrines and urinals in various parts of the town.
- Some of these works will be remunerative, (a) especially so.

IX.—IMPROVEMENT AND PLANTING OF PUBLIC GROUNDS.

48. All the lower parts of Ootacamund suffer both in appearance and in salubrity, from the lodgment of water and imperfect drainage.

49. One of the worst localities in this respect is at present being dealt with in constructing a new road of approach to Government House and the Botanical Gardens, advantage being taken of the work to cut a deep drain which, with other arrangements, should in time have a marked beneficial effect.

50. But all the low ground extending down the valley to the head of the lake has water so near the surface that much of it is in a sedgy condition, overgrown with docks and other rank weeds, and is both offensive to the eye and unhealthy. The A B C ground is from this cause the most notably catch-cold place in Ootacamund.

51. All the portion of the lake east of the Willow Bund is in the offensive condition previously described under head III above.

52. There are two ways of dealing with the matter, (1) by raising the level of all the affected grounds, or (2) by lowering the level of the water in the lake, which necessarily keeps up the spring level. The latter is obviously by far the cheapest plan, all that is needed being to cut down the level of the waste weir at the bund from 3 to 6 feet as may be desirable; in fact, by just so much as will lay dry the portion east of the Willow Bund. The ground so reclaimed may quickly and at small expense be turned into pleasure and recreation grounds.

53. The latter are much wanted for such purposes as Cricket, Polo, and Gymkana Sports, for which the present A B C grounds are much too restricted.

54. It must be borne in mind that the lake, as it stands, fulfils no useful functions for Ootacamund. It irrigates no ground below its bund, its water is unfit for drinking, unused for boating, and, if not ornamental, is valueless if not worse, as being little better in its present state than a receptacle for sewage.

55. The slope of the margins being very steep, the lowering of the present water-level by 6 feet would not narrow the present spread of the water in all by more than 30 or 35 feet at most; practically therefore this proposal, while pointing to an easy means for improving sensibly the sanitary condition of all east and north of the Willow Bund, and affording scope for improvements otherwise unattainable, would to no sensible degree interfere with the extent of the lake to the west of that point.

56. Instead moreover of leaving this latter portion in its present bald, unplanted, and uncared-for condition, particularly along its northern margin, the Committee strongly advocate all the knolls down to the water's edge being planted with selected trees (conifers chiefly) thereby turning the lake into the most attractive feature in Ootacamund.

57. North and close above the main bazaar it is very desirable that a wide road should be cut out of the hill side leading towards the market place, and the excavated earth used for filling in the unsightly pits, and otherwise bringing into form this most unsightly and neglected portion of ground.

58. The Committee consider that in connection with these and other improvements, to be effected chiefly through the action of the Municipal Commission, it would be highly desirable to enlist the active aid of all house-owners, in effecting judicious clearances of over-planted land, and by planting ornamental trees in groups or singly where such would be most effective.

59. With this object they would strongly recommend that both the Superintendent of the Botanical Gardens, and the Gardens themselves, should be placed much more than has hitherto been the case, at the service of the public.

60. The duties of the former might, with great advantage, be strictly confined in future to the care of all public grounds in Ootacamund, and to affording advice and assistance gratis to all house-owners, who may be desirous of improving their compounds by planting or clearing.

61. He should maintain at the gardens a nursery of such young trees and shrubs as experience has proved to answer best, the plants to be sold to the public (of Ootacamund only) at strictly cost price, instead of as hitherto at practically prohibitory rates. It is not perhaps too much to say that, owing to the present high prices of the plants and to the location of the gardens, the latter have hitherto been of little or of no use to any one.

62. To these duties might with advantage be added the publication from time to time of price lists of all the saleable stock, including seeds procurable from the gardens, and a monthly Gardeners' Chronicle, giving hints regarding the flowers to be put in during the succeeding month, the cultivation of vegetables, fruit trees, &c.

63. As the Committee are given to understand that the present Superintendent has many miscellaneous demands on his time unconnected with Ootacamund, which are incompatible with those above alluded to, they trust the Government may find it feasible to relieve him of all extraneous duties.

64. X.—COST OF THE SEVERAL PROPOSALS.

Water-supply, North side of Ootacamund.

	RS.	TOTAL RS.
Additions to the catchment of the Marlimund reservoir with subsidiary works, &c., see Appendix A.	33,750	
Fencing and distribution generally, see Appendix B	1,29,146	
Extra establishment and contingencies at 10 per cent.	16,289	
Total, North side	1,79,185	

Water-supply, South side.

Alterations to catchment of Dodabetta reservoir, see Appendix A.	2,000	
Fencing and distribution generally, see Appendix B	66,320	
Extra establishment and contingencies at 10 per cent.	6,832	
Total, South side	75,152	

Grand Total for water-supply and distribution (in round numbers).	2,55,000	
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Drainage.

Surface drainage, main bazaar, with certain additions to Mr. O'Shaughnessy's estimate.	90,000	
Do. Kandal town	30,000	
Do. other localities	25,000	
Intercepting sewer as estimated by Captain Tulloch with certain additions to complete the scheme.	90,000	
Total, Drainage	2,35,000	

Urgently required improvements.

(a) Unremunerative.

Removal of objectionable occupation	50,000	
Improved lighting for the streets and roads	7,000	
Additional latrines and urinals	7,000	
Conservancy plant	10,000	
Office for Municipal Commission	40,000	
New road above the main bazaar, lowering the level of the lake, reclaiming same at upper end, &c.	25,000	
Planting public grounds, margin of lake, &c.	14,000	
Unforeseen contingencies	1,60,000	
Total, Unremunerative requirements	1,60,000	

(b) Remunerative.

New General Market	2,50,000	
Cattle and bandy stand	30,000	
Slaughter houses	25,000	
Scavengers' and bandymen's lines	15,000	
Contingencies	10,000	
Total, Remunerative requirements	3,30,000	
Total for improvement	4,90,000	
Grand Total under all heads	9,80,000	

XI.—WAYS AND MEANS.

65. As comprehensive improvements on the scale above contemplated by the Committee would unquestionably insure a valuable enhancement to all property in Ootacamund, it is only reasonable that all house-holders should be prepared to undertake a fair share of the charge imposed by the provision of the means needed for their execution.

66. House-holders are now taxed for all municipal purposes to the extent of $7\frac{1}{2}$ per cent. on the rental value of their properties.

67. This is sensibly lower than the incidence of taxation in Madras and other large towns, and the Committee see no reason why, in order to meet as far as possible the objects at present in view, a maximum consolidated rate of 12 per cent. on the rental* should not be imposed, i.e., under the proviso that the scheme in its entirety, as now recommended, commands the approval and sanction of Government. It is needless to say that legislation would be necessary for this.

68. While thus prepared to recommend an increase of taxation to this large amount in the conviction that the resulting benefits will in time well repay the same, the Committee would deprecate very earnestly any increase over and above the limit specified, as such would in all probability tend to discourage permanent residence on the part of those classes, whose presence it is on every account most desirable to encourage, viz., the retired servants of Government and others with limited means.

69. The Committee are given to understand that the Municipality have already addressed Government as to the propriety of raising a loan of four lakhs of rupees at 4 per cent., with a view to carrying into effect some of the most needful improvements specified in this report, and they are of opinion, from statements of the financial condition laid before them, that with a consolidated tax to the limit proposed, the Municipality could not only meet the demand for interest on the loan, but be enabled to create a sinking fund for the eventual extinction of the debt.

70. The total approximate outlay being close on ten lakhs, the Committee see no other means for meeting the difference, viz., six lakhs, than by a Government grant, and, however large the demand, they are encouraged to hope that, taking into consideration the peculiar position which this station occupies, and the functions it fulfils towards not only this Presidency, but it may fairly be said towards the rest of India, such may not be considered unreasonable.

71. They cannot do better than here quote the cogent arguments adduced by Lord Napier when, as Governor, he recorded the following observations in his minute, dated 13th September 1867. "The Government of Madras, acting with the sanction of the Government of India, has created Ootacamund, has beautified it, has rendered it accessible by expensive roads, has made it the seat of various public establishments, such as jails, dispensaries, orphanages, and plantations, has invited the sick and the suffering of all classes to repair hither from all parts of India for the restoration of their health and vigor. The Government has given an imperial character and significance to the place, but while doing so, has marred its benevolent intentions by leaving a source of mischief in the very centre of the cherished spot. I do not think it would be liberal or equitable, at this stage when the evil has just attained proportions which can no longer be concealed or denied, that the Government should create a Municipality and discharge upon it the burthen of remedying an abuse which the Government itself permitted to grow."

72. The time that has elapsed since these eloquent words were penned, and since the more prosaic, but not less accurate and forcible, reports previously alluded to were written by the professional officers of Government, has only served to confirm and intensify the truth of all that has been thus advanced.

73. The Municipality were created at a time, when few or none of the really essential sanitary requirements of this large and growing station, had even received an initiative.

74. With means which were, and still unfortunately are, barely sufficient to meet the most urgent daily demands, and with moreover an Act, the many imperfections of which are only too patent, they were apparently expected not only to initiate but carry out several large measures of reform and improvement most urgently demanded, and the Committee feel bound to submit that prompt measures are needed to rescue this deserving body from a most embarrassing position.

75. The appeal made by Lord Napier was promptly and liberally responded to by the Supreme Government, who in their Public Works Department letter No. 792 C, dated Simla, 2nd November 1867, conveyed sanction to Rs. 74,000 as an Imperial Grant, on account of Captain Tulloch's estimate for the intercepting sewer. Most unfortunately this grant, owing it is believed to the exigencies of finance, was never availed of, and the work was consequently not carried out.

76. Looking to the foregoing considerations, and the fact that the Government of India has, it is understood, during late years given grants of not less than eight lakhs of rupees for general improvements, and lent seven lakhs more at 4 per cent. to the Simla Municipality for water-supply works, the Committee are sanguine that at least half of the 6 lakhs so urgently needed for Ootacamund may, under proper representation, be conceded as a grant-in-aid from Imperial Funds, with the object of carrying out the suggested improvements to this the Queen of hill stations and the finest sanitarium in India; also that the remaining three lakhs may be given from Provincial. These grants if conceded might if necessary be spread over the next three or four years.

(Signed) R. H. SANKEY, Colonel, R.E.,
Secretary to Govt., P.W.D.

(") M. C. FURNELL, M.D.,
Dy. Surgeon-General, Sanitary Commr.

(") N. ROUPELL,
Acting Commissioner, Nilgiris.

(") R. J. BAKER, Major-General.

(") H. R. MORGAN, Major-General.

(") J. O. HASTED, Lieut.-Col., R.E.

(") L. C. NANNEY, Surgeon-Major.

(") J. SMITH, Surgeon-Major.

(") H. R. MEAD, Major, R.E.

(") G. T. WALCH, M. Inst. C.E.

(") J. O'SHAUGHNESSY.

(") W. E. SCHMIDT.

APPENDIX A.

OOTACAMUND WATER-SUPPLY PROJECT.

THE MARLIMUND RESERVOIR.

The present catchment area is 268 acres, of which 188.65 acres are to be cut off and 79.35 acres retained as follows:—

Owner of Land.	Area.	Area to be cut off.	Area to be retained.	
	ACRES.			
General Baker	189.69	186.23	3.46	Uncultivated.
Mr. Frend	7.02	2.42	4.60	
„ Wapshare	47.73	...	47.73	
Total, Private lands ...	244.44	188.65	55.79	
Government waste	23.56	...	23.56	
Total	268.00	188.65	79.35	

The area that can be added north of reservoir is 35 acres, as follows:—

Private land (Mr. Taylor's)	8
Government waste	27
Total	35.00

and on the south of reservoir 53.42 acres, as follows:—

Private lands—	13.27
Mr. Frend	5.0
„ Cowdell	5.15
„ Griffiths	...
Total, Private	23.42
Government waste	30.00
Total	53.42
Total, area available west of Snowdon Saddle ...	167.77

The probable cost of securing the retained and added area will be—

Retained area, private land, 55.79 acres at Rs. 100	5,579
Added on north side do., 8 at „ 50	400
Do. on south side do., 23.42 at „ 100	2,342
Total, compensation for land 86.21 acres	8,321

The cost of diverting the drainage of the area cut off will be—

One mile of channel	500
Culvert under Marlimund road	1,000
Total	1,500

Total for compensation and works ... 9,821

or say Rs. 10,000.

The catchment area of 167.77 acres set apart as above for the sole use of the reservoir can be supplemented to any extent up to from 500 to 600 acres on the Snowdon Hill, of which about 10 acres value about Rs. 1,000 is private property.

The cost of conveying this drainage will be approximately as follows:—

	RS.
Catch drain round Snowdon Hill	1,000
One thousand feet of 24-inch main pipe along Snowdon Saddle	15,000
Cisterns at head and mouth of pipe 1,500 each	3,000
Channel from saddle to reservoir 500, superpassages of road drainage 500, inlets for hill drainage 500, culvert under Marlimumund road 750	2,250
Compensation for land on Snowdon Hill	1,000
Do. do. in course of channel to reservoir	500
And for the removal of huts above proposed line of channel	1,000
Total	23,750
Add for compensation and work on Marlimumund side as detailed above	10,000
Total cost of project	33,750

It must be observed that the 24-inch main pipe along Snowdon Saddle is calculated to carry the drainage of only 200 acres of the catchment area available on the Snowdon Hill, and more than this is not likely to be required for very many years to come. Should it be necessary to increase the supply from the Snowdon catchment area at any future time, another pipe of the required dimensions can be laid alongside of the 24-inch pipe now proposed.

DODABETTA RESERVOIR.

The present catchment area of this reservoir is 172.72 acres, of which 80.72 acres are private property and 92 acres Government waste and forest reserve. This area is a great deal more than what is required, and it will be reduced to 74 acres by cutting off 78.72 acres of the private land and 20 acres of the Government reserve as follows:—

Owner of Land.	Area.	Area to be cut off.	Area to be retained.
Mr. Misquith	ACRES.		
" Cowdell	5.00	5.00	0.00
Government waste and reserve	75.72	73.72	2.00
	92.00	20.00	72.00
Total	172.72	98.72	74.00

The 20 acres of Government land which is to be cut off lies beyond the private lands, and there is no necessity to incur the expense of leading its drainage to the reservoir; because the present capacity of the reservoir is 3,000,000 gallons, or 430,000 cubic feet. This capacity is to be increased to 6,000,000 gallons or to 960,000 cubic feet. The rainfall is 42 inches per annum, and, supposing half of it reaches the reservoir, the discharge from 74 acres would be 5,641,020 cubic feet, or sufficient to fill the reservoir seven times in the year.

	RS.
The cost of cutting off the surplus area and of securing the selected basin of 74 acres for the sole use of the reservoir will be compensation for 2 acres of private land (cultivated)	500
Catch drains to carry away the drainage of the lands cut off	1,000
A small viaduct to carry this drainage under the supply channel of the reservoir	500
Total	2,000

The position of the reservoirs of the lands and of the works referred to is shown on the accompanying map.

The position of the proposed distributing pipes is for convenience of reference shown also, but this part of the project is explained in another paper.

OOTACAMUND,
12th October 1881.

(Signed) J. O'SHAUGHNESSY, C.E.,
Local Fund Engineer, Nilgiri District.

APPENDIX B.

IMPROVEMENT OF OOTACAMUND WATER-SUPPLY.

SKELETON ESTIMATE.

No. of Item.	Description of Work.	Reference.	Cost of each Item.	Total.
			RS.	RS.
North side of Lake.				
1	Fencing round Marlimumund reservoir, length 5,750 feet.	Explanatory memorandum.	4,500	
2	Widening bye-wash, by moving back road, by 15 feet.	Do. ...	2,400	
3	Catch channels to bring extra water to Marlimumund reservoir (about 4 miles at Rs. 500).	Do. ...	2,000	
4	Masonry conduit from Marlimumund reservoir to Snowdon tunnel (see Captain Morant's report No. 206, 1st June 1877, paragraph 11).	Explanatory memorandum and Captain Morant's report No. 206, 1st June 1877, paragraphs 11 and 12.	14,646	
5	Cement piping (12 diameter) from tunnel to proposed service reservoir near St. Stephens', 6,000 feet at Rs. 1½ per running foot (say).		7,000	
6	Service reservoir (to hold three days' supply) near St. Stephens'.	Explanatory memorandum.	35,000	
7	Distribution piping as per detail list	Do. and map.	54,000	
8	Fountains (three) and stand-pipes (thirty), "fountains" Rs. 1,200 each = Rs. 3,600, and stand-pipes Rs. 200 each = 6,000.	Do. ...	9,600	
	Total, north side of lake (say)			1,29,146
				1,29,000
South side of Lake.				
1	Raising by 6 feet the bund, &c., of Dódabetta reservoir.	Explanatory memorandum and plan.	1,700	
2	Fencing round reservoir (1,400 feet)	Explanatory memorandum.	1,050	
3	Iron piping (4 inch diameter) to service reservoir west of Elk-hill aqueduct and fencing along cascades.	Do. ...	16,070	
4	Service reservoir to hold three days' supply	Do. ...	8,500	
5	Piping (as per detail list) for distribution	Do. and list and map.	38,000	
6	Stand-pipes (five at Rs. 200)	Do. ...	1,000	
	Total, south side of lake (say)			66,320
				66,000
	Grand Total			1,95,000

DETAIL LIST OF PROPOSED MAIN DISTRIBUTION PIPING.

Distin- guishing No.	Lines of Pipe.	Diameter of Pipes.	Length in	To supply.
	North of Lake.	IN.	FT.	
1	From service reservoir to Club road and by Westbury road to Kandal (Pykara road).	4	1,980	Branch No. 2, population. 505
		3	4,290	Do. " 3, " 1,240
				All between Westbury road and Kandal nullah, and whole of Kandal ... 1,681
	Total, Length No. 1 ...	...	6,270	Total ... 3,426
2	From No. 1 (at 1/4th of a mile) along present channel.	3	2,640	All between it and Westbury road, population. 505
3	From No. 1 (at 3/8ths of a mile) at Hadfield's roads and along that road to Westlake.	3	1,980	Branch No. 4, population. 942
		1 1/2	3,960	Seventeen European houses ... 298
	Total, Length No. 3 ...	...	5,940	Total ... 1,240
4	From No. 3 (at 3/8ths of a mile) at Sandrook along Whiphurst road with three minor branches (in all 3/8ths of a mile) to Muttachari.	3	1,650	Roman Catholic establishment ...
		1 1/2	990	European houses and whole of Muttachari. ... 942
			2,640	
5	From service reservoir new line to jail and thence to bazaar (Lake road).	5	1,650	Branches Nos. 6, 7, and 8, population ... 3,814
		4	3,630	Public offices, Jail, Police Lines, &c. ... 1,214
	Total, Length No. 5 ...	...	5,280	Total ... 5,028
6	From near end of No. 5 along middle bazaar road to market.	3	1,980	Part of bazaar (say) ... 2,000
7	From end of No. 5 along Lake road to Lady Hobart's school.	3	1,320	Do. do. do. ... 1,029
8	From No. 5 (at 3/8ths of a mile) near library, along Telegraph lane and along Commercial road both ways to market and Charing cross.	3	3,960	Whole of Agraaham, Tonga Company's stable, Alexandra Hotel, &c. ... 785
9	From service reservoir along Snowdon road to Mt. Carmel and thence to Allamby's stables.	3	3,300	Thirteen European houses, Allamby's stables, Engineer's office, &c. ... 398
10	From pipe between Snowdon tunnel and service reservoir starting near Stover cottage and along St. Ann's Hill to near Otiley.	3	2,640	Eleven European houses and Bandy shola ... 700
	Total, Running Feet ...	...	35,970	

ABSTRACT.

	Diameter of Pipe.	Lineal Feet.	Rate per Lineal Foot.	Total each size.	Grand Total.
	IN.	FT.	RS. A. P.	RS. A. P.	RS.
Part of No. 5 ...	5	1,650	2 10 0	4,331 4 0	
Part of No. 1 (1,980 feet), and part of No. 5 (3,630 feet) ...	4	5,610	2 0 0	11,220 0 0	
Part of No. 1 (4,290 feet), whole of No. 2, part of No. 3 (1,980) ...	3	23,760	1 6 0	32,670 0 0	
Part of No. 4 (1,650 feet), and whole of Nos. 6, 7, 8, 9, and 10 ...	1 1/2	4,950	1 2 0	5,568 12 0	53,790
Part of No. 3 (3,960 feet), and part of No. 4 (990 feet) (wrought iron) ...	...	35,970	...	...	
Total, Running Feet ...	...	...	...	...	54,000
Total, north of lake (say) ...	...	...	...	...	

DETAIL LIST OF PROPOSED MAIN DISTRIBUTION PIPING.

Distinguishing No.	Lines of Pipe.	Diameter of Pipes.	Length in	To supply.
South of Lake.				
1	Main from service reservoir to Woodstock	IN. 4 3 1½	FT. 3,630 2,970 6,600	All branches.
	Total, Length No. 1	...	13,200	
2	From ¾ths of a mile, 11 main near Elk-hill house.	1½	2,310	Elk-hill house, Little Shoreham and Shoreham.
3	From No. 2 to bank and houses near lake.	1½	1,980	Bank, &c.
4	From No. 2 at same point as No. 3.	1½	2,310	Abdul Khader's shop, &c.
5	From ¼ths of a mile of main to brewery, &c.	1½	1,320	Brewery, Stellinberg, A.B.C. ground, &c.
6	From ¾ths of a mile of main to Bakie house, &c.	1½	1,320	Bakie house, &c.
7	From 1¼th of a mile of main to St. Thomas' church with branch to "Mobornane."	1½	4,620	Oaklands. Birdwood, Cotissa Woodcot, &c.
8	From 1¼ths of a mile of main to Barton cottage, &c.	1½	1,320	Barton cottage, &c.
9	From 2¼th of a mile of main to Blackwood cottage.	1½	1,650	Geranium cottage, West cottage, Blackwood cottage, &c.
	Total, Running Feet	...	30,030	

ABSTRACT.

	Diameter of Pipe.	Lineal Feet.	Rate per Lineal Foot.	Total each size.	Grand Total.
Part of No. 1 (3,630 feet)	IN.	FEET.	RS. A. P.	RS. A. P.	RS. A. P.
Do. of " 1 (2,970)	4	3,630	2 0 0	7,260 0 0	
Do. of " 1 (6,600 feet) and whole of all other branches (wrought iron)	3	2,970	1 6 0	4,083 12 0	
	1½	23,430	1 2 0	26,358 12 0	37,702 8 0
Total, Running Feet	...	30,030	...	...	
Total, South of lake (say)	...	...	...	...	38,000 0 0

EXPLANATORY MEMORANDUM TO ACCOMPANY ESTIMATE FOR WATER-SUPPLY IMPROVEMENT.

NORTH SIDE OF LAKE.

ITEM 1.—The fencing round the reservoir is intended to be of four lines of galvanized iron wire 1 foot apart running through tarred teak uprights 9 feet apart, of a total height of 6 feet, of which 2 feet buried in the ground. This will prevent cattle from getting to the water and fouling it by droppings and wallowing. It will also keep out human trespassers who now frequently use the lake to wash themselves, and cattle in partly from ignorance and partly from the temptation afforded by unobstructed facility. Of course a watcher will be required, no matter what may be the character of the enclosing fence.

ITEM 2.—Widening Bye-wash.—On the sufficiency of the surplussing arrangements depends the safety of the reservoir; those in existence, though they have proved sufficient for the present catchment basin, are, according to theory, perilously small, and when the catchment basin is increased, as proposed, they must be widened by 15 feet.

ITEM 3.—Catch Channels.—Though the existing* reservoir when full holds enough for a five months' supply, its present catchment basin does not suffice to frequently fill it, and it is therefore proposed that, if found necessary, water from other gathering grounds should be led to the reservoir. See Appendix A.

* Capacity 50,000,000 gallons.
† 20 Gallons per head per diem × 12,000 population × 152 days + 10,000,000 gallons evaporation = 46,480,000 gallons.

ITEM 4.—Masonry Conduit from Reservoir to Snowdon Tunnel.—It has been decided that, on the score of both cleanliness and economy of water, it is necessary to enclose the channel, and the fall available being small, a masonry conduit will be much cheaper than iron pipes; such a conduit has been already designed and estimated for by Captain Morant.—See paragraph 11 of his report No. 206, 1st June 1877, the cost being Rs. 14,646.

ITEM 5.—Cement piping from Snowdon Tunnel to proposed "Service" Reservoir near St. Stephens' Church.—For the same reasons as those given as regards Item 4, this portion of the channel should be enclosed, and, as the fall is considerable, a 12-inch pipe will be sufficient to discharge all that is required (240,000 gallons in twelve hours) running three-fourths full. An iron pipe of that diameter would cost about Rs. 6-4-0 a running foot, but as with proper surplussing arrangements at the service reservoir there need be no pressure on the pipe, a cement pipe, as proposed in paragraph 12 of Captain Morant's report, No. 206, dated 1st June 1877, will do, and this according to his estimate will cost only about Rs. 1-2-0 a running foot, or a total for the 6,000 feet of Rs. 6,750, (say) Rs. 7,000.

ITEM 6.—Service Reservoir near St. Stephens' Church.—From this it is proposed to lead off the distributing mains; it will serve as the pressure reservoir, and it is thought that to prevent inconvenience in the event of stoppage of supply from the Marlund reservoir for a time to admit of repairs to that reservoir or to the channel from it, it would be advisable to make this service reservoir of a capacity to hold three days' supply, i.e., 720,000 gallons. With a depth of water in it of 8 feet, which has been adopted, the area of the reservoir would have to be 14,400 square feet. It would have to be cut out of the side of the hill, and this would, if it were made square, necessitate such a great depth of cutting over part of the area that it is considered advisable that it should be 60 feet broad × 240 feet long, therefore the walls would have to be 9 feet high, and where not built into the sides of the excavation, of a mean thickness of about 4 feet, where merely face walls to the excavation they might be of a mean thickness of 2 feet; they should be of best brickwork in cement and coated on exposed faces with cement. The floor and foundation of walls, a 1 foot 6 inches thick platform of cement concrete. Surplus might be provided by a 9-inch iron pipe leading for about one-eighth mile to either of the natural streams east or west of Church Hill. From this reservoir would take off one 4 inch, one 5 inch, and one 3 inch main (Nos. 1, 5 and 9 in detail list of distribution piping) with the necessary controlling valves. The total cost at rates furnished by Mr. O'Shaughnessy would be approximately Rs. 35,000.

ITEM 7.—Distribution Piping.—The system of mains proposed is indicated in the "detail list" of distribution piping and on the plan herewith. The sizes of the pipes would probably require rearrangement (almost always in the direction of reduction) when detail levels are taken for working the system out with accuracy. It has been assumed that the pipes should be able to carry the full daily supply in twelve hours. The rates have been arrived at from those again in the attached letter from the Ashley Works, Coonoor.

ITEM 8.—It is considered that there should be provided three additional street fountains and thirty "stand-pipes" fitted with "self-closing lever valves" which will only allow a certain quantity of water to pass each time the knob or handle is lifted, and with caps from which a water-cart can be filled into which a hose may be attached. The former, will cost probably Rs. 1,200 each, and the latter Rs. 200 each.

SOUTH SIDE OF LAKE.

ITEM 1.—*Raising bund, &c., of Dōdabetta Reservoir.*—The population south of the lake is 1,800; taking it as 2,000, the total storage required is $2,000 \times 20 \text{ gallons} \times 150 \text{ days} = 6,000,000$ gallons. The existing reservoir is said* to hold 3,000,000 gallons (this is probably under the mark), and I have ascertained from a survey (plan herewith) that by raising the full water-level by 6 feet, the contents would be increased by about 3,375,000 gallons, and the estimate provides for such raising of the bund, water tower, bye-wash, &c. The catchment basin and rainfall are ample.

ITEM 2.—*Fencing round Reservoir* to be of same character as described for Item 1, north side.

ITEM 3.—For the reasons given under Item 4, north side, it is proposed to enclose the whole channel from the reservoir (with the small exception named below); the fall available being great a small iron pipe (4-inch diameter) will suffice and be the cheapest arrangement. The estimate therefore provides for such a pipe to the "service" reservoir, excepting along two cascades (700 feet in length) which it is proposed only to fence, leaving the water to be aerated and oxygenized by the exposure to the air and the tumbling down the cascades, a total height of about 200 feet.

ITEM 4.—*Service Reservoir* to hold three days' supply equal 120,000 gallons, 2,400 square feet required. There is a capital site between "Pepbrook" and "Elk-hill Lodge" (or "Cottage") and on the general lines indicated under Item 6, north side (except that this reservoir might be square and the surplus pipe only a few feet long), the cost would probably not exceed Rs. 8,500.

ITEM 5.—*The remarks on Item 7, north side*, are applicable to this.

ITEM 6.—*It is considered that "five stand-pipes" of the character and cost mentioned under Item 8, north side*, should be provided.

(Signed) G. T. WALCH,
Executive Engineer, P.W.D.

N.B.—It will be observed that all the arrangements and calculations in the above estimate have been made for a supply of 20 gallons per head per diem; but first as in excessively dry years the quantity intercepted may be rather short of this; second as the population do not really require more than half this amount; and third as there are wells and springs to supplement the supply, the Committee in their report have adopted 10 gallons per diem as the standard. As, however, in all years of ordinary rainfall, 20 gallons may safely be distributed, they prefer not to alter the estimate framed by Mr. Walch.

EXPLANATORY MEMORANDUM TO ACCOMPANY ESTIMATE FOR
WATER-SUPPLY IMPROVEMENT.

NORTH SIDE OF LAKE.

ITEM 1.—*The fencing round the reservoir* is intended to be of four lines of galvanized iron wire 1 foot apart running through tarred teak uprights 9 feet apart, of a total height of 6 feet, of which 2 feet buried in the ground. This will prevent cattle from getting to the water and fouling it by droppings and wallowing. It will also keep out human trespassers who now frequently use the lake to wash themselves, &c., cattle in partly from ignorance and partly from the temptation afforded by unobstructed facility. Of course, a watcher will be required, no matter what may be the character of the enclosing fence.

ITEM 2.—*Widening Bye-wash.*—On the sufficiency of the surplussing arrangements depends the safety of the reservoir; those in existence, though they have proved sufficient for the present catchment basin, are, according to theory, perilously small, and when the catchment basin is increased, as proposed, they must be widened by 15 feet.

ITEM 3.—*Catch Channels.*—Though the existing* reservoir when full holds enough for a five months' supply, its present catchment basin does not suffice to frequently fill it, and it is therefore proposed that, if found necessary, water from other gathering grounds should be led to the reservoir.

* Capacity 50,000,000 gallons.
† 20 Gallons per head per diem $\times$ 12,000 population $\times$ 152 days = 364,800,000 gallons evaporation = 46,480,000 gallons.

See Appendix (A).

ITEM 4.—*Masonry Conduit from Reservoir to Snowdon Tunnel.*—It has been decided that, on the score of both cleanliness and economy of water, it is necessary to enclose the channel, and the fall available being small, a masonry conduit will be much cheaper than iron pipes; such a conduit has been already designed and estimated for by Captain Morant.—See paragraph 11 of his report No. 206, 1st June 1877, the cost being Rs. 14,646.

ITEM 5.—*Cement piping from Snowdon Tunnel to proposed "Service" Reservoir near St. Stephens' Church.*—For the same reasons as those given as regards Item 4, this portion of the channel should be enclosed, and, as the fall is considerable, a 12-inch pipe will be sufficient to discharge all that is required (240,000 gallons in twelve hours) running three-fourths full. An iron pipe of that diameter would cost about Rs. 6-4-0 a running foot, but as with proper surplussing arrangements at the service reservoir there need be no pressure on the pipe, a cement pipe, as proposed in paragraph 12 of Captain Morant's report, No. 206, dated 1st June 1877, will do, and this according to his estimate will cost only about Rs. 1-2-0 a running foot, or a total for the 6,000 feet of Rs. 6,750, (say) Rs. 7,000.

ITEM 6.—*Service Reservoir near St. Stephens' Church.*—From this it is proposed to lead off the distributing mains; it will serve as the pressure reservoir, and it is thought that to prevent inconvenience, in the event of stoppage of supply from the Marlumund reservoir for a time to admit of repairs to that reservoir or to the channel from it, it would be advisable to make this service reservoir of a capacity to hold three days' supply, i.e., 720,000 gallons. With a depth of water in it of 8 feet, which has been adopted, the area of the reservoir would have to be 14,400 square feet. It would have to be cut out of the side of the hill, and this would, if it were made square, necessitate such a great depth of cutting over part of the area that it is considered advisable that it should be 60 feet broad $\times$ 240 feet long, therefore the walls would have to be 9 feet high, and where not built into the sides of the excavation of a mean thickness of about 4 feet, they should where merely face walls to the excavation, they might be of a mean thickness of 2 feet; they should be of best brickwork in cement and coated on exposed faces with cement. The floor and foundation of walls, a 1 foot 6 inches thick platform of cement concrete. Surplus might be provided by a 9-inch iron pipe leading for about one-eighth mile to either of the natural streams east or west of Church Hill. From this reservoir would take off one-fourth inch, one-fifth inch, and one-third inch main (Nos. 1, 5 and 9 in detail list of distribution piping) with the necessary controlling valves. The total cost at rates furnished by Mr. O'Shaughnessy would be approximately Rs. 35,000.

ITEM 7.—*Distribution Piping.*—The system of mains proposed is indicated in the "detail list" of distribution piping and on the plan herewith. The sizes of the pipes would probably require rearrangement (almost always in the direction of reduction) when detail levels are taken for working the system out with accuracy. It has been assumed that the pipes should be able to carry the full daily supply in twelve hours. The rates have been arrived at from those again in the attached letter from the Ashley Works, Coonoor.

ITEM 8.—It is considered that there should be provided additional street fountains and thirty "stand-pipes" fitted with "self-closing lever valves" which will only allow a certain quantity of water to pass each time the knob or handle is lifted, and with caps from which a water-cart can be filled into which a hose may be attached. The former, will cost probably Rs. 1,200 each, and the latter Rs. 200 each.

SOUTH SIDE OF LAKE.

ITEM 1.—*Raising bund, &c., of Dódabetta Reservoir.*—The population south of the lake is 1,800; taking it as 2,000, the total storage required is $2,000 \times 20 \text{ gallons} \times 150 \text{ days} = 6,000,000$ gallons. The existing reservoir is said* to hold 3,000,000 gallons (this is probably under the mark), and I have ascertained from a survey (plan herewith) that by raising the full water-level by 6 feet, the contents would be increased by about 3,375,000 gallons, and the estimate provides for such raising of the bund, water tower, bye-wash, &c. The catchment basin and rainfall are ample.

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ITEM 4.—*Service Reservoir* to hold three days' supply equal 120,000 gallons, 2,400 square feet required. There is a capital site between "Pepbrook" and "Elk-hill Lodge" (or "Cottage") and on the general lines indicated under Item 6, north side (except that this reservoir might be square and the surplus pipe only a few feet long), the cost would probably not exceed Rs. 8,500.

ITEM 5.—*The remarks on Item 7, north side, are applicable to this.*

ITEM 6.—*It is considered that "stand-pipes" of the character and cost mentioned under Item 8, north side, should be provided.*

(Signed) G. T. WALCH,
Executive Engineer, P.W.D.

N.B.—It will be observed that all the arrangements and calculations in the above estimate have been made for a supply of 20 gallons per head per diem; but first as in excessively dry years the quantity intercepted may be rather short of this; second as the population do not really require more than half this amount; and third as there are wells and springs to supplement the supply, the Committee in their report have adopted 10 gallons per diem as the standard. As, however, in all years of ordinary rainfall, 20 gallons may safely be distributed, they prefer not to alter the estimate framed by Mr. Walch.

APPENDIX A.

OOTACAMUND WATER-SUPPLY PROJECT.

THE MARLIMUND RESERVOIR.

The present catchment area is 268 acres, of which 188.65 acres are to be cut off and 79.35 acres retained as follows:—

Owner of Land.	Area.	Area to be cut off.	Area to be retained.	
	ACRES.			
General Baker	189.69	186.23	3.46	Uncultivated.
Mr. Frend	7.02	2.42	4.60	
" Wapshare	47.73	...	47.73	
Total, Private lands ...	244.44	188.65	55.79	
Government waste	23.56	...	23.56	
Total	268.00	188.65	79.35	

The area that can be added north of reservoir is 35 acres, as follows:—

Private land (Mr. Taylor's)	8
Government waste	27
Total	35.00

and on the south of reservoir 53.42 acres, as follows:—

Private lands—		
Mr. Frend	13.27	
" Cowdell	5.0	
" Griffiths	5.15	
Total, Private	23.42	
Government waste	30.00	
Total	53.42	
Total, area available west of Snowdon Saddle	167.77	

The probable cost of securing the retained and added area will be—

Retained area, private land, 55.79 acres at Rs. 100	5,579
Added on north side do., 8 at " 50	400
Do. on south side do., 23.42 at " 100	2,342
Total, compensation for land 86.21 acres	8,321

The cost of diverting the drainage of the area cut off will be—

One mile of channel	500
Culvert under Marlimund road	1,000
Total	1,500

Total for compensation and works ... 9,821

or say Rs. 10,000.

The catchment area of 167.77 acres set apart as above for the sole use of the reservoir can be supplemented to any extent up to from 500 to 600 acres on the Snowdon Hill, of which about 10 acres value about Rs. 1,000, is private property.

The cost of conveying this drainage will be approximately as follows:—

	RS.
Catch drain round Snowdon Hill	1,000
One thousand feet of 24-inch main pipe along Snowdon Saddle ...	15,000
Cisterns at head and mouth of pipe 1,500 each	3,000
Channel from saddle to reservoir 500, superpassages of road drainage 500, inlets for hill drainage 500, culvert under Marlimund road 750	2,250
Compensation for land on Snowdon Hill	1,000
Do. do. in course of channel to reservoir	500
And for the removal of huts above proposed line of channel ...	1,000
Total ...	23,750
Add for compensation and work on Marlimund side as detailed above	10,000
Total cost of project ...	33,750

It must be observed that the 24-inch main pipe along Snowdon Saddle is calculated to carry the drainage of only 200 acres of the catchment area available on the Snowdon Hill, and more than this is not likely to be required for very many years to come. Should it be necessary to increase the supply from the Snowdon catchment area at any future time, another pipe of the required dimensions can be laid alongside of the 24-inch pipe now proposed.

DODABETTA RESERVOIR.

The present catchment area of this reservoir is 172.72 acres, of which 80.72 acres are private property and 92 acres Government waste and forest reserve. This area is a great deal more than what is required, and it will be reduced to 74 acres by cutting off 78.72 acres of the private land and 20 acres of the Government reserve as follows:—

Owner of Land.	Area.	Area to be cut off.	Area to be retained.
	ACRES.		
Mr. Misquith	5.00	5.00	0.00
" Cowdell	75.72	73.72	2.00
Government waste and reserve	92.00	20.00	72.00
Total ...	172.72	98.72	74.00

The 20 acres of Government land which is to be cut off lies beyond the private lands, and there is no necessity to incur the expense of leading its drainage to the reservoir; because the present capacity of the reservoir is 3,000,000 gallons, or 480,000 cubic feet. This capacity is to be increased to 6,000,000 gallons or to 960,000 cubic feet. The rainfall is 42 inches per annum, and, supposing half of it reaches the reservoir, the discharge from 74 acres would be 5,641,020 cubic feet, or sufficient to fill the reservoir seven times in the year.

	RS.
The cost of cutting off the surplus area and of securing the selected basin of 74 acres for the sole use of the reservoir will be compensation for 2 acres of private land (cultivated)	500
Catch drains to carry away the drainage of the lands cut off	1,000
A small viaduct to carry this drainage under the supply channel of the reservoir	500
Total ...	2,000

The position of the reservoirs of the lands and of the works referred to is shown on the accompanying map.

The position of the proposed distributing pipes is for convenience of reference shown also, but this part of the project is explained in another paper.

OOTACAMUND,
12th October 1881.

(Signed) J. O'SHAUGHNESSY, C.E.,
Local Fund Engineer, Nilgiri District.

APPENDIX B.

IMPROVEMENT OF OOTACAMUND WATER-SUPPLY.

SKELETON ESTIMATE.

No. of Item.	Description of Work.	Reference.	Cost of each Item.	Total.
			RS.	RS.
North side of Lake.				
1	Fencing round Marlimund reservoir, length 5,750 feet.	Explanatory memorandum.	4,500	
2	Widening bye-wash, by moving back road, by 15 feet.	Do. ...	2,400	
3	Catch channels to bring extra water to Marlimund reservoir (about 4 miles at Rs. 500).	Do. ...	2,000	
4	Masonry conduit from Marlimund reservoir to Snowdon tunnel (see Captain Morant's report No. 206, 1st June 1877, paragraph 11).	Explanatory memorandum and Captain Morant's report No. 206, 1st June 1877, paragraphs 11 and 12.	14,646	
5	Cement piping (12 diameter) from tunnel to proposed service reservoir near St. Stephens', 6,000 feet at Rs. 1½ per running foot (say).		7,000	
6	Service reservoir (to hold three days' supply) near St. Stephens'.	Explanatory memorandum.	35,000	
7	Distribution piping as per detail list	Do. and map.	54,000	
8	Fountains (three) and stand-pipes (thirty), "fountains" Rs. 1,200 each = Rs. 3,600, and stand-pipes Rs. 200 each = 6,000.	Do. ...	9,600	
	Total, north side of lake (say) ...			1,29,146
				1,29,000
South side of Lake.				
1	Raising by 6 feet the bund, &c., of Dôdabetta reservoir.	Explanatory memorandum and plan.	1,700	
2	Fencing round reservoir (1,400 feet)	Explanatory memorandum.	1,050	
3	Iron piping (4 inch diameter) to service reservoir west of Elk-hill aqueduct and fencing along cascades.	Do. ...	13,070	
4	Service reservoir to hold three days' supply ...	Do. ...	8,500	
5	Piping (as per detail list) for distribution ...	Do. and list and map.	38,000	
6	Stand-pipes (five at Rs. 200)	Do. ...	1,000	
	Total, south side of lake (say) ...			66,320
				66,000
	Grand Total ...			1,95,000

DETAIL LIST OF PROPOSED MAIN DISTRIBUTION PIPING.

Dis- guising No.	Lines of Pipe.	Diameter of Pipes.	Length in	To supply.
	North of Lake.	IN.	FT.	
1	From service reservoir to Club road and by Westbury road to Kandal (Pykara road).	4	1,980	Branch No. 2, population. 505
		3	4,290	Do. " 3, " 1,240
				All between Westbury road and Kandal nullah, and whole of Kandal ... 1,681
	Total, Length No. 1 ...	...	6,270	Total ... 3,426
2	From No. 1 (at 1/4th of a mile) along present channel.	3	2,640	All between it and Westbury road, population. 505
3	From No. 1 (at 2/3ths of a mile) at Hadfield's roads and along that road to Westlake.	3	1,980	Branch No. 4, population. 942
		1 1/2	3,960	Seventeen European houses ... 298
	Total, Length No. 3 ...	...	5,940	Total ... 1,240
4	From No. 3 (at 2/3ths of a mile) at Sandrock along Whiphurst road with three minor branches (in all 2/3ths of a mile) to Muttachari.	3	1,650	Roman Catholic estab-lishment ... 942
		1 1/2	990	European houses and whole of Muttachari.
			2,640	
5	From service reservoir new line to jail and thence to bazaar (Lake road).	5	1,650	Branches Nos. 6, 7, and 8, population ... 3,814
		4	3,630	Public offices, Jail, Police Lines, &c. ... 1,214
	Total, Length No. 5 ...	...	5,280	Total ... 5,028
6	From near end of No. 5 along middle bazaar road to market.	3	1,980	Part of bazaar (say) ... 2,000
7	From end of No. 5 along Lake road to Lady Hobart's school.	3	1,320	Do. do. do. ... 1,029
8	From No. 5 (at 1/4th of a mile) near library along Telegraph lane and along Commercial road both ways to market and Charing cross.	3	3,960	Whole of Agraaham Tonga Company's stable, Alexandra Hotel, &c. ... 785
9	From service reservoir along Snowden road to M'Carmel and thence to Allunby's stables.	3	3,300	Thirteen European houses, Allunby's stables, Engineers office, &c. ... 398
10	From pipe between Snowden tunnel and service reservoir starting near Stover cottage and along St. Ann's Hill to near Ottley.	3	2,640	Eleven European houses and Bandy shola ... 700
	Total, Running Feet ...	...	35,970	

ABSTRACT.

	Diam- eter of Pipe	Length in feet	Rate per lineal Foot.	Total each size.	Grand Total.
	IN.	FT.	RS. A. P.	RS. A. P.	RS.
Part of No. 5 ...	5	1,650	2 10 0	4,331 4 0	
Part of No. 1 (1,980 feet), and part of No. 5 (3,630 feet) ...	4	5,610	2 0 0	11,220 0 0	
Part of No. 1 (4,290 feet), whole of No. 2, part of No. 3 (1,980) ...	3	23,760	1 6 0	32,670 0 0	
Part of No. 4 (1,650 feet), and whole of Nos. 6, 7, 8, 9, and 10 ...					
Part of No. 3 (3,960 feet), and part of No. 4 (990 feet) (wrought iron) ...	1 1/2	4,950	1 2 0	5,568 12 0	53,790
Total, Running Feet ...	...	35,970	...	...	54,000
Total, north of lake (say) ...	...	...	...	...	

DETAIL LIST OF PROPOSED MAIN DISTRIBUTION PIPING.

Distin- guishing No.	Lines of Pipe.	Diameter of Pipes.	Length in	To supply.
South of Lake.				
1	Main from service reservoir to Woodstock	IN. 4 3 1½	FT. 3,630 2,970 6,600	All branches.
	Total, Length No. 1 ...	...	13,200	
2	From ¾th of a mile, 11 main near Elk-hill house.	1½	2,310	Elk-hill house, Little Sharsham and Shartham.
3	From No. 2 to bank and houses near lake.	1½	1,980	Bank, &c.
4	From No. 2 at same point as No. 3.	1½	2,310	Abdul Khader's shop, &c.
5	From ¼th of a mile of main to brewery, &c.	1½	1,320	Brewery, Stellingberg, A.B.C. ground, &c.
6	From ¾th of a mile of main to Bakir house, &c.	1½	1,320	Bakir house, &c.
7	From 1¼th of a mile of main to St. Thomas' church with branch to "Mobarnans."	1½	4,620	Oaklands. Birdwood, Cotissa Woodcot, &c.
8	From 1¼th of a mile of main to Barton cottage, &c.	1½	1,320	Barton cottage, &c.
9	From 2½th of a mile of main to Blackwood cottage.	1½	1,650	Geranium cottage, West cottage, Blackwood cottage, &c.
	Total, Running Feet ...	...	30,030	

ABSTRACT.

	IN.	FEET.	RS. A. P.	RS. A. P.	Grand Total.
Part of No. 1 (3,630 feet)	4	3,630	2 0 0	7,260 0 0	
Do. of „ 1 (2,970)	3	2,970	1 6 0	4,083 12 0	
Do. of „ 1 (6,600 feet) and whole of all other branches (wrought iron) ...	1½	23,430	1 2 0	26,358 12 0	37,702 8 0
Total, Running Feet ...	...	30,030	...	...	
Total, South of lake (say) ...	...	...	...	...	38,000 0 0

REPORT.

THE Committee appointed under G.O., 6th June 1881, No. 1408 W., to consider and report on the measures deemed to be urgently required for the improvement of the station of Ootacamund, and to give an approximate estimate of the cost of the needful works, have now the honor to submit their views for the favorable consideration and orders of Government.

2. Before doing so they beg to explain that the delay which has occurred in submitting their report, has chiefly been due to the necessity for personal examination of the various localities, and discussion of details of plans for water-supply and drainage, before a final decision could be arrived at.

3. It may also be mentioned that Colonel Hasted, Major Mead, and Mr. Walch, owing to the calls of their respective duties, have been obliged to absent themselves from the later meetings; they, however, afforded valuable assistance to the Committee in the early stages of the inquiries. Mr. Minchin also had to leave for England without taking part in the discussions.

4. The work of the Committee was confided to two Sub-Committees, who, in addition to minute personal inquiry, have thoroughly considered all the important reports bearing on the sanitation of Ootacamund which have previously been submitted to Government; and the following conclusions, in which the members are unanimously agreed, will, for the sake of convenience, follow much the same order in which the various subjects of inquiry have been taken up by the Sub-Committee alluded to:—

I.—SUITABILITY OF THE EXISTING SUPPLY OF WATER IN QUANTITY AND QUALITY.

5. Ootacamund is divided into two distinct areas, each of which has its storage reservoir, one the Marlimund-tank, north, with a calculated capacity of 50,000,000 gallons; the other the Dodabetta tank, south, capable of containing 3,000,000 gallons.

6. Allowing 10 gallons per head per diem, and under the supposition that it is necessary to store a five months' supply to meet the requirements of exceptionally dry seasons, the Committee consider the storage capacity of the Marlimund reservoir ample for the present inhabitants, about* 11,000, and for reasonable future increase, as 16½ million gallons is all that would be consumed in that time.*

7. Major Morant has, it is true, in his report, as per margin, calculated that the supply is inadequate, and with a view to counteract this suggested the construction of another reservoir below Snowdon House, but adds that at least nine-tenths of the volume is now wasted in distribution. If, as will presently be shown, the drainage of not less than 300 acres can be counted on for storage, 68 millions of gallons would be received each year by the reservoir, assuming that only 10 inches out of the average annual rainfall of 42 inches be intercepted, and the Committee therefore are satisfied that with due precautions the existing supply should prove ample.

8. The quality of the water collected in the reservoir is not, however, satisfactory. A large proportion of the area of the catchment, even at the time of its construction, was under tea cultivation, which, as the plants need considerable manuring, renders this part of the supply unfit for drinking.

9. To buy out the owner of the Tudor Hall estate would prove too expensive, but the Committee have had under consideration an alternative plan which, though not worked out in all its details, affords *prima facie* evidence of a less costly solution of the difficulty.

10. By excavating a catch-drain immediately below the Tudor Hall tea estate, it is hoped that all the impure supply from this source can be led off and delivered below the reservoir into the waste channel.

11. At the same time, in order to make good the area thus cut out (188.65 acres of the catchment, 268 acres in all) and if necessary add considerably to the supply, it is proposed to collect the drainage of not less than 200 acres of the upper part of Snowdon Hill (an area which is probably more free from all sources of contamination than any other) and lead it past Snowdon House in the manner indicated in the annexed survey and estimate, *Appendix A*.

12. To the Snowdon area will also be added the drainage from 35 acres immediately north, and 53.42 acres south, of the reservoir, to be led in by simple catch-drains.

13. The total catchment area thus secured will be as follows:—

	ACRES.
From present catchment	79.35
From Snowdon (available)	150.00*
From the new area North	35
Do. do. South	53.42
	88.42
Total Acres (say)	318.00

* One-fourth of the Snowdon area is thrown out as the 24 inch diam. pipe would not pass the whole drainage of the 200 acres on that side. At any future time by simply adding one or more pipes the drainage of an additional 150 acres or as much more as may be needed can be added to the catchment.

14. As regards the reservoir on the south side below Dodabetta, although the number of inhabitants which it will have to supply will probably not exceed in future 2,000, the present capacity, 3,000,000 gallons, is considered insufficient, and the Committee propose to increase this by 3,375,000 gallons, raising the bund 6 feet. *See Appendix B*.

15. But here again much of the catchment area being under high cultivation, such portion as cannot be readily acquired or effectively controlled must be cut out, and a fresh supply from a thoroughly reliable source brought in. Fortunately there will be neither difficulty nor any appreciable expense in effecting this. *See Appendix A*.

16. The Committee would here venture to express an opinion that the measures above recommended for insuring a perfectly pure source of water-supply for Ootacamund will have but little practical effect, unless the most stringent rules are not only laid down but enforced, for preventing in future all contamination of the catchments.

17. Already injunctions on this subject have been issued by Government; but it is feared that owing to various causes, these have not been complied with so strictly as could be desired, and it would appear essential that in the yearly Administration Report of the Municipality, the manner in which the purity of these areas is maintained, should be invariably and specially dwelt on for the information of Government.

18. Not only should the catchment areas be properly fenced off, but even grazing of cattle should be prohibited.

19. In immediate connection with the supply of water for the station, and as a possible substitute for storage reservoirs, the Committee have had under consideration proposals for an extensive construction of wells, both public and private, and in reply to a circular addressed to house-holders with this object have elicited the fact that there exist already not less than 208 wells and 69 springs of water, many of the latter being perennial. Although this points to the existence of a large supply of drinking water in ordinary years, the Committee are inclined to think that neither on the score of purity nor of permanency in exceptionally dry seasons, can either or both of these sources be implicitly relied on.

† Well water in the bazaar is very impure. These wells will have to be filled in or permanently covered over.

20. From evidence before them the Committee consider that well water in Ootacamund is not always pure, and as regards quantity and permanency of supply, several wells, which on first construction gave good promise, are shown to have subsequently run dry.

21. Whether special encouragement should be held out to construct wells may be a matter for future consideration; but for the present the Committee think on the whole that the construction of wells may be left to private individuals.

II.—BEST MEANS FOR ECONOMISING THE SUPPLY OF WATER.

22. There can be no doubt that, as at present distributed in open channels, an immense percentage of the water, estimated as shown by Major Morant at no less than nine-tenths of the total volume, is lost. The remedy for this is simple, and the Committee are of opinion that the only proper way to conserve the water, which in addition to loss in volume is subject to all kinds of contamination, is to conduct the supply to its destination in masonry conduits and pipes.

23. The general features and probable cost of the scheme are given in *Appendix B*, from which it will be observed that, as regards the northern area, the water is to be conveyed in a closed masonry channel from the Marimund reservoir to a point immediately above St. Stephen's Church. Here there will be a pipe head reservoir, from which the distribution will be made in iron pipes of varying capacities, to all the most suitable points.

24. For the southern area the distribution would be wholly by iron pipes carried from the Dodabetta reservoir to the most distant points of supply.

III.—DRAINAGE WORKS REQUIRED.

25. Under this head the drainage of the bazaars claims first attention. In the opinion of the Committee the scheme framed by Mr. O'Shaughnessy for the drainage of the main Ootacamund bazaar, estimated to cost Rs. 86,400, if supplemented by gullies with gratings, and with short lengths of pipe, to drop the scourings of the houses and backyards into the street drains, will prove suitable, particularly if everywhere stone surfaces are provided as a protection against the rough usage to which all such drains are necessarily exposed in effecting the daily cleansing, &c.

26. There is every reason to hope that, after the proper levelling and sloping of all the backyards, as contemplated by Mr. O'Shaughnessy's scheme, the provision at intervals throughout the streets of receptacles for filth and rubbish, and the strict enforcement of all conservancy rules by the municipal servants under the lately appointed Health Officer, the formation of a rotten soil should be impossible in future.

27. In addition to the special drainage works above for the main bazaar, analogous but less costly measures must be carried out for Kandal Town, which is now in a very filthy state.

28. The drainage also of one or two small localities like Bandi Shola, which cannot conveniently be brought into any large system, should be dealt with by cess-pits, which will have to be cleaned periodically.

29. Next in importance to the proper provision of surface drains for the several bazaars, &c., is the removal of the sewage, which is at present, with the exception of that from Kandal, discharged into the lake, the water of which thus becomes more foul year by year. The upper portion, east of the Willow Bund, is now in great measure a sedgy pond, covered with much floating weed, and with sewage accumulations at the extremity of all the bazaar drains. Instead of the beautiful feature which it might easily, with a little care and taste, be made, the lake is rapidly becoming a disgrace to Ootacamund.

30. Some slight modifications in the details of Captain Tulloch's project have been recommended by the professional officers on our Committee, and it is also thought that instead of commencing the sewer near the head of the lake, a sewage pipe of small capacity, (preferentially of iron,) should be carried up as far as the Madras Carrying Company's premises, as a good deal of foul matter is now discharged into the supply channel from that quarter, which it would otherwise be difficult to dispose of. These slight modifications would approximately raise the estimated cost from Rs. 74,000 to Rs. 90,000.

IV.—OBJECTIONABLE OCCUPATIONS.

31. At various places throughout Ootacamund objectionable occupations have been allowed to spring up. Though the removal of such is only matter for compensation, as the provisions of the Land Acquisition Act can be put in force, the cost will be heavy, and should be undertaken with discrimination, and be only resorted to in the most urgent cases.

32. Among the most needful measures in this respect will, the Committee consider, be the following:—

- (1) The acquisition for public purposes of Toppa Moodelly's lines and bungalow (at foot of Bombay House hill) and the land attached thereto.
- (2) Do. do. Tom's bungalow and site at foot of Shoreham hill.
- (3) The acquisition, drainage, and cleansing of—
 - (a) Joachim Petta, a collection of filthy houses.
 - (b) Charcoal village, do. do.
 - (c) The long unused Forest Department timber-yard, near Charing Cross, a great eye-sore in the heart of Ootacamund.
 - (d) Tirroovangadam Moodelly's land near Crewe Hall, most unsightly in its present condition.
 - (e) Other objectionable spots in scattered localities.

33. For the persons removed under (1), (2), and (3), fresh buildings sites, &c., should be found in Kandal and the necessary compensation paid. In most of these cases the amount of the latter has been sufficiently ascertained.

34. As a rule the future extension of native occupation should be allowed only in the last-named locality—Kandal town—where land may be acquired by the Municipality and laid out on a well-arranged plan.

35. In immediate connection with this subject, the Committee desire to bring to notice that the municipal authorities have apparently no sufficient powers, under the existing Act, to prevent the erection of unsightly tenements, and that if expenditure is now to be incurred as recommended for the removal of objectionable occupations, it would appear equally necessary to legislate with this object for the future.

V.—OBJECTIONABLE VEGETATION AND NEGLECTED LANDS.

36. The excessive growth of the Australian acacia ("wattle") has become a most serious evil in Ootacamund, and from the fact that in the form of a jungle or dense "bush", it has proved itself of value to house-owners as fire-wood, the nuisance threatens to be perpetuated indefinitely.

37. The Committee are satisfied that nothing short of complete extirpation of the "wattle" from the station will answer or should be aimed at, and they beg to press the necessity of this most earnestly on the consideration of Government. The medical officers are very pronounced in their condemnation of this overgrowth, which, as well known, is in Australia carefully kept at a distance from all towns stops the free circulation of air, and affords shelter for nuisances of all descriptions.

38. The Municipal Commission are understood to have under contemplation, the necessity of imposing such a rate on the cultivation of the wattle, as will prevent the areas so occupied being looked on as a valuable firewood preserve.

39. This measure may be deemed oppressive by house-holders, but the magnitude of the evil is such that, in the public interests, some sacrifice is called for. To minimise as much as possible the objections that may be entertained to the proposed action, the Committee would venture to recommend that Government meet the house-holders half way, by some such arrangement as the following:—

40. It is generally understood that to eradicate the wattle costs about Rs. 200 per acre, and that even with this outlay it is difficult for private individuals to ensure that the work is thoroughly done, as coolies on daily hire, unless very closely watched, fail to remove the roots which are the source of the evil.

41. The work can, in fact, be only done satisfactorily by prison labor, and the Committee would suggest that Government maintain an adequate body of convicts to meet the requirements of private individuals in this respect, and that the jail authorities be prepared to contract for the thorough eradication of the wattle, at the rate of Rs. 100 per acre.

42. By this means alone the Committee are convinced can this evil be met, and, should Government adopt the suggestion, they are of opinion that with due notice it would be perfectly equitable to enact that the retention of the obnoxious plant in any compound after a period of ten* years should be illegal, and subject house-owners to penalties, in addition to meeting the full cost of its eradication.

* Some members of our Committee consider that a grace of only five years should be granted.

43. In a minor degree other classes of vegetation, allowed to run into excess, are very objectionable, added to which heaps of paper, broken glass or china, with the thousand and one objects which, though not actually injurious to health, are in civilized countries prohibited as nuisances, meet the eye at every turn in parts of Ootacamund. For the removal of these and for securing proper attention to the tidy and neat appearance of the various private properties, the Committee consider the Act requires strengthening.

VI.—SLAUGHTER HOUSES.

44. The mutton, beef, and pork slaughter houses should, in the opinion† of the Committee, as strongly urged by many medical authorities on previous occasions, be moved from their present site, closely adjoining the Main Bazaar, to a spot beyond Kandal on the Pykara road.

† Some members of the Committee would be satisfied with the less expensive proceeding of simply improving the present slaughter houses.

VII.—A GOOD DAILY MARKET.

45. Public opinion being unanimous as to the necessity for this, as lately evinced by the movement so heartily responded to, of associating the name of the late honored Governor with the work, that the Committee feel it would be superfluous to record their reasons for considering this to be perhaps one of the most urgent necessities of the station. They merely observe that the butchers' shops would all be transferred to this building, and that such removal would put an end to one of the most offensive sights in Ootacamund. Moreover, from information received, the work is certain to be remunerative.

46. Legislation will be necessary to compel butchers and persons of certain other callings to confine the sale of their wares exclusively to this new market.

VIII.—MISCELLANEOUS BUILDINGS, &c., NEEDED.

47. (a) A public cattle and bandy-stand with proper shelter for the animals close to the market.
 - (b) Permanent lines for municipal coolies and bandy-men.
 - (c) More public latrines and urinals in various parts of the town.
- Some of these works will be remunerative, (a) especially so.

IX.—IMPROVEMENT AND PLANTING OF PUBLIC GROUNDS.

48. All the lower parts of Ootacamund suffer both in appearance and in salubrity, from the lodgment of water and imperfect drainage.

49. One of the worst localities in this respect is at present being dealt with in constructing a new road of approach to Government House and the Botanical Gardens, advantage being taken of the work to cut a deep drain which, with other arrangements, should in time have a marked beneficial effect.

50. But all the low ground extending down the valley to the head of the lake has water so near the surface that much of it is in a sedgy condition, overgrown with docks and other rank weeds, and is both offensive to the eye and unhealthy. The A B C ground is from this cause the most notably catch-cold place in Ootacamund.

51. All the portion of the lake east of the Willow Bund is in the offensive condition previously described under head III above.

52. There are two ways of dealing with the matter, (1) by raising the level of all the affected grounds, or (2) by lowering the level of the water in the lake, which necessarily keeps up the spring level. The latter is obviously by far the cheapest plan, all that is needed being to cut down the level of the waste weir at the bund from 3 to 6 feet as may be desirable; in fact, by just so much as will lay dry the portion east of the Willow Bund. The ground so reclaimed may quickly and at small expense be turned into pleasure and recreation grounds.

53. The latter are much wanted for such purposes as Cricket, Polo, and Gymkana Sports, for which the present A B C grounds are much too restricted.

54. It must be borne in mind that the lake, as it stands, fulfils no useful functions for Ootacamund. It irrigates no ground below its bund, its water is unfit for drinking, unused for boating, and, if not ornamental, is valueless if not worse, as being little better in its present state than a receptacle for sewage.

55. The slope of the margins being very steep, the lowering of the present water-level by 6 feet would not narrow the present spread of the water in all by more than 30 or 35 feet at most; practically therefore this proposal, while pointing to an easy means for improving sensibly the sanitary condition of all east and north of the Willow Bund, and affording scope for improvements otherwise unattainable, would to no sensible degree interfere with the extent of the lake to the west of that point.

56. Instead moreover of leaving this latter portion in its present bald, unplanted, and uncared-for condition, particularly along its northern margin, the Committee strongly advocate all the knolls down to the water's edge being planted with selected trees (conifers chiefly) thereby turning the lake into the most attractive feature in Ootacamund.

57. North, and close above the main bazaar, it is very desirable that a wide road should be cut out of the hill side leading towards the market place, and the excavated earth used for filling in the unsightly pits, and otherwise bringing into form this most unsightly and neglected portion of ground.

58. The Committee consider that in connection with these and other improvements, to be effected chiefly through the action of the Municipal Commission, it would be highly desirable to enlist the active aid of all house-owners, in effecting judicious clearances of over-planted land, and by planting ornamental trees in groups or singly where such would be most effective.

59. With this object they would strongly recommend that both the Superintendent of the Botanical Gardens, and the Gardens themselves, should be placed much more than has hitherto been the case, at the service of the public.

60. The duties of the former might, with great advantage, be strictly confined in future to the care of all public grounds in Ootacamund, and to affording advice and assistance gratis to all house-owners, who may be desirous of improving their compounds by planting or clearing.

61. He should maintain at the gardens a nursery of such young trees and shrubs as experience has proved to answer best, the plants to be sold to the public (of Ootacamund only) at strictly cost price, instead of as hitherto at practically prohibitory rates. It is not perhaps too much to say that, owing to the present high prices of the plants and to the location of the gardens, the latter have hitherto been of little or of no use to any one.

62. To these duties might with advantage be added the publication from time to time of price lists of all the saleable stock, including seeds procurable from the gardens, and a monthly Gardeners' Chronicle, giving hints regarding the flowers to be put in during the succeeding month, the cultivation of vegetables, fruit trees, &c.

63. As the Committee are given to understand that the present Superintendent has many miscellaneous demands on his time unconnected with Ootacamund, which are incompatible with those above alluded to, they trust the Government may find it feasible to relieve him of all extraneous duties.

64. X.—COST OF THE SEVERAL PROPOSALS.

Water-supply, North side of Ootacamund.

	RS.	TOTAL RS.
Additions to the catchment of the Marlimund reservoir with subsidiary works, &c., see Appendix A.	33,750	
Fencing and distribution generally, see Appendix B	1,29,146	
Extra establishment and contingencies at 10 per cent.	16,289	
Total, North side	1,79,185	

Water-supply, South side.

Alterations to catchment of Dodabetta reservoir, see Appendix A.	2,000	
Fencing and distribution generally, see Appendix B	66,320	
Extra establishment and contingencies at 10 per cent.	6,832	
Total, South side	75,152	

Grand Total for water-supply and distribution (in round numbers) ... 2,55,000

Drainage.

Surface drainage, main bazaar, with certain additions to Mr. O'Shaughnessy's estimate.	90,000	
Do. Kandal town	30,000	
Do. other localities	25,000	
Intercepting sewer as estimated by Captain Tulloch with certain additions to complete the scheme.	90,000	
Total, Drainage	2,35,000	

Urgently required improvements.

(a) Unremunerative.

Removal of objectionable occupation	50,000	
Improved lighting for the streets and roads	7,000	
Additional latrines and urinals	7,000	
Conservancy plant	10,000	
Office for Municipal Commission	40,000	
New road above the main bazaar, lowering the level of the lake, reclaiming same at upper end, &c.	25,000	
Planting public grounds, margin of lake, &c.	14,000	
Unforeseen contingencies	1,60,000	
Total, Unremunerative requirements	1,60,000	

(b) Remunerative.

New General Market	2,50,000	
Cattle and bandy stand	30,000	
Slaughter houses	25,000	
Scavengers' and bandymen's lines	15,000	
Contingencies	10,000	
Total, Remunerative requirements	3,30,000	

Total for improvement ... 4,90,000

Grand Total under all heads ... 9,80,000

XI.—WAYS AND MEANS.

65. As comprehensive improvements on the scale above contemplated by the Committee would unquestionably insure a valuable enhancement to all property in Ootacamund, it is only reasonable that all house-holders should be prepared to undertake a fair share of the charge imposed by the provision of the means needed for their execution.

66. House-holders are now taxed for all municipal purposes to the extent of $7\frac{1}{2}$ per cent. on the rental value of their properties.

67. This is sensibly lower than the incidence of taxation in Madras and other large towns, and the Committee see no reason why, in order to meet as far as possible the objects at present in view, a maximum consolidated rate of 12 per cent. on the rental* should not be imposed, i.e., under the proviso that the scheme in its entirety, as now recommended, commands the approval and sanction of Government. It is needless to say that legislation would be necessary for this.

68. While thus prepared to recommend an increase of taxation to this large amount in the conviction that the resulting benefits will in time well repay the same, the Committee would deprecate very earnestly any increase over and above the limit specified, as such would in all probability tend to discourage permanent residence on the part of those classes, whose presence it is on every account most desirable to encourage, viz., the retired servants of Government and others with limited means.

69. The Committee are given to understand that the Municipality have already addressed Government as to the propriety of raising a loan of four lakhs of rupees at 4 per cent., with a view to carrying into effect some of the most needful improvements specified in this report, and they are of opinion, from statements of the financial condition laid before them, that with a consolidated tax to the limit proposed, the Municipality could not only meet the demand for interest on the loan, but be enabled to create a sinking fund for the eventual extinction of the debt.

70. The total approximate outlay being close on ten lakhs, the Committee see no other means for meeting the difference, viz., six lakhs, than by a Government grant, and, however large the demand, they are encouraged to hope that, taking into consideration the peculiar position which this station occupies, and the functions it fulfils towards not only this Presidency, but it may fairly be said towards the rest of India, such may not be considered unreasonable.

71. They cannot do better than here quote the cogent arguments adduced by Lord Napier when, as Governor, he recorded the following observations in his minute, dated 13th September 1867. "The Government of Madras, acting with the sanction of the Government of India, has created Ootacamund, has beautified it, has rendered it accessible by expensive roads, has made it the seat of various public establishments, such as jails, dispensaries, orphanages, and plantations, has invited the sick and the suffering of all classes to repair hither from all parts of India for the restoration of their health and vigor. The Government has given an imperial character and significance to the place, but while doing so, has marred its benevolent intentions by leaving a source of mischief in the very centre of the cherished spot. I do not think it would be liberal or equitable, at this stage when the evil has just attained proportions which can no longer be concealed or denied, that the Government should create a Municipality and discharge upon it the burthen of remedying an abuse which the Government itself permitted to grow."

72. The time that has elapsed since these eloquent words were penned, and since the more prosaic, but not less accurate and forcible, reports previously alluded to were written by the professional officers of Government, has only served to confirm and intensify the truth of all that has been thus advanced.

73. The Municipality were created at a time, when few or none of the really essential sanitary requirements of this large and growing station, had even received an initiative.

74. With means which were, and still unfortunately are, barely sufficient to meet the most urgent daily demands, and with moreover an Act, the many imperfections of which are only too patent, they were apparently expected not only to initiate but carry out several large measures of reform and improvement most urgently demanded, and the Committee feel bound to submit that prompt measures are needed to rescue this deserving body from a most embarrassing position.

75. The appeal made by Lord Napier was promptly and liberally responded to by the Supreme Government, who in their Public Works Department letter No. 792 C, dated Simla, 2nd November 1867, conveyed sanction to Rs. 74,000 as an Imperial Grant, on account of Captain Tulloch's estimate for the intercepting sewer. Most unfortunately this grant, owing it is believed to the exigencies of finance, was never availed of, and the work was consequently not carried out.

76. Looking to the foregoing considerations, and the fact that the Government of India has, it is understood, during late years given grants of not less than eight lakhs of rupees for general improvements, and lent seven lakhs more at 4 per cent. to the Simla Municipality for water-supply works, the Committee are sanguine that at least half of the 6 lakhs so urgently needed for Ootacamund may, under proper representation, be conceded as a grant-in-aid from Imperial Funds, with the object of carrying out the suggested improvements to this the Queen of hill stations and the finest sanitarium in India; also that the remaining three lakhs may be given from Provincial. These grants if conceded might if necessary be spread over the next three or four years.

P. H. Sankey Col. R.E.

*M. C. Sumell M.D. Dy. Surgeon Genl
Sanitary Commissioner*

W. B. Dimpell Esq. Comr. Nilgiris

H. J. Baker Major General

H. R. Morgan Esq. General

J. H. Atter Local R.E.

L. C. Stanley Esq. Major

Dr. Smith Esq. Surgeon Major

M. D. Hunt Esq. Major R.E.

J. H. B. B. Esq. M. Inst. C.E.

J. H. B. B. Esq. M. Inst. C.E.

J. H. B. B. Esq. M. Inst. C.E.

J. H. B. B. Esq. M. Inst. C.E.

J. H. B. B. Esq. M. Inst. C.E.

J. H. B. B. Esq. M. Inst. C.E.

P. W. C. No 675A

Rec. 1/2/82.

Note by the Right Honourable
the Governor.

My recollections of Ota-
cannund are very vague,
and I write with the greatest
diffidence.

If however it is necessary
to give an opinion now, I
would say
first, look after your
drainage. That is obviously
a most pressing matter. We
may at any time have an
epidemic at Otaacannund
which may injure for years
its rising reputation, as a
sanitarium for all the
Central and Southern part
of the Indian peninsula.

Secondly improve your water supply, which much wants improving though it is not quite so urgently necessary to improve it as to get rid of the poison which is stored up in and around the town.

I think that the distribution by pipes is desirable. It will be more costly; but much safer and the work will be done once for all. Sooner or later there would be a clamour against the open channels.

As to the sufficiency of the catch drain under the Windsor Estate I can say nothing; but there were two Medical men under

the Sanitary Commissioner on the Committee. Have we any means of getting any more authoritative opinion?

I never saw the lake but once and do not remember the appearance of the banks, but I see no *prima facie* objection to gradually lowering its level - very slowly. The exposed mud would soon be covered by vegetation and the natural action might be quickened by sowing rapidly growing water weeds.

If the lake can be made quite clean I would presume it - as one of the prettiest features in the place.

As to the discharge of
the sewage into the river
I should be inclined to
agree with my honorable
colleague Mr. Carmichael,
but I am told that
his proposal would be
costly and am afraid
that the amount of
sewage discharged into
the river is too small
to be of any hurt to
the water a few miles
below.

With this expression of
opinion to which I give
as I said with the greatest
hesitation I send these
papers to Council.

(Int.) W. G. L. Dec 5/81

P. S.

Thank the Committee
most heartily; but I venture
to disagree in toto with
their proposal as to the
duties to be entrusted to
Mr. Jamieson. If he
has neglected his work,
let him be punished, but
the work the Committee
propose to assign to him,
is not the proper work of
the Superintendent of a
Botanical Garden. If
he is a good natured and
sensible man he will
help the society of Otoro-
cannund in a hundred
horticultural ways, not
exactly within the scope of

his duties, just as Sir
J. D. Hooker helps people
at home but I can quite
understand his being very
indignant if the people
about him showed that
they thought he was only
there to be a cheap nursery-
man and Consulting
Landscape gardener.

I write under the supposition
that he was sent out from
England to be a Botanical
Gardener and that he is
paid as a man of science.

I am far from saying
that it might not be
well worth while to have
a Consulting Landscape
Gardener attached to the
Municipality of Ootacamund.

If a really good ^{man},
he would repay his salary
ten times over in the
increased value which
his work would give to
property.

(Int.) M. G. D.

Note by His Excellency the
Commander-in-Chief.

I have considerable
acquaintance with hill stations
in Northern India, and
therefore, knowing the locality
under consideration, I can
speak with confidence as
to the liability of all
stations in the hills to
be visited by epidemics,
and to the necessity of
securing a good and
plentiful supply of drinking
water, and of ensuring every
perfect conservancy arrange-
ments.

During the last 10 years
the hill stations of Nuss
Tal - Muzpore, Simla,
Dunghai, Saharun, Kufra-
te, Dalhousie, Dharmasala
and Muzpore have had
epidemics of cholera, and

at each it was found that
great improvements were
necessary both as regards
water and conservancy. -
at all a plentiful supply
of pure water is now available,
the drainage (especially
at Nynce Tal the only
one where there is a lake)
has been considerably improved,
and great attention has
been paid to latrine arrange-
ments. Latrines for native
men and women have
been built wherever they
were found necessary. and
owners of houses have been
required to construct proper
latrines for those living on
their own estates, and
receptacles for the house
refuse. This is all carried
away twice daily - a

certain quantity is used for
manure purposes - the
rest is burnt.

Stable litter is similarly
dealt with. I strongly
recommend Ootacamund
being cared for, as it has
been found necessary, to
take care for hill stations
in other parts of India.
If any medical officer
has studied sanitary
subjects as a speciality,
I would suggest that
he should be directed to
visit Ootacamund and
there consider the report
of Colonel Sankey's
Committee. I would also
suggest that when medical
officers are appointed to
the civil charge of
Ootacamund, they should

be selected as much for
their experience and knowledge
of sanitary matters, as for
their skill in the more
general subjects of their
profession.

With regard to dealing
with the lake, it might
be advisable to profit
by the experience gained
at Nynce Tal, where
some few years ago the
water of the lake was
getting rapidly so foul
that it was feared it
would affect the health
of the residents.

The lake is now, I believe,
in a satisfactory condition.
(init) J. R.

6/12/81

Note by the Honorable W.
Audleston.

The thanks of Government
are due to the Committee
for their Report, which results
in an estimated proposed
expenditure of about ten
lakhs of Rupees of which
four lakhs are proposed
to be a loan to the Munici-
pality repayment to be
provided by an increased
Consolidated tax on House
& property of 12% on
rental for which legislation
will be necessary, and the
balance of six lakhs by
equal grant of three

Lakhs each from Imperial
and Provincial Funds

The items of expenditure are

Improved Water Supply	Super
}	2,55,000

Drainage 2,35,000

General Im- provements	}	4,90,000
---------------------------	---	----------

Total 9,80,000

No doubt the whole is
very desirable and probably
would be most economically
attained by complete action
at once but I am not
prepared to say that the
whole is necessary at once.

The Committee however propose
that the grant if made
be ^{spread} ~~spread~~ over 3 or 4 years
and double that period

at least would be ^{31/10/67} required
for effecting the improvements.

I think however that while
approving the suggestions attention
must for the present be directed
to essentials and of these
I consider the Drainage is
the most important and next
the improvement to the Water
Supply.

As regards the first I
think the entire project should
be taken in hand as speedily
as possible. The cost renders
this more within our means.

As to the second I think
that the catch drains round
the reservoir and the ex-
tension of the catchment
area with the necessary

fencing should be carried
out at once, but that the
closed masonry and pipes for
supply to reservoir and dis-
tribution with the new
reservoirs themselves might
be postponed.

With these I would combine
the lowering of the Lake
level so as to drain the
water off above the willow
bund, and to allow of the
area so laid dry being
reclaimed.

and I would ask Col.
Sankey to give me an approp-
riate estimate of the cost
of this much of the scheme.

as far as I can make
out it might be

	Rs.
Drainage	2,35,000
Partial improve- ments to Water Supply	12,650
	<u>2,47,650</u>

say $3\frac{1}{2}$ lakhs. to which
must be added the lowering
of the bund of the Lake
and the reclamation of the
land laid dry above the
Willow bund, and on the
margin of the lower Lake
which would remain.

As Convict labor might
be made available for this
latter work I dare say 3
lakhs might cover the
immediate necessity and if
an expenditure of 4 lakhs
were undertaken I think

for a very material stride
in advance would be made.
Of this amount a
grant in aid of 2 lakhs
were made by Imperial
and Provincial in equal
shares and gradually as
required for the works, the
Municipality might be
called on to accept the
balance charge, and a
loan of that amount
might be raised probably
without additional legis-
lation.

(Int.) W. H.

Note by the Honorable S. J.
Carmichael.

37/2
Thanks of course

The water supply of course
the most important part
of the scheme.

Below Snowden House is
the place for a fine Re-
servoir. it would not cost
much, if Government give
Convict labour.

Marlmoor Reservoir
must be always more or
less fouled. General
Baker is constantly
dunging his trees, and
the rain water must
percolate into the reservoir
through the manured ground.
The proposed "Excavated
Catch drain" is not certified
by the Committee, as sure to

prove a remedy.

I see no necessity to lower the level of the Lake. The stench from the fetid mud would kill us all. What is required, is to pour more water into the Lake - to deepen the upper portion, i.e. above the Willow Bank and create a current thro' the Lake from East to West. The expense of Reclaiming the swamp above the Willow Bank will be enormous, and the reclamation will be of no remunerative use. The present tea gardens & Tennis Court and Cricket ground suffice for recreation purposes.

Drainage.

I think the proposal to

have a sewer to carry off the filth to discharge itself near the Native Cemetery below the old Kennels, very objectionable. It must always be in a stinking state, unless constantly flushed with water. The sewerage would poison the Tyakara river. Why not cut a canal. This was old Rhodes' scheme from the end of the Lake to the Pondretta Farm, and barge your filth away?

The surface drains, if laid should of course be of stone V shaped, Slaughter Houses.

These stand on a portion of the Sail Hill the land is therefore Govt property. Remove the shambles to Kaulal, and the Butchers, slaughtens etc

Must follow. / Compensation would be required

Abattoirs might be got from home, thro' Gen. Hyde - this answers well at Cork and is greatly used for Abattoirs throughout the Continent

1 July D.F.C.

37/3/82
Note by the Rt Honble the Governor.

Cotacumund January 9th 1882.

I have now inspected most of the localities alluded to in the Report of the Committee and have been able to make up my mind upon several points with regard to which I felt much doubt.

1. I am of opinion that drainage should take precedence of water supply.
2. It seems to me pretty certain that the catch-drain under the Tudor Hall Estate can be so constructed as to prevent the Marlborough reservoir being polluted by the manure which is employed.

played upon that estate.

3. I think it is quite practicable to lower the level of the lake without creating a nuisance.

4. I see no great difficulty in reclaiming the portion of it which lies above the Willow-land, thus adding to the size and much improving the healthfulness of the recreation ground.

5. It would be highly desirable if possible to increase the flow of water through the lake as proposed by Mr. Carmichael.

6. I am inclined to think that the time may come when his plan of carrying away the sewage

by a Canal may be pronounced to have been the best; but pecuniary considerations tell the other way and I am persuaded that no nuisance to the present inhabitants of Ootacamund will be created by adopting the plan proposed by the Committee. It will meet the wants of the next two or three generations.

7. The expense of distribution of water by pipes will be very great but I fear we must face it - if not immediately - yet very soon still it should come last of the proposed changes.

8. The minor sanitary arrangements alluded to by

the Commander-in-Chief
are of great and urgent
importance - more urgent
than anything else I think,
except the drainage.

9. The slaughter houses
and all other objectionable
occupations should be got
rid of as rapidly as may be.

10. The Municipality
should communicate as
the Commander-in-Chief
suggests with the other
hill stations of India.

(S.) M. E. Grant Duff

Ootacamund
Improvements

I am copy of note
by the Rt Hon. the
Governor.

Ootacamund Jan^r. 9th 1882.

I have now inspected most of the
localities alluded to in the Report of
the Committee & have been able to make
up my mind upon several points with
regard to which I felt much doubt.

1. I am of opinion that drainage
should take precedence of water-supply.

2. It seems to me pretty certain that
the Catch-drain under the Indor Hall
estate can be so constructed as to
prevent the Marlborough reservoir being
polluted by the manure which is con-
veyed upon that estate.

3. I think it is quite practicable to
close the Leaze of the lake without creating
a nuisance.

4. I see no great difficulty in reclaiming
the portion of it which has above the

Willow-bund, then adding to
the size & much improving the
healthiness of the recreation ground.

5. It would be highly desirable
if possible to increase the flow of
water through the lake as proposed
by Mr. Carmichael.

6. I am inclined to think that the
time may come when his plan of
carrying away the sewage by a canal
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sently considering the other
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by adopting the plan proposed
by the Committee. It will meet
the wants of the next two or

three generations.

7. The expense of distribution by
pipes will be very great but
I fear we must face it - if
not immediately - yet very soon
still it should come last of the proposed changes.

8. The Minor Sanitary Arrangements
must be attached to by the Commandant
in Chief as of great & urgent
importance - more urgent than any
thing else I think, except the drainage.

9. The Slaughtering house & all other
objectionable occupations should
be got rid of as rapidly as may
be.

10. The Municipality should be
managed as the Commandant in Chief
suggates with the other hill stations
of India.

M. B. S. S. S.

Copy for report in other sheet

Mr Jamieson should certainly
be supplied with some good horticultural
periodicals. I saw by his report for
1878-9 that the expense of the
Gardeners Chronicle was objected to
by the Accountant and General — on
the ^{ground} of penny-woolworth
costs.

*But a report
by a
committee
on the
subject
has been
decided
upon
J.B.*

Note by A.E. the Commander
in Chief

Madras, 3rd January 1882.

I took the opportunity
while at Ootacamund to
inspect the water supply
arrangements, the sanitary
condition of the settlement
generally, and the proposed
drainage scheme.

There can be no doubt
that the present water
supply requires considerable
improvement, mainly in the
protection of the catchment
areas, and in providing closed,
instead of open channels
for the waters passage from
these areas to the points
of distribution.

I do not think that

any water supply can be altogether satisfactory, the main source of which is an artificial lake or tank, but as apparently there are but few springs in the immediate neighbourhood of Ootacamund, I suppose we must chiefly depend upon the drainage water as at present collected.

It makes it all the more necessary, therefore, that the ground over which this water drains should ^{be} carefully preserved from any possible pollution, and that the water should have every chance given to it in its distribution.

The Committee which assembled at Ootacamund last October, have drawn up a scheme for improving

the water supply at a cost of Rs 2,50,000. I am quite satisfied this money would be well spent in providing the place with a plentiful supply of pure water, but, even after the works recommended by the Committee have been carried out, the most careful supervision would be necessary over all the gathering grounds.

Meanwhile, I would suggest that an analysis be made by the chemical examiner at Madras of all the water now in use at Ootacamund, from tanks, wells, the lake itself and the various streams running through the settlement. Some, I venture to assert, will be found quite unfit for use; all such sources

of supply should be at once stopped, the wells by being filled up, and by warning the public generally against resorting to the foul tanks and streams.

One source of contamination is that dholies are allowed to wash clothes in the centre of the station, the water thus used flows into the lake, and is doubtless freely drunk on its passage there.

This washing should be stopped without delay, and a place given to the dholies at the lowest level of the station, where the water has no chance of being drunk by the inhabitants of Ootacamund

or by the villagers in the neighbourhood.

My stay at Ootacamund was too short to admit of my giving any decided opinion upon the proposed drainage scheme. But I satisfied myself on two points.

- (1) that the Main Bazaar and Kandal should have a proper system of drains, and
- (2) that the sewage from the Bazaar should on no account be allowed to flow into the lake, as it does at present.

A thorough system of sewerage at Ootacamund is even more important than the supply of pure

waters and good drainage;
in fact, the success of
the two latter schemes will
mainly depend upon the
first being properly carried
out.

Where drinking water is
dependent upon surface
drainage it is absolutely
necessary that the ground
should be kept completely
free from any chance of
defilement. Yet, incredible
as it may appear, there
is scarcely a house at
Ootacamund which is
provided with a latrine
for natives. Servants and
followers naturally avail
themselves of the nearest
cover, with a result which
does not require any comment

from me.

Owners of houses should
be at once required to
build latrines according to
a plan approved by the
Municipality, and of
sufficient size to accommo-
-date the number of servants
on the premises: and also
to provide receptacles which
should be removed or
emptied daily by the Muni-
-cipality.

Pits for stable litter
should also be constructed,
the contents of which should
either be burnt periodically,
or used under the sanction
of the Municipality, in
gardens and plantations where
no contamination to the
water supply could possibly

issue.

There are doubtless many other points which would have struck me had I remained longer in Ootacamund, but I saw enough to be assured that no time should be lost in securing a supply of pure drinking water, and in placing the sanitary arrangements on a satisfactory footing.

The recently appointed Sanitary officer, Surgeon Major Nanney, seems to take a great interest in his work, as does Mr. Barlow, the Commissioner. Both these gentlemen were good enough to show me round Ootacamund -

27/3/83
I would urge that the Chief Civil officers at places like Simla, Muzee, Missourie, Darjeeling &c. should be addressed, in order to obtain from them copies of the bye-laws, and a list of the taxes they may have found necessary from time to time to introduce.

These hill stations were, at one time, nearly as backward as Ootacamund is, both in regard to their water supply and their Conservancy, but experience, gained from heavy and frequent visitations of cholera and other epidemics forced upon the local authorities the

necessity of improving the
sanitary condition of their
stations, and it will no
doubt be advantageous
to the Municipality of
Ottawa to learn
what precautionary measures
have been adopted at
somewhat similar settle-
ments.

(Initialed) J. R.

Ootacamund
Improvements

San. copy of notes
by H. S. the Civil

48-7
26
Madras, 5th January 1882.

I took the opportunity
while at Ootacamund
to inspect the water
supply arrangements, the
sanitary conditions of the
settlement generally, and
the proposed drainage
scheme -

There can be no doubt
that the present water
supply requires considerable
improvement, mainly in
the protection of the
catchment areas, and
in providing closed, instead
of open channels for the
water's passage from
these areas to the
points of distribution.

I do not think that
any water supply can be
altogether satisfactory

The main source of which
is an artificial lake on
tank, but as apparently
there are but few springs
in the immediate
neighbourhood of Ortacamaund,
I suppose we must chiefly
depend upon the drainage
water as at present collected.

It makes it all the
more necessary, therefore,
that the pond or tank which
this water drains should
carefully preserve from
any possible pollution,
and that the water should
have every chance given
to it in its distribution.

The Committee which
assembled at Ortacamaund
last October, have drawn up
a scheme for improving the
water supply at a cost of
25000 Rs. - I am
quite satisfied that
money would be well
spent in providing the

place with a plentiful
supply of pure water, but
even after the works
recommended by the
Committee had been
carried out, the most
careful supervision would
be necessary over all the
gathering grounds -

Meanwhile, I would
suggest that an analysis
be made by the Chemical
Laboratory at Madras of
all the water now in use
at Ortacamaund; from
tanks, wells, the lake
itself and the various
streams running through
the settlement. Some
attention to such will
be found quite useful for
use; all such sources
of supply should be at
once stopped. The wells
by being filled up, and
by removing the public
generally against ~~the~~ ^{the}
the first tanks and
streams.

The source of contamination
is that clothes are allowed
to wash clothes in the centre
of the station; the water
thus used flows into the
lake, and is doubtless
freely drunk on its
passage there.

This washing should be
stopped without delay, and
a place given to the
clothes at the lowest
level of the station, where
the water has no chance
of being drunk by the
inhabitants of Otacamand,
or by the villagers in the
neighbourhood.

My stay at Otacamand
has led me to admit of
my forming any decided
opinion upon the proposed
drainage scheme - but
I satisfied myself on two
points.

(1) That the main Bazaar
and Haudah should
have a proper system
of drains, and

(2) That the sewage from
the Bazaar should
on no account be
allowed to flow into
the lake, as it does at
present.

A thorough system of
conservation at Otacamand
is even more important
than the supply of pure
water and good drainage;
in fact, the success of the
latter schemes will
mainly depend upon the
first being properly carried
out.

Where drinking water
is dependent upon
surface drainage it is
absolutely necessary that
the ground should be
kept completely free from
any chance of depletion.
Yet, incredible as it
may appear, there is
scarcely a house at
Otacamand which

is provided with a latrine
for natives. Servants
and followers naturall
cover themselves of the
karak cover, with a
result which does not
require any comment
from me.

Owners of houses should
be at once required to
build latrines according
to a plan approved of by
the Municipality, and
of sufficient size to accom-
modate the number of
servants on the premises;
and also to provide
receptacles which should
be removed ^{as required} daily by the
Municipality.

Pits for stable litter
should also be constructed.
The contents of which should
either be buried periodically,
or used under the sanction
of the Municipality, in
gardens and plantations

26/2/20
where no contamination to the
water supply could possibly
ensue.

There are doubtless
many other points which
would have struck me
had I remained longer
at Ootacamund, but I
am enough to be satisfied
that no time that no
time should be lost in
securing a supply of pure
drinking water, and in
placing the sanitary
arrangements on a
prosperous footing.

The locally appointed
Sanitary Officer, Surgeon
Major Hume, seems
to take a great interest
in his work, as does
Mr. Garlow, the Com-
missioner. As to these
gentlemen were good
enough to show me
round Ootacamund.

Should say that
the Chief Civil Officers
of places like Saile,

Munice, Morrison,
Ospeltine. Should be
addressed in order to obtain
from them copies of the
bye laws and a list of
the taxes they may have
found necessary from
time to time to introduce.

These hill Stations were
alone time, nearly as
backward as Otacamaund
is, both in regard to their
water supply and their
convenience, but
experience, gained from
heavy and frequent
visitations of cholera and
other epidemics, forced
upon the local
authorities the necessity
of improving the sanitary
condition of their stations,
and it will no doubt
be advantageous to the
Municipality of Otacamaund
to learn what precautionary
measures have been
adopted at some of the
Milder Settlements.

J.R.

I think the paper
must certainly be
circulated & all
J.R.

Apr 27-1882

R. 30-1882

To Hon W. H. Hudson
The Hon D. F. Carmichael
The Rt Hon the Governor
v/g For order M.S.

In recirculating with
draft of order, and of
a letter to the Govt,
the Otacamaund Supplement
Report, I am not
aware that it will
now be necessary to
circulate these to the
attending members of Govt.
this perhaps being an
important matter it
would be more satisfactory
to do so

No notice is taken in
the order on the subject
of attending & strengthening
the Municipal Act
upon which stress was
laid by the Committee
but as copies of the
various Acts of other
Hill Stations are not

procured it might
suppose perhaps to
say in the order that
Subsequent instructions
will issue on their
receipt. I have
added something to
the effect in pencil
Altt

26.1.82

I think there is diff.
concurrence of opinion
to allow of a G.O. being
now drafted. The working
of the G.O. by the Govt. & the
the Govt. have arrived
are very much better
& I express in my note.
I think it sh. be
resolved to take the
necessary steps to carry
out as speedily as
possible so much
of the Com. Scheme
as be agree in
thinking primarily
essential. The rest?

The Hon W. H. Gladstone

For order

I beg to recommend
the annexed file connected
with the Octacomb
Improvement Scheme
as both H.E. the Governor
and H.E. the C in C
have each drawn up
several notes which
will have to be considered
in framing the order

There are several
of the minor points re-
garding which no
particular remarks or
instructions have as
yet been given and I
am not quite sure as
to what notice is to
be taken of these in
the order - Regarding
the suggestion that the
various Acts of the
Second Session should

time - the similar
 is already in the hands
 of the Commission of
 the Illinois on 1st no-
 curred it in line some
 time ago; but it is
 not clear whether it
 will be necessary to
 await the arrival
 of these acts & then
 enumerate before
 disposing of this
 reference

Att

10/1/82

stated. I fear I think
 may be settled in fact.
 but then the only object
 he has is to the fact
 in view of the question
 of provision of funds
 being dealt with. I
 think it shd. be
 ascertained from the
 whether they will assist
 by a grant from
 Imperial.

OK

10/1/82

X.
No. 286 W

PUBLIC WORKS DEPARTMENT.

PROCEEDINGS OF THE MADRAS GOVERNMENT.

Under date the

1st Feb'y 1882

Read the following:—

Report of the Committee appointed under G.O. 6th June/81
N^o 1408 W to consider and report on the measures
deemed necessary for the improvement of the station
of Otacamund, and to frame an approximate
estimate of the cost of the needful work.

The attention of Govern-
ment having been drawn to
the requirements of Otaca-
mund, more especially from
a sanitary aspect, the consi-
deration of the whole question
was by G.O. 1408 W d^o 6th June/81
remitted to a Committee under
the presidency of the Chief
Engineer.

2. The Committee were
engaged on the work from
June to the end of October
1881, and having submitted
their

their report recorded at
the head of these Proceedings,
the Right Honible the
Governor in Council desires
that the thanks of Govern-
ment be conveyed to them
for their valuable and
complete Report.

3. The proposals of the
Committee embrace improved
water supply and drainage
schemes - a new Market
and other Town Improve-
ments, both sanitary and
general, and are estimated
to cost in the aggregate in
nearly 10 Lakhs.

4. Of this sum it is
suggested that 4 Lakhs
shall be advanced in the
form of a loan to the
Municipality, repayment
being provided by increa-
sing the present taxation
for 7 to 12 per cent on the
rental of properties in
the station and that

the balance of 6 lakhs
be met by a grant to the
Municipality from Impe-
rial and Provincial
Funds in equal shares.
These grants would be
spread over 3 or 4 years
as ^{might} ~~may~~ be requisite for
carrying out the works.

5. The Right Honible the
Governor in Council has
given the Report of the
Committee and the several
suggestions contained there-
in his careful considera-
tion, and after personal
inspection of the localities
named by himself and by
His Excellency the Command-
er in Chief, has come to
the following conclusions:-

6. Improved Drainage
and Water Supply works
are in his opinion most
essential but the former
should take precedence
of

of the latter in point of
urgency. In this connection
he deems it essential to
note

(1) that the Main Bazaar
Kandal and other
collection of native
houses should be given
a proper system of
surface drains.

(2) that the sewage from
the Bazaar should on
no account be allowed
to flow into and
contaminate the Lake
as it does at present,
and

(3) that the level of the
lake should be lower-
ed as suggested by
the Committee. This
latter measure can
be, as convinced he
carried out without
creating any perap-
tible nuisance and
should when complet-
ed reclaim nearly
all the ground east
of the Willow bund
thus adding to the
extent

extent and sensibly
improving the healthi-
ness of the Recrea-
tion ground.

7. If the lake level be
lowered gradually the small
portions of exposed margin
would soon be covered by
vegetation and the natural
action might be quickened
by sowing rapidly growing
water weeds.

8. It may possibly be
found desirable hereafter
to carry away the Sweepings
of the Bazaar &c by a
Canal taken from the
waste weir round the hill
at the extremity of the
lake to the poudrette
depot but the scheme
will be expensive, and
will not provide for re-
moval of liquid sewage.
Meanwhile it would
appear clear that no
nuisance will be created
by adopting the plan pro-
posed by the Committee
for

for discharge of the latter
into the stream below the
bund if as may fairly
be assumed the tank
waste weir or sluice can
always furnish a suffi-
-cient body of water for
flushing. Among the
detailed measures of
conservancy requiring
attention the following
may be indicated.

Where such accessions^{ones}
do not at present exist
owners of houses should
at once be required to
build latrines according
to a plan approved by
the Municipality, and
of sufficient size to
accommodate the number
of servants on the premises,
as also to provide recept-
-acles which should be
removed or emptied daily.

9.10 Pits for stable litter
which cannot readily be
removed should be con-
-structed, the contents

Para 9
(Separate para)

pl of which should be either
burnt periodically or used
50/200 under the sanction of
the Municipality in
gardens or plantations
where no contamination
to the water supply is
likely to ensue.

11 The measures of
sanitary improvement
recommended by the Com-
-mittee and others which
will readily suggest them-
-selves to the Commission-
-ers, and the health offi-
-cer of the station should
be kept constantly in view.

12 As regards the water
supply, considerable im-
-provement in the existing
state of things is also
essential, mainly in the
protection of the catch-
-ment areas, and in pro-
-viding closed instead of
open channels for con-
-veyance to the points
of

of final distribution.

13. While admitting the extreme difficulty of securing thoroughly satisfactory water supply the main source of which is an artificial lake or tank, there is in this instance no other alternative as the natural springs are both too few in number and too uncertain as to their yield. It is all the more necessary therefore that the ground forming the catchment areas should be most scrupulously preserved from any possible pollution, and the water carefully conserved in its distribution. The several proposals made by the Committee with those objects appear to be well worthy of adoption.

14. The cost of the water supply

15. The supply project is approximately estimated at Rs 2,50,000, and the money would in the opinion of His Excellency the Governor in Council be well spent in providing the station with a plentiful supply of pure water if the precautions above adverted can be ensured.

15. The construction of the aqueduct proposed through the Snowden House property for increasing the water supply and the removal of the polluted drainage from the Tudor Hall estate are both measures which recommend themselves to Government.

16. The expense of distribution by pipes will be considerable and will probably have to be soon met, but may, nevertheless come

Come last in order of the proposed ^{changes} should the grants prove insufficient to meet the whole charges at once.

No. 17 An analysis should be made by the Chemical Examiner at Madras of all water now in use at Otacamund from tanks, wells, the lake, and the various streams running through the station. Some of these sources of supply will, it is believed, be found quite unfit for use, and such measures as may be feasible should immediately be adopted as will effectually prevent the water being employed for drinking or cooking.

No. 18 One source of contamination is due to Shobies being allowed to

pb
\$6/2807 to wash clothes in the centre of the station & the water thus used flows into the lake. It is essential that this practice should be stopped without delay, and a place assigned to these people at the lowest level of the station where the water cannot possibly be used for drinking by the inhabitants.

19 No. 19 As regards the minor improvements recommended by the Committee, the Right Honble the Governor in Council concurs in the suggestions as to the removal of the Slaughter Houses and all other objectionable occupations, and remits this subject together with the other matters dealt with in the

the Committee's Report,
to the early attention of
the Municipal Commis-
sioners.

19. He is however unable
to give his full concur-
-rence to the proposals
on the subject of the work
to be assigned to the
Superintendent of the
Botanical Gardens. His
Excellency in Council
has no doubt that
Mr. Jameison will help
the Society of Ootacamund
in horticultural matters
as far as may lie in his
power, and trusts to his
good sense to aid in
the improvements indi-
-cated by the Committee
as being allied to his
own special occupation.

If it were found feasible
for the Municipality to
engage the services of a
really

187 1/2
I do not suggest
this in the present
condition of the Munici-
pality's finances.

really good landscape
gardener it is considered
that the cost would be
amply repaid by the
enhanced value which
would be thus given to
property in the station.

21 20. While approving of
the suggestions of the
Committee as above spe-
-cified, it remains to
consider what portions
of the schemes should
be first taken up and
how the requisite funds
should be provided.

22 21. His Excellency in
Council has no doubt
that the whole scheme
of improvements is very
desirable and that the
objects in view would
be most economically
attained by complete
action at once - but
he is not prepared to
admit

admit that the whole
is of equal urgency, the
Committee however propose
that the grants if made
should be spread over three
or four years, and that
period would in the
opinion of Government
be at least required for
carrying out the works.

22. Taken in order of
urgency, the Rt. Honble
the Governor in Council
considers that the works
stand as follows:—

(1) Drainage Works.

- (a) Surface drainage of the Bazaar.
- (b) — do — Nandal town.
- (c) — do — Minor collection of houses.
- (d) Main sewer along north
margin of Lake.

(2) Water supply Works.

- (a) Improvements as
recommended for both

the Marleywood and
Sodabatta reservoirs.

- (b) Distribution of supply
by closed channels and
pipes — ditto — Northern area.

- (c) Ditto — ditto — Southern
area.

- (3) The several items included
under Nomenclature "urgently
required improvements" page
7 of Report modified and
if possible reduced.

- (4) Ditto — Nomenclature — do.

24. 25. The Inspector General
of Jail will be requested
to state his opinion as to
the desirability of employing
Convicts generally on the
works of reclamation &c.
and especially with reference
to the clearance of "wattle"

scrub-para 36 to 42 of
the Report. He should
state what number of
prisoners might be conveniently
accommodated at Ootaca-
mund, and what have
been the general results
of the clearances of "wattle"
in the neighbourhood of
the present jail - giving
the cost per acre &c.

24. In the opinion of the
Rt. Honble the Governor
in Council, an expenditure
of 4 Lakhs in the first
instance would admit
of material improvements
being effected and he is
disposed to recommend
that half of the amount

X as the progress of the
work may render
necessary.

P9 ~~be only made available~~
as a grant-in-aid from
Provincial Funds, and
the remainder from Imperial.
be granted and held available
With this view the
Govt of India will now
be addressed.

25. For the remaining
outlay the Municipality
might be called on to
accept the charges, raising
from time to time such small
loans as may be needed.
This can be done without
any additional legislation

26. Further orders will issue
in the Financial Dept.
as to the provision of funds
as above alluded to
also regarding any change
that may be desirable
change

27
The Imp^t Committee
S. & L. Circle
Hyd Dept
Ind. Dept
Sept 10 Feb 1882

No.

287 W

Government of Madras,

PUBLIC WORKS DEPARTMENT.

To

*The Secretary to the Govt of India,
P.W. Department - Calcutta,*

Calcutta, 1st Feb 1882.

SIR,

I am directed to submit for the favorable consideration of His Excellency the Governor General in Council the Proceedings of this Govt with the Report and Plan (to be returned) noted in the margin having reference to the improvements of Ootacamund.

2. The subject of improving

90 A-286 1st Feb 1882

scrub in the Municipal Act
the Act as advised by the Com.
state matter when this Govt.
prison have been placed in
possession of copies of
the Acts relating to
the Municipalities at
other Hill Stations
in Northern India.

Att

26.1.82

the drainage water supply
part of this which by general
assent is considered the
most important sanitarium
in India has from time
to time forced itself on
the attention not only of
this Government but also
of that of the Government
of India as will be observed
from the correspondence
closing with Colonel Dickens's
letter No 992 C dated 2^d
November 1867.

3. It is not now I am
to say considered either
desirable or necessary to
enlarge on the claims which
have ^{more} already been so
cogently urged by Lord
Napier when Governor of
the Presidency, and

61/716 P11
which from the corres-
pondence quoted met,
it will be observed, with
so ready a response from
the Supreme Government.

4. The Municipal Com-
mission of Ootacamund
while ^{although} being charged with
the creation of all the
needful sanitary machinery
have hitherto found it
impossible to enter upon
^{necessary work} the undertaking without
imposing a burthen on
the resident Community,
which would be quite
unbearable, while on the
other hand the provincial
resources at command of
this Government have been
inadequate for meeting any

of the needful demands -
5. The Rt. Honble the
Governor in Council is
of opinion that after
years spent in fruitless
reporting the time for taking
action has arrived, and
on the eve of ^{confidently}
~~decisions~~ to what extent
^{between with}
may be an improved era
as regards the Provincial
Assignments for this Presidency
is very desirous of making
a moderate grant - in aid
to the Municipality, stated
in the Proceeding at 2
Lakhs, and would now
venture to submit that
a similar sum be contributed
from Imperial funds on
the same account.
I am here to state

112.
62/1280 That owing to a variety of
circumstances unnecessary now
to dwell on, the grant of
Rupees 74,000 promised from
Imperial towards the con-
struction of the main sewer
at Botasamund in Colonel
Ticken's letter, was ~~at~~ &
fact never availed of by
the Government, and
looking to the large sums
contributed by the Supreme
Government to ~~the~~ ^{towards similar works elsewhere, the} ~~the~~ ^{the}
station of Spital, to the
acknowledged requirement
of Botasamund, and to
the position it occupies
as a sanitarium for all
India, it is hoped by
His Excellency in Council
hopes that
the request now put

forward may not be looked
on as in any sense
unreasonable. The grant
if conceded might be
lessened in its incidence
by being given in instal-
ments of Rs. 50,000 per
annum for the next four
years.

Att

26/1/82

Despatch to Calcutta with 6
spare copies of letter no 2878
+ 25 spare copies of L. O. 2864
with plan + report + appendix
A - 10" Feb'y/82
* 25 copies each.

30.8.93
31.1.05
17-11-17

Govt. of (1882)
PUBLIC WORKS

To

Dated

Issued

Recd.

Encl.

G. O. No. 1882, No. 28610
28710

Nos.

Forwarding Proceedings
Report of the Committee
submitted & considered
on the measures
recommended necessary for
improvement of the
condition of the area

improvement of the
condition of the area
measures.

Passing orders on
Report of the Committee
submitted & considered
on the measures
recommended necessary
for the