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TAMIL NADU ARCHIVES

GOVERNMENT OF TAMIL NADU

P.W.D. DEPARTMENT

G.O. No. / B.P. No.	682. W.	Press. / Mis.
Dated	13. 3	1884 ~~19~~.

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682

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Buildings and Roads.
Civil Works.

D—the following papers:—

From Colonel J. BEATTY, R.E., Superintending Engineer, IV Circle, to the Chief Engineer, Public Works Department, dated Coimbatore, 8th February 1884, No. 72 E.W.

I have the honor to submit, herewith, an estimate, amounting to Rs. 40,000, with plans, for the new brick sewer at Ootacamund that is to receive the drainage both of the upper and lower bazaars, between the tonga stables near Glendower Hall and the willow bund, and convey it to the iron-pipe sewer, which is eventually to carry it into the valley below Kandal at the lower end of the lake.

1 Survey.
1 Section.
1 Plan.
1 Detailed estimates with abstracts.
Abstract, and
General abstract in duplicate.

. The position of the proposed sewer is shown on the plan and longitudinal sec- from which it will be seen that its length is about 6,580 feet, or nearly $1\frac{1}{4}$ miles, hat it will have a uniform fall of 8·8 inches per mile. It will be laid under- d, and is to be of the best brickwork in mortar, and plastered with Portland t. In section it will be 14 inches wide at bottom and 12 inches high.

. Along the line of this brick sewer there will be masonry sumps or catch-pits, at top by wooden doors, to act as traps for any solid refuse that reaches the line sewer. Such solid matter is to be removed by the municipal conservancy carts. upper part of the sewer the sumps will be 3 feet square, in the lower part $3\frac{1}{2}$

. The estimate also provides 3,490 lineal feet of 6-inch stone branch drains to y the drainage of that part of the town between the Commerical road and the r-channel to the new brick sewer.

. Masonry under-tunnels are also provided to pass local rainfall under the brick to the lake supply-channel.

. Although the scheme of drainage for the north side of the lake will still be plete until the pipe sewer has been laid from the willow bund to the end of the nd liquid sewage will still reach the lake at one point, it is expected that the now proposed will materially improve the present condition of the station. The ewer must have the effect of stopping all the solid matter that now falls into pply-channel at different points along its course, and also such as falls into the rect at places along the upper part of its margin.

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om the Superintending Engineer, IV Circle, dated 26th February 1884, No. 114 W.
" " V " " 7th March " " 4196.

No. 1262.

Note by the Chief Engineer, Public Works Department.

The estimate is submitted for the sanction of Government.

2. It is suggested that the floors of under-tunnels to pass the rainfall should be slabbed, and that some provision for wings should be made at entrances and exits of the water-channels.

12 March
~~14th February~~ 1884. (Signed) J. SHAW-STEWART, Colonel, R.E.,
Chief Engineer, P.W.D.

ORDER—dated 13th March 1884, No. 682 W., Public Works.

The estimate, amounting to Rs. 40,000, for the construction of a masonry sewer at Ootacamund, is sanctioned, as supplemental to the drainage estimate of Rs. 94,000, referred to in G.O., No. 314 W., dated 29th January 1883.

2. The expenditure on the original estimate, to the end of 1882-83, amounted to Rs. 39,773; the current year's grant is Rs. 40,000, and Rs. 14,200 have been provided for the work in the Provincial budget for 1884-85. If additional funds are required during the current official year, early application should be submitted by the Superintending Engineer.

3. The attention of the Superintending Engineer is called to the suggestion in paragraph 2 of the Chief Engineer's note above recorded.

4. The Government trust to receive, at a very early date, the estimate for the iron pipe sewer to be laid from the willow bund to the west end of the lake, in continuation of the masonry sewer now sanctioned.

5. This sanction has been registered as Povincial No. 235 W. of 1883-84, and classified as Miscellaneous Public Improvement, Original Works.

(True Extract.)

Major, R.E.,
Under Secy. to Govt., P.W.D.

To the Superintending Engineer, IV Circle, with seventeen enclosures.
" Examiner, Public Works Accounts, with general abstract estimate.
" Financial Department.

Exd. E. Fernandez.
Spare Copies

BUILDINGS AND ROADS.
CIVIL WORKS.

Govt. of {1884} Madras.

PUBLIC WORKS.

Dated March, 13*th*.

Read.

Encl.

G.O., 13th March 1884, No. 682 W.

MARCH.

Masonry Sewer at Ootacamund

Estimate, amounting to Rs. 40,000, for constructing a —, sanctioned with remarks.

No. 14. Read the following letter from Lieutenant-Colonel E. LAWFORD, Officiating Chief Engineer; to the Secretary to Government, dated 12th October 1858, No. 4449.

SIR,

I have the honor to submit for the sanction of Government, an estimate amounting to Rupees (2,750) two thousand seven hundred and fifty, providing for laying down 9 inch Cast Iron-Pipes, on the plan of an inverted syphon, for conveying water across, the Elk-Hill cutting, or sunken Road, between Ootacamund and Conoor, on the Neilgherry Hills.

1 Copy of letter.
1 Abstract Estimate.

2. The Estimate sanctioned on the 6th of October 1853, for opening out this cut included an item for Iron Piping for conveying the water across it, for the supply, of two Houses called "Elk-Hill-House" and "Shoreham," formerly the property of Mr. Norton, Advocate General, to whom the sole right in this stream, was granted by Government, and restoring to the present owners* of these Houses, their right in the supply, which had been cut off, on the formation of the Sunken Road or Elk-Hill cutting, as it is now called; the money, however, was all expended on the cutting and no permanent piping was laid down; it was afterwards considered advisable to set up a temporary Lattice Bridge an item for which was included in the amount viz., Rupees 10,200 sanctioned by Government in Extract Minutes Consultation dated 14th September 1855 No. 538 for widening the cut to convey the water in an open pipe or trough across, till it was determined what quantity would be required for the supply generally of the Houses to the South of Ootacamund for the investigation of which Project the Collector of Coimbatore had received sanction to the amount of Rupees 400; the Lattice Bridge was built, but I am sorry to say, failed on account of the subsequent widening of the cut, destroying its relative proportions of length and depth, and the supply was consequently cut off.

* Major General Dowker. Colonel Hadfield.

3. Notwithstanding the previous failure, Government again in Extract Minutes Consultation No. 1887 under date the 11th July 1857, sanctioned an Estimate amounting to Rupees 300 (simply as an act of justice) for restoring the supply of water cut off by a Government work; This estimate proved insufficient to accomplish the object in view, on account of the rise in prices of labor and materials; a Carpenter at Ootacamund demanding at that time (when the construction of the Jackatalla Barracks had been ordered) 1 Rupee per diem, at Jackatalla receiving 8 annas per diem with Batta.

4. As therefore the owners of these two Houses have had their supply of water from this stream entirely cut off, (by the execution of a Government work) the sole right to which, having been originally granted by Government, to Mr. Norton, the former Proprietor of the House, I would beg most strongly to recommend the accompanying estimate for sanction involving, it may be said, rather a large outlay, but which I believe will at once render justice to the owners of these two Houses and accomplish the Government intention of providing for a supply of water generally to the Houses on the South of Ootacamund; this I believe will result in a permanent settlement of all disputes on the subject, and all further trouble to Government. It would be only fair though, that such an advantage to the Inhabitants on the South side of Ootacamund, should be accompanied, by some small return to Government, under the head of a fixed-water rate, the amount of which might be settled by the Collector and District Engineer.

Letter from WILLIAM FRASER, Esq., Acting District Engineer of Coimbatore; to the Chief Engineer, dated Coimbatore 29th September 1858, No. 138.

SIR,

General Dowker and Colonel Hadfield of Ootacamund lately addressed the Collector on the subject of the cutting off the supply of water from their Houses by the Elk-Hill cutting.

2. They applied to the Collector previously to laying their case before Government, and the Collector brought the matter before me, and thus I have the honor of again addressing you on the subject.

3. It is quite clear from the statements they make that Elk-Hill-House and Shoreham-House are entitled to water from the stream severed by the Elk-Hill cutting.

4. The lands were granted by Government to the late Advocate General Mr. George Norton and there is little doubt but that the right to the water course was granted also, at all events the right was admitted by the fact that General Dowker was paid 18 Rupees per month from the time of the cutting of the stream up to the end of April 1857 to indemnify him for the loss of the water. He was paid nothing since that date.

5. On the 11th July 1857 a sum of Rupees 300 was granted to put up a temporary continuance for carrying the water across, and when I had Executive charge of the Neilgherry Range I proposed a timber syphon at an estimate of 1,200 Rupees the materials for which were partly prepared.

6. About Rupees 277 were spent on the proposed temporary measure, but the balance of the 300 Rupees would not complete it.

7. You disapproved of the timber syphon and recommended a metal one instead.

8. A metal syphon is no doubt the best way to carry the water across, but there would probably be great delay in getting the pipes cast and it would cost much more than a timber syphon which if properly made of proper timber would last a long time.

9. What are we to do, shall we.

1. Resume payment of water-men for General Dowker and Colonel Hadfield at about 30 Rupees per month or
2. Complete the temporary plan of carrying the water over which would cost about 250 Rupees or
3. Construct a timber syphon at 1,200 Rupees or
4. Order pipes for a metal syphon, nine inch Pipes would do and about 200 feet would be required.

10. I would recommend the construction of the permanent syphon at once and I think it is probable that if General Dowker and Colonel Hadfield were aware that an order to this effect were given, they would not seek payment for water-men during the time of its construction.

No. 15. ORDER THEREON, No. 2650; dated 8th December 1858.

Under the circumstances represented in the above letter, the Government sanction for entry in the Budget Statement No. 2 of 1859-60, the estimate amounting to Rupees 2,750, for laying down 9 inch cast Iron pipes for conveying water across the Elk Hill cutting at Ootacamund to the two houses called Elk Hill House and Shoreham at present the property of General Dowker as well as to the houses generally on the South of Ootacamund.

(Signed) W. H. BAYLEY,
Acting Secretary to Government.

No. 23. Read the following letter from Major General H. DOWKER, Ootacamund; to T. PYCROFT, Esq., Chief Secretary to Government; dated Ootacamund, 12th November 1858.

SIR,

I have the honor to forward you copy of a letter which I addressed to J. W. Cherry, Esq., Acting Collector of Coimbatore, on the 15th of June last, together with copies of four documents, therewith transmitted to him; as this correspondence is explanatory of a serious grievance under which I have been suffering since December 1854, I therefore beg you will do me the favor to submit the same to the Right Honorable the Governor, as I feel that this correspondence will exhibit satisfactorily to him the manner in which I have for very nearly four years been treated regarding the restoration, or rather I should say the non-restoration, of the watercourse in question; to which, I most respectfully state I am fully and lawfully entitled, conjointly with Colonel Hadfield the proprietor of Shoreham, and I sincerely hope and trust that his Lordship being made aware of the grievance, will be pleased to have it remedied as early as conveniently practicable, for the expense I have been put to, and the great inconvenience I have suffered, from being deprived of this watercourse for such a length of time, are not to be easily understood.

No 1, Copy of letter No. 298 from J. W. Cherry, Esq., to Major General Dowker, dated 18th of June 1858, marked A. A.

No. 2. Copy of copy of letter from W. Fraser, Esquire, Acting District Engineer to J. W. Cherry, Esq., Acting Collector dated 10th of July 1858, marked B. B.

No. 3. Copy of letter No. 237 from J. W. Cherry, Esquire, to Major General Dowker, dated 23rd July 1858, marked C. C.

No. 4. Copy of copy of letter No. 205 from W. Fraser, Esq. to J. W. Cherry, Esq., dated 30th September 1858, marked D. D.

No. 5. Copy of letter No. 297 from J. W. Cherry, Esquire, to Major General H. Dowker, dated 2nd October 1858, marked E. E.

Since addressing J. W. Cherry, Esquire, on the 15th of June last, I have received five communications from that officer (letters and copies of letters) and copies of which I now deem it advisable to forward you, they are herewith enclosed, as indicated in the margin, and I merely observe with regard to them that I cannot see that any thing active or effective in the Engineer's Department has been done or is doing, although it is nearly five months since the 15th of June, and nearly four years since my watercourse has been rendered useless, on account of the new public road.

From Major General DOWKER; to J. W. CHERRY, Esq., Acting Collector of Coimbatore; dated Ootacamund, 15th June 1858.

SIR,

Referring to a conversation I had with you a few days since, I have the honor to bring to your notice that I have now for a period of upwards of three years and a half, been deprived of the use and benefit of the water-course, rightfully, belonging conjointly to the Properties of Elk Hill and Shoreham.

2nd. I am fully informed that the right of this water-course in question, was originally granted to George Norton, Esq., the then Proprietor of Elk Hill and Shoreham by a former Collector, and that this arrangement was subsequently allowed of by Government.

No. 1. Copy of letter from Major General Dowker; to E. B. Thomas, Esq., Collector of Coimbatore dated 16th of May 1855, marked A.
No. 2. Copy of letter No. 31 dated 21st May 1855, from E. B. Thomas, Esq., Collector of Coimbatore; to Major General Dowker, marked B.
No. 3. Copy of Copy of letter dated 21st May 1855, from E. B. Thomas Esq., Collector of Coimbatore; to Captain P. M. Frances Civil Engineer 7th Division marked C.
No. 4. Copy of Copy of letter No. 267 dated 28th May 1855, from Captain P. M. Frances Civil Engineer 7th Division; to E. B. Thomas Esq., Collector of Coimbatore marked D.

3rd. In further explanation of my right conjointly with Colonel Hadfield, the present Proprietor of Shoreham, I have the honor to forward the Documents noted in the margin; which, I beg to observe, are all dated so far back as May 1855.

4th. Reference is made in Document No. 1 marked A to an inadequate remuneration of four coolies from the Road Department; well, I went on being paid eighteen Rupees per men-

sem for these four coolies, from the time the Civil Engineer failed in giving me a temporary water-course up to the 30th of April 1857; but, since which date I have been paid nothing, and consequently have borne since that date, the entire expense myself for water for my House and Grounds; further comment on this point is unnecessary.

5th. In documents Nos. 2, 3 and 4 marked B. C. and D. respectively of May 1855, you will perceive that hopes are held out, that something would be done at once to give a temporary water-course for Elk Hill and Shoreham, until such time as the cut, and contemplated permanent aqueduct were completed; but, this sort of thing, has from time to time been going on, almost ever since May 1855, with the same results.—Nothing; it was only as late as in the month of February last, I think, that Mr. Fraser Civil Engineer and Captain Francis called upon me; when, at their request I accompanied them and pointed out to them, the place at which I wished the water to enter my grounds, adhering strictly to the old course made with authority, by Mr. Norton, as any other line of water-course than that originally granted to that gentleman, might involve me in litigation and dispute, and any lower point of entry for the water, would not all suit my vegetable garden, indeed, this vegetable garden is now "dead letter" for more than half the year; well, on this occasion of the Civil Engineer and Captain Francis calling upon me, I most fully expected to have had the water-course working immediately; but, no such thing, nothing appears to have been done or appears to be doing.

In conclusion, I most earnestly entreat, that you will have the goodness to adopt the necessary steps to have the former supply of water brought into these grounds by the former water-course; at the old point of entry, and should you find yourself unable to have this performed, may I beg you will do me the kindness to forward this my present correspondence with you, together with the four accompanying documents, to the Board of Revenue for submission to Government, for I feel assured that if this grievance be once brought to the notice of Government, orders would at once be issued for the restoration of the water by the original course, as I am perfectly confident Government would never allow the expense of the thing to interfere with the undoubted right of the present sufferers.

(A true Copy.)

(Signed) HOWARD DOWKER,
Major General.

A.

From Major General DOWKER, to E. B. THOMAS, Esq., Collector of Coimbatore, dated Ootacamund, 16th May 1855.

Sir,

I have forborn for a length of time to address you on the subject of the watercourse; to which, Elk Hill house and Shorcham are justly and lawfully entitled; in fact till my patience is somewhat worn out; I have therefore the honor now to inform you, that some six months since I think, Captain Francis, Civil Engineer of the District in riding through my place with Captain Babington on their way to Kulhutty; asked my consent to have the old wooden trough or channel which carried the Elk Hill and Shoreham supply of water across the Condor road removed, for the purpose of allowing that place to sink or settle, as well as I remember; on this occasion Captain Francis promised me water by another course from the neighbouring hills, as a temporary measure; and therefore as the old wooden channel was much deranged by what had previously taken place, in having the proper inclination for the water spoiled, and as I did not really had I reflected a moment I should have withhold this consent until I had consulted nor ever should wish to retard a public benefit or improvement, I gave my consent at once; but Colonel Hadfield, for his property of Shoreham is entitled to the water of the course in question as well as Elk Hill.

Captain Francis failed with the watercourse he endeavoured to make in some measure useful to me, and I was afterwards supplied with four coolies by him from the Road Department; but I assure you that these four coolies, are but of exceedingly trifling use to me compared with

the advantage I should have derived from my watercourse, had it been running properly all this time.

My vegetable garden I have been obliged entirely to give up for many months, my young trees are much neglected and what I feel most of all, I am entirely I may say, deprived of the amusement and enjoyment of planting and improving many parts of my property; in truth, I cannot well explain to you, the loss and inconvenience I have been put to in various ways, by having been deprived of my watercourse, for such a length of time, as I have now been without it.

I have now the honor to request you will do me the favour to use your interference as Collector of the District, in having the water of Elk Hill and Shoreham restored by the Engineer's Department to its *original channel*, with as little delay as conveniently practicable; and I entreat you also to make enquiry, and to inform me in what time I may reasonably expect to see this work performed; because *at present* I feel most averse to making any appeal to Government about the matter.

I am aware that water might be brought on to part of Elk Hill by a lower line; but, that arrangement I beg now to say I should most respectfully protest against; because, a lower line of channel than the original one, *would not in any way suit my purpose.*

B.

From E. B. THOMAS, Esq., Collector of Coimbatore; to Major General H. DOWKER; dated Ootacamund, 21st May 1855, No. 81.

Sir,

In reply to your letter of the 16th Instant I beg to say I have forwarded your letter to the Civil Engineer and requested him to give me, if possible, some idea when the cut and watercourse may be completed. I am fully aware of the inconvenience you are put to, but I fear it was an unavoidable alternative to complete a great public work (the cut) it was absolutely necessary to move the trough and cut down the bank, and the slipping and difficult character of the soil, has augmented the difficulty considerably. I will request the Civil Engineer to consider if any expedient, by a temporary trough be practicable.

C.

From E. B. THOMAS, Esq., Collector of Coimbatore; to Captain P. M. FRANCIS, Civil Engineer, 7th Division; dated Ootacamund, 21st May 1855.

Sir,

I beg to enclose copy of letter from Major General Dowker dated 16th Instant, on the subject of the watercourse to supply the Elk Hill House and Shoreham, at Ootacamund.

It is worthy of consideration whether some temporary Trough (till the Cut and aquiduct be completed) is not practicable. I add copy of my reply to Major General Dowker.

D.

From Captain P. M. FRANCIS, Civil Engineer, 7th Division; to E. B. TAOMAS, Esq., Collector of Coimbatore; dated Coimbatore, 28th May 1855, No. 267.

Sir,

I have the honor to acknowledge the receipt of your letter dated 21st May 1855, No. 80 together with two enclosures. In reply I have the honor to state that Mr. Stewart has been requested this day to see what can be done at once, regarding the watercourse to supply Elk Hill House and Shoreham.

A. A.

From J. W. CHERRY, Esq., Acting Collector of Coimbatore, to Major General H. DOWKER, Ootacamund; dated 13th June 1858, No. 208.

Sir,

1. I have the honor to acknowledge the receipt of your letter of the 15th Instant forwarding copy of correspondence relative to the watercourse supplying water to the properties of Elk Hill and Shoreham and requesting my interference in the matter.

2. In reply I beg to inform you that I shall be most happy to do my best in the matter; but, as the construction of the aquiduct across the Cut; which, has been sanctioned by Government long ago, rests with the Public Works Department, I have written to the District Engineer on the subject, on the receipt of his reply I shall be better able to see, whether the reference to the Board asked for by you, can be made.

B. B.

From WILLIAM FRASER, Esq., Acting District Engineer of Coimbatore; to J. W. CHERRY, Esq., Acting Collector of Coimbatore; dated Coimbatore, 10th July 1858, No. 146.

SIR,

With reference to your letter No. 273 dated 18th June, I have the honor to state that I have forwarded copies of General Dowker's and Colonel Hadfield's letters to the Chief Engineer, with a request that he will give me instructions as to what answer I shall give respecting the construction of some means of carrying water across the Elk Hill Cutting. Until I receive the Chief Engineer's answer I shall be obliged if you will delay laying the matter before the Board of Revenue.

C. C.

From J. W. CHERRY, Esq., Acting Collector of Coimbatore; to Major General H. DOWKER, dated Ootacamund, 23rd July 1858, No. 237.

From Genl. Dowker, 15th June 1858.
To do. do. 18th do. No. 203.

SIR,

Adverting to the correspondence noted in the margin I have the honor to forward copy of a letter from the Acting District Engineer of Coimbatore, dated 10th Instant No. 146 from which it will appear that he has made a reference to the Chief Engineer on the subject of the Elk Hill watercourse.

D. D.

From WILLIAM FRASER, Esq., Acting District Engineer of Coimbatore; to J. W. CHERRY, Esq., Acting Collector of Coimbatore, dated 30th September 1858, No. 205.

SIR,

In returning the original letters as requested in your letter No. 273 dated 18th June, 1858, I have the honor to inform you that I have referred the matter to the Chief Engineer, with a recommendation that he will issue orders to have the water carried across Elk Hill without delay. I will inform you of his reply when I get it.

One Copy of letter from General Dowker, to Mr. Thomas, dated 10th May 1858.
2. Do. of a letter from Mr. Thomas, to Genl. Dowker No. 81 dated 21st May 1858.
3. Do. from Mr. Thomas, to Captain Francis, dated 21st May 1858.
4. Do. from Captain Francis, to Mr. Thomas, dated 28th May 1858, No. 267.

E. E.

From J. W. CHERRY, Esq., Acting Collector of Coimbatore; to Major General H. DOWKER, dated Ootacamund, 2nd October 1858, No. 297.

SIR,

In continuation of my last letter to you on the subject of carrying water, across the Elk Hill, I have the honor to send for your information copy of a letter which I have only this day received from the District Engineer of Coimbatore, from this it would appear that the matter has been referred for the settlement of the Chief Engineer, and a further delay occurs, for which my Department is in no way to blame.

No. 24.

Minute by the Right Honorable the President.

Before quitting this Station, I wish to bring to the notice of Government certain subjects, which in my opinion, require immediate attention and action, in order to secure its well-being, and to ensure its future improvement, with order and regularity.

1. The roads require more careful superintendence, and greater skill in the method of repairing them. Mr. Fraser the Acting District Engineer is fully aware of this, and has already initiated an improved system which I hope may be continued; the only really good portion of road in the Cantonment is one formed and repaired under Mr. Fraser's immediate superintendence.

There are at present about 20 miles of road in the Cantonment, 10 of them being main arteries, and the remainder of less importance, but still absolutely necessary, and more are still required; but up to the present time, these roads have been laid out, as occasion required, with little or no order or regularity, and many valuable sites for houses have been overlooked.

Mr. Fraser is fully aware of these errors, and is prepared with remedies; my reason for now pointing them out is in order to state, that it is very important, that he should be, if possible, supplied with sufficient professional aid to apply those remedies. Every year, nay every month, that is lost, affords opportunities for irregularities being confirmed, and makes improvement more difficult.

2. The same observations are applicable on the subject of water. All the houses of the Cantonment might be well supplied, were the streams and springs properly economized; but this requires that a systematic plan should be adopted, and the supply to each house regulated and charged for.

Mr. Fraser is prepared with a plan for attaining this object; and if an establishment could be allowed him for a few months, he would be able to complete the survey of the Cantonment, laying out roads and sites, and a water supply at the same time.

3. The bazaars and small native villages require to be placed under Conservancy rules, and the permission to natives to erect small huts in their gardens, should be restricted.

The Acting Collector Mr. Cherry, is doing his best to improve the state of things, but there appears to exist scarcely sufficient legal authority to enable the Collector to enforce the necessary regulations.

4. Great complaints are made of the want of law for enforcing agreements between masters and servants, and it is asserted that serious inconvenience to families thereby result.

A law, to some extent applicable to this subject, is at present under the consideration of the Legislative Council; but it is intended to be restricted to the three Presidency towns.

I do not see the objection to making it applicable to the whole country; but it is certainly quite as much required at such Stations as this, and in such Settlements as the Wynaad, as at Madras.

5. The attention of the Board of Revenue should be called to the necessity for laying down some rules for the working of the Peat Mosses.

At present any one is allowed to use them,—or if a grant is given to work them to an individual, he can do so, as may appear most convenient,—and in consequence there is a liability of great quantities of this very useful kind of fuel being wasted or lost.

One instance, I have seen, in which one large moss has slipped away, and become entirely useless, from being improperly worked. The fuel obtained from them is of intrinsic value, and of increased importance as affording relief to the woods in the neighbourhood.

6. I think also some more specific and definite course should be adopted respecting the granting of leases for lands, and I would request attention to a correspondence between Mr. Thomas and Mr. Scott on this subject, (copies of which can be obtained from the Collector's Office), as a proof of the very loose method in which these matters have been conducted.

I have been informed, that the land in question is on the Coonoor Ghat or very close to it, and that there is some valuable timber on it.

7. A communication from General Dowker on the subject of the water supply to his house, will be forwarded to the Government by the Chief Secretary. I mention it, because I believe that justice requires that it should be immediately attended to.

Mr. Fraser informs me that he is very sure, that the wooden syphon recommended by him to supply water across the Elk Hill cutting, would last for some years.

Some of the above remarks are applicable equally to Coonoor and Kotahgerry.

The value of these Hill stations to the Europeans in India, cannot in my opinion be too highly estimated; and it is of great importance that they should be placed under such regulations as will preserve them in a state of salubrity, order, and comfort; and there is some risk of these requirements being neglected, until it may be most difficult to apply remedies to irregularities, which by lapse of time may almost become prescriptive rights.

OOTACAMUND, 13*th November* 1858.

(Signed) HARRIS.

No. 25.

ORDER THEREON, No. 1652; dated 11th December 1858.

In the above Minute the Right Honorable the President brings before Government certain subjects which have come under notice during his Lordship's recent visit to Ootacamund, and which in his opinion require immediate attention and action in order to secure the well-being of the station, and to ensure its future improvement with order and regularity.

2. These relate first, the laying out and repair of the roads of the station.

3rd. The water supply of the Hills.

4th. The erection of Bazars and native villages.

5th. The necessity for a law to enforce engagements between masters and servants.

6th. Rules for the working of the peat mosses.

7th. The grant of leases for lands on the Hills.

3. On the first mentioned subject it appears that the roads require more careful superintendence, and a greater amount of skill in the method of repairing them. Mr. Fraser the Acting District Engineer fully aware of the fact has already initiated an improved system, and the only good portion of the road in the Cantonment is stated to be that formed and repaired under his immediate superintendence.

4. Of 20 miles of road in the Cantonment, 10 are main arteries, and the remainder though of less importance are stated to be absolutely necessary, while more roads are still required. It would seem that up to the present time these roads have been laid out as occasion required with little or no order or regularity and many valuable sites for houses have been overlooked. The Acting District Engineer is fully aware of these errors and is prepared with remedies, but he would seem to be wanting in adequate professional aid to apply those remedies. It is essential that this aid should be speedily supplied, as every moment that is lost, affords opportunities for irregularities being confirmed, and makes improvement more difficult.

5. These remarks are equally applicable to the subject of water supply. All the houses of the Cantonment might be well supplied were the streams and springs properly economized, and a systematic plan adopted by which the supply to each house would be regulated and charged for. The Acting District Engineer is prepared with a plan for attaining this object and all that he requires, is a small establishment for a few months that would enable him to complete the survey of the Cantonment, to lay out roads and sites and a water supply at the same time.

6. The Governor in Council resolves to communicate the above remarks to the Public Works Department in order that the Officiating Chief Engineer may be instructed to ascertain what additional professional aid the Acting District Engineer of Coimbatore may need for the purposes specified, viz. for laying out the roads, completing the plan of the station, and arranging the distribution of water and to report how such assistance may be supplied.

7. The subject next noticed is the bazars and small native villages. These require to be placed under conservancy rules, and the permission to natives to erect small huts in their gardens should be restricted. The Acting Collector it is understood is giving his attention to the subject, but it would seem that he has not sufficient legal authority to enforce the necessary Regulations. The Board of Revenue will be good enough at once to place themselves in communication with the Collector, with a view to remedy the evil adverted to.

8. Great complaints are made of the want of a law for enforcing agreements between masters and servants, and it is asserted that serious inconvenience to families thereby result. His Lordship's remarks on this subject and on that noticed in the preceding paragraph, will be communicated to the Judicial Department where they will receive consideration.

9. The Governor in Council resolves to call the attention of the Board of Revenue to the two subjects next adverted to in His Lordship's Minute in order that after communicating with

the Acting Collector they may propose whatever measures they consider advisable. These are; first, the necessity for laying down some rules for the working of the peat mosses. At present any one is allowed to use these mosses, or if a grant is given to work them as may appear most convenient, there is in consequence a liability of great quantities of this very useful kind of fuel being wasted or lost. His Lordship notices an instance which came under his own observation in which one large moss has slipped away and became entirely useless from being improperly worked. It is needless to remark that the fuel obtained from these mosses is of intrinsic value, and of increased importance as affording relief to the woods in the neighbourhood. Secondly, His Lordship thinks that some more specific and definite course should be adopted respecting the granting of leases for lands; and he calls attention to a correspondence that has passed between Mr. Thomas and Mr. Scott on this subject, to be found on the records of the Coimbatore Collectorate, as shewing the very loose method in which these matters are conducted. The land in question is on the Coonoor ghat, or very close to it, and contains some valuable timber on it. The attention of the Board of Revenue will be particularly directed to this subject; but it is probable that the fault is not so much with the rules for granting leases, as the manner in which those rules have been unattended to, and the adoption of demi-official and private correspondence which is much to be deprecated in these matters.

10. The last subject noticed by His Lordship is the complaint of General Dowker regarding the water supply to his houses. The Government have in a separate resolution in the Public Works Department sanctioned for entry in the Budget of 1859-60 an estimate amounting to Rupees 2,750 for laying down Cast Iron pipes for conveying water across the Elk Hill cutting to the properties of General Dowker, and to the houses generally on the South of Ootacamund.

(Signed) W. H. BAYLEY,

Acting Secretary to Government.

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Fort Saint George, Public Works Consultation of 21st December 1858.

No. 57. Extract from the Minutes of Consultation under date the 20th December 1858, No. 2731.

Read again letter from the Officiating Chief Engineer, dated 12th October and recorded in Diary to Consultation 14th December 1858, No. 2660.

Referring to para. 10 of Extract Minutes of Consultation in the Revenue Department, dated 11th December 1858, No. 1652, and to the authority conveyed in Extract Minutes of Consultation in the Public Works Department, dated 8th December 1858, No. 2660, for entry in the Budget of 1859-60, an estimate amounting to Rupees 2,750, for laying down Cast Iron Pipes for conveying water across the Elk Hill cutting to the properties of General Dowker and to the houses on the south of Ootacamund, the Government on further consideration of the subject are of opinion that it would be better to adopt the wooden piping proposed by the District Engineer, in his letter to the Officiating Chief Engineer, dated 29th September 1858, as it could be both cheaply and speedily set up, and at once put an end to the grievance complained of, whereas by the other and more expensive method, much time would be lost in obtaining the Iron Piping. They resolve therefore to cancel the order No. 2660 of the 8th December and to direct that wooden Piping be substituted for the Elk Hill cutting. The Government cannot learn from the District Engineer's letter what the exact cost of the latter may be, but they request that the amount may be specified in order that sanction may be granted for its immediate disbursement from the one lac fund of the Current year. In the meantime the Officiating Chief Engineer will instruct the District Engineer to proceed with the work and to report how soon this can be done.

(Signed) W. H. BAYLEY,
Acting Secretary to Government.

Fort Saint George, Public Works Consultation of 11th *January* 1859.

No. 126. Read the following letter from Lieutenant-Colonel E. LAWFORD, Officiating Chief Engineer; to the Secretary to Government, dated 23rd December 1858, No. 6560.

SIR,

1 Copy of letter.
1 Abstract estimate.

With reference to Extract from Minutes of Consultation No. 2731, dated the 20th Instant, I have the honor to forward copy of Mr. Fraser's letter of the 2nd February 1858, forwarding his estimate for a wooden tube to convey water across the Elk-Hill cutting, the latter amounting to Rupees (1,200) one thousand and two hundred.

* Para 13.

2. Instructions will be now given for the immediate commencement of the work which Mr. Fraser states* can be finished in one month.

3. I think it necessarry to observe that this plan was duly considered in the Central Office, but it was thought that the pressure of a head of water of 54 feet would be such as to render iron piping preferable, and I cannot but be of the same opinion still, although for the reason stated by Government I do not object to Mr. Fraser's project.

Letter from W. FRASER, Esq., Civil Engineer; to Captain FRANCIS, District Engineer, dated Ootacamund 2nd February 1858.

SIR,

In accordance with your directions, I have examined the Elk-Hill cutting with the object of seeing how water for the supply of General Dowker's and Colonel Hadfield's houses, could be conveyed across it, I have taken the necessary levels and prepared the sketches and estimates which I showed you on the ground this morning.

2. Your directions to me were, to ascertain how the water could best be brought across *temporarily* so as to supply General Dowker's grounds at a level considerably lower than that at which it formerly flowed, but at which he was satisfied to receive it until you could obtain sanction for bringing it across at the former high level.

3. This temporary project has been considered by Major Dobbie who proposed to carry the water in a Gutta-Percha pipe down the slope to within 40 feet of the summit level of the road thence in a wooden shoot across to and along the slope on the opposite side, until it clears the edge of the cutting from which a new channel, about ¾ of a mile in length, must be cut to bring it to general Dowker's house. He has estimated this work at 450 Rupees, 300 of which only have been sanctioned: Rupees 111 had been expended in the making of about 220 feet of troughing and building a small cess-pool when the work was suspended; of the amount sanctioned then therefore remains a sum of 189 Rupees to put up the Pipe, complete the troughing, and to make the channel to General Dowker's: This sum is not sufficient for the work proposed, but, with it, we might be able to carry the water across in a *very temporary* way at a point lower down, but still high enough to command the level at which it must be delivered.

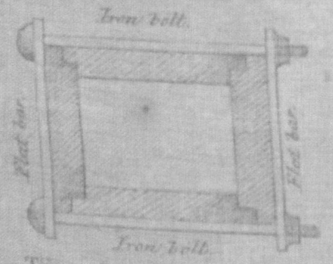
4. I consider Major Dobbie's estimate of 450 Rupees fair, my own estimate for the same object but proposed to be carried out in a different way is 420 Rupees, but I am not disposed to recommend the construction of any temporary contrivance, especially as I am of opinion that for a sum very little more than double the cost of the temporary measure, the water can be conveyed across permanently at the high level, where it must eventually be carried.

5. I would not recommend the adoption of any contrivance for *bridging over* the cutting, the depth and width of the cut (74 feet high and 182 feet wide) render any such contrivance, no matter what the materials, difficult and expensive.

6. An inverted syphon of sufficient capacity, and with sufficient head, is in my opinion, the simplest and cheapest arrangement that can be adoted.

7. The syphon may be of cast iron, or wooden tubing, the former would of, course, be best, but under existing circumstances, i. e. the present scarcity of money and the necessity for supplying General Dowker and others with water, without delay I would recommend the latter.

8. The length required is 245 feet that is, a little more than the length of the two slopes and the width of the road-way, the area I propose is 16"+14", as this is the greatest size the timber we can purchase here will afford, the sides to have an average thickness of 2 inches and to be jointed and to put together thus.



A strap of two pieces of flat bar-iron and two round bolts to be placed at an average of 3 feet apart the direction of the bolts in the straps to be alternately at right angle, so that when screwed up, the pressure will be equal all round, which will keep the joints water-tight.

9. The syphon to be covered with one or more coats of asphalt or tar, and laid into a recess cut for it in the slopes, and covered from the action of the weather.

10. At the upper end a small filtering cistern would be required, so that none but clear water could get into the syphon, and at the lowest point a stop cock would be necessary to draw off the water occasionally.

11. I estimate the cost of the syphon at 1,200 Rupees, a detailed estimate is appended.

12. As to the durability of the timber, I would remark that, if well seasoned teak can be procured and I understand it can be in abundance in the market here, and if it be protected by a a coating of asphalt or tar as proposed from the weather, and if the water be kept constantly flowing, it will last for, at all events 50 years ; and may for centuries.

13. The work may be completed and the water running in the old channel within one month from the time of getting the order to proceed with the work.

14. The timber used up in the shoot already made, will not be lost, as the boards have been put together in a V form and are uninjured.

15. In conclusion I beg to state, that if you decide in favor of carrying the water *over temporarily* I will do the best I can with the 100 Rupees available, but I would urge in preference the construction of the permanent work.

No. 127.

ORDER THEREON, No. 92 ; dated 11th January 1859.

The Government sanction the estimate submitted with the above letter, amounting to Rupees 1,200 for a wooden tube to convey water across the Elk Hill cutting at Ootacamund, for immediate execution, out of the one lac fund of the current year.

(Signed) J. D. BOURDILLON,
Secretary to Government.

Proceedings of the Madras Government, Public Works Department, 1st October 1861.

No. 9. Read the following letter from Lieutenant-Colonel W. H. HORSLEY, Chief Engineer, to J. D. SIM, Esq., Secretary to Government, dated Chepauk, 31st August 1861, No. 4,497:—

From District Engineer, No. 6, 11th May 1859
Do. do. " 67, 29th July "
Do. do. " 130, 24th " 1861.
One Bill from Mint Master.

SIR,

1. I have the honor to submit for the consideration of Government the accompanying papers connected with the project for laying down pipes for the purpose of conveying water across the Elk Hill cutting at Ootacamund, in the District of Coimbatore.

No. 2,660, 8th December 1858.

2. In their Proceedings marginally noted, Government sanctioned an estimate amounting to Rupees 2,750 for laying down cast iron pipes, but in modification of that Order, Government directed* that wooden tubes should be substituted for cast iron piping previously sanctioned, and in pursuance of this Order, an estimate amounting to Rupees 1,200 was submitted and sanctioned by Government,† and duly communicated to the District Engineer of Coimbatore for his information and guidance.

* No. 2,731, 20th December 1858.

† No. 92, 10th January 1859.

3. Nothing further transpired on the subject until 11th May 1859, when Mr. Fraser, then District Engineer of Coimbatore, forwarded‡ an estimate of the probable cost of the iron piping required for the proposed syphon for the Elk Hill cutting, with the view to the same being checked in this Office, expressing an opinion that its cost would not much exceed the sanctioned amount of Rupees 1,200.

‡ No. 6, 11th May 1859.

4. The Mint Master was then requested to report the cost of casting the iron piping required, and in reply stated that the castings would amount to Rupees 140 per ton.

5. On the District Engineer being informed of the cost, he requested§ that the castings might be ordered; the Mint Master was accordingly requested‖ by this Office to give the necessary orders for the castings being put in hand as soon as possible, as Sir C. Trevelyan was anxious that the project should be carried out with as little delay as practicable; from this it is presumed that Colonel Bell had received verbal instructions from Sir C. Trevelyan for substituting iron for wooden piping.

§ No. 67, 29th July 1859.

‖ No. 10,844, 29th February 1860

¶ No. 3,418, 17th July 1861.

6. The Mint Master has since submitted¶ a bill amounting to Rupees 1,439-2-10 as the cost of the castings, which is at the rate of Rupees 163 per ton; this sum of course is exclusive of that required for the transport to, and the setting up of the syphon, at the Elk Hill cutting, which the District Engineer estimates at as follows:—

	Rs.	A.	P.
Bandy hire from the Mint to the Railway Station... ...	12	0	0
Transport by Rail to Salem at 14 Rupees per ton...	127	0	0
Bandy hire from Salem to Mettapolliem...	161	0	0
Do. from Mettapoliem to Kunúr	273	0	0
Do. from Kunúr to Elk Hill cutting	60	0	0
Sundry charges, &c..	37	13	0
For setting up the pipes as per original estimate... ...	300	0	0
	970	13	0
Cast iron pipes as per the Mint Master's account	1,428	2	10
	2,400	0	0

7. Adding therefore this amount to the cost of the castings, the total expenditure will amount to Rupees 2,400, or Rupees 1,200 in excess of the sum authorized for wooden tubes.

8. I have the honor therefore to request that as the pipes have been prepared, Government will cancel their Order,** directing that a wooden tube be used as sanctioned at a cost of Rupees 1,200, and grant sanction from the reserve fund for Rupees 2,400 for the iron piping, carriage, &c., as above, instead thereof.

** No. 2,731, 20th December 1858.

Proceedings of the Madras Government, Public Works Department, 1st October 1861.

No. 10. ORDER THEREON, 1st October 1861, No. 1,817.

1. Under the circumstances represented in this letter, the Government recall their Order of the 20th December 1858, No. 2,731, directing the substitution of wooden for the cast iron piping previously authorized for conveying water across the Elk Hill cutting, and accordingly sanction the charge of 2,400 Rupees, being the cost of the iron piping stated to have been cast at the Madras Mint, and the expense of conveying and setting up the same at the Elk Hill. As the reserve fund cannot however bear the charge, the Chief Engineer must suggest another arrangement.

2. The substitution of iron for wooden piping without the sanction of the Government was irregular.

(Signed) J. D. SIM,
Secretary to Government.

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Proceedings of the Madras Government, Public Works Department, 19th June 1862.

Read the following papers.

No. 361. From Colonel W. I. BIRDWOOD, Deputy Chief Engineer, Southern Circle, to Lieutenant-Colonel W. H. HORSLEY, Secretary to Government, Public Works Department, dated Chepauk, 2nd May 1862, No. 90 :—

SIR,

1. I have the honor to forward, for the sanction of Government, the accompanying plan and revised estimate, amounting to Rupees 9,530, or Rupees 7,130, in excess of the amount (Rupees 2,400) sanctioned by Government in their Proceedings, No. 1,817, dated 1st October 1861, for laying down cast iron pipes for the purpose of conveying water across the Elk Hill cutting at Ootacamund, in the District of Coimbatore.

2 Letters from the District Engineer of Coimbatore, Nos. 563 and 668, dated 12th February and 5th April 1862
1 Letter from Captain Farewell, No. 196, dated 27th January 1862.
1 Account Current 4-16,348-1862.
1 Plan-19,262-1862.
1 Abstract estimate, Rupees 7,130.

2. In his letter No. 196, dated 27th January 1862 (herewith forwarded), Captain Farewell noticed the following omissions in Mr. Fraser's estimate*, viz :—

* Rupees 2,400.

I. That flushing valves have not been provided for, to be fitted at the points C and D, as per plan ;

II. That no arrangement has been made for supporting the pipes in the embankment to prevent an accident happening by the pipes breaking at C and D ;

III. That the sanctioned estimate only provides for a masonry bed for the pipes ; and that no provision is made for the reception of the discharged water which the pipes will drink against the bank opposite the flushing valves C and D, or for the construction of a drain on each side of the road-way to convey the water on the pipes being flushed ;

IV. That by accurate measurements taken it is found that the Cisterns A and B, for the reception and discharge of water, will, owing to the quantity of piping furnished, be too close to the top of the excavation for the reception of the pipes, and that additional pipes are therefore required for lengthening the syphon from A to E, and F to B ; and,

V. That the cost of scaffolding and covering of the pipes is not included in the sanctioned estimate.

3. The present revised estimate, which has been carefully examined and corrected in this office, provides for all that is requisite for completing the work. The rates given in it are not more than absolutely necessary. I therefore request that you will be good enough to obtain the early sanction of Government thereto, the amount, viz., Rupees 7,130 to be defrayed from the Reserve Fund of 1862-63.

4. You will observe that pending the receipt of the orders of Government, the District Engineer has directed† Captain Farewell to suspend work as soon as the pipes shall have been deposited at the Elk Hill cutting.

† No. 563, dated 12th February 1862, paragraph 6.

No. 362. From Lieutenant-Colonel J. OUCHTERLONY, Deputy Chief Engineer, in charge of Southern Circle, to Lieutenant-Colonel W. H. HORSLEY, Secretary to Government, Public Works Department, dated Chepauk, 24th May 1862, No. 951 :—

SIR,

1. With reference to your Memorandum No. 71, dated 6th May 1862, I have the honor to represent that compliance with your requisition to furnish a comparative statement in the usual form to support the demand for a further heavy sanction to complete, or to attempt to complete, that most untoward project for carrying a small stream of water across the Elk Hill cutting at Ootacamund, is not practicable.

2. If you will be so good as to refer to Proceedings of Government, No. 1,817 of 1st October 1861, and compare the items of estimate in paragraph 6 of the letter from this Office recorded therein, with those of the revised estimate submitted to Government by Colonel Birdwood on the 2nd May 1862,* you will perceive that, except in the items of pipes at the Mint Master's charge, carriage, and "setting up," there is no identity; and as these charges do not vary greatly in amount, to enumerate these would scarcely prove of advantage.

* No. 90.

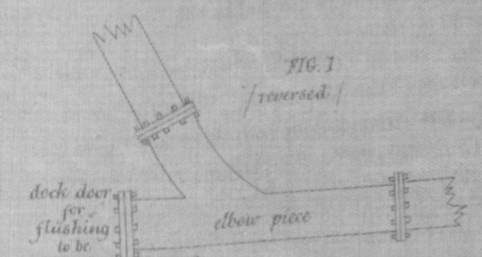
3. The following Memorandum shows all that can be ascertained :—

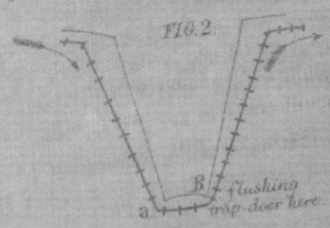
Work.	According to estimate sanctioned 1st October 1861.	According to estimate dated 29th January 1862.	
	Rs.	Rs.	
Cast iron pipes per Mint Master's account.....	1,428	2,123*	* This must include muchaddi-tional piping.
Bandy hire from Madras to Salem	139	109	
Do. Salem to foot of Ghât	162	213	
Do. foot of Ghât to Elk Hill ...	333	369	
Setting up the pipes...	300	310	
Sundry charges	38	.....	
All the other items amounting to	2,400	6,406	
And which swell the total to.....	.....	9,530	

consist of various matters so indispensable to the operation of fixing the pipes, that I am at a loss to account for their omission from the estimate of October 1861.

4. Looking however over these items, I am free to confess I cannot comprehend the necessity of more than one-half of them, or rather of their extent. The "brickwork" for example amounts, including plastering, to no less than Rupees 3,655; nearly double the *cost* of the original iron pipes, carriage included. In the absence of any description of what is intended, I can only infer from the estimate that large cisterns are to be erected on either crest of the cutting for the insertion of the pipes. Small cisterns will of course be requisite, but as they can be moved back to a reasonable distance from the edges of the banks, and be connected with the top pipes by wooden covered troughs, there can be no occasion, I should conceive, for anything at all massive in the way of masonry, and this item ought therefore to be considerably reduced.

5. Then there is an item of Rupees 400 for "two flushing valves" which seems objectionable. In the first place one "valve" is sufficient to flush the pipes (and they will not require the operation more than a dozen times in a year with proper care), because the water flows in one direction, and as the deposit can only take place in the 20 feet length of the bottom limb of the syphon, a "valve" at the near end (a in margin Figure 2) would be of no use whatever. But how this "valve" which should be a mere door or plate of iron to take off and on with screw bolts and nuts attaching it to the elbow pieces (as per diagram in the margin) can be made to cost Rupees 200 I cannot comprehend; since the whole elbow piece, clak door and all, would not cost at the Mint more than





Vide FIG. 1 above

	Rs.
Rupees 60 or 70, weighing as it would about 1 ton at Rs. 160	40
Extra for pattern...	28
	68
And adding for carriage ½	25
Total...	85

6. I observe also in the estimate "17 iron brackets or collars driven into the banks to support pipes Rupees 204." I hope the difficulty and danger attending the fixing of the pipes in the (I think) peculiarly disadvantageous position in which they have been designed, has been well considered. The weight of the pipes, with water, resting on the flange of the lower length will not be less than four tons, and unless, while fixing, the pipes are most rigidly stayed up and maintained in an inflexible position, the flanges are sure to break under such a force, applied with the great leverage due to the column of pipes bending or sagging, inwards.

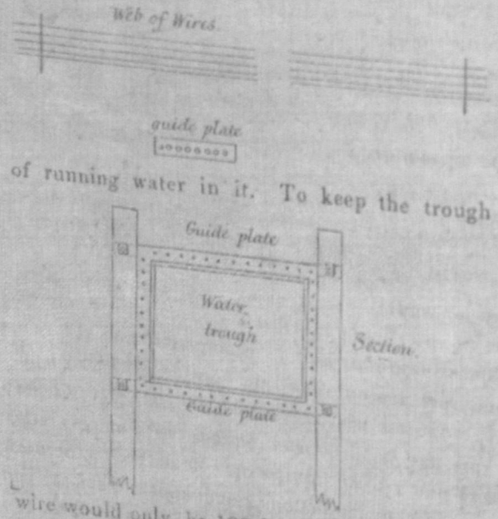
7. I consider the operation of getting these pipes at Elk Hill into position, so delicate an one, that if it were possible I should counsel the employment of one of the Government Mechanical Engineers as an Assistant under the District Officer for the occasion.

8. It is grievous to think how all the expense in which Government have been, and must still be involved about this water couse, might have been avoided by the simple expedient of a light iron girder or lattice bridge carrying an open trough of wood or sheet iron; and I firmly believe that even now it would cost far less to put one up than to carry out the present project with all its contingencies and uncertainties.

9. The estimate which I submitted to Government in the Northern Circle for an iron lattice bridge of 50 feet span and 14 feet roadway, to carry its own weight plus a practical load of 120 lbs. to the square foot, amounted I think, to no more than Rupees 4,600; and as the Elk Hill

structure with a width of only 3 or 4 feet would have to carry little beyond its own weight, its cost could not amount to one-half of that sum though the span may be 2½ times greater. Employing such a bridge, scarcely 100 cubic feet of brickwork would be needed in the work.

10. I am also somewhat inclined to believe that a web of strong telegraph wires stretched from bank to bank through perforated iron plates would be able to carry, without appreciable sagging a light zinc or copper trough, which if made 15 or 18 inches wide with a considerable fall, need never have more than an inch of running water in it. To keep the trough in its place under the action of high winds additional wires could be stretched across and on each side of it, after it had been placed in position, enclosing it in fact in a sort of cage of wires. Presenting as it would a narrow edge of 10 or 12 inches (which would allow 9 inches for sagging) to the wind, the pressure against it during violent gales should not be formidable. The extreme bearing span for the wire would only be 126 feet, reducible to 100 feet by struts and uprights in the upper slopes; while the extreme stretch of the wires from straining post to straining post would not exceed 160 feet. All these dimensions are moderate and practicable.



No. 363. From Lieutenant-Colonel J. OUCHTERLONY, Acting Deputy Chief Engineer, in charge of Southern Circle, to Lieutenant-Colonel W. H. HORSLEY, Secretary to Government, Public Works Department, dated Chepauk, 29th May 1862, No. 1,152:—

SIR,

1. In continuation of my letter, No. 951, dated 24th instant, on the subject of the Elk Hill cutting on the Neilgherries, I beg to state that I have communicated with the Officer in charge of the Southern Electric Telegraph Range regarding the wire available for carrying a water trough across the opening. It appears there is abundance of wire of the largest size, No. 1 or $\frac{5}{16}$th inch, in store; as also zinc plates adapted for forming a trough; the cost of the former being Rupees 43-12 per mile. Mr. Blissett informs me that 120 feet is as I surmised, the usual distance of the supporting posts on which the telegraph wires are stretched; and he is of opinion that a web of No. 1 wires on full tension would bear the light distributed weight of a shallow water trough, or supports 100 feet apart, without deflecting more than a few inches.

2. Mr. Blissett expresses his readiness to undertake, with the approval of Government, experiments to ascertain whether such would be the result; and if Government consider my proposal worthy entertaining, I think it would be well to accept that gentleman's offer, as the wire employed could be used over again, and no expense would be involved.

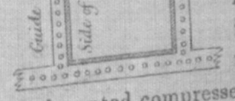
3. From a rough calculation I should estimate the cost of carrying the water course over the Elk Hill cutting by means of wires as under:—

No. 1, or $\frac{5}{16}$ inch wire, for a bottom web of 24 wires, a top web of 9 and two side webs of 12 each; together with diagonal ties, or guys (a, a, in Diagram) to resist lateral action of wind; as also under guys (b, b,) to resist action from below upwards; and if possible suspension wires (s, s, s,) to reduce the bearing, and consequent possibility of deflection of the trough.

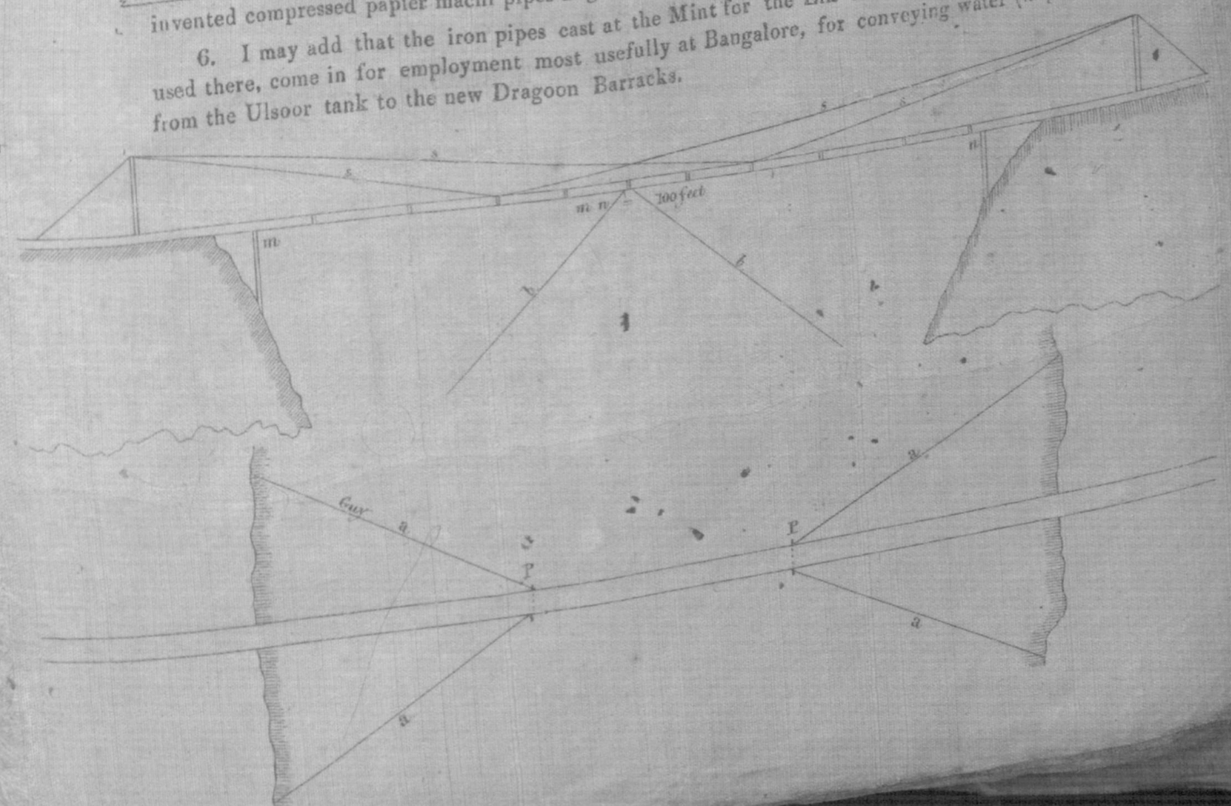
		Rs.	A.	P.
	2½ miles @ Rupees 43-12 per mile	109	6	0
	Teakwood straining posts, and framing on each edge of the cutting	25	0	0
	Carriage of wire to Ootacamund	25	0	0
to be forged and drilled at the Mint and sent up.	16 iron guide plates, perforated to receive the wires, and placed about 10 feet apart so as to support the trough and carriage.	60	0	0
	Carpenter's and artificer's labor in fixing.	100	0	0
	Zinc trough 140 feet long, 1 foot deep, and ¾ wide	200	0	0
	Contingencies.	10	10	0
	Total...	850	0	0

4. Government are, I believe, now expending between Rupees 20 and Rupees 30 a month for supplying water to Major Hadfield's property by Puckallies: the sooner therefore this is put a stop to the better; and as the method by wires, if it succeeds, will be the most expeditious of all, since the stretching and fixing could all be completed in a fortnight, it seems to me worth experimenting upon.

5. If 24 wires are found insufficient for the lower web, the number could be increased; each additional wire only costing Rupee 1-7. The width of the trough need not correspond with that of the web, as it would be borne by the lower rib of the iron guide or stinap plates (P.) Also should a zinc trough be found too heavy, a well made Fire Engine hose (of which there must be many in store) could be substituted: and it would have the advantage of being sure to work whether the wire web "sagged" or remained rigid. The newly invented compressed papier machi pipes might also be found to answer.



6. I may add that the iron pipes cast at the Mint for the Elk Hill cutting would, if not used there, come in for employment most usefully at Bangalore, for conveying water (in part) from the Ulsoor tank to the new Dragoon Barracks.



No. 364. ORDER THEREON, 19th June 1862, No. 1,394.

1. With the first of the above letters the Deputy Chief Engineer, Southern Circle, submits additional estimates amounting to Rupees 7,130, for laying the cast iron pipes intended to convey water across the Elk Hill cutting at Ootacamund.

2. In the second letter Colonel Ouchterlony, at present in charge of the Southern Circle, takes exception to the arrangements proposed, and recommends instead a web of telegraph wires being stretched across for the purpose of supporting a light zinc or copper trough 15 or 18 inches wide.

3. In the third letter Colonel Ouchterlony reports that there is abundance of $\frac{1}{10}$th inch electric telegraph wire available as also zinc plates for forming the trough, and that Mr. Blissett, the Superintendent of Electric Telegraphs, has expressed his readiness to undertake experiments to ascertain the amount of deflection which the wire would undergo with the weight that it would have to support.

In letter No. 1,152, dated 20th May 1862.

4. Colonel Ouchterlony also submits an estimate of the cost of carrying the water course across the Elk Hill cutting by this proposed method amounting to only Rupees 850.

5. The Government consider Colonel Ouchterlony's suggestions well worthy of trial, and authorize the necessary experiments being undertaken by Mr. Blissett; and on their result proving satisfactory they will be prepared to sanction the adoption of Colonel Ouchterlony's proposal, the exact expense of which might meanwhile be ascertained in communication with the Executive Officer at Ootacamund, as under any circumstances it cannot fail to be very much smaller than the arrangements proposed with the cast iron pipes, the expense of which they consider quite disproportionate with the object to be attained.

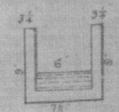
(Signed) W. H. HORSLEY, Lieut.-Colonel,
Secretary to Government.

No. 131. Read the following letter from Lieutenant-Colonel J. OUCHTERLONY, Deputy Chief Engineer, Southern Circle, to Colonel W. I. BIRDWOOD, Secretary to Government, Public Works Department, dated Madras, 5th July 1862, No. 55:—

SIR,

1. I have the honor to report that the result of the experiments with Telegraph wire authorized by Government in connection with the project for carrying a water channel across the Elk Hill cutting, Neilgherries, has been eminently successful. It is as follows:—

Government Order, No. 1,394, dated 19th June 1862.

	Length of wire between supports.	Distributed weight.	Deflection at centre.	Remarks.
1st Experiment.	130 feet.	40 lbs. being the equivalent of the weight of a zinc trough with 12 inches section of water. 	$2\frac{7}{10}$ inches.	
	120 ,,		$2\frac{1}{4}$,,	
	110 ,,		2 ,,	
	100 ,,		$1\frac{3}{4}$,,	
	$\frac{1}{0}$,,		$\frac{3}{5}$,,	Strain on wire increased: after rising to $\frac{1}{2}$ inch deflection the wire broke at a weld.
2nd Experiment.	130 feet.	66 lbs. for a teakwood trough carrying 12 square inches of water section. 	$4\frac{1}{2}$ inches.	
	120 ,,		$3\frac{3}{4}$,,	
	110 ,,		$3\frac{1}{3}$,,	
	100 ,,		$2\frac{1}{2}$,,	On the strain being increased the wire broke: again at a weld.

Natural deflection of wire, at 130 feet, unloaded, but very insufficiently strained, was found to be $\frac{26}{100}$ of an inch.

2. The wire employed in these experiments was No. 1; but it was pronounced by Mr. Blissett, the Superintendent of the Electric Telegraph Department, of very inferior quality, and incapable of bearing a full strain. The length employed in the first experiment had a weld in 130 feet, and the piece used in the second trial had two welds in the same length; whereas there ought not to be more than one weld in 220 yards.

3. Even however calculating on the data afforded by experiment on such inferior wire, it is shown that the project of carrying a water trough of a far more solid description than that which I originally contemplated using at the Elk Hill cutting is perfectly feasible; as it is clear that when the suspending wires are applied, the trifling deflection ascertained, will be negatived; and the trough will be maintained truly horizontal.

4. If it is the pleasure of Government that the proposal contained in my letter No. 951, dated 24th May 1862, shall be carried out, it will be necessary for me to send up to the District Engineer of Coimbatore complete working sketches, and to request that Officer to prepare an

estimate of the cost of the wood work, including straining posts, struts, braces and trough; of the iron work for web plates, straining butts, &c., and of the labor for fixing. Or, as, while at Salem shortly, I shall be only one day's journey from the spot, Government would perhaps approve of my proceeding thither to explain personally the requirements of the case, and so avoid much delay by correspondence and references.

5. I have to record my obligations to Mr. Blissett and to Mr. Faulkner of the Electric Telegraph Department, for the valuable assistance which they gave me in the conduct of the experiments described in the preceding: and I would beg leave to suggest that if the project is sanctioned for execution, the services of the last named gentleman may be made available for the purpose, as, besides a perfect acquaintance with the manipulation of wires, he appears to possess a degree of practical skill and handicraft which would be invaluable in conducting an operation of this, to us, comparatively novel character.

6. Mr. Blissett informs me that arrangements could readily be made for the efficient performance of Mr. Faulkner's duties during the brief period of absence which would be necessary if Government were to authorize his employment as I have suggested.

No. 132. ORDER THEREON, 8th July 1862, No. 1,586A.

1. The Government approve of the Deputy Chief Engineer, Southern Circle, proceeding to Coimbatore for the purpose mentioned in paragraph 4.

2. Application will be made through the Public Department to the Deputy Superintendent Electric Telegraphs for the services of Mr. Faulkner being temporarily placed at the disposal of the Deputy Chief Engineer, Southern Circle, for employment in the manner proposed in paragraph 5.

(Signed) W. I. BIRDWOOD, Colonel, R. E.,
Secretary to Government.

No. 94. Read the following letter from Lieutenant-Colonel J. OUCHTERLONY, R. E., Deputy Chief Engineer, Southern Circle, to Colonel W. I. BIRDWOOD, R. E., Secretary to Government, Public Works Department, dated Madras, 23rd July 1862, No. 71:—

SIR,

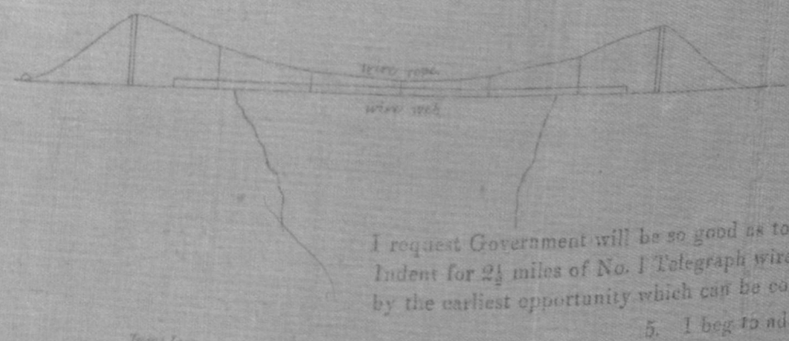
1. With reference to correspondence and orders of Government quoted in the margin,* I have the honor to report that my inspection of the "Elk Hill cutting" at Ootacamund has quite satisfied me upon two points: the one that the operation of setting up the cumbrous 10 inch iron pipes would prove even more hazardous and impracticable than I had previously conceived, owing to the extremely friable and uncertain character of the soil; and the other that the object of carrying water across the cutting can only be achieved, within any reasonable limits as to cost, by adopting a plan which shall admit of the points of support or of suspension being taken back considerably beyond the brink on either side, so as to be well out of the influence of a possible earth slip.

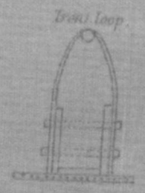
* Letters Nos. 951, 1,152, 15 and 55, dated 2nd and 29th May, and 16th June and 5th July 1862.
Proceedings of Government Nos. 1,394, 1,586A, dated 19th June and 8th July 1862.

1 Indent.

2. And I am still of opinion that the scheme illustrated in my letter No. 1,152, dated 29th May 1862, which combined support on a web of telegraph wires with suspension by wires, or wire ropes, is quite feasible, and, as far as I can foresee, the most expedient at the present juncture. A gutta percha tube of proper diameter would no doubt be preferable to the wooden trough which I propose to use, but a long time would elapse before it could be received from England, and it is, as we have seen in Madras, a substance very susceptible of injury in *transitu* and under the influence of a hot climate or temperature.

3. I have taken all the measurements requisite for the preparation of detailed plans and estimates, and I have also inspected some excellent banks of teak timber which are available within a few hundred yards of the cutting for straining posts and supports: the trough can be made at Wellington under Captain Farewell's skilful supervision, and put together *in situ*; and to admit of its being placed in position in a complete state, avoiding the necessity of having to send a workman along with it to adjust any of its attachments, I propose to bolt to the trough at proper intervals stirrups, or loop irons representing co-ordinates to the curve which the wire-suspending rope will assume, by means of which the rope can be passed through the whole and over the saddles on either bank, and thus made to aid the wire web beneath in supporting the weight of the trough by acting in suspension as the latter is hauled across.





4. I will prepare and submit estimates and working drawings as soon as I can possibly find time, but in the meantime to meet what will prove the chief cause of delay I request Government will be so good as to forward the enclosed Indent for 2½ miles of No. 1 Telegraph wire to Calcutta for supply by the earliest opportunity which can be commanded.

Vide Proceedings of Government, No. 1,787, dated 28rd July 1862.

5. I beg to add that Mr. Faulkner's services will not be required until the wire has been received from Calcutta, and transmitted together with all other necessary articles to Ootacamund. I estimate the time to be thus consumed at a month, or six weeks.

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Proceedings of the Madras Government, Public Works Department, 7th August 1862.

No. 95. ORDER THEREON, 7th August 1862, No. 1,878.

1. The Indent received with the foregoing letter will be forwarded to the Public Department with a view to its being ascertained whether the wire required can be supplied by the Telegraph Department.

2. Paragraph 5 of the Deputy Chief Engineer's letter will be communicated to the Director of Telegraphs, Southern Division, with reference to his letter of the 16th July 1862, No. 423. The further information applied for by Mr. Blissett in his letter of the 24th idem, No. 456, has been called for from the Deputy Chief Engineer, Southern Circle.

3. The Government will await the receipt of the plans and estimates about to be prepared for carrying a wooden trough across the Elk Hill cutting, and they request that the Deputy Chief Engineer will, with reference to Mr. Blissett's letter, communicated in Proceedings dated 25th July 1862, No. 1,794, make the necessary provision in the estimate, for Mr. Faulkner's pay and travelling allowances, should he consider the services of that gentleman to be indispensable for carrying out the scheme.

(Signed) W. I. BIRDWOOD, Colonel, R. E.,
Secretary to Government.

Proceedings of the Madras Government, Public Works Department, 23rd January 1863.

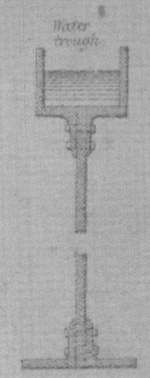
No. 383. Read the following letter from Lieutenant-Colonel J. OUCHTERLONY, R. E., Deputy Chief Engineer, Southern Circle, to Colonel W. I. BIRDWOOD, R. E., Secretary to Government, Department Public Works, dated Ootacamund, 27th December 1862:—

SIR,

1. I have the honor to submit for the information of Government a copy of a letter which I have been under the necessity of addressing to Major General Dowker and Colonel Hadfield on the subject of the Elk Hill Aqueduct, and the original reply which I have received from those gentlemen.

2. Government will observe by the correspondence that the erection of the Aqueduct is unavoidably postponed, pending the receipt from England of a supply of No. 1 wire, of which it appears from a Telegraphic communication which I have received from Colonel Douglas, there is no stock whatever in Calcutta: a contingency which I of course never contemplated.

3. As this must unavoidably occasion delay in the execution of the work sanctioned by Government, I am induced to solicit authority to modify my design for carrying water across the cutting in the event of my finding that I can get a light wrought-iron girder made up under my own supervision whilst in England which, while it shall serve to carry over a larger stream of water than I allowed for in my original project, shall not very greatly exceed in cost that of the wire web and wooden trough which it provided for. The great expense and difficulty of making up such a girder here, precluded me from proposing its use in the first instance; but now that the opportunity is presented to me of getting it made in England where I can have its weight reduced to a minimum, and where I can have the lengths cut to the measurement most economical for transport up the Hill Ghâts, the case is greatly altered. The weight of water to be carried will be so trifling, that the duty of the girder will be little more than that of bearing the load of its own weight; and I calculate that by employing $\frac{5}{16}$ inch iron for the web, with $\frac{3}{8}$ inch iron for the angles, and flanges, giving to the girder the form shown in the margin, I shall be able to get one made up at Home adapted to the span of the cutting, which shall not have a gross weight, including rivets, exceeding 7 tons; a weight which would admit of its being parbuckled up the slope of the hill through which the cutting has been formed, and being placed in situ, without much difficulty: the entire girder having been rivetted together at the base.



4. My calculation of the cost of such a girder is as follows:—

7 Tons of girder iron, fitted, at £15* per ton	£	105	0 0
Freight and Insurance at £2-10 per ton	,,	17	10 0
	Rupees	1,225	
Landing charges and carriage to Elk Hill, employing	,,	400	
Government Elephants up the Ghât	,,	275	
Rivetting and putting up	,,	1,000	
Total	,,		

* Though I expect in the present dull state of the iron trade in England, it would not cost so much.

5. The trifling excess which this exhibits over the cost of a wooden trough and wire web† would be amply compensated for by the possession which it would give Government of the means for conveying a far larger body of water across the obstruction which the cutting presents, for the supply of other houses besides those of General Dowker and Colonel Hadfield: a supply of which I anticipate will before long be greatly needed.

† Rupees 1,700.

6. The vulcanized India Rubber pipe, or tube, which I have referred to in my letter to General Dowker and Colonel Hadfield would of course be scarcely required if Government see fit to empower me to order the construction of an iron trough girder.

7. I beg leave to add that I have duly intimated to Mr. Blissett that Mr. Faulkner's services will not be required at Ootacamund for some time to come.

No. 384. ORDER THEREON, 23rd January 1863, No. 194.

Under the circumstances stated in the foregoing letter the Government authorize Colonel Ouchterlony whilst in England to order the construction of an iron trough girder for carrying water across the Elk hill cutting.

(Signed.) W. I. BIRDWOOD, Colonel, R. E.,
Secretary to Government.

No. 102. Read the following :—

Diary of the Superintending Engineer, 7th Division, for the month of July 1863.

Date.	Where present.	How employed.	What works inspected.	Under charge of what Officer.	REMARKS.
1st July.	OOTACAMUND. Inspected the *Road from Wellington to Ootacamund* in company with *Major Farewell*, Executive Officer of Neilgherry Range. *Aqueduct across Elk Hill.*				Found it in first rate order, special attention being given to the side and under-drainage, and shape and hardness of the surface. Having a distinct remembrance of the improper section given to the Neilgherry roads, and of its bad effects in 1856, the change produced by Major Farewell's adherence to correct principles was greatly appreciated by me. I find this project left as follows, viz., an original sanction of Rupees 1,700 for carrying the water over in a wooden trough suspended by a web of telegraph wires, cancelled in favor of a rough estimate of Rupees 1,900 for a wrought iron girder, the top of which itself forms the trough. I like the one plan as little as the other, even making allowance for the incorrectness with which I presume Lieutenant-Colonel Ouchterlony's sketch of the girder to have been copied in the engraving which accompanies Government Order No. 194 of 23rd January 1863, and Major Farewell has objected to the practicability of par-bricking the entire girder up the hill slope when put together at the bottom as intended by the late Deputy Chief Engineer. In my opinion, unnecessary resort has been made to materials to be brought from a long distance and requiring skilled labor to put together. At the utmost I might be driven to resort to screw feet for the uprights, wherewith I would propose to support the lightest possible superstructure of pipes resting on baulks of timber, by means of which I would pass the water over. But my present inspection has not convinced me that the nature of the cutting demands such great care not to disturb its strata as needs preclude the use of ordinary timber superstructure on masonry piers. The top width of the cutting being 145 to 147 feet, its bottom width 18 feet and its height 66, its slopes may be taken practically as having an inclination of 45° or 1 in 1. If I had to use timbers with screw feet, I would place them at intervals of 30 feet, singly or in pairs, according to the width desired at top, staying them both lengthways and crossways with proper framing and struts and wire rope guys. If masonry piers are adopted I would have but two, dividing the whole into 3 spans of 50 feet each, as per sketch accompanying, which also shows sections at top and bottom, and at bottom of foundation. Their cost and that of a timber foot bridge above may exceed either of the amounts estimated for carrying out the former expedients ; but I am of opinion that a more permanent structure would be the result attained without those doubts of failure which I cannot dissociate from the other proposals. With the permission of Government I will call upon the Executive Engineer of Neilgherry Range to estimate the exact sum required. Vide sketch.

Diary of the Superintending Engineer, 7th Division, &c.—(Continued.)

Date.	Where present.	How employed.	What works inspected.	Under charge of what Officer.	Remarks.
	Sanitary condition of Ootacamund.	.....	.....	.....	Under the guidance of Major Farewell I renewed my acquaintance during the day with most of the station roads; and while rejoiced on the one hand to witness the improvement of those devoted to the accommodation of the European residents and to bring in traffic, I was shocked on the other hand with the deplorable state of the Native bazaars. The main bazaar and Kanndall roads were knee deep in mud for want of side and cross drains and good material, but this can be easily remedied for a few thousand Rupees which should be laid out upon them without much more delay. But the state of the backyards of dwellings, and the utter want of drainage for sanitary purposes, will be more difficult and more costly to remedy. I cannot but think, however, that Magisterial powers are not exercised to the full extent authorized by law; and that the inhabitants might be coerced into the adoption of conservancy measures. Certainly some of the greatest nuisance might be put down with the strong hand, if those in authority had but time to devote to the matter. That such a place as Ootacamund is devoid of any thing like Municipal institutions has surprized me, a want which I have heard attributed to the comparative fewness of permanent residents. The Collector looks for the first means of improvement to the introduction of running water from one of the surrounding hills; but to avoid spoiling the lake that measure will have to be supplemented by an intercepting drain from the lower bazaar street to the end of the lake.
2nd & 3rd July.	*Lawrence Asylum and Convicts' Huts.*				The main object of my visit to the hills was to carry out the Orders of Government under date the 2nd June, No. 150, and I was fortunate enough to have the guidance and advice of the three men most conversant with the subject, Messrs. Farewell, Grant and Wapshare, on the site and in office. To these gentlemen I took particular care to add the Revd. Principal of the Institution and Secretary to the Committee, and in his company and Major Farewell's discussed minutely every item laid down in His Excellency the Governor's Memorandum in Government Order No. 150 of 2nd June. Fully recognizing, as I do, my own responsibility as to the plans and estimates, I have not felt called upon to interfere with their completion by Major Farewell, in whose hand they had already been worked out for a smaller number of inmates, and who could give his undivided attention to the subject. Having hitherto worked at them entirely unaided by the District Engineer, I felt that nothing should be done to detract from his claim to be considered the architect of these national buildings. I have therefore made over to him my Draughtsman, in addition to one for his own Office, whom I procured from Malabar, until completion of the plans and estimates; in the execution of which he will conform most strictly to whatever alterations and arrangements were settled between us and the Secretary to the Committee, with whom, as embodying

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Diary of the Superintending Engineer, 7th Division, &c.—(Continued.)

Date.	Where present.	How employed.	What works inspected	Under charge of what Officer.	Remarks
					their views, he will be always in communication. Huts have been erected for 150 Convicts, and a proportionate allowance of Police, men; in a most eligible situation, airy but well sheltered, convenient to the works and for water; each man having 15 square feet allowed him for lying down, and sleeping platforms of split bamboos having been constructed to raise them about 1½ feet off the ground. It is not supposed by Major Farewell that he will have work for a larger gang this season, nor should even the above number be sent him until the south-west monsoon is fairly over, and the huts have been dried by a continuance of fair weather. Previous to their joining, *i. e.*, by September, he should be invested with limited powers of punishment under Regulation X of 1862, similar to those conferred on Lieutenant Trail, in Government Order No. 2,046 of 16th December, and which have brought about a great contrast between the work of those prisoners directly under him on the Metapolliam road and those over whom he has no power on the Poothancor Railway feeder.
3rd July.	*Ootacamund and Coonoor old Road.*				Accompanied Major Farewell along this line, which is maintained to ease the new carriage road of the traffic by means of laden bullocks.
4th July.	*Coonoor Ghát, Burliar Bungalow.*				I must express my regret that at a time when every Rupee is wanted for works of real importance so large a sum as Rupees 5,000 should have been allotted for a work like this, of doubtful necessity at best, and which will be thrown altogether out of the line when a carriage ghát supersedes the present one. I would urge re-consideration of this subject, and request that orders may be given to stop the works. The ghát itself was in very good order for a work of its class, and showed little signs of the damage it sustained in April last. Still it astonishes me how it has sufficed for the traffic so long, and how wheeled vehicles are brought into use upon it. In Government Order No. 221 of 16th May, I have been called upon to examine the various lines of Tram and Railway suggested by Lieutenant-Colonel Ouchterlony and Messrs. Fraser and Sanderson, by the Coonoor and Mailoor Ghâts, in company with Mr. Fraser; but as it is probable that gentleman's services may not be available simultaneously with my own, and as I have had an opportunity of seeing something of the nature of the ground proposed to be worked by Mr. Sanderson in a trip which I had the pleasure of making with Mr. Grant on the 30th July, I take this opportunity of offering some remarks on the subject, which I hope may be turned to practical account. My own impression is that Government are not called upon to take the initiative in investigating projects of this sort, which should be left strictly to private enterprise, and Government action confined to guarantee or cession of land, or other mode of facilitating the Company's work. Personally it would be a welcome task for me to spend

Diary of the Superintending Engineer, 7th Division, &c.—(Continued.)

Date.	Where present.	How employed.	What works inspected.	Under charge of what Officer.	Remarks.
					some time in the manner proposed, but my real work would suffer from the interruption. If matters are so far advanced as Lieutenant-Colonel Ouchterlony sanguinely believed, Government have only to wait till one or more Companies come forward with their prospectuses and claims. I look, however, upon a common ghát road, practicable for wheel carriages, on this side of the hills as an essential want, to be supplied whether a Tramway or Railway be eventually made or not. As regards the country to be worked over, I look upon Mr. Sanderson's proposed line as undeniably the best in an engineering point of view, and from the nature of the ground so far as I have seen it. But it is out of the question as the Government line, which cannot so ignore the existence of Wellington, Coonoor and Kotagherry. It will be the line for private enterprise to work unless, as is very likely, Ootacamund is destined to be reached by rail *viâ* Bangalore and Mysore. There exists a beautiful trace by Colonel Francis from Ooty by Kotagherry to the low country near Sreemogay, not far from Metapolliam, to which my chief objection is that the gradients are unnecessarily good for such a ghát as I conceive to be wanted, and inconveniently lengthen the line. It runs within five miles of Coonoor and Wellington (to which there is already a good road), and I am not sure that it, or a line to strike into it from Metapolliam, may not be better to adopt than one up the Coonoor valley, the side slopes of which will certainly be expensive to work along. Practically to settle the question, I should be allowed the services of a special Executive Officer accustomed to ghát work in this country, and who will put his own hand to the levels with delight in his work. His own pay and establishment of Lascars would cost Rupees 250 a month, or Rupees 1,500 for the last half of this official year. To which if Rupees 250 a mile for twenty miles of one yard trace, wide enough to be used as a briddle-path, were allowed, it would make a total of Rupees 6,500, which might be usefully appropriated from this year's Reserve Fund. Burliar bungalow sanction would almost suffice. I shall be glad to receive orders on this subject including permission to make an entry in the Budget of 1864-65 on the same account.
6th to 28th July.	... ...				Engaged in Office duties.
29th July. 30th July. 31st July.	*Goodalore.* *Bhowany Valley, Goodalore and Coimbatore.*				The trip of inspection of a part of the Bhowany valley in company with the Collector, alluded to under date the 4th July.

Coimbatore,
10th August 1863.

(Signed) G. W. WALKER, Lieut.-Colonel,
Superintending Engineer, 7th Division.

No. 103. Order thereon, 5th September 1863, No. 2,567.

1. The Superintending Engineer, 7th Division, is informed that in permitting Superintending Engineers to bring promptly to notice, in their Monthly Diaries, such observations as they may think it advisable to communicate, the Government did not intend that information called for on particular subjects or recommendations requiring to be acted on should be therein submitted.

2. The Government request therefore, that Colonel Walker will address them separately and in detail on the following subjects :—

(1.) Aqueduct across the Elk Hill cutting with Estimate called for from Executive Engineer.

(2.) Measures for the improvement of the sanitary condition of Ootacamund.

(3.) Investing Major Farewell with limited power of punishment under Regulation X of 1862.

(4.) Coonoor Ghát improvements, but not including the Burliar bungalow, a question which Colonel Walker will consider finally settled, and will proceed with the work as rapidly as possible.

(True Extract.)

(Signed) C. A. ORR, Colonel, R. E.,
Secretary to Government.

To the Superintending Engineer, 7th Division.
To all other Superintending Engineers.

Exd, S. T. Augustin.

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Proceedings of the Madras Government, Public Works Department, 13th October 1863.

No. 245. Read the following Proceedings of the Board of Revenue, dated 22nd September 1863, No. 6,000 :—

Read the following letter from P. GRANT, Esq., Collector of Coimbatore, to W. HUDLESTON, Esq., Secretary to the Board of Revenue, dated 27th July 1863, No. 141.

SIR,

Dated 2nd April 1860, No. 1,668.
Dated 27th September 1860, No. 4,412.

1. Adverting to the Circulars marginally indicated I have the honor to submit my Report on the Public Works, carried out during the Official year 1862-63, together with a copy of the detailed Statement of their progress received from the Superintending Engineer of the 7th Division.

2. The amount expended during the year under report as compared with the preceding one is shown in the following Abstract Statement :—

Works.	Expenditure of 1861-62.	Expenditure of 1862-63.	Difference.	
			Increase.	Decrease.
New Works.	RS.	RS.	RS.	RS.
Irrigation...	1,288	12,343	11,052	...
Communications...	17,470	15,663	...	1,807
Buildings...	28,169	23,516	...	4,653
Total ...	46,927	51,519	11,052	6,460
Repairs.				
Irrigation...	36,461	31,155	...	5,306
Communications...	72,044	94,594	22,550	...
Buildings...	2,486	9,896	7,410	...
Total ...	1,10,991	1,35,645	29,960	5,306
Grand Total ...	1,57,918	1,87,164	41,012	11,766
Deduct Decrease ...	...	...	11,766	...
Net Increase ...	...	...	29,246	...

		RS.
1.	Improving Arcancotah Channel...	3,749
2.	Do. Tadapully Channel and building new Sluices, &c...	7,939
3.	Constructing two groynes at Vangal for the preservation of the Neroor Channel...	698
4.	Building three rough stone groynes for the preservation of the Vangal Channel...	144
		12,340

3. Rupees 12,340 were expended on the new Irrigation works marginally noted. They are still in progress, and it is expected that on the completion of the first two works, the result will be a considerable increase of revenue, by the conversion of dry into wet cultivation.

4. Rupees 15,663 were laid out on the following new roads :—

No.	Name of Road.	Amount expended. RS.
1.	Constructing a first class road from the Railwaystation to connect the Trunk road No. 5 and the Town of Coimbatore...	1,202
2.	Constructing a bridge across Valunthavalum river...	3,086
3.	For digging upper ditch to Railway feeder from the Railway Station at Somanoor on Trunk road No. 5...	635
4.	For completion of the cart road to Devashola...	766
5.	Constructing a timber bridge of four bays across the Vettalacalypullum stream on the road from Coimbatore to the foot of the Coonoor Ghaut... ...	127

		Rs.
6.	Constructing a timber bridge of six bays at the north approach to the single arched masonry bridge of 12 feet span at Sanganoor on the road from Coimbatore to the foot of the Coonoor Ghaut...	2,429
7.	Improving and building certain rough stone tunnels on the branch road from the Railway station at Somanoor...	1,282
8.	Constructing a bridge across the Chinnanowkaray Nullah near the 13th mile on the Trunk road No. 5 from Coimbatore to Walliaur... ...	1,850
9.	Cost of cast iron pipes for laying across Elk-Hill cutting at Ootacamund, and throwing a timber aqueduct across do. do.	105
10.	Building a rough stone culvert of ten vents on Trunk road No. 5 on the 3rd mile east of Chengapully...	426
11.	Constructing two bridges on the road from Ootacamund to Governor Sholah.	950
12.	Constructing a wooden bridge of three bays each 18 feet span across Poonguncaduvoo Nullah on the Anamalay road...	1,000
13.	Constructing a Bungalow and out-offices half way up the Coonoor Ghaut for the accommodation of the European travellers....	370
14.	Constructing a timber bridge of five bays across the Sunnasypullum stream on the road from Coimbatore to the foot of the Coonoor Ghaut... ...	1,380
15.	For completing Tarumpully bridge...	105
	Total...	15,663

5. Nos. 1 and 3 are Railway feeders.

6. Works Nos. 2, 5, 6, 7, 8, 10 and 12 to 14 are in progress, and do not therefore call for any special remarks.

7. No. 4. The line of road from Ootacamund to Davasholah has been satisfactorily completed under the superintendence of Colonel Babington. The supply of fuel to meet the wants of the increasing community of Ootacamund is now brought to the station by this road, a distance of 11 miles.

8. No. 9. This is now held in abeyance; it is eventually intended to convey water across the Elk-Hill cutting, and as the Board are doubtless aware, has been the subject of much discussion for some years past.

9. No. 11. The completion of these bridges is a great convenience to parties taking this route to Pykara and Nedivuttom.

10. No. 15. Requires no remark.

11. *New buildings. Rupees* 23,516.—Under this head Rupees 13,449 were laid out on the construction of Jail Warder's cottages at Ootacamund, and Rupees 1,565 in building a Soldiers' rest house at the Coimbatore Railway station. It has been completed, and proves most convenient and useful from its proximity to the station.

12. *Repairs to Irrigation works. Rupees* 31,155.—This money was laid out in the clearing of channels and on other works of an ordinary nature for the maintenance of the existing revenue.

13. The expenditure on the repair of roads consists for the most part of the "annual maintenance allowance." I may here bring to the notice of the Board that from the amount allotted for the repair of roads, a sum of Rupees 21,052-10-0 was placed at my disposal under the orders of Government to afford relief to the distressed population by employing them on the repair of cross roads, &c. This sum was distributed over those Taluks in which distress was most felt, and a considerable amount of work in the way of repairing roads and public wells was performed at an actual cost of Rupees 18,889-1-3, whilst the works thus executed, have proved advantageous to the general public, the money expended proved a great boon to the starving poor, who really suffered much in some parts of the District.

14. With reference to paragraph 2 of the Government Order of the 13th November 1860, No. 2,355, Public Works Department, I beg to add that the annual allowance of Rupees 1,500 for 1862-63 for the repair of bridle paths and cross roads on the Neilgherry Hills, has been beneficially laid out as shown in the accompanying Statement of actual charges. Of the above sum, Rupees 626-12-0 were not included in the Superintending Engineer's Progress Report and Account Current as my accounts did not reach him in time. The fault I am sorry to say lies partly at my door, but I trust it will not again happen.

Proceedings of the Madras Government, Public Works Department, 13th October 1863.

ENCLOSURE No. 1.

ABSTRACT.—Report of Progress during the year 1862-63, in the execution of projects enumerated in Statements Nos. 1, 2 and 3 of the Public Works Budget of the Madras Presidency for the same year submitted and sanctioned on 31st December 1861.

ENCLOSURE No. 2.

ABSTRACT.—Statement showing the expenses incurred for repairing cross roads, &c., from May 1862 to April 1863.

1. Ordered that the above letter be submitted for the information of Government.

2. The above report is very satisfactory. There has been a net increase of 29,246 Rupees over the expenditure of the previous year, chiefly consisting in the larger sums spent on new irrigation works and repair of roads, the former of which are expected to bring in a considerable increase of revenue. The roads and bridges improved or repaired are important communications. In their review of the Progress Report of 1861-62, the Board noticed the inconvenience to landed proprietors on the hills by the continued suspension of the project for conveying water across the Elk-Hill cut. They observe that the work is still in abeyance.

3. The Board are glad to learn that the Collector has beneficially laid out the sum placed at his disposal, out of the road repair allotment, in judicious relief to the poor by finding them work on cross roads, &c.

(A true Copy and Extract.)

(Signed) W. HUDLESTON, *Secretary.*

No. 246. ORDER THEREON, 13th October 1863, No. 2,964.

1. Communicated to the Superintending Engineer, 7th Division.

2. Lieutenant-Colonel Walker will be requested, with reference to paragraph 2 of G. O. No. 2,567, dated 5th September 1863, to expedite the submission of the Estimate called for from the Executive Engineer of the Neilgherry Range for the proposed aqueduct across the Elk Hill cut.

(True Extract.)

(Signed) CHARLES A. ORR, Colonel, R. E.,
Secretary to Government.

To the Superintending Engineer, 7th Division.
" Board of Revenue.

Exd. S. T. Augustin.

Proceedings of the Madras Government, Public Works Department, 17th February 1865.

No. 401. Read the following letter from Major W. FAREWELL, Executive Engineer in charge of 7th Division, to Colonel C. A. ORR, R. E., Secretary to Government, Department Public Works, dated Ootacamund, 24th January 1865, No. 241 :—

SIR,

1. With reference to Government Orders as per margin, I have the honor to forward a plan of what appears to be the cheapest mode of taking the water across the Elk Hill cutting at Ootacamund to the properties of Lieutenant-General Dowker and Colonel Hadfield.

No. 1,878 of 7th August 1862.
" 2,567 of 5th September 1863.
" 2,964 of 13th October "

Several projects for this purpose have been before submitted to Government, the estimates for which have far exceeded the amount now named, and other plans have in addition been made by the Executive Engineer of the Neilgherry Range, all of which have been kept back owing to the high amounts of their estimates.

2. The site at which the old channel crossed the Elk Hill cutting (80 feet above the road-way) gave a much greater fall in the channel than necessary to convey the water to the exact spot at which it originally entered the highest part of Lieutenant-General Dowker's property. A line for a new channel was, therefore, selected with a rise from the original point of entry into Lieutenant-General Dowker's grounds of six inches in one hundred feet till it reached the cutting, and it is found that this channel, which will cost next to nothing, will reduce the masonry work of the piers of the aqueduct 30 feet in height, consequently also in their dimensions every way, and considerably shorten the width of the bays, thus reducing an estimate that was made for the cheapest mode of spanning the cutting at the old site from Rupees 7,291-6-0 to nearly half or Rupees 4,580-7-0, while there is no doubt that Lieutenant-General Dowker's and Colonel Hadfield's grounds will be supplied with just as much water as they ever had before.

These estimates include the value of timber.

3. The new channel will run through the property of Mr. Pestonjee (a Parsee gentleman of the firm of Framjee & Co.), who makes no objection to its doing so provided he also is supplied with a little water for household purposes, which I consider is but a reasonable demand; he asks no compensation whatever for the land occupied by the channel, and agrees to allow the right of waterway to Government through his grounds promising not to take more water from the channel than what the Government Officers may decide he should be supplied with. Altogether I think Mr. Pestonjee has been very obliging and liberal in the matter. At the same time I think it right to mention that I have been given to understand that all the old leases granted to proprietors on the hills, particularly specified that Government should at any time have the right of water or roadway through such properties; a reference to the Revenue Department would decide this question.

4. Lieutenant-General Dowker and Colonel Hadfield have however addressed me a letter,* a copy of which I enclose, remonstrating with me for my having changed the line of channel, and though not actually objecting to my project yet have hedged their acceptance of the same with so many restrictions that in fact their letter is tantamount to upsetting the whole scheme.

* Dated 8th February 1864.

5. The question to be dealt with by the Public Works Department is to secure to Lieutenant-General Dowker and Colonel Hadfield, at the same point of entry into their grounds as formerly, all the water (dependent on the seasons, &c., &c.,) which may reach the original point where the Elk Hill cutting deprived them of their channel. The estimate now submitted will if sanctioned, effect this.

6. The total amount of the estimate now submitted is Rupees 4,580-7-0, including the value of timber to be supplied by the Forest Department, deducting the value of which under G. O. No. 1,127, dated 20th April 1864, viz., Rupees 1,056-9-0, leaves the actual amount including sundries requiring the sanction of Government to be Rupees 3,880.

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Proceedings of the Madras Government, Public Works Department, 17th February 1865.

No. 402. ORDER THEREON, 17th February 1865, No. 479.

1. The question of the mode of conveying water across the Elk Hill cutting at Ootacamund has been under consideration for some years. It was originally proposed by Mr. W. Fraser, the then District Engineer of Coimbatore, to effect this object by laying down cast iron pipes in the form of an inverted syphon; and the necessary pipes having been cast at the Mint were at a great expense transported to the cutting. Objections to their use, as designed by Mr. Fraser, were, however, then found to exist, and on the suggestion of the late Colonel Ouchterlony, the Government were induced to entertain a proposition for stretching a web of telegraph wires across the cutting and thereon laying a light zinc or copper trough. This scheme proved as little feasible as that for laying the syphon pipes, and the matter has lain over.

2. Major Farewell now submits a plan for accomplishing the object in view at an estimated cost of Rupees 3,880. He states that the point which had been selected by Mr. Fraser for carrying the water across the cutting is needlessly high, and that by diverting the stream to one much lower down the hill, through which the cutting is made, the water may be taken over it at a height of 50 instead of 80 feet and still command the point to which it is required to be led. He proposes, at the lower spot which he has selected, to throw a light timber truss supported on masonry abutments and piers across the cutting and on the truss to lay the pipes which are ready on the spot.

3. The Government are of opinion that this is the most practicable way in which the Elk Hill stream can be carried over the cutting; but before sanction is accorded to the estimate, the rights urged by Mr. Pestonjee and Lieutenant-General Dowker and Colonel Hadfield, as well as the arrangements they propose for securing to themselves the sole use of the water, will receive consideration in the Revenue Department.

(True Extract.)

(Signed) CHARLES A. ORR, Colonel, R. E.,
Secretary to Government.

To the Revenue Department.
" Superintending Engineer, 7th Division.

Exd. S. T. Augustin.

Proceedings of the Madras Government, Public Works Department, 5th April 1866.

No. 37. Read the following Proceedings of the Madras Government in the Revenue Department:—

Passing orders on Proceedings of the Board of Revenue, recommending that the Collector of Coimbatore be instructed to make over to the Reverend J. Griffith's a small plot of land, and also the land known as "Garrard's land" at Ootacamund, in the Coimbatore District, as compensation for loss sustained by him. } (Here enter 26th March 1865, No. 745.)

No. 38. ORDER THEREON, 5th April 1866, No. 1046.

ESTABLISHMENT, No. 4.

Communicated to the Superintending Engineer of the 7th Division, whose attention will be requested to the orders in paragraph 19.

(True Extract.)

(Signed) CHARLES A. ORR, Colonel, R, E.,
Secretary to Government.

To the Superintending Engineer, 7th Division.

Exd. S. T Augustin.

No. 445. Read the following Proceedings of the Board of Revenue:—

Recommending that the Collector of Coimbatore be instructed to make over to the Reverend Mr. Griffiths a small plot of land, and also the land known as "Garrard's land" as compensation for loss sustained by him } (Here enter 10th January 1866, No 166.)

No. 446. ORDER THEREON, 26th March 1866, No. 745.

Land Revenue.

1. The Governor in Council proceeds to pass orders on the three requests preferred by the Reverend J. Griffiths in his Memorial, dated 13th November last. These requests are—

I. That a piece of land at Ootacamund, some ten cawnies in extent, called "Garrard's land," should be granted to him.

II. That certain water rights in respect to a property of his called "Rielly's Cottage," and a channel from Snowdon, should be restored to him.

III. That he should be authorized to carry out his schemes for supplying the station of Ootacamund with water, his remuneration being dependent on his success.

2. The circumstances as regards the first claim are briefly as follow:—

3. In 1845 Mr. Griffiths applied to the then Collector, Mr. Wroughton, for "Garrard's land." Mr. Wroughton replied *officially by letter* that the subject "had better lie over until the completion of the survey of the Neilgherries."

4. This much is on record, and admitted by Mr. Griffiths himself.

5. Mr. Griffiths, however, asserts that, notwithstanding this official and, under the circumstances, proper enough reply, Mr. Wroughton permitted him to occupy the land, and that he accordingly entered upon it, on Mr. Wroughton's "verbal but official promise to have it *put up for sale*" for him.

From Mr. Griffiths to the Board of Revenue, 10th March 1859.

6. This rests on Mr. Griffiths' statement, there being no evidence, oral or written, of any such promise.

7. It would appear, however, from Mr. Griffiths' account, that he did enter upon the land, but he could not have expended much money upon it. He states that he "cut paths in the property, planted a few trees, cleared out the foundation of a building, and ran a water-course through it." But whatever Mr. Griffiths may have done towards the improvement of the property, under the alleged permission of Mr. Wroughton, he clearly did at his own risk, on the chance of his getting the land when sold by auction. He has never paid any assessment on the land.

8. In 1849 on the survey of the Neilgherries being completed, rules were sanctioned by Government defining the mode in which applications for land should be dealt with. Under these rules, if the Revenue Board approved of their sale, they were to be put up to public auction at an upset price, the woods and streams being specially reserved to Government.

Rules VI and XV.

9. Mr. Griffiths states that on the survey of the hills being finished, he made an application for "Garrard's land." There is nothing on record to prove this,

nor does it appear why, when his application was not complied with, he did not promptly appeal to the Board of Revenue or Government. His first complaint to the Board of Revenue seems to have been preferred in March 1859—more than nine years after the Neilgherry Rules were sanctioned by Government, and fourteen years after his first application to Mr. Wroughton. The Board rejected his application, and now, after a further interval of six years, or twenty years after his first application, he appeals to Government.

10. Admitting, however, that Mr. Griffiths did make application after the survey of the Neilgherries was completed, it is clear that if it had been complied with, the land, with the reservation of the wood and swamp in it, would have been put up to publi competition, and Mr. Griffiths would have had to take his chance of becoming its purchaser. This indeed is all that (as he himself declares) Mr. Wroughton promised him, "to have it put up to sale" for him.

From Mr. Griffiths to the Revenue Board. 10th March 1859.

11. All, therefore, that Mr. Griffiths can in strictness claim now, is what might have been done for him in 1850, viz., that the land be sold, with reservation to Government of the wood and swamp, and that he may have the opportunity of buying it, if he should be the highest bidder.

12. Both the Collector and the Board urge, that in the event of "Garrard's land" being made over to Mr. Griffiths, "the entire right and sole control over the water which flows from the swamp situated in it" should be reserved to Government. The Collector writes, "the water which flows from the swamp is one of the main existing sources of supply to the channel now running past the church, and which it is eventually hoped will convey water to the European and Native jails, and the bazaar below them."

13. The object of the Collector and the Board can be effectually secured only by the whole swamp, and the wood that protects part of it, being absolutely excepted from any grant that may be made of the land, clearly demarcated and with a sufficient margin and means of access reserved to Government, the holder of the land being debarred from in any way meddling with it.

14. If Mr. Griffiths' desires that the land thus curtailed should be put up to sale, the Collector will adopt the necessary measures in accordance with the present rules.

15. Under any circumstances, the Collector will carefully protect the swamp and the stream issuing from it, and report what he has done.

16. As regards the streams led from Snowdon by Mr. Griffiths, it is clear that with the consent, as he alleges, of the Engineer Officers, (who had no power to give such consent,) or at least with the acquiescence or non-interference of the local authorities, Mr. Griffiths has been suffered to cut and lead water-courses through Government land in a most unauthorized and irregular manner, and to assert private rights in them quite at variance with the views and orders of Government on the subject.

17. The Government cannot at all agree with the Board that Mr. Griffiths has a vested right in the channel which he calls "Rielly's." All that he bought when he bought the cottage was the right to so much water supply as the previous

owner had permissively enjoyed. His purchase of the cottage grounds conferred on him no title to lead the water out of that ground, and then deal with it as he pleased. The reservation on the back of General Kennett's Title Deed is only binding on the parties to it, and not on the Government.

18. Similarly the "Snowdon" supply clearly belongs to the Government, and not to any individual who sees fit to cut a channel from it.

19. But while thus declining in any way to admit Mr. Griffiths' asserted rights, the Government concur with the Board of Revenue that a fair distribution of water should be made among the properties having reasonable claims on it. The Collector and Engineer will, therefore, in concert, arrange for such a distribution, and either from Rielly's or the Snowdon channels or both, give as much water to Mr. Griffiths' properties as can equitably be given to them, consistently with the fair supply of others and the public requirements for the jails, &c. This being done, the Collector will take care that such distribution is not again interfered with.

20. As regards Mr. Griffiths' third request, the Government do not require his services, and desire that he will abstain from encroaching on the province of officers in the Revenue and Public Works Departments.

21. The Government consent to the transfer to Mr. Griffiths of the small piece of land referred to by the Collector and Board of Revenue, on his executing a written agreement throwing open the private road to which allusion is made, and engaging to abstain from doing any thing which will interfere with its ordinary use by the public, or its repair by the Officers of Government at their discretion.

(True Extract.)

(Signed) J. D. SIM,
Secretary to Government.

To the Board of Revenue.
,, the Collector of Coimbatore.
,, the Public Works Department.
,, the Reverend J. Griffiths.

Exd. S. T. Augustin.

Proceedings of the Madras Government, Public Works Department,
22nd December 1866.

No. 530. Read the following Proceedings of the Madras Government in the Revenue Department :—

Communicating paragraphs 1 to 6 of a Minute by His Excellency the President, and calling for a report on the several arrangements therein proposed as regards the Snowdon water-supply at Ootacamund. } (Here enter 20th December 1866, No. 3,430.)

No. 531. ORDER THEREON, 22nd December 1866, No. 4,074.

CIVIL WORKS, No. 106.

Forwarded to the Superintending Engineer of the 7th Division, for communication to Major Farewell for his information and guidance, in continuation of G. O. No. 1,046, dated 5th April 1866.

(True Extract.)

(Signed) CHARLES A. ORR, Colonel, R. E.,
Secretary to Government.

To the Superintending Engineer, 7th Division, with two copies of Enclosures.

Exd. S. T. Augustin.

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Proceedings of the Madras Government, Revenue Department,
20th December 1866.

Read the following papers:—

No. 346. Minute by His Excellency the President.
(Here enter 16th October 1866.)

No. 347. Minute by Sir T. Pycroft.
(Here enter 31st October 1866.)

No. 348. Minute by the Honorable H. D. Phillips.
(Here enter 31st October 1866.)

No. 349. ORDER THEREON, 20th December 1866, No. 3,430.

Land Revenue.

1. Resolved with reference to G. O. 26th March last, No. 745, that a copy of paragraphs 1 to 6 of His Excellency the President's Minute above recorded be forwarded to the Collector of Coimbatore, and that he be instructed, in communication with the Executive Engineer, Major Farewell, to report fully on the several arrangements proposed therein as regards the Snowdon water-supply. The report should be submitted as soon as possible, and should be accompanied by the necessary plans and estimates, and a sketch of the locality, shewing through what private land, if any, the channels will pass, the compensation probably payable, and the existing private claims to water-supply which may be sensibly prejudiced. When this information is laid before them, the Government will be in a position to pass final orders on the question.

2. The Collector will report what has been done in regard to paragraphs 14 and 21 of the G. O. of 26th March last.

(True Extract.)

(Signed) J. D. SIM,
Secretary to Government.

To the Collector of Coimbatore.
,, the Board of Revenue.

Exd. S. T. Augustin.

Proceedings of the Madras Government, Public Works Department,
22nd December 1866.

No. 482. Read the following letter from the Superintending Engineer, 7th Division, to the Secretary to Government, Department Public Works, dated Coimbatore, 12th December 1866, No. 188:—

I have the honor herewith to submit an estimate (with plan) for draining the Wellington Bazaars, amounting to Rupees 2,985, duly approved of by His Excellency the Commander-in-Chief.

1 Plan.
1 Estimate, No. 33.

Cholera having broken out at Coonoor, the Medical Officer at Wellington, and the Officer Commanding, brought to the notice of the Divisional Military authorities the filthy state of the Wellington Bazaars, and the necessity for proper drainage, without which the existing Conservancy establishment could not work with efficiency. On the subject being referred to this department, the place was personally inspected by me in company with Major Farewell, and I have the honor now to recommend that his estimate be sanctioned for immediate execution with savings on other Military works to be reported hereafter.

No. 483. ORDER THEREON, 22nd December 1866, No. 4,051.

MILITARY WORKS, No. 29.

The Government sanction the estimate of Rupees 2,985, submitted with this letter, for draining the Wellington Bazaars, and authorize the work being undertaken in anticipation of the provision of funds from savings. Colonel Walker will report in due course the source from which the outlay can be met.

(True Extract.)
(Signed) CHARLES A. ORR, Colonel, R. E.,
Secretary to Government.

To the Superintending Engineer, 7th Division, with one Plan and Estimate.
" Controller of Public Works Accounts.
" Accountant General.
" Military Department.

Fxd. S. T. Augustin.

No. 407.

Dated 21st *February* 1867, No. 519.

CIVIL WORKS, No. 61.

1. As the question of the manner in which the drainage of the native town of Ootacamund can be improved, by the provision of means for the conveyance of all the sewage beyond the basin of the lake, will, it is believed, ere long, come under the consideration of Government, His Excellency the Governor in Council thinks it desirable that Captain Tulloch, who has devoted much attention to the subject of drainage, should proceed at once to Ootacamund and there confer with the Executive Engineer on the subject.

2. Captain Tulloch's attention should be specially given to a scheme for carrying off the sewage of the town through an iron pipe to be laid either under the water of the lake or along its margin, and, with reference to the relative levels of the town and the outfall, he should carefully consider the dimensions and character of the conduit which, in his opinion, will be most suitable for effecting the object in view.

3. The Superintending Engineer of the 5th Division will accordingly relieve Captain Tulloch, and direct him to proceed to Ootacamund on the duty above assigned him.

(True Extract.)

(Signed) CHARLES A. ORR, Colonel, R. E.,
Secretary to Government.

To the Superintending Engineers, 5th and 7th Divisions.
,, Captain Tulloch, Executive Engineer.
,, the Controller of Public Works Accounts.

Exd. S. T. Augustin.

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MINUTE BY HIS EXCELLENCY THE PRESIDENT.

1. A supply of pure water for Madras has now been secured. Either by means of annual appropriations from the public revenue or by means of a loan, a competent quantity of water will be delivered by Government on the outskirts of the city. It remains with the Municipal authorities to make the proper provisions, in connection with Government, for the distributive part of the project.

2. Under these circumstances, it appears desirable that the greater and more arduous scheme of removing the sewage of the town should engage our early attention, and that certain preliminary measures should be sanctioned with a view to the accomplishment of that capital object.

3. The liquid and semi-liquid sewage of Madras at present in part evaporates in open, almost level, drains or gutters, in part it percolates into the sub-soil, in part it is conveyed slowly into the Cooum, Cochrane's canal, and the sea. In every case it poisons the water and the air. If Madras is still habitable, it is owing to the admirable conjunction of a dry, wholesome, sandy soil, with a regular sea breeze, and an abundant subterranean water supply. But the benefits of nature are combated by the neglects and abuses of man, and should the present condition of the city remain long uncorrected, there can be little doubt that the evil influences will get the upper hand. Happily the mischief already perpetrated, and the danger to be apprehended in the future, are thoroughly recognized and understood, while the most appropriate and effective remedy has been submitted, in the able project for the drainage of Madras, by Captain Tulloch, which is now under the consideration of Government.

4. It is not my purpose to go into the details of Captain Tulloch's scheme, or to ask the Government to pledge themselves to it by adoption in every particular. I submit to Council the expediency of simply affirming the following leading principles, which form the basis of the plan, and of affording Captain Tulloch the means of improving his professional knowledge for our benefit, and for the more effectual execution of the work when the financial means shall be secured for that purpose.

5. The principles which I think the Government may safely assert are the following :—

(1.) That the sewage of Madras ought to be moved by water and by a system of covered drains, not by carts or other mechanical means in connection with the dry earth system.

(2.) That the sewage ought to be conveyed to some spot to the north of the city, at a sufficient distance, and that it should be there appropriated to the purposes of fertilizing the soil, not discharged into the sea.

6. To these principles I would add the following affirmation of our general views as to the financial means by which the project may be carried out:—

(1.) The Government are of opinion, having in view the imperial interests at stake in the capital of the Presidency and the poverty of the Native community, that one-half of the expenditure incurred on this work should be defrayed directly by the State, either in the form of annual appropriations of revenue, or by means of a loan to be raised for this purpose, the interest of which shall be defrayed by Government.

(2.) That the other half of the expenditure incurred should be borne by the Municipality of Madras, which should be empowered to raise a Municipal loan for that purpose, guaranteed by Government.

7. For the purpose of enabling Captain Tulloch to mature his knowledge and his views, I submit that he be authorized to proceed to England for eight months on full pay, with the allowance which may be thought necessary not only to defray his travelling expenses there and back, but to enable him to repair to various places in England where drainage works and sewage irrigation works are now in progress.

8. Before going to England I think it desirable that Captain Tulloch should visit Ootacamund, with the view of conferring with the Executive Engineer at that place on the means of conveying the sewage of the Native town beyond the basin of the lake. Ootacamund, destined to be the Sanitarium at least of Southern India, is already in a state of deterioration, in consequence of the accumulation of filth in the centre of the station. There would, it is believed, be no difficulty in carrying off the sewage of the town through an iron pipe, to be laid either under the water of the lake or along its margin, and the attention of Captain Tulloch might be advantageously directed to the question of levels, and to that of the diameter and character of the conduit which would be most available for the object indicated.

9. The Council will, perhaps, also concur with me in thinking that Captain Tulloch should remain a few days in Malta, for the purpose of inspecting the system of subterranean reservoirs for rain-water in the Island, a system which it may become necessary to introduce at Bangalore, Bellary, and elsewhere, for the better supply of drinking water to our Military establishments.

16*th February* 1867.

(Signed) NAPIER.

MINUTE BY THE HONOURABLE SIR T. PYCROFT, K. C. S. I.

1. Captain Tulloch's project for the drainage of the town of Madras and its environs is incomplete. It provides only for the main and street drains, but not for the house drains. What the expense of these last will be, although doubtless very considerable, has not been ascertained, nor, of course, what part of such expense can be defrayed by the householders themselves, and what proportion will have to be met by the Municipality, or by Government, or by both.

2. The scheme is further imperfect, inasmuch as it appears from a passage in Chapter V. of the Report, at page 106, that it disposes only of the liquid sewage of Madras, and not of the solid sewage, which will have to be removed by the Municipal Commissioners in carts in much the same manner as at present.

3. Without committing myself to an entire concurrence in the views pr... pounded in His Lordship's Minute, I quite agree with him that the thorough drain... age of Madras is a very great desideratum. Looking also to the position of Madras as the seat of Government of this Presidency, and the site of numerous public estab... lishments, and to its commercial and general importance, and remembering that the cost of effective drainage must, at the lowest estimate, be more than can be borne by the resources of the place, within any conceivable time, I think that the Govern... ment may fairly be expected to bear a part of the burden. In what shape, ar... to what extent such assistance should be afforded, I am not, at present, prepared to say, nor indeed until we have the whole measure before us in all its bearings, and its total ultimate cost, can any definite opinion be arrived at on the subject.

4. Meanwhile, I concur in His Lordship's proposal that Captain Tulloch be sent to England, that he may acquaint himself with the most approved systems of town drainage there followed, in view to his maturing and perfecting a scheme for Madras on his return to India.

(Signed) T. PYCROFT.

23*rd March* 1867.

MINUTE BY THE HONOURABLE H. D. PHILLIPS.

1. I have perused with interest what Captain Hector Tulloch has written about his drainage scheme, but must confess myself very doubtful of the possibility of ever having it completed by any means within the competency of the Madras Municipality.

2. The result may be otherwise, if extraordinarily liberal pecuniary assistance be given to the work by Government; but what the extent of that assistance should be, will depend on the probable cost of the work when Captain Tulloch has supplied estimates for the deficiencies to which Sir Thomas Pycroft draws attention, and which, I observe, have been subject of comment in the public prints.

3. As it is clearly desirable that Captain Tulloch should have the best possible opportunity of inspecting and studying the most recent improvements in drainage science and the great sewerage operations now in progress in London and on the Continent of Europe, to enable him to s ly the deficiencies adverted to above, I concur in the advisability of directing t Officer to proceed to England as proposed by His Lordship the President.

25th March 1867.

(Sipned) H. D. PHILLIPS.

21 Jan 1868
2 Encls to not sent
13/2/68

Original with all Plans &c

Proceedings of the Madras Government, Public Works Department,
17th April 1867.

Read the following papers :—

No. 409. From the Superintending Engineer, 5th Division, to the Secretary to Government, Department Public Works, dated Cuddalore, 9th April 1867, No. 8.

1. With reference to the Orders of Government of the 21st February and 29th March 1867, Nos. 519 and 985, I have the honour to request I may be informed whether Captain Tulloch's Office is to remain at Bangalore, under the orders of the Executive Engineer.

2. Captain Tulloch has requested the Executive Engineer to send the Clerks to Ootacamund, but the latter reports that "it is only by the aid of these Clerks that he is enabled to get through even the current work from day to day, and that if they were removed the Office would break down altogether."

Referred to the Controller of Public Works Accounts, who will furnish a Statement of the Office establishments now maintained at Bangalore.

(Signed) CHARLES A. ORR, Colonel, R. E.,
Secretary to Government.

13th April 1867.

No. 410. From the Acting Controller of Public Works Accounts, to the Secretary to Government, Public Works Department, dated Madras, 16th April 1867, No. 196.

With reference to your endorsement of the 13th instant, on a letter of the Superintending Engineer, 5th Division,
2 Enclosures. I have the honour to forward herewith a Statement of the establishments now maintained at Bangalore :—

Bangalore.					
Lieutenant J. Pennycuick, R.E., Executive Engineer 4th Grade	300	0	0		
Military allowances	195	12	0		
	495	12	0	495	12 0
Upper Subordinates.					
C. Arnachellum Moodelliar, T. O.	60	0	0	60	0 0
A. Vadivaloo Moodelliar, T. O.	60	0	0	60	0 0
Range Establishments.					
T. Maselamoney Pillay, Head Accountant	60	0	0		
A. Vydilinga Moodelliar, Assistant do.	50	0	0		
T. Seetha Ramah do.	40	0	0		
A. Arogeasawmy Pillai, Estimator	50	0	0		
Mr. I. J. Sullivan, Store-keeper	40	0	0		
2 Peons at 6 Rupees each	12	0	0		
	252	0	0	237	0 0

Minor Establishments.					
	Rs.	A.	P.		
P. Gooroosawmy Moodelliar, Writer	15	0	0		
2 Lascars at 6 Rupees each	12	0	0		
	27	0	0	27	0	0
M. Soobroya Pillai, Writer	15	0	0		
2 Lascars at 6 Rupees each	12	0	0		
	27	0	0	27	0	0
				411	0	0
Captain Tulloch's Special Establishment.					
T. Teroovangada Moodelliar, Accountant	35	0	0		
C. Ragavaloo Naidoo, Draughteman	40	0	0		
4 Lascars at 7 Rupees each	28	0	0		
	103	0	0	99	0	0

No. 411.

ORDER THEREON, 17th April 1867, No. 1,204.

ESTABLISHMENT, No. 41.

1 Accountant.
1 Draughtsman.
4 Lascars.

As the establishment noted in the margin was allotted to Captain Tulloch in his position of Special Executive Engineer intrusted with the investigation of projects, the members of that establishment should be made available for employment on the duty which was assigned to Captain Tulloch in the Order of the 21st February 1867, No. 519.

(True Extract.)

Colonel, R. E.,
Secretary to Government.

To the Superintending Engineer, 5th Division.
,, Controller of Public Works Accounts.

Exd. S. T. Augustin.

Read the following papers:—

No. 531. From Captain H. TULLOCH, R. E., Executive Engineer on special duty, to the Secretary to Government, Department Public Works, dated Madras, 5th June 1867.

1. I have the honor to submit the accompanying Report and Plans in connection with the Main Drainage of Ootacamund.

2. If the Government propose to begin the work this year, I think it would be best to confine the work to the manufacture of materials. It is possible that an inspection of the drainage systems in the different countries of Europe may suggest to me valuable modifications in the details of the work, so that perhaps it might be better to wait till I return from Home before carrying out the work.

Report on a Project for the Main Drainage of Ootacamund.

1. The following drawings accompany this Report:—
   (1.) General Plan of Ootacamund.
   (2.) Detail Plan showing the direction of the Main Sewer.
   (3.) Detail section of Main Sewer.

2. The Datum Line, to which all the levels are referred, is the crest of the waste weir of the Ootacamund lake, *i. e.*, the level of the water when the lake is just full.

Datum Line.

3. The Sanitarium of Ootacamund is situated on the inner slope of a series of hills which stand on either side of a great valley. The lower portion of the valley is formed into a long narrow lake by a dam which has been thrown across a gorge between two hills. From the bottom of the valley the ground rises on either side at a considerable slope, and most of the dwellings are built on the slopes of the hills.

Position of Ootacamund.

4. The most thickly populated neighbourhood is the village of the General Barar, which stands near the margin of the lake on the northern side of its upper end. It contains about 750 dwellings. On the lower side of the slope of the hill, on which this village has sprung up, the floors of some of the houses are raised two or three feet only above the level of the lake, and in heavy rains some of the houses are partly submerged. The fall from the upper to the lower part of the town is so considerable that the street drainage can be designed and carried out with the greatest facility.

General Barar.

5. To the west of the General Barar, on the slope of another hill, stands Mootoocherry, which merely contains a number of small detached huts, scattered about in all directions, built without reference to any general plan, and presenting the appearance of a neglected and dilapidated native village. It offers the same facilities for subsidiary drainage as the General Barar.

Mootoocherry.

6. The only other thickly populated neighbourhood, which it is proposed to drain at present, is the small Brahmin village called Agraharam. It lies to the north-east of the General Barar, and contains about sixty houses. Being situated near the bottom of the valley, and being raised many feet above its level, its drainage will be a simple matter.

Agraharam.

7. There are still two native villages which require to be mentioned, although the present project does not contemplate the drainage of either of them.

8. One of these is known as Dhoby's Pettah, and lies at the upper end of the Ootacamund valley, more than a mile away from the other thickly populated neighbourhood mentioned above. I will hereafter show how easily it can be drained; but while the most important part of the town remains undrained, I think it will be unadvisable to go to the expense of draining Dhoby's Pettah.

Dhoby's Pettah.

9. The only remaining native town is Kandal. This village does not lie in the Ootacamund valley. The Kandal and Ootacamund valleys are separated by high hills, and no system of drainage, therefore, which would answer for one could be made to answer for the other. The drainage of Kandal must be taken up as a project by itself. It has not been considered by me, as the Order of Government plainly refers to the drainage of the Ootacamund valley only. I have inspected Kandal, and consider that I should inform the Government that its drainage would present no difficulties. It is, however, a much more important village than it is generally thought to be, and if Ootacamund is to be rendered free from all obvious sources of sickness, the drainage of Kandal should be undertaken as soon as that of the Ootacamund valley has been accomplished.

Kandal.

10. The mere fact of Ootacamund being situated on the slopes of hills will at once enable the Government to understand that there is abundant slope in every neighbourhood for the effectual drainage of the streets and houses. The case of Ootacamund is the very opposite to that of Madras. Madras for all drainage purposes is as level as a table. Ootacamund has the slope of a mountain. In order to obtain a proper inclination for the street sewers and drains in Madras, it is a matter of absolute necessity to create it artificially. In order to obtain a proper slope in Ootacamund, nothing is required but to use the slope which nature has given us. In fact the subsidiary drainage of every neighbourhood in Ootacamund is extremely easy. By subsidiary drainage is here meant the drainage of the streets and houses, and it must not be confounded with the main drainage of Ootacamund, which is a totally different thing.

Subsidiary Drainage.

11. The subsidiary drainage of a neighbourhood is dependent on the natural slopes of the streets in that neighbourhood only, but the main drainage of a town is dependent on the relative levels of the lowest inhabited parts in *all* the districts of the town. However favourably situated every district in a town may be with [illegible] to its own subsidiary drainage, the main drainage of the town may be a matter. There might be a dozen districts within the space of a few [illegible]

easy, yet the connection of all the districts by one system of main drainage may demand the greatest care and consideration from the Engineer. As main drainage does not depend on the facilities, however great they may be, offered by each neighbourhood considered as a drainage area *by itself*, but is dependent on the relative position of all the different neighbourhoods themselves, it must be considered from an entirely different point of view to that from which the subsidiary drainage of each district is regarded.

12. My object in making the above remarks is to illustrate the position of Ootacamund, the subsidiary drainage of which is extremely easy, while at the same time there are undoubtedly difficulties in its main drainage, which can only be overcome by skill.

13. A glance at a Map of Ootacamund will at once satisfy the Government that the only out-fall for the main drainage of this Sanitarium is the extreme end of the valley where the dam stands. Had the town stood at the lower end of the lake instead of at its upper end, of course the main drainage would have been very easy. As it is, however, the town is situated at its upper end, and between the town and the out-fall is the lake, more than a mile in length. The difficulty to be overcome is to convey the sewage to the out-fall in spite of the obstacle which the lake presents. I will here mention the propositions which I have heard made to meet this difficulty. The Government will then be in a better position to judge of the project, submitted with this report.

Main Drainage.

14. One proposition is, as I understand it, to run the Ootacamund lake dry, and to lay the main sewer along its bottom which would undoubtedly be very easy, but it would be a barbarous way of trying to get over a difficulty. In fact it would simply be getting over one difficulty to create another and a far greater one. The slightest consideration should show that although the main sewer could be very easily built if the lake were run dry, yet to keep it in order after the lake had been filled again, would be attended by almost unsurmountable difficulties. Sewers should always be built in such a manner that they can be easily kept under perfect control. But to keep under control a sewer lying at the bottom of a lake which is in some parts more than 50 feet deep would require most expensive arrangements. Every time the drain leaked it would be necessary to run the lake dry in order to get at the sewer to repair it, and every time the lake were run dry the most dreadful consequences might arise from the exposure of so extensive an area of swampy land. I could mention several other grave objections to this proposition, but the Government will, no doubt, agree with me at once that the idea of a sewer at the bottom of the lake is utterly out of the question.

15. The second proposition which I have heard made is to buy up the lower portion of the town, and to run the main sewer at a considerable elevation above the lake, and with such a slope that it should issue at the lower end of the lake on a level with the water. The object of this proposition is to overcome the difficulty of building a sewer at a great depth below the surface of the lake. Now it will be manifest to Government that if a sewer is built at a high level, no houses situated below that level could be drained into it. Now although the lower portion of the town could be brought up at the probable cost (at a rough calculation) of about a lac of Rupees, there would still remain an extensive tract of land lying higher up in the

Ootacamund valley which it would be also necessary to purchase, and the cost of this has not been considered. Moreover, as the sewer at a high level could run along one side only of the valley, it is clear that no drainage from the other side of the valley could be received into it, as of course in that case the sewage would require to be taken across the valley which would lie below the sewer. In fact if this proposition were carried out, two systems of main drainage would be ultimately required, one system for one side of the Ootacamund valley, and another for the other. I calculate the cost of the property that would have to be bought up for such a scheme at certainly not less than a lac of Rupees, and probably more. In fact such a proposition if carried out would entail an enormous expenditure.

16. Since my report on the drainage of Madras was submitted to Government, further consideration of the subject has convinced me that the views I have therein expressed, regarding the advisability of separating sewage and rain-water in this country, are correct. From information I have gathered I am inclined to think that even in England it may be found necessary hereafter to carry sewage by itself, and to let rain-water escape by open surface channels to the natural outfalls in the immediate neighbourhood. There is no doubt now that many Engineers in England are inclining to this view of the question. Bet arguments in favor of the separation of sewage and rain-water apply with three and four times as much force when town drainage in this country is considered. The arguments in favor of my views being already before Government in the report on the drainage of Madras, I shall not here enter upon the subject again, but shall at once assume that the Ootacamund sewers should be constructed for the removal of sewage only, and that the rain-water should be allowed to escape as it now does into the natural out-falls in each district.

Sewage and rain-water must be separated.

17. The sewer which I propose for the main drainage of Ootacamund is an egg-shaped one, 2¼ feet high by 1½ feet wide, this, at the slope that I have given it, will discharge more than twice the total quantity of sewage calculated at twenty gallons daily per head of the population. Although this is an exceedingly small sewer for a main one, I have purposely made it larger than might be thought necessary for the present wants of Ootacamund, as the station is a growing one and may in the course of some years increase very rapidly in population.

18. As the cost of an iron pipe of nine inches only in diameter would be more than four times that of the brick sewer proposed above, while the latter would, at the same time, discharge nearly ten times as much sewage as the former, the idea of an iron pipe has been abandoned by me.

19. By reference to the drawings which accompany this report the general direction of the main sewer, and the details in connection with its proposed construction, will be understood. I propose to lay the sewer by the margin of the lake. The main stream which feeds the lake from the east, and which is never dry during any part of the year, runs along the bottom of the Ootacamund valley, and has a slope of more than ten feet a mile. From a point near its junction with the lake I propose to start the main sewer, at a slope of three feet per mile. It maintains

Main Sewer.

sewer is increased, as I wish to prevent all chance of accumulation of deposit in it. From the creek the sewer is then continued to the out-fall, at the uniform slope of three feet per mile.

20. The slope of three feet per mile would, under ordinary circumstances, be too little for so small a sewer, but considering the command of water that we shall have along the entire length of the sewer, I do not anticipate that there will be any obstruction in it. It will be necessary to make arrangements to flush the sewer at every hundred yards of its length, and manholes, lampholes, and ventilators will also be required.

21 As the sewer starts at three feet below the level of the stream which feeds the lake, so it should be continued up the valley to the furthest neighbourhood which it may be considered necessary to drain—the sewer always running parallel with the surface of the stream, but three feet below it. The advantage of building the sewer in this position will be that along its entire length there will always be abundance of water with sufficient pressure to keep the sewer clear of deposit. It so happens in this particular case that the stream itself has a considerable fall; the sewer will therefore also have a good fall.

22. Now if it should be considered advisable hereafter to drain Dhoby's Pettah, the village which lies more than a mile from the General Barar, all that would be required would be to continue the sewer up the valley until Dhoby Pettah was reached. There would be abundant fall for the sewer and abundance of water to flush it with, as the sewer would always be three feet below the surface of the stream.

Drainage of Dhoby's Pettah.

23. The advantage of laying the sewer along the natural drainage line of the country is that the whole of Ootacamund, with the exception of the southern side of the Ootacamund lake, could be drained into it. The southern side of the lake has only a few European houses, and will not require to be drained.

24. The street drainage of the different districts will be a very simple matter so far as engineering is concerned. I would recommend the use of six inch earthenware pipes running generally parallel with the surface of the roads, and placed about three feet below it. The earthenware pipes should be connected with the houses in the same manner as proposed by me in the report on the drainage of Madras.

Street Drainage.

25. In connection with the drainage of Ootacamund, I propose also the reclamation of the swamp at the head of the lake. This is a work of great necessity and might be commenced at once. I propose to make a channel (wide enough for two boats to pass each other), from the lake to the head of the swamp. The earth should then be excavated from the upper portion of the lake and should be taken by boats and deposited at the head of the swamp. As the swamp on each side of the channel became filled up, the channel for the boats should at the same time be gradually closed, and the work of reclamation continued till no swamps were left. There are other ways of reclaming the swamp into which I need not enter, but the one I propose has the advantage that the swamp would be reclaimed in the shortest time. The prisoners in the Ootacamund Jail might well be employed on the work of reclamation. When the swamp is entirely reclaimed the margin of the lake should

The Ootacamund Swamp.

be well defined and no encroachments on the lake permitted. The reclaimed land might be formed into a Public Garden or Park, a great want in Ootacamund, as the present Botanical Gardens are so far distant from the centre of the town.

26. I beg to inform the Government that the out-door survey work from which the Plan of the Main Sewer has been plotted, was done by Major Hessey's Department.

Referred to the Acting Sanitary Commissioner for any observations that he may have to offer.

(Signed) J. H. M. SHAW STEWART, Major, R. E.,
Under Secretary to Government.

FORT SAINT GEORGE,
1*st August* 1867.

No. 532. From the Acting Sanitary Commissioner for Madras, to the Secretary to Government, Department of Public Works, dated Cannanore, 29th August 1867, No. 260.

2 Plans of Ootacamund Drainage, (by Banghy post.)
1 Letter from Captain Tulloch, R. E., to Secretary to Government, Public Works Department.
1 Report on a Project for the Main Drainage of Ootacamund.
1 Estimate.
1 Abstract.

1. In reply to your reference to me of the plan proposed by Captain Tulloch, R. E., for the drainage of Ootacamund, I have the honor to state that the scheme appears in every way suitable for that station.

2. I would, however, respectfully direct the attention of Government to the desirability of refraining from the definite sanction of the expenditure contemplated by Captain Tulloch (74,000 Rupees) for the carrying out of this drainage scheme until an estimate has been made of the cost of constructing the house-drains and street-drains (not apparently estimated for by Captain Tulloch), and until *it is* settled by whom these are to be constructed.

3. Until these matters are settled the construction of a system of main drainage may prove to be a cause of useless expenditure of money.

No. 533. Minute by the Right Honorable the President.
(Here enter —— September 1867.)

No. 534. Minute by Sir T. PYCROFT, K. C. S. I.
(Here enter 27th July 1867.)

No. 535. Minute by the Honorable H. D. PHILLIPS.
(Here enter 11th September 1867.)

No. 536. ORDER THEREON, 21st September 1867, No. 2,940.

CIVIL WORKS, No. 56.1

1. With his letter above recorded, Captain Tulloch, Special Executive Engineer, submits in compliance with the Orders of Government of the 21st February 1867, No. 519, a report, accompanied by plans and estimates,* on the subject of the Main Drainage of Ootacamund.

* Rupees 74,000.

2. After describing the great natural facilities which exist for the effectual drainage of the streets and houses in this Sanitarium, and discussing the merits of the several proposals which have been made for its main drainage, Captain Tulloch states that a long and careful consideration of the subject has confirmed him in the opinion that in devising any scheme for this latter object, complete separation of sewage and rain-water should be maintained. Assuming the correctness of this principle, Captain Tulloch proposes to construct an egg-shaped sewer ($2\frac{1}{4}$ feet high and $1\frac{1}{2}$ feet wide) starting from a point near the junction of the main stream with the Ootacamund lake, and carried, at a slope of three feet per mile, until "a creek of the lake is reached," under which he proposes to take the sewer in the form of an iron pipe, but with an increased inclination to prevent accumulations of deposit. From the creek the sewer will be continued to the out-fall at the uniform slope of three feet per mile, which, looking to the large quantity of water available, Captain Tulloch considers will be amply sufficient. The sewer will run parallel with the surface of the main stream, but three feet below it, the advantage of constructing the drain in this position being that along its entire length there will always be abundance of water with sufficient pressure to keep the sewer clear of deposit.

3. The Government approve generally of the scheme submitted by Captain Tulloch. The unsightly and filthy condition of the lower parts of the Native town and principal bazaar at Ootacamund and of the streets above them is such as to call urgently for immediate remedy, and looking to the importance of that station as the seat of many charitable and other public institutions, with an English population exceeding that of any Civil Station in this Presidency, Madras excepted, and as the great Sanitarium of the South of India resorted to by Government servants from the three Presidencies, and bearing in mind that the local municipal revenue will be required for the execution of the minor or street drainage works subsidiary to Captain Tulloch's scheme for the opening out and repair of roads, and for the water supply and general conservancy of the town, the Government are of opinion that the outlay necessary for the main drainage may fitly be borne by the State. The plans submitted by Captain Tulloch will accordingly be forwarded to the Government of India, with the recommendation of His Excellency in Council that sanction may be given for the commencement of the work from such funds as may be at the disposal of this Government, to be supplemented, if necessary, by a further special grant for the purpose.

4. Captain Tulloch suggests that in the event of it being considered desirable to commence the work projected by him this year, operations should be confined to the preparation of materials, as his inspection of the drainage systems of Europe may possibly suggest valuable modifications of the plan which he has submitted. The Government approve of this suggestion, and they request the Superintending Engineer of the 7th Division to instruct the Executive Engineer at Wellington to take measures, in anticipation of the sanction of the Government of India, for the manufacture, by means of convict labor, of the quantity of bricks that is likely to be required. Colonel Walker will report, now that the Lawrence Asylum scheme of buildings has been reduced, whether a large quantity of the bricks in store for those works could not be made available for the Ootacamund drainage.

5. The reclamation of the swamp at the head of the Ootacamund lake, referred to in paragraph 25 of Captain Tulloch's report, is a very desirable project, and one

which should be taken up at once. The Superintending Engineer will obtain and submit a detailed plan and estimate of the work to be executed in the manner sketched out by Captain Tulloch. The work should be wholly carried out by the convicts confined in the Native Jail, assisted by an additional gang chosen with proper care after provision has been made for their lodging, health and security. Colonel Walker will lose no time in communicating with the Inspector General of Jails upon this subject, and in completing the necessary arrangements.

6. Ordered that the following letter be sent :—

(Here enter No. 2,941, dated 21st September 1867.)

(True Extract.)

(Signed) J. H. M. SHAW STEWART, Major, R. E.,
Under Secretary to Government.

To the Superintending Engineer, 7th Division.
" Accountant General.
" Controller of Public Works Accounts.
" Public Department.

Exd. T. O'Connor.

PUBLIC WORKS DEPARTMENT,
FORT ST. GEORGE,
21st September 1867.

No. 2,941.

No. 537.

To

THE SECRETARY TO THE GOVERNMENT OF INDIA,
PUBLIC WORKS DEPARTMENT.

SIR,

CIVIL WORKS, No. 57.

1. I am directed to forward for the consideration of the Right Honorable the Governor General in Council plans and estimates amounting to Rupees 74,000 for the Main Drainage of the Sanitarium of Ootacamund.

2. The project has been designed by Captain Tulloch, of the Royal Engineers, copies of whose Report on the proposed works and of the Proceedings of this Government thereon are enclosed.

3. I am also to submit the accompanying Minutes by His Lordship the President and the Members of Council upon this subject, and to request that, under the circumstances therein set forth, sanction may be accorded to the commencement of the works from such funds as may be at the disposal of this Government, to be supplemented hereafter, if necessary, by a special grant from the Government of India.

I have the honor to be,
Sir,
Your most obedient servant,

(Signed) J. H. M. SHAW STEWART, Major, R. E.,
Under Secretary to Government.

Exd. T. O'Connor.

Proceedings of the Madras Government, Public Department,
26th September 1867.

No. 213. Read the following Proceedings of Government in the Public Work Department, dated 21st September 1867, No. 2940.

Communicating a Report by Captain Tulloch on the drainage of Ootacamund. } (Vide Proceedings, Public Works Department, dated 21st September 1867, Nos. 531—536.)

No. 214. ORDER THEREON, 26th September 1867, No. 1200.

Communicated to the President of the Municipal Commission, Ootacamund.

(Signed) A. J. ARBUTHNOT,
Chief Secretary.

To the President, Municipal Commission, Ootacamund.

Exd. J. Tulloch.

No. 162. Read the following Endorsement of the Superintending Engineer, 7th Division, dated Camp at Oolleel, 24th October 1867, No. 120:—

Read the following letter from the Executive Engineer, Neilgherries, to the Superintending Engineer, 7th Division, dated Ootacamund, 15th October 1867, No. 95.

Your Endorsement on G. O. No. 2,940, of 21st September 1867.

1. I have the honor to report that the bricks made at the Lawrence Asylum works are only just sufficient for the building designed by Mr. Chisholm for the male branch.

2. The preparation of all materials for the female branch was stopped by order of Government in March last, so no bricks are available at the Lawrence Asylum sites for the Ootacamund drainage scheme; lastly, even if bricks were available at the Lawrence Asylum sites, the cost of carriage into Ootacamund would be so heavy, *i. e.*, nearly doubling the price per thousand, that I could not recommend their being obtained from that source; I therefore propose to make as many bricks as the clay remaining in the Government brick-fields, near Kandal, will admit of, and then moving to another locality as near as possible to the station.

3. On Saturday, the 12th instant, I had an interview with the Inspector General of Jails, and arranged with him to locate a gang of sixty-four prisoners in a temporary Jail, as per plan already submitted, and approved of by you, to be constructed in the Kandal brick-fields; this Jail, if sanctioned immediately, will be ready for the reception of the convicts by some time in December 1867, or by January 1868 at the latest.

4. To save the cost of another temporary Jail, the Inspector General of Jails proposes that the convicts of Ootacamund Jail, about eighty in number, out of which I calculate sixty men would be available for work, should be employed in the reclamation portion of the scheme, and on the earth-work necessary for the sewer; but before making use of the services of these convicts, it is absolutely necessary that the improvements of their own Jail should be pushed on as much as possible; if the convicts are kept steadily at this work for a couple of months, I think I shall by that time be able to spare them, and if a further provision of funds to the extent of eight or ten thousand rupees be made, I hope to complete the new Hospital for the Jail and outside boundary wall within the present official year. Rupees 15,000 have already been placed at my disposal for this work, of which I have spent up to date about Rupees 13,500.

5. The survey of the swamps to be reclaimed, which formed part of a project submitted by me in 1861, is ready, and shall be submitted immediately; but it is necessary that I should be furnished with the drawings accompanying Captain Tulloch's Report, in order that my estimate may be prepared in accordance thereto.

6. In order to carry out the reclamation scheme, it will be requisite to build boats, but before submitting plans and estimates for them, understanding that Government have already in their possession, either at Madras or Negapatam, several spoil-boats built of iron, and so constructed as to allow of their being taken to pieces and put together again, I think it desirable that inquiries should be made regarding these boats, as if they are likely to be suitable for the work in question,

it might possibly be cheaper to use them than build new ones. As a guide to the kind of boat required, they should not draw more than 2½ feet when laden.

Superintending Engineer's Endorsement on G. O. No. 2,940, of 21st September 1867.

1. Major Farewell will be so good as to take measures for the manufacture of the quantity of bricks likely to be required for the main drainage of Ootacamund; and is requested to inform the Superintending Engineer whether such manufacture will be conducted at the Lawrence Asylum or other brick-field. It is taken for granted that none are to spare of those originally made for the Asylum works.

2. Major Farewell is also requested to be so good as to lose as little time as possible in preparing a survey of the swamp to be reclaimed, with detailed plan and estimate of the work; placing himself, in Colonel Walker's absence, in personal communication with the Inspector General of Jails as to the employment of the convicts, and provision of accommodation for an additional gang. The limits of that portion of the lake which is to be deepened, of the ground to be reclaimed, and of the channel by which such reclamation is to be carried out, may be at once laid down. But until boats shall have been built, it does not appear that the actual work of reclamation can be undertaken.

CALICUT,
27th *September* 1867.

(Signed) G. W. WALKER, Colonel, R. E.,
Superintending Engineer, 7th Division.

Submitted to Government, with reference to paragraphs 4 and 5 of G. O. No. 2,940 of 21st September.

(Signed) G. W. WALKER, Colonel, R. E.,
Superintending Engineer, 7th Division.

No. 163. ORDER THEREON, 7th November 1867, No. 3,462.

CIVIL WORKS, No. 19.

1. The Superintending Engineer of the 7th Division will be informed, with reference to paragraph 6 of Major Farewell's letter, that no iron spoil-boats are available for employment in the reclamation of the swamp at the head of the Ootacamund lake.

2. The Government regret that they are at present unable to supplement the grant for the Jail at Ootacamund, but in the event of funds being hereafter set free from the allotments for other districts, they will give favorable consideration to Major Farewell's application for an additional assignment.

3. The plans which accompanied Captain Tulloch's report on the main drainage of Ootacamund will be forwarded to the Superintending Engineer of the 7th Division for transmission to Major Farewell.

(True Extract.)

(Signed) CHARLES A. ORR, Colonel, R. E.,
Secretary to Government.

To the Superintending Engineer, 7th Division, with two Plans.
,, Public Department.

Exd. S. T. Augustin.

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No. 542. Read the following letter from the Secretary to the Government of India, Public Works Department, (Civil Works—Miscellaneous,) to the Secretary to the Government of Fort St. George, in the Public Works Department, dated Simla, 2nd November 1867, No. 792 C:—

1. In reply to your letter, No. 2,941, dated 21st September 1867, I am directed to state that the Governor General in Council will not object to sanction, as a special case, the expenditure from Imperial Funds of Rupees 74,000, for constructing a main Sewer for the drainage of the sanitarium of Ootacamund; but I am to add that this sum must be looked upon as a Government grant-in-aid, and that the work is not to be considered as in any sense an Imperial one. There will, however, be no objection to the Public Works Department undertaking the work if the Municipality desire it.

Seventy-four thousand Rupees.

2. The sanction given in this letter has been registered as No. 92 C of 1867-68 in this Office.

3. The estimate and drawings are returned.

No. 543. ORDER THEREON, 25th November 1867, No. 3,652.

CIVIL WORKS, No. 74.

Communicated to the Public Department, and to the Superintending Engineer of the 7th Division and Controller of Public Works Accounts for information and guidance, with reference to the Order of the 21st September 1867, No. 2,940.

(True Extract.)

(Signed) CHARLES A. ORR, Colonel, R. E.,
Secretary to Government.

To the Public Department.
,, Superintending Engineer, 7th Division.
,, Accountant General.
,, Controller of Public Works Accounts.

Exd. F. R. Bantleman.

No. 8. *Dated* 1*st April* 1868, *No.* 1,032.

CIVIL WORKS, No. 1.

1. As the Government deem it of very great importance that the scheme for conveying water into Ootacamund from the high grounds in the direction of Snowdown should be carried out with the utmost possible despatch, and that the reclamation of the swamp at the head of the lake at Ootacamund, as projected by Captain Tulloch, should be vigorously proceeded with, they think it necessary to place these works under an Officer whose particular attention may be given to them under Major Farewell's general direction, and who may be able to utilize upon them to the utmost extent such convict labor as it may be in the power of the Inspector General of Jails to place at his disposal. His Excellency in Council accordingly resolves to appoint Lieutenant H. M. Vibart, of the Royal Engineers, temporarily to this duty under the orders of the Superintending Engineer of the 7th Division, and to request the Inspector General of Jails to take immediate measures for placing at Lieutenant Vibart's disposal the largest number of convicts that can be advantageously employed on the works in question.

2. If the plans, surveys, and estimates of the water supply and reclamation projects are ready, the Superintending Engineer will submit them at once for the orders of Government. If not, Lieutenant Vibart's first duty will be to complete them with all practicable expedition. Lieutenant Vibart may also be employed in preparing a plan for the internal drainage of the town of Ootacamund, or in perfecting any such [illegible] have already been commenced.

(True Extract.)

(Signed) CHARLES A. ORR, Colonel, R. E.,
Secretary to Government.

To the Superintending Engineer, 7th Division.
,, Do. do. 2nd Division.
,, Inspector General of Jails.
,, Controller of Public Works Accounts.
,, Judicial Department.
To Lieutenant H. M. Vibart, R. E.

Ed. S. T. Augustin.

No. 306. Read the following letter from the Superintending Engineer, 7th Division, to the Secretary to Government, Department Public Works, dated Coonoor, 20th April 1868, No. 17 :—

4 Surveys and Sections.
1 Estimate No. — Rupees 23,000.
1 Report No. 3 of 7th April 1868.

I have the honor to submit, for the sanction of Government, the survey and estimate for reclaiming the swamp at Ootacamund, called for in paragraph 5 of G. O., No. 2,940, of 21st September 1867. They are not, however, based on the plan sketched out by Captain Tulloch for reasons detailed by Major Farewell in the accompanying report, and in which I fully concur. The quantity of earth required to fill in the portion to be reclaimed to a height of at least 18 inches above the highest water-level, would not be obtainable from the bed of the lake by dredging under a very long period of time, if obtainable at all, without emptying the lake, and such stuff as might be obtained by dredging would be of a very improper kind to expose to the action of sun and wind in the centre of the station. I never liked the idea of using boats, and am rejoiced to find that Major Farewell has hit upon a plan by which a two-fold public improvement will be carried out much more cheaply and quickly than if they were to be employed, and with the best of material. As convict labor will be largely used in the work, it may suffice to allot only Rupees 13,000 of the entire estimate for preliminary expenses and purchase of ground in the current season.

From Major W. FAREWELL, Executive Engineer, to the Superintending Engineer, 7th Division, dated Ootacamund, 7th April 1868, No. 3.

1. With reference to paragraph 5, of G. O., No. 2,940, dated 21st September 1867, I have the honor to submit a plan and estimate for the reclamation of the swamp at the head of the Ootacamund lake, as also for raising the lower road of the Ootacamund bazaars, and the ground between the road and the margin of the lake above the usual flood levels.

2. Captain Tulloch proposes, in the scheme submitted to Government, that a channel wide enough for two boats to pass each other be made from the lake to the head of the swamp, that the earth required for the reclamation of the swamps should thus be excavated from the upper portion of the lake, and then taken by boats and deposited at the head of the swamp ; this portion of his scheme is incomprehensible, inasmuch as the whole of the upper portion of the lake being under water, and the margin all swampy ground, no earth for the purpose required can be obtained from this locality.

3. In the reclamation scheme of the upper portion of the lake, proposed by me in 1860, in connection with the construction of a new waste weir to the end of the lake, it was proposed to lower the water in the lake four feet, and thus afford the means of getting at the earth and defining the margin of the lake and using boats as now again suggested by Captain Tulloch ; for the reasons just noted, as the earth required for the reclamation of the swamp is not to be obtained in the locality noted by Captain Tulloch, after a careful examination of the whole project, I have come to the conclusion that the earth required can, while making a great and useful improvement to the high road in the vicinity of the lake, be had from a much more accessible position, and the work done quicker, easier, and cheaper, without the use of boats at all or the extra work of excavating a channel for them and having to re-fill the same again.

4. The high road from the drain on the southern side of the Bombay House Hill to the drain near Abdool Khader's shop, on the northern side of Bombay House Hill, ascends and descends

abruptly at a heavy gradient, making the approach to the Brahmins' or market bridge difficult and dangerous; I have had a series of levels taken of this road, and find from the sections that if the high road is made level from the points named, sufficient earth for the reclamation scheme can be obtained from this locality, which runs close along the swamps to be reclaimed. The whole scheme will be easily understood on reference to the plan, this portion is marked yellow on the plan, the reclaimed swamp marked in brown. The only expense necessary will be that of constructing a tramway for the easy and speedy removal of the earth to the points required; rails, waggons, &c., are already on hand, and have simply to be utilized in the project, the cost being simply that of the carriage of the plant to the locality, and Carpenters required for laying the rails.

5. To allow of the swamp being thoroughly reclaimed, and the margin of the lake supply channel properly defined, raised above flood levels, and so forth, it will be necessary that the properties marked on the plan abutting on the Brahmins' bridge, on the eastern side of the lake stream, half of which are swamps, be purchased and handed over to me; while the whole of the land, which is private property, as shown in the plan to the western side of the lake stream, should also be purchased to allow of its being raised like the eastern bank above flood levels; the ground on the eastern side of the lake stream being reserved as a park, while that to the west, when once raised and properly consolidated, might be marked out into streets and holdings, and eventually sold by auction for bazaars, to be built on some orderly plan of the design forwarded for approval, each holding having a bazaar, verandah, store, living and cook-rooms, and back-yard; the streets and houses are so arranged as to allow of their easy drainage to the main sewer, the line of which is shown as proposed by Captain Tulloch, while in each of the back streets a latrine for males and females might be provided at a convenient distance.

6. The area that will be made available for the construction of these bazaars in one of the most central and convenient localities of the station, after deducting the roads, equals 8,199 square-yards, which, at what is considered a moderate rate for so eligible a trade site, viz., 100 Rupees per holding of 65 square-yards, as arranged in the p[illegible], will produce a return of Rupees 12,600, and this might, as a further inducement to persons willing to occupy this locality, be collected from them in four annual equal instalments.

7. If sanction is accorded to the work, it may be commenced at once: the preparation of the plans and estimates called for with reference to the subsidiary house and street drainage are under preparation, but will, from the number of details necessary to be gone into in regard to drainage of each holding, &c., take some time before it can be submitted in a complete form.

8. The value of the land and houses which must be purchased before anything is done towards the reclamation scheme amounts, according to the Tahsildar's estimate, to somewhere below 15,000 Rupees; but I dare say this amount will, when closely examined by the Collector, be reduced, and still further reduced by giving the parties concerned other sites for building upon as part of their compensation.

9. The estimate submitted allows of the work being performed by coolies; if done by convicts the only cost will be that for plant, tools, and Carpenters necessary for laying the rails, &c., &c.

No. 307.

ORDER THEREON, 12th May 1868, No. 1,500.

CIVIL WORKS, No. 34.

1. In connection with his scheme for the drainage of Ootacamund Captain Tulloch brought under the consideration of Government a proposal for the reclamation of the swamp at the head of the Ootacamund lake, and the project being admitted on all hands to be most

Proceedings of the Madras Government, Public Works Department,
12th May 1868.

desirable, the Superintending Engineer was requested to obtain and submit a detailed plan and estimate of the work.

2. In compliance with this requisition Colonel Walker submits a scheme prepared by Major Farewell, which differs, however, from that proposed by Captain Tulloch. The latter Officer recommended that a channel should be cut, wide enough for two boats to pass each other, from the lake to the head of the swamp, and that the earth required for reclaiming the swamp should be excavated from the upper portion of the lake and taken by boats and deposited at the head of the swamp. Major Farewell does not consider this portion of the scheme to be feasible as, the whole of the upper portion of the lake being under water, and the margin all swampy ground, no earth can be obtained from that locality. He accordingly proposes to cut down part of the road which runs along the eastern side of the lake to a dead level, and to deposit the earth thus obtained along the shores of the lake up to the margin of the supply channel, and over the morass, so as to close up the lake and keep the edges of the stream well defined above high-water mark, thus forming a level plain on each side of the channel. The ground on the eastern side of that channel would then be available for conversion into a cricket ground and public gardens, and that on the western side near the market for buildings systematically laid out with all proper sanitary provisions.

3. The Government have given their careful consideration to the alternative schemes thus laid before them, and are in favor of that proposed by Major Farewell, which will improve the high road in the vicinity of the lake, and, without disturbing the mud and silt, will cover in all the swampy ground at the head of the lake with good wholesome earth. His Excellency in Council accordingly resolves to sanction the estimate of Rupees 23,000 submitted by the Superintending Engineer, and to direct that measures be at once adopted for the purchase of the private property referred to by Major Farewell. The convicts might at once be employed upon the road-cutting.

4. In carrying out the scheme, it is of great importance that no houses should be allowed to remain between the lower bazaar road and the margin of the lake; that that margin should be the first part to be cleared and covered with earth, and kept quite sweet and dry; that a strict prohibition should be issued against throwing rubbish there, and that the natives should be absolutely debarred from repairing there for the purposes of nature. The edge of the lake along that side should be filled in to some distance, and care should be taken to lay gravel and stones along the margin so as to protect the earth from the abrasion of the water or waves. The supply channel to the upper end of the lake should be cut quite straight and deepened, and the drainage of the market should be cut off from the supply channel and lake at once, and removed artificially.

5. No details are furnished of the compensation to be paid for the land and houses which will have to be purchased; but as the Superintending Engineer reports that convict labor will be largely used, it is believed that the estimate of Rupees 23,000 will be found sufficient to meet all charges.

6. The Government desire that the whole work should be put in hand without delay, and they resolve to place a sum of Rupees 13,000 at the disposal of the Superintending Engineer for the purpose from the reserve under "Miscellaneous

Public Improvement," to which head a sum of Rupees 9,000 will be transferred from the reserve under " Communications."

(True Extract.)

(Signed) CHARLES A. ORR, Colonel, R. E.,
Secretary to Government.

To the Superintending Engineer, 7th Division, with 1 Estimate, 4 Surveys, and 1 Report.
" Public Department.
" Revenue do.
" Controller of Public Works Accounts.
" Accountant General.

Exd. S. T. Augustin.

No. 137. Read the following Proceedings of Government in the Public Works Department, dated 12th May 1868, No. 1500.

Passing orders for the immediate commencement of the Ootacamund Drainage Scheme. } (Vide Proceedings Pulic Works Department, dated 12th May 1868, Nos. 306 & 307).

No. 138. ORDER THEREON, 18th May 1868, N
Communicated to the President of the Municipal Comm

To the President of the Municipal Commission, Ootacamund.

Exd. F. R. Bentleman.

No. 174. Read the following letter from the Sanitary Commissioner for Madras, to the Chief Secretary to Government, Fort Saint George, dated Madras, 25th October 1869, No. 3138.

I have the honour to submit, for the consideration of Government, a few remarks upon the water supply at Ootacamund, now in course of provision.

2. The water of these Hills, as procured from sources of supply, at elevations above the risk of contamination, and whether derived from perennial springs or from artificial impounding reservoirs, has been pronounced by Mr. Broughton, after chemical analysis, to be remarkably pure.

3. But there is abundant experience to show that, in order to maintain this condition of purity, it is necessary to adopt the principles of storage and distribution recognised in Europe.

"The practical solution in fact of the question of water supply in India is," as has been remarked by the Army Sanitary Commission in their Memorandum transmitted by the Right Honourable the Secretary of State with his Despatch, No. 12, (Sanitary,) dated the 24th June of the current year, "the same as in London."

4. The leading principles applicable to the conditions of supply to be adopted at Ootacamund may be stated as follow:—

1*st*.—That the sides and slopes of the impounding reservoirs should be most strictly conserved and especially kept free from cultivation requiring manure.

2*nd*.—That the water after filtration should be passed into covered reservoirs, and thence be distributed by pipes or closed conduits with the object of excluding it from light and air, during the whole course of its circulation after filtration.

5. The proposed scheme makes no provision for security against deterioration, and it requires little prescience to predict that before the water reaches the consumers, it will, in its flow along lines of open channels, be so contaminated by *inorganic* matters dissolved out of the soil, and *organic* matters communicated to it by the numerous methods of contamination associated with the habits of the natives of this country with which the Government are so well-acquainted, as to be quite unfitted for domestic purposes.

6. At Simla this has proved to be the case. Water, which at its source was of the purest quality, was found ere it reached the consumers, to have become most impure, and to be the actual means of diffusion of sickness. There can be little doubt that the same results will follow at Ootacamund, if the same system of supply by open channels is followed.

7. The Government, I am aware, have given full consideration to the importance of this subject, but while fully recognising the correctness of the principles of storage and distribution by pipes or closed conduits advised, are deterred by the additional expense attendant upon the system.

8. I would respectfully submit, however, that all money expended in giving the inhabitants of this favoured sanitarium a water supply upon the system of open channels, and without most rigid conservancy of the gathering grounds and filtration, will prove to be money wasted. The supply will by slow, but sure degrees be so contaminated as to be unfit for domestic use.

9. Should filtration and the method of distribution of the *entire* supply by pipes be impracticable on financial grounds, it is most desirable that at least a portion of the supply, sufficient for domestic use, should after filtration be brought from the impounding reservoirs by pipes, and conducted into fountains or reservoirs, placed in convenient localities throughout the station.

10. These reservoirs or fountains need not be numerous; but it is certainly most advisable that the community should have it in their power to procure a pure water for drinking and culinary purposes, and a comparatively small number of the suggested fountains would place it in the power of every one to command pure water for domestic use.

11. It would be for the Municipality, in communication with the Executive Engineer, to determine the number, site, and construction of these fountains.

12. The material of which they should be constructed requires consideration. Mr. Broughton recently had a practical illustration of the necessity for attending to this point. For the convenience of his laboratory he led a stream of water, (possessing such purity that he was able to substitute it in all chemical processes, for distilled water) into a cistern constructed of ordinary brick and mortar. He found, however, that the water dissolved out so much of the lime salts that it was no longer fitted for use in his laboratory.

13. The fountains should, therefore, I think, be of iron; not that a little impregnation of the water by carbonate of lime would, in a sanitary point of view, be of much importance. In an economic sense it has more significance; still it is desirable to maintain, to the fullest possible extent, the original purity of the water.

These fountains might be provided with a number of "careless" cocks to prevent wastage.

14. But the details of the scheme which I have ventured to shadow forth for the favourable consideration of Government, would have to be considered by the Executive Engineer in communication with the Municipal Commission.

15. The cost of the scheme will not, I trust, be found so great as to militate against its entertainment. In the face of the impossibility—owing to the great expense of bringing the *whole* supply by iron pipes—it offers a solution of the difficulty of the question of providing a limited pure supply under conditions that exclude all possible sources of pollution.

16. I had the advantage of an interview with Colonel Farewell on the subject. He was pleased to express his approval of the scheme, and indeed appeared to accept it as quite practicable, and—as a measure calculated to meet the wants of the station—deserving of every consideration.

17. The main pipes I understood him to say might be of glazed earthernware as they would not be subjected to much pressure. The distribution pipes to the fountains would have to be of iron.

18. By the term "fountains," I do not mean any kind of reservoir into which vessels can be dipped at the risk of contamination of the supply. They might consist of iron reservoirs somewhat resembling the "pillar posts" recently erected in the station, with four "careless" cocks, from which at all times a pure supply

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could be drawn under conditions that would put it out of the power of any one to contaminate it.

19. I think it also necessary to add a caution regarding the conservancy of the impounding reservoirs near Major Morgan's property, and which is destined to supply the northern side of the station. The sides and slopes of part of the gathering grounds of that reservoir are under cultivation, and the land is heavily manured. The possibility, indeed the certainty, of the supply being thus contaminated at its fountain head must not be lost sight of. No precaution in fact should be omitted that may tend to maintain the purity of the supply, and heavy manuring of any portion of the gathering grounds will communicate impurities of the most dangerous nature.

20. The measures, then, I think it necessary on sanitary grounds to press upon the consideration of Government before further progress is made in the works now under execution, are—

1*st.*—That any further extension of cultivation upon the sides and slopes of the lands constituting the gathering grounds of the reservoir be prevented, and the grounds themselves strictly conserved;

2*nd.*—That a filter or filters be made for filtration of a limited supply of water for drinking and culinary purposes; that from these filters the water be made to pass into a closed reservoir or reservoirs (clear water tank); and

3*rd.*—Thence be distributed by pipes to fountains placed at sites to be determined by the Municipal Commission and Executive Engineer.

No. 175. ORDER THEREON, 30th November 1869, No. 1627.

In the foregoing letter the Sanitary Commissioner remarks on the water supply at Ootacamund, and offers suggestions for securing for the residents at that station a moderate supply of pure drinking water.

2. The Sanitary Commissioner's suggestions, briefly stated, are—that any further extension of cultivation upon the sides and slopes of the reservoir should be prevented and the grounds strictly conserved; and that, as the supply to each house of pure water would entail a very great expense, fountains should be erected at convenient spots in the station, so that the residents would be able to obtain water which has been stored in covered reservoirs—filtered—and led in earthenware, and where necessary, in iron pipes to the fountains.

3. His Excellency the Governor in Council approves of the Sanitary Commissioner's suggestions, and directs that a copy of his letter be furnished, through the Public Works Department, to Colonel Farewell, the Executive Engineer, with a view to his preparing, in communication with the Municipal Commissioners, plans and estimates for the proposed scheme.

4. It will also be suggested to Colonel Farewell, for inquiry, whether it may not be possible to find suitable clays on the Neilgherry Hills, and to manufacture earthernware pipes at Ootacamund itself.

5. The Commissioner of the Neilgherries will be requested to abstain fr granting any portion of the lands in the vicinity of the reservoir for cultivati and to arrange for the grounds being strictly conserved.

(True Extract.)

Chief Secretary

To the Public Works Department.
" Sanitary Commissioner.
" Commissioner of the Neilgherry Hills.
" Revenue Department.

Exd. J. Wright.

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Proceedings of the Madras Government, Public Works Department, 19th January 1870.

No. 401. Read the following letter from the Superintending Engineer, 7th Division, to the Secretary to Government, Public Works Department, dated Coonoor, 8th January 1870, No. 161:—

The sum of Rupees 19,295, excess outlay on the Lawrence Asylum Works over the reduced allotment, for which in G. O., No. 4,008, of 24th December I was ordered to provide funds by transfer from other works, has been increased to Rupees 26,683 by the expenditure shown in November Progress Report. Lieutenant-Colonel Farewell had my written orders to stop the works on the 18th October; but these were not acted on in consequence of his having been given to understand by His Excellency the Governor and by yourself personally that transfers would be forthcoming from other works. Such expectations were not realized, and the final suspension of operations did not take place till the 18th November. Had my first instructions been carried out I should not have had so large a sum to provide at the expense of other works in the division.

2. As it is I have had to suspend all operations on the Talook Cutcherries at Erode and Dharapooram and Munjerry, and on Subsidiary Jails in Coimbatore and Canara Districts, and on the Beypore Chuttrums in Malabar. The actual amounts realized from these and other sources are particularized below, and I have the honour to request that the formal sanction of Government may be accorded to the requisite transfers:—

	RS.
Talook Cutcherry and Subsidiary Jail at Erode	2,026
Do. do. at Dharapooram.	3,652
Do. do. at Munjerry ...	1,329
Subsidiary Jails in Coimbatore District	7,420
Do. in South Canara District	2,138
Chuttrums at Beypore	2,183
Road from Ootacamund to the head of the Goodalore Ghaut	3,600
Road to connect the two Government Plantations at the Pykara Falls with each other and with the high road from the Goodalore Ghaut to Ootacamund, including a bridge over Pykara River	2,000
Reclamation of the swamp at the head of the lake at Ootacamund	1,500
Burghoor Ghaut New Trace	835
Total ...	26,683

No. 402. Order thereon, 19th January 1870, No. 209.

ACCOUNT, No. 49.

As the Government will require all savings other than Military to meet expenditure already incurred without or in excess of allotments, they regret that they are unable to sanction the proposals contained in this letter. The amount* surrendered by the Superintending Engineer in paragraph 2 will accordingly be held at the disposal of Government,

* Rupees 26,683.

and the excess outlay on the Lawrence Asylum buildings must be left to be adjusted by savings under "Military" before the close of the year.

(True Extract.)

(Signed) CHARLES A. ORR, Colonel, R. E.,
Secretary to Government.

To the Superintending Engineer, 7th Division.
" Controller of Public Works Accounts.

Exd. A. S. Rodgers.

No. 230. Read the following Proceedings of the Madras Government in the Public Department:—

Passing orders on a letter from the Sanitary Commissioner regarding the water-supply of Ootacamund. } (Here enter 30th November 1869, No. 1,627.)

No. 231. ORDER THEREON, 14th December 1869, No. 3,907.

CIVIL WORKS, No. 27.

COMMUNICATED to the Superintending Engineer of the 7th Division, who will call upon Colonel Farewell to submit the plans and estimates referred to in paragraph 3, and to report after due inquiry on the subject of paragraph 4.

(True Extract.)

(Signed) CHARLES A. ORR, Colonel, R. E.,
Secretary to Government.

To the Superintending Engineer, 7th Division.
" Public Department.

Exd. E. C. Shunker.

Govt. of {1869} Mad

PUBLIC WORKS

To

THE SUPERINTENDING ENGINEER

7TH DIV

&c., &c.,

Dated December, 14th.

Read.

G. O., 14th December 1869, No. 3

DECEMBER.

Nos. 230-231

Water-Supply at Ootacamund.—Proceed-
ings Public Department, passing orders on
the letter from the Sanitary Commissioner
for Madras submitting his remarks upon
the water-supply at Ootacamund in the
Coimbatore District now in course of
provision, communicated to the officer
concerned with instructions.

1869
53

Proceedings of the Madras Government, Public Works Department, 19th January 1870.

No. 403. Read the following Proceedings of the Board of Revenue, dated 13th December 1869 :—

Read the following letters :—

From the Commissioner of the Neilgherry Hills, to the Acting Secretary to the Board of Revenue, dated Ootacamund, 18th November 1869, No. 165.

PROCEEDINGS of the Board of 9th November 1869, No. 8,274, received to-day regarding reduction made in certain Budget allotments.

2. In the list, under the head *Miscellaneous Public Improvement*, compensation for land taken up for the Reclamation and Water-supply Works at Ootacamund, Rupees 20,000, are withdrawn. I lose no time in reporting that of this amount I have already spent and paid away Rupees 16,299.

3. I shall stop all further payments till I get further orders.

From the same officer, dated Ootacamund, 30th November 1869, No. 174.

REFERENCE, Board's Proceedings, No. 8,417, of the 13th November 1869.

I beg to report that the expenditure of Rupees 4,039 under "Land Revenue—Miscellaneous" without a Budget grant, alluded to in paragraph 10, was incurred on the sanction recorded in G. O., No. 53, of 9th January 1869. Rupees 20,000 was budgetted for by the Department Public Works for the present year. Considering this provision a sufficient authority, I continued to pay compensation to proprietors of land already taken possession of by Government in carrying out the Swamp Reclamation and Water Projects, although no formal transfer of funds had been made from the Department Public Works to the Revenue Department.

2. The Government, in paragraph 1 of their Order of 9th January above mentioned, said they relied upon me to make the most economical arrangement I could, and this I could only do with the money in hand. I noted against the Budget grant "estimate awaited" and concluded that the Department Public Works would furnish this in due course.

3. Up to the present a sum of Rupees 16,299 has been paid in compensation, as already reported by me after perusal of Board's Proceedings, No. 8,274, of the 9th ultimo, and, although I shall now pay no more until I hear again, I must remind the Board that the Government have in every case actually taken possession of all the land required by the Department Public Works for the Reclamation and Water Projects, and the owners of the land not unnaturally demand a prompt settlement.

4. With regard to the over-debit of Rupees 45 under "Extra Tentage-Land Revenue," I beg to observe that the amount budgetted for (Rupees 500) is quite inadequate for the purpose. That for 1869-70 being the first Budget for this district, I hope the Board will see reason to make allowance for the error, and permit me to transfer to this head the unexpended balance under some other.

5. For the explanation of the excess expenditure on Peons' belts and badges I beg to call the Board's attention to their Proceedings of 20th August last, No. 6,255, permitting me to meet the charge out of the provision for office furniture.

6. The over-debit under Contingencies has arisen from the fact that no funds are available for printing blank forms of accounts, etc., in the Budget for my district. This allotment has accordingly been debited with the charge. The circumstance was alluded to in my letter to the Board, Account Department, No. 180, of the 8th November 1869.

7. Adverting to the overcharge of Rupees 83 "Law Charges—Miscellaneous," I beg to remark that the full amount of law expenses has been [illegible]d, and appears to credit in my accounts for September 1869 ; the Budget grant of R[illegible]fore, under this head remains untouched.

From the same officer, dated Ootacamund, 7th December 1869, No. 179.

With reference to my letters to the Board of 18th and 30th November 1869, Nos. 165 and 174 respectively.

In these letters I informed the Board of the circumstances under which I had paid away Rupees 16,299 out of the Budget allotment of Rupees 20,000 for the present year in compensation to parties whose land has been taken up by the Public Works Department for the Ootacamund Reclamation and Water Projects, and I stated that I would pay no more until I received further orders.

2. Since writing the above, however, I find I am being pressed on all sides for a speedy settlement by Mr. Rielly, Mr. Griffiths, Hussain Bhava and others, and I do not well see how I can avoid payment much longer lest the parties put me into Court. The last case is especially urgent; we have been contending for six months past. He began by claiming Rupees 7,000, but has now come down to Rupees 1,400 and wants a settlement.

3. I regret that under a misapprehension I omitted to apply for a formal transfer of Rupees 20,000 from the Public Works Department to the Revenue Department, and I beg to make the application now, for if the parties press, as they seem disposed to do, we cannot avoid paying, being in possession of their land.

Submitted for the orders of Government.

2. It is observed from the statement appended to paragraph 2 of the Government Order, dated 8th October 1868, No. 3,247, Public Works Department, that Rupees 20,000, provided in the Public Works Budget of the current year for compensation for lands taken up for the Reclamation and Water-supply Works at Ootacamund, has been withdrawn, though a large sum, amounting to Rupees 16,299, appears to have been already spent out of the provision.

3. In paragraph 3 of the second letter above recorded the Commissioner states that he will now pay no more until further orders; but that in every case all the lands required for the purpose have been actually taken possession of, and that the owners will demand a prompt settlement.

4. In the third letter it is reported that the owners press for an immediate settlement.

Referred to the Public Works Department with reference to the Proceedings in that department dated 8th October 1869, No. 3,247.

Fort Saint George,
18*th December* 1869.

(Signed) H. WELLESLEY,
Acting Under-Secy. to Govt.

No. 404. Order thereon, 19th January 1870, No. 210.

ACCOUNT, No. 50.

Item No. 423 of Budget of 1869-70.

As it appears from these papers that the Commissioner of the Neilgherries has actually disbursed a sum of Rupees 16,299 towards the liquidation of claims to compensation on account of land taken up for the Reclamation and Water-supply Projects at Ootacamund, and that pressing demands are being made upon him for the payment of sums still due, the Government resolve to direct that of the amount held at their disposal in G. O., No. 209, of the 19th January 1870, Rupees 20,000, as noted be[illegible] be made available for immediate [illegible]ent to the Commissioner of the Neilgherries:—

Govt. of 1870 Madras.

PUBLIC WORKS.

To

THE SUPERINTENDING ENGINEER,

7th Division.

&c., &c., &c.

Dated January, 19th.

Recd.

G. O., 19th January 1870, No. 209.

JANUARY.

Nos. 401-402

Lawrence Asylum Buildings at Ootacamund.—Passing orders on the letter from the Superintending Engineer of the 7th Division proposing certain transfers of funds to meet the excess outlay on the Lawrence Asylum Works at Ootacamund, in the Coimbatore District.

182/54

Proceedings of the Madras Government, Public Works Department, 19th January 1870.

From		To	
	RS.		
COIMBATORE.—Talook Cutcherry and Sub-Jail. Estimate Rupees 25,560, sanctioned in G. O., No. 3,339, of 1868. Budget Item No. 67	2,026		
Do. —Do. at Dharapooram. Estimate Rupees 25,040, sanctioned in G. O., No. 3,339, of 1868. Budget Item No. 68...	3,652		
MALABAR.—Do. at Munjery. Estimate Rupees 25,000, sanctioned in G. O., No. 3,339, of 1868. Budget Item No. 70 ...	1,329		
COIMBATORE.—Sub-Jail. Budget Item No. 137	2,237		
SOUTH CANARA.—Do. do. No. 139 ...	2,138		
MALABAR.—Chuttrums at Beypoor. Estimate Rupees 6,080, sanctioned in G. O., Nos. 201 and 3,958, dated 21st January 1865 and 21st December 1867	2,183		
NEILGHERRIES.—Road from Ootacamund to the head of Goodalore Ghaut. Estimate Rupees 66,760, sanctioned in G. O., No. 3,261, of 1866. Budget Item No. 338	3,600		
Do. —Road to connect the two Government plantations at the Pykarra Falls with each other and with the high road from the Goodalore Ghaut to Ootacamund, including a bridge over the Pykarra river. Estimate Rupees 24,670, sanctioned in G. O., No. 1,706, of 1868. Budget Item No. 340...	2,000		
COIMBATORE.—Burghoor Ghaut new trace. Estimate Rupees 72,100, sanctioned in G.O., No. 162, of 1866. Budget Item No. 332...	835	NEILGHERRIES.—Compensation for land for the Reclamation and Water-supply Works. Budget Item No. 423...	RS. 20,000
	20,000		

(True Extract.)

(Signed) CHARLES A. ORR, Colonel, R. E.,
Secretary to Government.

To the Revenue Department.
,, Board of Revenue.
,, Superintending Engineer, 7th Division.
,, Controller of Public Works Accounts.
,, Accountant-General.

Exd. A. S. Rodgers.

Govt. of 1870

PUBLIC WORKS.

To

THE REVENUE DEPARTMENT.

&c., &c.

Dated January, 1870.

Read.

G. O., 19th January 1870, No. 210.

JANUARY.

Nos. 403-404

Land.—Certain transfers of land authorized for providing Rupees 30,000 on account of compensation for land for the Reclamation and Water-supply Projects at Ootacamund, in the Coimbatore District.

682/55

Proceedings of the Madras Government, Public Works Department, 10th February 1870.

No. 176. Read the following letter from the Superintending Engineer, 7th Division, to the Secretary to Government, Public Works Department, dated Coonoor, 22nd January 1870, No. 171:—

With reference to late orders of Government directing suspension of all Imperial New Works, I have the honour to submit herewith a memorandum of certain payments which must necessarily be continued to be paid during the months of January, February, and March 1870, and request that the Controller may be authorized to pass such charges against the unspent balances of the works enumerated. Similar authority should likewise be granted for passing the outlay on Jail Establishments, etc., in 1870-71, on such works as have not Budget allotment, until they shall have been duly provided for from the reserve.

MEMORANDUM

Of sums required for outlay on Imperial New Works under suspension.

Cannanore Central Jail.

		Rs.
1.	Salary of Jail Superintendent, Apothecary, Police guard, etc., for January and February 1870, payable in	2,300
	February and March	1,170
2.	Due for tiles already supplied	3,470

Commissariat Godown.

Tiles contracted for and under delivery		405
European Orderly-room and Offices.		
Tiles contracted for and under delivery		607
		1,012
		200
Amount already paid		812
Net balance due before 1st April 1870		

Lawrence Asylum Works.

Jail Establishment and Police guards for December, January, and February, payable in January, February and March 1870 at 400 rupees per month ...	1,200

Reclamation Works.

Jail Establishments and Police guards for January and February, payable in February and March at 285 rupees a-month	570

Water Supply at Ootacamund.

Jail Establishment, Police guard, and Sappers' working pay for January and February, payable in February and March at 170 rupees per month	340

New Coonoor Ghaut Works.

Working pay of Sappers for January and February, payable in February and March	400

(Signed) G. W. WALKER, Colonel, R.E.,
Superintending Engineer, 7th Division.

Proceedings of the Madras Government, Public Works Department, 10th February 1870.

No. 177. ORDER THEREON, 10th February 1870, No. 466.

ACCOUNT, No. 22.

	Rs.
Amount due for tiles supplied to the Cannanore Central Jail	1,170
Do. do. under delivery at the Commissariat Godown and European Orderly-room and Office	812
Working pay of Sappers employed on the new Coonoor Ghaut	400

THE Controller of Public Works Accounts is authorized to pass during the current official year the charges marginally noted. The question of meeting the cost of Jail Establishments and Police guards from the probable savings in the Jail Budget will be considered in the Judicial Department with reference to the Order in that Department, No. 128, of the 26th January 1870.

2. The Superintending Engineer will report how much of the sum (Rupees 340) entered in his list for the Water Supply Project at Ootacamund is for Sappers' working pay, and he will submit a statement showing clearly the specific amounts that will be required for the payment of Jail Establishments in 1870-71.

(True Extract.)

(Signed) CHARLES A. Orr, Colonel, R. E.,
Secretary to Government.

To the Superintending Engineer, 7th Division.
,, Controller of Public Works Accounts.
,, Accountant General.
,, Judicial Department.

Exd. E. C. Shunker.

Govt. of [1870] Madras

PUBLIC WORKS.

To

THE SUPERINTENDING ENGINEER,

7th Division.

&c., &c., &c.

Dated February, 10th.

Read

G. O., 10th February 1870, No. 166

FEBRUARY.

Nos. 176-177

Works.—Passing orders on the letter from the Superintending Engineer of the 7th Division requesting that the Controller of Public Works Accounts may be authorized to pass the charges on certain works, etc., in the division.

682/57

Proceedings of the Madras Government, Public Works Department, 3rd March 1870.

No. 37. Read the following letter from the Superintending Engineer, 7th Division, to the Secretary to Government, Public Works Department, dated Coimbatore, 16th February 1870, No. 187 :—

With reference to G. O., No. 466, of 10th February 1870, I have the honour to report that Rupees 80 (out of Rupees 340) is the probable amount payable to Sappers employed on the Water-supply Project of Ootacamund for January and February payable in February and March.

2. The specific amounts required for payment of establishment on having no allotment in 1870-71 are as follows monthly, viz. :—

	Rs.
Jail and Police.	
Reclamation Work	285
Water-supply Project	130
Sappers.	
Water-supply Project	40
New Coonoor Ghaut	160
Total...	615

3. I have also to bring to the notice of Government that, owing to the delay in passing orders on my letter of 22nd January, No. 171, the following payments have necessarily been made, which the Controller should be authorized to pass, viz. :—

	Rs.
Cannanore Central Jail.	
Salary of Jail Superintendent, Apothecary, Police Guard, for January, payable in February	1,150
Lawrence Asylum Works.	
Jail Establishment and Police Guards for December and January, payable in January and February, at Rupee 400 per month	800
Reclamation Works.	
Jail Establishments and Police Guards for January, payable in February, at Rupees 285 a month ...	285
Water supply at Ootacamund.	
Jail Establishment and Police Guard for January, payable in February at Rupees 130 per month ...	130

No. 38. Order thereon, 3rd March 1870, No. 679.

ACCOUNT, No. 2.

Communicated to the Controller of Public Works Accounts with reference to G. O., No. 466, of the 10th February 1870.

2. As the amounts mentioned in paragraph 2 will be debited to the estimates for the works, they may be passed after the 1st April next in anticipation of a specific allotment of funds.

3. The adjustment of the charges indicated in paragraph 3 will be considered in the Judicial Department with reference to the orders above quoted.

(True Extract.)

(Signed) CHARLES A. ORR, Colonel, R. E.,

Secretary to Government.

To the Superintending Engineer, 7th Division.
,, Controller of Public Works Accounts.
,, Judicial Department.

Exd. A. S. Rodgers.

Govt. of {1870} Madras

PUBLIC WORKS.

To

THE SUPERINTENDING ENGINEER,

7TH DIVISION

&c. &c.

Dated March 3rd

Recd. Encl.

G. O., 3rd March 1870, No. 079

MARCH

Nos. 37-38

Works.—Letter from the Superintending Engineer of the 7th Division requesting that the Controller may be authorized to pass the outlay on certain works in the division, etc., communicated to the officer concerned with instructions.

Proceedings of the Madras Government, Public Works Department, 16th August 1870.

No. 245. Read the following letter from the Acting Superintending Engineer, 7th Division, to the Secretary to Government, Public Works Department, dated Camp at Sattiamungalum, 3rd August 1870, No. 87 :—

1 Commissioner's letter, No. 30, of 16th July 1870, and 3 Statements, A., B., and C.
1 Estimate, No. 17, Rupees 30,029.

WITH reference to your memorandum No. 58, of 18th January 1870, I have the honour to submit an estimate of Rupees 30,029 of the probable total cost of compensation for lands taken up for the Swamp Reclamation and Water Supply Projects at Ootacamund, prepared from the accompanying papers from the Commissioner of Neilgherries, submitted in original. Rupees 20,000 have already been disbursed by the Commissioner, leaving Rupees 10,029 still to be paid.

From the Commissioner of the Neilgherries, to the Executive Engineer, Neilgherry Range, dated Ootacamund, 16th July 1870, No. 30.

IN reply to memorandum, 18th January 1870, No. 58, from Secretary to Government, Public Works Department, (herewith returned,) I beg to send you three statements, A, B, and C, showing the probable cost, on account of compensation, for the Swamp Reclamation A. and for the North and South Water Projects Ootacamund, B. and C.

2. Some delay has occurred in consequence of my having to await the surveys of the various bits taken.

3. Colonel Farewell and I, after consultation, considered that 200 Rupees an acre, as a general rule, would be sufficient to offer the owner. In some instances however, as explained in the Remark column of A, B, and C, I have added to the amount of compensation for special reasons.

4. The figures in red ink are the sums which I have already paid away in compensation out of the 20,000 Rupees placed at my disposal in Government Order, Public Works Department, 19th January 1870, No. 210. Of this amount I subsequently recovered Rupees 2,618-13-3 by sale of materials, and am about to write to Government to be allowed to spend the same in purchasing a street of unsightly Pariah huts near the Agraharum.

5. You will observe that Rupees 17,699 have been spent on Swamp Reclamation compensation and 2,301 on Water Supply compensation, and that I calculate that at least a further sum of Rupees 10,029 will be wanted, namely :—

200	for Swamp Reclamation.
8,209	for North Water supply.
1,620	for South Water do.
10,029	

I must remind you that my figures in A, B, and C are only *estimates*, and it is very probable that owners in some instances will prefer to settle under Act X. of 1870, (Land Acquisition Act,) than accept my offer.

Mr. Friend, for example, in Statement B, demands Rupees 25,000, while I have only offered him 4,000, and I am accordingly about to write to Government to appoint a Judge under the Act above mentioned to determine the proper amount to be given. You will observe that I have put in Statement A. 200 Rupees for Captain Mitchell for a 30-feet roadway, with catch-drains, through his land on the margin of the lake near the Willow Bund.

Proceedings of the Madras Government, Public Works Department, &c.
16th August 1870.

No. 17 of 1870-71.

Estimate of Compensation for Land taken up for Reclamation and Water Supply Projects at Ootacamund.

	Amount already paid.	Amount yet to be paid.	Total.
	Rs.	Rs.	Rs.
Lands taken up for the Swamp Reclamation at Ootacamund	17,699	200	17,899
Do. for the North Water Supply Channel at do. ...	2,301	8,209	10,510
Do. South do. do.	...	1,620	1,620
Total...	20,000	10,029	30,029

CAMP, SATTIAMUNGALUM,
3rd August 1870.

(Signed) W. FAREWELL, Lieut.-Colonel,
Acting Superintending Engineer, 7th Division.

No. 246. ORDER THEREON, 16th August 1870, No. 1,952.

CIVIL WORKS, No. 29. ORDERED to be recorded.

(True Extract.)
(Signed) CHARLES A. ORR, Colonel, R.E.,
Secretary to Government.

To the Superintending Engineer, 7th Division.

Exd. S. T. Augustin.

Govt. of {1870} Madras.

PUBLIC WORKS.

To

THE SUPERINTENDING ENGINEER,

7TH, DIVISION.

Dated August, 16th

Recd. Encl.

G. O., 16th August 1870, No. 1,952

AUGUST.

Nos. 245-246

Swamp Reclamation and Water Supply Projects at Ootacamund.—Letter from the Superintending Engineer of the 7th Division submitting an estimate of Rupees 30,029 of the probable cost of compensation for lands taken up for the Swamp Reclamation and Water Supply Projects at Ootacamund, recorded.

Proceedings of the Madras Government, Public Works Department, 19th September 1870.

No. 321. Read the following letter from the Acting Superintending Engineer, 7th Division, to the Secretary to Government, Public Works Department, dated Coimbatore, 30th August 1870, No. 114 :—

WITH reference to G. O., No. 1,766, of 23rd July, paragraph 1, and No. 2,008, of 20th August, paragraph 4, I have the honour to report that the following sums are required during the current year for the works noted below.

2. G. O., No. 1,312, of 21st May 1870, sanctioned the disbursement of Rupees 80 monthly for the Lawrence Asylum Jail Establishment. When addressing Government on this subject, I was under the impression that the monthly cost of Rupees 312 for Police Guards had already been sanctioned by Government from the allotment of Rupees 70,200 (since reduced to Rupees 66,450) for the Lawrence Asylum Works, Budget Item No. 16 ; but I now find that no such sanction was accorded, and therefore solicit the same, entering the amount amongst the items noted below :—

Reclamation Works.

	RS.
For Jail Establishment and Police Guards for twelve months, at Rupees 285	3,420
Do. for four months, at Rupees 100—*Water supply, Convicts*	400
	3,820

Water Supply Project.

Jail Establishment, Police Guards, and Sappers' working pay, for eight months, at Rupees 170	1,360

Lawrence Asylum.

Police Guards over convicts for twelve months, at Rupees 312	3,744

3. With reference to paragraph 1 of G. O., No. 466, of 10th February 1870, unless orders have been issued in the Judicial Department for the adjustment of the cost of the following Jail Establishments for February and March, regarding which no communication has been received in this office, the following further allotments will be necessary to meet the same :—

Reclamation Works.

	RS.
Jail Establishment, etc., for February and March, at Rupees 285	570

Water Supply Project.

Do. do., at Rupees 130	260

Lawrence Asylum.

(From the Budget allotment.)

Do. do., at Rupees 392	784

4. I beg to bring to the notice of Government that, of the sum of Rupees 1,620 applied for for water service, there remains only Rupees 274 actual balance

of estimate, which estimate, it will be observed by the accompanying copy of a letter* from the Range Officer, was reported so far back as January last as likely to be considerably exceeded for the reasons therein given. The Executive Engineer has been urged, now that the tunnel is nearly completed, to submit the supplemental estimate required as early as possible.

* No. 196, dated 8th January 1870.

No. 322. ORDER THEREON, 19th September 1870, No. 2,253.

ACCOUNT, No. 34.

Part II., Item No. 16.

His Excellency the Governor in Council sanctions the disbursement of Rupees 312 per mensem for the Police Guards employed in connection with the Lawrence Asylum buildings, and authorizes the outlay being charged to the Budget allotment for those works.

2. The only available money at the disposal of Government for appropriation to the Reclamation Works and Water Supply Project is the balance of Rupees 2,204 remaining from the excess Budget provision for the Iyaur bridge in the Trichinopoly District. This amount will be transferred to the works in question in the proportion of Rupees 1,204 and 1,000 respectively subject as regards the former to the approval of the Government of India. When these appropriations are exhausted, the Superintending Engineer will report to Government, and His Excellency in Council will then endeavour to provide the balances (Rupees 2,616 and Rupees 360) still required for charges to be incurred in the current official year.

3. Adverting to paragraph 3 the attention of the Superintending Engineer will be called to the Order of Government of the 31st March 1870, No. 174.

4. The supplemental estimate for the Water Supply Project referred to in paragraph 4, should be laid before Government without further delay.

(True Extract.)
(Signed) CHARLES A. ORR, Colonel, R.E.,
Secretary to Government.

To the Superintending Engineers, 6th and 7th Divisions.
,, Controller of Public Works Accounts.

Exd. S. T. Augustin.

Govt. of {1870} Madras.

PUBLIC WORKS.

To

THE SUPERINTENDING ENGINEERS,

6th and 7th Divisions.

&c., &c., &c.

Dated September, 19th.

Read.

Encl.

G. O., 19th September 1870, No. 2,253.

SEPTEMBER.

Nos. 321-322

Works.—Passing orders on the letter from the Acting Superintending Engineer of the 7th Division, reporting the amount required during the current year for certain works in the Neilgherry Range.

1852
62

Proceedings of the Madras Government, Public Works Department, 14th October 1870.

Read the following letters:—

No. 205. From the Commissioner of the Neilgherries, to the Chief Secretary to Government, Ootacamund, dated Ootacamund, 23rd July 1870, No. 31.

I HAVE the honour to enclose copy of my letter and Statements A., B., C., to the Engineer, giving (according to my estimate) the probable cost to Government of compensation for lands taken for the Swamp Reclamation and Water-supply Channels.

2. The total *estimated* cost stands as follows:—

	Paid. Rs.	A.	P.	To be paid. Rs.	A.	P.
Swamp Reclamation 17,699 (2,618-13-3 recovery)	15,080	2	9	200	0	0
North Water Supply Channel	2,301	0	0	8,209	0	0
South Water Supply do.	.....			1,620	0	0
	17,381	2	9	10,029	0	0

17,381-2-9 + 10,029 = 27,410-2-9, total estimated cost.

3. The Government will observe by Statement A., that Rupees 17,699 have been paid out of the 20,000 Rupees sanctioned in Government Order, Public Works Department, 19th January 1870, No. 210, in compensation for houses and lands taken on account of the Swamp Reclamation, and that the sum of 200 Rupees has still to be paid for a roadway through Captain Mitchell's land on the margin of the lake near the Willow Bund.

Subsequently I recovered Rupees 2,618-13-3 (of the Rupees 17,699) by sale of materials, and this sum is now to credit under the head of Miscellaneous Deposits.

I beg to apply to Government for permission to spend this sum of Rupees 2,618-13-3, or as much of it as may be necessary, in purchasing a row of unsightly pariah huts close to the Agraharam and the Municipal Office.

4. In Statement B. of the north water-supply channel, the Government will note that we have taken acres 12·22 from Mr. Frend, (see sketch and survey statements of area marked D. and E.) Of this land acres 7·46 are grass and 4·76 swamp.

I have calculated Mr. Frend's compensation for the grass land at the rate we have offered to others, namely, Rupees 200 per acre (7·46 × 200 = 1,492), and for his swamp land I have offered him the same rate which Colonel Morgan has accepted for his swamp land ($\frac{A}{3\cdot62}$ acres in sketch), namely, 400 Rupees an acre. (4·76 × 400 = 1,904.)

1,492 + 1,904 =	3,396
Add for inconvenience and delay	604
	4,000

I made Mr. Frend a formal tender of Rupees 4,000, which he declines, claiming Rupees 25,000, as per his letter F., he [illegible]th forwarded.

5. The reservoir work was commenced in May 1868, before the Neilgherry Commission was established.

In August 1868 I wrote formally to all the owners concerned for permission to carry on the works, and to allow the question of compensation to be settled subsequently.

They all gave permission, Mr. Frend among the rest in his letter dated 21st August 1868.

6. It now remains to arbitrate with Mr. Frend under the Land Acquisition Act X. of 1870.

By paragraph 3 of the Act the Local Government is empowered to appoint a Judicial Officer to perform the functions of a Judge under the Act.

I would recommend that Colonel Rose Campbell be appointed.

From the Commissioner of the Neilgherries, to the Executive Engineer of the Neilgherry Range, dated Ootacamund, 16th July 1870, No. 30.

In reply to Memorandum, 18th January 1870, No. 58, from Secretary to Government, Public Works Department, (herewith returned,) I beg to send you three Statements (A., B., C.) showing the probable cost on account of compensation for the Swamp Reclamation (A), and for the North and South Water Projects, Ootacamund (B and C).

2. Some delay has occurred in consequence of my having to await the surveys of the various bits taken.

3. Colonel Farewell and I, after consultation, considered that 200 Rupees an acre, as a general rule, would be sufficient to offer the owner. In some instances, however, as explained in the remark column of A., B., C., I have added to the amount of compensation for special reasons.

4. The figures in red ink are the sums which I have already paid away in compensation out of the 20,000 Rupees placed at my disposal in Government Order, Public Works Department, 19th January 1870, No. 219. Of this amount I subsequently recovered Rupees 2,618-13-3 by sale of materials, and am about to write to Government to be allowed to spend the same in purchasing a street of unsightly Pariah huts near the Agraharam.

5. You will observe that Rupees 17,699 have been spent on Swamp Reclamation compensation, and 2,301 on Water Supply compensation, and that I calculate that at least a further sum of Rupees 10,029 will be wanted, namely :—

Rs.	
200	for Swamp Reclamation.
8,209	for North Water Supply.
1,620	for South Water do.
10,029	

6. I must remind you that my figures in A., B., and C., are only *estimates*, and it is very probable that owners in some instances will prefer to settle under Act X. of 1870 (Land Acquisition Act) than accept my offer.

7. Mr. Frend, for example, in Statement A. demands Rupees 25,000, while I have only offered him 4,000, and I am accordingly about to write to Government to appoint a Judge under the Act above mentioned to determine the proper amount to be given.

8. You will observe that I have put in Statement A. 200 Rupees for Captain Mitchell for a 30 feet roadway, with catch drains, through his land on the margin of the lake near the Willow Bund.

A.

Account particular showing the expenditure on account of Reclamation Project in the District of Neilgherries.

Date of disbursement.	Name of the party to whom disbursed.	Nature of disbursement.	Number and date of Cheque.		Amount of Bill.	Total of the month.	Grand Total.
				1869.	Rs. A. P.	Rs. A. P.	Rs. A. P.
21st Jan. 1869.	V. Kanagasaby Moodelliar ...	Compensation for land.	79	21st Jan.	30 0 0		
Do. do. ...	Vakeel Venkataramier ...	Do. ...	75	20th do. ...	583 5 4		
Do. do. ...	Ramiah for do.	Do. ...	76	Do. ...	10 0 0		
27th do. ...	Cuthaperumal Maistry ...	Do. ...	82	26th do. ...	100 0 0		
Do. do. ...	Periauna Ravoothen ...	Do. ...	83	Do. ...	170 0 0		
Do. do. ...	Chelva Acharry	Do. ...	84	Do. ...	90 0 0		
Do. do. ...	Shunmoogum Pillay ...	Do. ...	85	Do. ...	115 0 0		
Do. do. ...	Peroomall Pillay ...	Do. ...	86	Do. ...	75 0 0		
Do. do. ...	Balavandrum Acharry ...	Do. ...	87	Do. ...	140 0 0		
Do. do. ...	Chinnapien	Do. ...	88	Do. ...	40 0 0		
Do. do. ...	Veerabudra Pillay ...	Do. ...	89	Do. ...	500 0 0		
Do. do. ...	Meenachee Ammall ...	Do. ...	90	Do. ...	142 8 0		
Do. do. ...	Chowrimootoo Acharry ...	Do. ...	91	Do. ...	142 8 0		
Do. do. ...	Sarvoomean	Do. ...	92	Do. ...	125 0 0		
Do. do. ...	Annamali	Do. ...	94	Do. ...	160 0 0		
Do. do. ...	Iyavoo Pundarum ...	Do. ...	95	Do. ...	400 0 0		
28th do. ...	Rajoo Acharry	Do. ...	93	Do. ...	128 0 0	2,921 5 4	
1st Feb. do. ...	Mahomed Sahib	Do. ...	97	30th do. ...	130 0 0		
Do. do. ...	Yacobkhan	Do. ...	99	Do. ...	120 0 0		
Do. do. ...	Maduray	Do. ...	102	Do. ...	40 0 0		
Do. do. ...	Shake Hoosbane	Do. ...	106	Do. ...	70 0 0		
Do. do. ...	Selodrum, Butcher ...	Do. ...	100	Do. ...	42 0 0		
Do. do. ...	Nunjapah Row	Do. ...	102	Do. ...	1,480 0 0		
Do. do. ...	Poodeovai Mootoosawmy ...	Do. ...	98	Do. ...	45 0 0		
Do. do. ...	Adaikalum Acharry ...	Do. ...	104	Do. ...	90 0 0		
Do. do. ...	Moothen	Do. ...	105	Do. ...	96 0 0		
Do. do. ...	Sesha Row	Do. ...	110	Do. ...	34 0 0		
Do. do. ...	Nagappen	Do. ...	101	Do. ...	160 0 0		
Do. do. ...	Theroomalay Colandi Pillay	Do. ...	107	Do. ...	40 0 0		
2nd do. ...	Iyavoo Pillay	Do. ...	111	Do. ...	95 0 0		
3rd do. ...	Mahomed Ibuahun, son of Shake Hoossane ...	Do. ...	108	Do. ...	100 0 0		
Do. do. ...	Ibrahimkhan, alias Meadur Sahib ...	Do. ...	80	21st do. ...	85 0 0		
5th do. ...	Arooloo Maistry ...	Do. ...	103	30th do. ...	250 0 0		
Do. do. ...	Abdool Kawder... ...	Do. ...	116	4th Feb. ...	40 0 0		
Do. do. ..	Seetooram	Do. ...	118	Do. ...	45 0 0		
Do. do. ...	Syed Imam	Do. ...	127	Do. ...	140 0 0		
Do. do. ...	Gungaram	Do. ...	120	Do. ...	30 0 0		
Do. do. ...	K. Ramiah	Do. ...	128	Do. ...	17 0 0		
Do. do. ...	Mahomed Iyeth Sahib ...	Do. ...	114	Do. ...	70 0 0		
Do. do. ...	Nagojee Row	Do. ...	126	Do. ...	250 0 0		
Do. do. ...	Ragconatha Iyer ...	Do. ...	125	Do. ...	650 0 0		
Do. do. ...	Latchmedavy Ammall ...	Do. ...	121	Do. ...	25 0 0		
Do. do. ...	Moonien and Meenachee ...	Do. ...	122	Do. ...	25 0 0		
Do. do. ...	Peramboor Rajoo Acharry...	Do. ...	119	Do. ...	25 0 0		
Do. do. ...	Mooneyappa Row ...	Do. ...	139	Do. ...	24 0 0		
Do. do. ...	Moorthooga	Do. ...	124	Do. ...	10 0 0		
6th do. ...	Condasawmy Pillay ...	Do. ...	115	Do. ...	65 0 0		
10th do. ...	Karcoppanna Pillay ...	Do. ...	129	Do. ...	170 0 0		
11th do. ...	Kistna Pillay	Do. ...	117	Do. ...	55 0 0		
17th do. ...	Mahomed Isoph... ...	Do. ...	141	17th do. ...	80 0 0		
Do. do. ...	Davasagayam Pillay ...	Do. ...	142	Do. ...	150 0 0		
18th do. ...	Mootoosawmy Pillay, Cartman	Do. ...	139	Do. ...	245 0 0		
Do. do. ...	Mootoosawmy Pillay, Rice merchant	Do. ...	140	Do. ...	450 0 0		
Do. do. ...	Iyerrapacharry and Palsamandacharry	Do. ...	143	Do. ...	540 0 0		
Do. do. ...	Tikkojee	Do. ...	137	Do. ...	27 0 0		
23rd do. ...	Coomara Row	Do. ...	133	Do. ...	38 0 0		
24th do. ...	Mr. W. Williams ...	Do. ...	147	23rd do. ...	680 0 0		
26th do. ...	Anthiammall	Do. ...	145	Do. ...	340 0 0		
25th do. ...	Gungajee Row	Do. ...	123	4th do. ...	10 0 0		
27th do. ...	Seerpojee Row	Do. ...	146	23rd do. ...	85 0 0		
1st March do. ...	Papanna, son of Maddanna...	Do. ...	149	27th do. ...	60 0 0		
3rd do. ...	Byrojee Row	Do. ...	150	Do. ...	10 0 0		
10th do. ...	Mrs. Hillier	Do. ...	135	8th March.	60 0 0		
19th do. ...	Rajoo Moodeliar ...	Do. ...	166	18th do. ...	550 0 0		
20th do. ...	Alagoo Pillay	Do. ...	167	Do. ...	200 0 0		
Do. do. ...	Kassimkhan	Do. ...	168	20th do. ...	75 0 0		
22nd do. ...	Batchmean	Do. ...	144	3rd Feb.	75 0 0	7,947 0 0	

Account particular showing the expenditure on account of Reclamation Project in the District of Neilgherries.—(Concluded.)

Date of disbursement.	Name of the party to whom disbursed.	Nature of disbursement.	Number and date of Cheque.		Amount of Bill.	Total of the month.	Grand Total.
				1869.	Rs. A. P.	Rs. A. P.	Rs. A. P.
31st March 1869.	Vanoogopaliah ...	Compensation for land.	148	27th Feb.	40 0 0	1,060 0 0	21,079 2 6
7th April do. ...	Manager, Commissioner's Office, for Nuthumeah ...	Do. ...	178	7th April	70 0 0		
Do. do. ...	Do. for Soobarayalu ...	Do. ...	179	Do. ...	20 0 0		
13th do. ...	Do. for Haseem Khan ...	Do. ...	180	Do. ...	1,323 0 0		
16th do. ...	Teroomalay Colunda Pillay, Rungasawmy Pillay ...	Do. ...	181	12th do. ...	540 0 0		
3rd May do. ...	Manager, Commissioner's Office, for Kanagasaby Moodelliar	Do. ...	184	15th do. ...	90 0 0	2,163 0 0	
10th do. ...	Do. for Rungasawmy Naidoo	Do. ...	192	3rd May ...	1,000 0 0		
20th do. ...	Shaik Hyder	Do. ...	193	Do. ...	150 0 0		
8th June do. ...	Manager, Commissioner's Office, for Sidoo Sait ...	Do. ...	197	19th do. ...	124 0 0	1,274 0 0	
19th Aug. do. ...	Goolam Hyder Sahib ...	Do. ...	262	27th May ...	300 0 0	300 0 0	
Do. do. ...	Manager, Commissioner's Office, for Mrs. Vanegan-	Do. ...	31	14th Aug.	500 0 0		
19th Oct. do. ...	Do. do. ...	Do. ...	76	Do. ...	4 0 0	812 0 0	
3rd Feb. 1870.	Do. Chinnachetty and others	Do. ...	76	15th Oct.	1,181 10 8	1,181 10 8	
	Asanbava and Co., Fakeer Mahomed	Do. ...	157	1870. 3rd Feb.	1,400 0 0	1,400 0 0	6,850 10 8
	Total...	.....	...	...	...	...	17,629 0 6
	Captain Mitchell for Roadway	...	...	...	...	...	200 0 0
	Grand Total...	...	...	...	...	...	17,829 0 0

OOTACAMUND,
16th July 1870.

* Expended last official year.

(Signed) J. W. BREEKS,
Commissioner.

B.

Compensation for land taken for the North Water Supply Channel.

No.	Name of Property.	Name of Proprietor.	Extent taken.	Amount of compensation.	Remarks.
			Acs. Dec.	Rs.	
1	Snowdon House	General McLeod ...	3 ·46	692	
2	Puttah No. 43	....	0 ·19	38	
3	Do. ,, 43	....	0 ·24	48	
4	Do. ,, 44	Mr. Bonnett ...	5 ·20	40	
5	Do. ,, 45	....	0 ·03	4	
6	Do. ,, 46	Mr. Taylor ...	0 ·20	6	
7	....	....	5 ·03	40	
8		Mr. A. Freud ...	0 ·03	4	
9	Reservoir ... {Swamp ...	....	0 ·20	6	
10	{Do. ...	Colonel Morgan ...	12 ·23	40	Mr. Freud demands Rupees 25,000. I have offered him Rupees 4,000.
11	Oxton House	Mr. Cuchterlony ...		{900 *3,100	
12	Sheddeu do.	Captain Richardson ...	3 ·57	{823 *1,935	
		Reverend Griffiths ...	7 ·19	*3,500	
			0 ·35	55	
			0 ·57	114	

* These amounts are calculated at 460 Rupees an acre, being swamp lands containing peat.
In addition I have added to Mr. Freud's compensation for inconvenience and delay

Compensation for land taken for the North Water Supply Channel.—(Concluded.)

No.	Name of Property.	Name of Proprietor.	Extent taken.	Amount of compensation.	Remarks.
			Acs. Dec.	Rs.	
13	Hill side House ...	Mr. Reilly	0 ·33	†146	† One hundred Rupees extra given for loss of privacy, the channel running through their gardens and close to the houses.
14	Prospect do. ...	Mrs. Eckersall	0 ·14	†128	
15	St. Stephen's Hill ...	Reverend Griffiths ...	0 ·20	46	
16	Kempstow	Mr. Cunliffe	0 ·15	80	
17	Hill side Cottage ...	Mrs. Rae	0 ·14	98	
18	Rosemont	Mr. Cuchterlony ...	0 ·47	94	
19	Woodside	Mrs. Watson	0 ·27	54	
20	Club	Secretary Club	0 ·17	64	
			29 ·85	10,510	
	Deduct already paid as in red ink	....	.....	2,301	
	Remaining to be paid ...	....	.....	8,209	

OOTACAMUND,
16th July 1870.

(Signed) J. W. BREEKS,
Commissioner.

C.

Compensation for land taken for the South Water Supply Channel.

No.	Name of Property.	Name of Proprietor.	Extent taken.	Amount of compensation.
			Acs. Dec.	Rs.
1	Misquiths' Farm	Mr. Misquith	0 ·15	30
2	{Waste land block. Do. } No. 58 ...	Do.	0 ·27	54
3	{Do. Do. } No. 99 ...	Do.	0 ·73	146
4	Waste land near Elk Hill ...	Pestonjee Nuserwanjee... ...	0 ·20	40
5	{Pepbrook ... ... Do.	Do.	0 ·62	124
6	Elk Hill Cottage	Do.	0 ·18	36
7	General Dowker's House	General Dowker	0 ·18	36
8	Eckford Cottage	Mr. Coleman	0 ·20	40
9	Hope Land	Nursecboye	0 ·31	62
10	Rock Lands	T. Onslow, Esq.	0 ·13	26
11	Glencoe Lower Stettenburgh ...	Rev. J. B. Sayers	0 ·35	70
12	Upper Stettenburgh	Mr. J. H. Morgan	0 ·24	48
13	Goats Land	Captain J. M. Martin	0 ·02	4
14	Glenwood	Deputy Commissary Flanagan..	0 ·13	26
15	{Baikie House ... ... Kaity Lodge	Dr. J. Miller	0 ·41	82
16	Cluny Hall	George Lecot, Esq.	0 ·50	100
17	{Bishopsdown ... ... Do.	Reverend T. Dealtry	1 ·58	316
18	Belmont Estate	Colonel Denison and Major C. P. Taylor.	0 ·37	74
19	Fern Hill	Mr. F. Copleston and Major W. H. Wapshare.	0 ·64	128
20	Mowbray House	Colonel Saxton	0 ·36	72
21	Koondah Cottage...	Mrs. Barclay	0 ·01	2
22	Waste below Cedars	.....	0 ·17	34
23	{Colonel Farewell's application ... Gable Cottage	.....	0 ·21	42
		Colonel Farewell	0 ·14	28
			8 ·10	1,620

OOTACAMUND,
16th July 1870.

(Signed) J. W. BREEKS,
Commissioner.

Statement of area taken from Mr. Frend for North Reservoir and Supply Channel.

Area of E.	Acres. ·06	Not taken; to be deducted from 11·20.
Do. of F.	·13	
	·19	
Mr. Frend's extent as shown in Colonel Ouchterlony's Plan	11·20	
Remaining, taken for Reservoir	11·01	
Add Nos. 1, 2, and 3	·45	
Add also supply channel from X. to Y.	·76	
	12·22	Total taken.
Grass	7·46	
Swamp	4·76	
	12·22	Total.

Revenue Survey Office,
Ootacamund,
21*st July* 1870.

(Signed) J. FRASER,
Sub-Assist. Revenue Survey,
for Supt. Revenue Survey.

(Signed) J. W. BREEKS,
Commissioner.

From Mr. A. FREND, Ootacamund, to the Commissioner of the Neilgherries, dated Ootacamund, 19th July 1870.

In compliance with your letter I beg to submit the following statement of the particulars of my claim for compensation for land taken from me for Government purposes:—

Two acres of land were taken for the water channel and the bund.

Nine acres of land were taken for the tank.

About two acres of the latter land had original peat in them. The existence of this peat I shall be prepared to prove. The peat, from a specimen digging, was a yard in depth; So far was ascertained indisputably, but an iron rod driven into the soil brought up indications of the peat being two yards in depth. I have further ascertained that a cubic yard of peat contains about 250 bricks, or two-thirds of a bandy-load. A bandy-load is worth, exclusive of the labour of cutting and the bandy-hire, Rupees 1-12-0. Giving 4,000 yards to an acre, each of the two acres of peat would have produced very nearly 5,000 Rupees. This computation is for a single cube; doubling the depth the produce of each acre would have been worth some 10,000 Rupees.

Two acres of peat at single cube, Rupees 10,000.
At double cube, Rupees 20,000.

5. The remaining seven acres of the nine taken for the tank would, if cultivated with potatoes, have yielded a clear profit of at the least 200 Rupees per acre per annum. An acre should yield from 550 to 600 maunds in two crops per year, and each maund should bring 8 Annas. If the land was *rented* for potatoe cultivation it would bring, at the rate usually paid by the Natives, upwards of a hundred rupees per year for each acre.

Seven acres' crop of potatoes per year, 1,400 Rupees.

Rent of seven acres per year, 700 Rupees.

6. Further, the construction of the tank has deprived me of access to my other peat land, by which I have lost on an average about 2,000 Rupees per year, making for the fourteen months during which the tank has been under construction a total loss of about 2,330 Rupees. There is no access yet. I do not know when there will be.

Loss of 2,330 Rupees by want of access.

7. Lastly, I would state that the cutting off the water is the source of a most serious loss to me, as it prevents my sowing more than one crop of potatoes per year in the land in my possession. Ten acres have been under cultivation, producing until now two crops per year. There are some twenty more acres which when cultivated will not, from the above cause, yield more than one crop per year.

The lowest amount I am prepared to take for the acre, Rupees 25,000.

19*th July* 1870.

(Signed) A. FREND.
(Signed) J. W. BREEKS,
Commissioner.

Transferred for disposal to the Department of Public Works.

(Signed) R. S. ELLIS,
Chief Secretary.

12*th August* 1870.

Referred to the Government Pleader, with a request that he will report upon the mode of procedure to be adopted, and furnish a draft of the terms in which the appointment of Colonel Campbell should be made.

Fort St. George,
19*th August* 1870.

(Signed) CHARLES A. ORR, Colonel, R.E.,
Secretary to Government, P.W.D.

No. 206. From the Government Pleader, Madras, to the Secretary to Government, Public Works Department, dated Ootacamund, 17th September 1870:—

With reference to the Proceedings of Government in the Public Works Department, noted in the margin, referring to me a letter from the Commissioner of the Neilgherry Hills, with its enclosures, for report upon the procedure to be adopted in determining, under Act X. of 1870, the price to be paid to a Mr. Frend for land taken for public purposes, in connection with the water-supply of Ootacamund, I have the honour to submit the following observations.

Dated 19th August 1870.

2. I have conferred with the Commissioner on the subject, and have ascertained from him several particulars not appearing from the papers before me. It appears that the land in question belonging to Mr. Frend, and all the other lands required for the water supply and swamp reclamation schemes, were taken possession of in 1868, permission in writing being obtained from the respective owners for such possession being taken, subject to the subsequent determination of the amount of compensation under the Act.

3. The Acts then in force regulating the acquisition of land for public purposes were Act VI. of 1857, and the amending Act II. of 1861, which are both repealed by Act X. of 1870 from the 1st of June last. By section 2 of this latter Act references in contracts, etc., to the former Acts are to be read as if made to this Act, and under this provision the written permission given by the respective owners might be treated as a contract to sell their lands to Government at prices

to be determined in the manner pointed out by the present Act. The forms prescribed by the former Acts for taking possession of lands for public purposes were not, however, complied with, so that the title of Government to the lands would not, I think, be complete without conveyances from the owners, and in the event of any of them refusing to execute such conveyances, Government might be driven to the necessity of bringing suits to compel them to do so. This would of course be inconvenient, and difficulties might arise from the agreements for sale not being stamped, and in other ways.

4. It appears to me, therefore, that the safest course will be to go through the whole process required by the present Act with regard to all the lands taken for the two schemes in question. The first step will be the publication in the *Gazette* of a declaration, under section 6, that the land is required for a public purpose. The Commissioner informs me that he will immediately furnish the description of the land and the other particulars necessary for such declaration.

5. After the publication of the declaration last mentioned, the Commissioner will go through the forms prescribed by sections 9 to 13 (inclusive) for investigating the nature and value of the claims to the land, and then, in the case of the owners who agree as to the price, make his award under section 14, and in the case of those who refuse the amount tendered to them, refer the matter to the Court under sections 15 and 18.

6. After the award or reference to the Court has been thus made, the title of Government to the land will, under section 16, be complete without any conveyance from the owners.

7. With regard to the appointment of Colonel Campbell to exercise the powers of a Judge under the Act, I was at first doubtful whether that gentleman was a Judicial Officer within the terms of section 3, clause 5, but having ascertained that he is a Magistrate with full powers, and in no sense a Revenue Officer, I think he may properly be appointed. The appointment should be made by notice in the *Gazette*. It may either be for the special purpose of deciding upon Mr. Frend's claim alone, or more generally for deciding upon all claims in connection with the two public works in question, or more generally still for all purposes under the Act within the district. I enclose draft form of appointment for each of the above cases. I would suggest that the second or third form would be more convenient than the first, as I understand from the Commissioner that it is not unlikely that some other owners of land besides Mr. Frend may not agree to the terms proposed.

8. I return all the enclosures forwarded to me with the above Proceedings.

No. 207. ORDER THEREON, 14th October 1870, No. 2,468.

CIVIL WORKS, No. 18.

IN Part II. of the Public Works Budget of 1869-70, a sum of Rupees 20,000 was provided to meet demands on account of compensation for land required for the "Water Supply and Reclamation Works" at Ootacamund.

2. The entire amount having been placed at the disposal of the Commissioner of the Neilgherries, that officer now reports that the allotment has been expended as follows:—

	Estimated cost.	Payments made.	Balance to be provided.
	Rs. A. P.	Rs. A. P.	Rs. A. P.
Reclamation Project	15,260 2 9	15,080 2 9	200 0 0
North Water Supply Channel	10,510 0 0	2,301 0 0	8,209 0 0
South do. do.	1,620 0 0	....	1,620 0 0
Total...	27,410 2 9	17,381 2 9	10,029 0 0

3. The Government are desirous that the whole of the lands particularized in the Commissioner's statements should be taken up with as little delay as practicable, and, in order to this, the sum of Rupees 10,029 still required will be allotted as savings on other assignments are made available. Meanwhile, the Commissioner's letter, together with the opinion of the Government Pleader, will be referred to the Judicial Department, with a view to arrangements being made, in pursuance of the recommendation in paragraph 6 of the former, for the appointment of an officer to perform the functions of a Judge under paragraph 3 of Act X. of 1870.

4. Adverting to paragraphs 5 and 6 of the Government Pleader's letter, the Commissioner will be requested to follow the course therein indicated in respect to all the lands required or taken up for the Reclamation and Water Supply Projects.

(True Extract.)

(Signed) CHARLES A. ORR, Colonel, R. E.,
Secretary to Government.

To the Judicial Department.
" Commissioner of the Neilgherries.
" Superintending Engineer, 7th Division.
" Controller of Public Works Accounts.

Exd. S. T. Augustin.

Govt. of [1870] Madras.

PUBLIC WORKS.

To

THE JUDICIAL DEPARTMENT.

&c., &c., &c.

Dated October 14th.

Read. Encl.

G. O., 14th October 1870, No. 2,468.

OCTOBER

Nos. 205-207

Reclamation and Water Supply Projects at Ootacamund.—Passing orders on papers relative to lands required to be taken up for the Reclamation and Water Supply Projects at Ootacamund.

Proceedings of the Madras Government, Revenue Department, 17th October 1870.

No. 167. Read the following letter from the Commissioner of the Neilgherries, to the Chief Secretary to Government, dated Ootacamund, 15th September 1870, No. 47:—

I HAVE the honour to enclose a Notification and two Statements in reference to land acquisitions for the north and south water-supply channels, and to request you will have the goodness to have them published in the *Fort Saint George Gazette* as required by Act X. of 1870.

2. After consultation with Mr. Handley it seems to me necessary that this declaration should be made in order that the lands (of which we have got possession with the written consent of the owners) should thereupon vest absolutely in the Government as set forth in Section 16 of the Act.

No. 168. ORDER THEREON, 17th October 1870, No. 1,582.

Miscellaneous.

THE Government resolve to declare the land referred to in the foregoing letter to be required for a public purpose under Section 6, Act X. of 1870. The following Notification will be published in the *Fort Saint George Gazette*:—

"Under Section 6, Act X. of 1870, the Governor in Council hereby notifies "that the plots of land in the district of Neilgherries, specified in the subjoined "list, are required for a public purpose, having been selected for the courses of "the north and south water-supply channels for Ootacamund. Plans of the water "course in question may be inspected at the Commissioner's Office at Ootaca-"mund."

List referred to in the foregoing Notification.

No.	Name of property.	Name of proprietor.	Extent. Acs.	Extent. Decimal.
	Land required for the North Water-supply Channel.			
1	Snowdon House...	General McLeod...	3	·46
2	Puttah No. 42...	Unknown	0	·19
3	,, ,, 43...	,, ...	0	·24
4	,, ,, 44...	Mr. Bennett	0	·20
5	,, ,, 45...	Unknown	0	·02
6	,, ,, 46...	,, ...	0	·03
7	.....	Mr. Taylor	12	·20
8	Reservoir. Swamp	Mr. A. Frend	3	·22
9	,, ...	Colonel Morgan	7	·57
10	,, ...	Mr. Ouchterlony	0	·49
11	Oxton House	Captain Richardson	0	·25
12	Shedden House...	Reverend Griffiths	0	·57
13	Hill-side House	Mr. Reilly	0	·23
14	Prospect House	Mrs. Eckersall	0	·14
15	St. Stephen's Hill	Reverend Griffiths	0	·20
16	Kempstone	Mr. Cunliffe	0	·15
17	Hill-side Cottage...	Mrs. Rae	0	·14
18	Rosemont	Mr. Ouchterlony	0	·47
19	Woodside	Mrs. Watson	0	·27
20	Club	Secretary, Club ...	0	·17
			29	·85

Proceedings of the Madras Government, Revenue Department, 17th October 1870.

List referred to in the foregoing Notification.—*(Concluded.)*

No.	Name of property.	Name of proprietor.	Extent. Acs.	Extent. Decimal.
	Land required for the South Water-supply Channel.			
1	Misquith's Farm	Mr. Misquith	0	·15
2	Waste Land Block ... } No. 58.	,, ...	0	·27
3	,, ... } No. 99.	,, ...	0	·73
4	Waste land near Elk Hill	Pestonjee Nesserwanjee	0	·20
5	Pepbrook ... ... }	,, ...	0	·62
6	Elk Hill Cottage	,, ...	0	·18
7	General Dowker's House	General Dowker	0	·18
8	Elkford Cottage	Mr. Coleman	0	·20
9	Hopeland	Nurseeboyee	0	·31
10	Rocklands	T. Onslow, Esq.	0	·13
11	Glencoe Lower Stellenburgh	Reverend J. B. Sayers	0	·35
12	Upper Stellenburgh	Mr. J. H. Morgan	0	·24
13	Goats' land	Captain J. M. Martin	0	·02
14	Glenwood	Deputy-Commissary Flanagan ...	0	·13
15	Baikie House ... ... } Knity Lodge ... ... }	Dr. J. Miller	0	·41
16	Cluny Hall	George Lecot, Esq.	0	·50
17	Bishop's Down... ... ... } Do. ... ... }	Reverend T. Dealtry	1	·58
18	Belmont Estate	Colonel Denison and Major C. P. Taylor	0	·37
19	Fern Hill	Colonel W. Rose Campbell ...	0	·64
20	Mowbray House	Colonel Saxton	0	·36
21	Koondah Cottage	Mrs. Barclay	0	·01
22	Waste below Cedars	Unknown	0	·17
23	Colonel Farewell's application... Gable Cottage ... ... }	Colonel W. Farewell	0	·21 ·14
			8	·10

(True Extract.)

(Signed) R. A. DALYELL,
Acting Secretary to Government.

To the Commissioner of the Neilgherry Hills,
,, the Board of Revenue.
,, the Public Works Department.
,, the Superintendent Government Press.

Ord. F. R. Bantleman.

5-5-81

Govt. of {1870} Madras.

REVENUE.

To

THE COMMISSIONER OF THE

NEILGHERRY HILLS

&c., &c., &c.

Dated October, 17th.

Recd. *Recd.*

G. O., 17th October 1870, No. 1,582.

OCTOBER.

Nos. 167-168.

Land required for Ootacamund Water-supply Channel.—Passing orders with reference to its acquisition under Section 6, Act X. of 1870.

Proceedings of the Madras Government, Public Works Department, 16th November 1870.

No. 290. Read the following letter from the Superintending Engineer, 7th Division, to the Secretary to Government, Public Works Department, dated Camp at Cochin, 5th October 1870, No. 148:—

In submitting a supplemental estimate for the water supply of the station of Ootacamund, called for in G. O. No. 2,253, of 19th September 1870, together with the Range Officer's report on the subject, I have the honour to point out that the excess chiefly represents new and additional work not entered in the original estimate, and ought therefore to be treated more as a new estimate for the purpose of extending the project. The original estimate for the north supply amounted to Rupees 8,000. On reference to the comparative statement it will be observed that the earthwork has been exceeded by Rupees 861, due to the necessity of changing the site of the reservior dam, while the item of Rupees 833-5-8 saved goes towards covering cost of tunnel (undertaken with the sanction of the Superintending Engineer), which sum in all probability would have been sufficient for the work had not more than half of the line of tunnel turned out to be rock of the hardest description, which could only be removed by blasting; and as the site for the pipes and that of the tunnel now completed are the same, the cost of excavating the line for the pipes would have been similarly increased. The southern project has been worked out for its original estimate of Rupees 4,000, the whole of the increase of its present estimate being additions not contemplated when the estimate was framed. The Range Officer's letter explains the additions now estimated for. The dams of both reservoirs have been successfully completed, and the reservoirs have been gradually filled during the south-west monsoon. The northern and main reservoir has reached a depth of 16·8 feet above the floor of its delivery sluice, or 2·7 feet below the crest of its waste weir, while the smaller or southern reservoir, the Range Officer reports, is quite full, and water to a depth of 3 inches has for some time flowed over the waste weir, the height of which, I believe, is 18 feet above the floor of its delivery sluice. The Government Chemist speaks in the highest terms of the purity of the water.

1. Revised Estimate, No. 28, Rupees 23,672.
2. Do., No. 29, ,, 4,722.
3. Plan of Pressure Cistern.
4. Plan of masonry lining to Snowdown tunnel.
5. Range Officer's report No. 124, of 26th September 1870.
6. Register of rainfall, etc.

2. The cost of the requisite arrangements for drawing off the water as near the surface as possible, as pointed out in the papers printed with G. O. No. 1,937, dated 18th June 1868, is entered. This estimate does not, however, include the plan advocated by the Sanitary Commissioner and printed with G. O. No. 3,907, dated 14th December 1869, for the execution of which the Municipality are unable to provide funds. The preparation of an estimate for this work must therefore lie over; but in order to complete the bazaar water supply two pressure reservoirs are now provided for. The probable cost of lining the tunnel, cut through Snowdown saddle with brick has also been included in this estimate; as it is very desirable that the latter work should be completed as early as practicable, I trust Government may be pleased to sanction it, and may have it in their power to allot the required funds, (Rupees 2,500—*vide* estimate,) so as to allow of its being taken in hand at once.

3. The revised estimates now forwarded aggregate Rupees 28,394 against those of Rupees 12,000, sanctioned in G. O. No. 1,508, of 12th May 1868, giving

an increase of Rupees 16,394 requiring the sanction of Government. The expenditure incurred up to end of the past official year is Rupees 11,069-5-5, and the current year's allotment is Rupees 1,657, which sums, together with those of Rupees 360 promised to be provided in G. O. No. 2,253, of 19th September, and of Rupees 2,500 herein applied for, amount to Rupees 15,586-5-5, leaving a balance of Rupees 12,808 to be provided with funds in the outgoing Budget, or from the Reserve of 1871-72.

No. 291. ORDER THEREON, 16th November 1870, No. 2,749.

CIVIL WORKS, No. 22.

In Proceedings dated 12th May 1868, No. 1,508, the Government accorded sanction to two estimates of Rupees 8,000 and Rupees 4,000, respectively, for the supply of drinking water to the public buildings and private residences on the north and south side of the Ootacamund lake.

2. The Acting Superintending Engineer now submits revised estimates of Rupees 23,672 and Rupees 4,722 for the two schemes, together with a letter from the Officer in charge of the Neilgherry Range furnishing detailed explanations of the causes of excess. The revised estimate for the north supply project includes a sum of Rupees 10,000 for the construction of two cisterns which were not provided for in the original estimate, but which are now considered necessary to meet the requirements of the Ootacamund and Khandal bazaars. These cisterns are intended to hold 77,650 and 40,000 gallons, respectively, and are to be supplied from the Marlimund reservoir. The proposed outlay on them represents 63 per cent. of the increase. The former estimate allowed for simply excavating the saddle near Dr. Pope's school and laying down pipes, but it was subsequently determined to tunnel the saddle. It was believed that this change of plan would not materially affect the cost of the work, but rock having been met with for more than half of the line of tunnel, blasting became necessary and has led to increased expenditure. A sum of Rupees 2,500 is provided for lining the tunnel with brick, and the remainder of the excess is due to the arrangements made for drawing off the supply near the surface in accordance with the suggestion communicated by the Government of India in their orders recorded in G. O. No. 1,937, dated 18th June 1868. To this last-mentioned cause is almost entirely due the excess of Rupees 722 over the original estimated cost of the south supply scheme.

3. The Acting Superintending Engineer reports that the water in the northern or main reservoir has reached a depth of more than 16 feet above the floor of its delivery sluice, and that the smaller reservoir is quite full. The water is stated to be of the purest description.

4. In originally giving their approval to the scheme of water supply under consideration, all that the Government contemplated was to bring the water down to the bazaar and to form a reservoir at the source in order to increase and regulate the supply, but they had no intention of carrying out from Imperial Funds any works designed to store or distribute the water in the town. His Excellency in

Council is therefore not prepared to sanction the construction of the two cisterns which, if considered indispensable, should be built at the cost of the Municipality. The open channel has been cut to the vicinity of the church, and as its extension to the village of Khandal should be carried out by convict labour, no appropriation of money for the purpose is needed.

5. With these exceptions the excess over the original estimate for the north supply scheme is passed, and Colonel Farewell will submit an amended estimate showing what the increase of cost will be under these orders. The revised estimate of Rupees 4,722 for the south supply scheme is sanctioned.

6. The expenditure up to the end of the past official year was Rupees 11,069, and a sum of Rupees 1,657 has been allotted during the current official year chiefly to cover the cost of the Jail Establishment, Police guards and Sappers working pay, for which purpose a further sum of Rupee 360 was promised to be provided in G. O. No. 2,253, dated 19th September 1870. In addition to this sum Lieutenant-Colonel Farewell requests that Rupees 2,500 may be at once placed at his disposal for lining the tunnel of the north supply scheme, the balance of the estimates being included in the outgoing Budget. His Excellency the Governor in Council regrets that he is not at present in a position to provide the grant applied for, but he hopes to be able to do so from savings as the year advances.

7. In their orders in the Public Department, dated 30th November 1869, No. 1,627, the Government approved of certain suggestions of the Sanitary Commissioner in connection with the supply of drinking water to the residents at Ootacamund. It appears from the papers now before them that the Municipality at that station do not expect to be able to meet any part of the large outlay which will be entailed by the adoption of the Sanitary Commissioner's proposals. The Commissioners therefore desire the completion of the projects now in hand, leaving the further development of the scheme to be undertaken at some future time, and in this arrangement His Excellency in Council concurs, but the Municipality will distinctly understand that the Government cannot authorize any expenditure of Imperial funds on the Water supply of Ootacamund beyond the amount now sanctioned.

(True Extract.)

Colonel, R.E.,

Secretary to Government.

To the Superintending Engineer, 7th Division.
" Controller of Public Works Accounts.
" Public Department.

Exd. E. C. Shunker.

Govt. of 1870 Madras

PUBLIC WORKS.

THE SUPERINTENDING ENGINEER

NOVEMBER

No. 290 291

682/70

Proceedings of the Madras Government, Public Works Department, 24th January 1871.

No. 398. Read the following letter from the Acting Superintending Engineer, 7th Division, to the Secretary to Government, Public Works Department, dated Camp at Cannanore, 16th December 1870, No. 205:—

One estimate for North Water Supply, Ootacamund, No. 48, Rupees 13,470.

With reference to paragraph 5 of G. O., No. 2,749, of 16th November 1870, I have the honour to submit an amended revised estimate, amounting to Rupees 13,470, in which Rupees 10,000 on account of the cisterns, and Rupees 202 as the cost of the extension of the channel to Kandal, have been omitted, as ordered in paragraph 4 of the G. O. under reply.

2. The total of both estimates, the north (now submitted) and the south (sanctioned in G. O., No. 2,749, of 16th November 1870) water supply, aggregate Rupees 18,192, of which Rupees 11,069-5-5 have been spent up to end of last year, Rupees 1,657 have been provided in G. O., No. 2,253, of 19th September 1870, and Rupees 360 promised in that G. O., and Rupees 2,500 in paragraph 6 of the G. O. under reply, leaving a balance of Rupees 2,606 to be provided in the next year's Budget.

No. 399. Order thereon, 24th January 1871, No. 195.

CIVIL WORKS, No. 30.

In their orders of the 16th November 1870, No. 2,749, the Government, in reviewing a revised estimate of Rupees 23,672 for the supply of drinking water to the public buildings and private residences on the north side of the Ootacamund Lake, declined to sanction from Imperial funds any of the works included in that estimate which were designed for storage or for distribution to the town.

2. Lieutenant-Colonel Farewell was accordingly called upon to furnish the amended estimate, which he now submits and which amounts to Rupees 13,470.

3. His Excellency the Governor in Council sanctions the estimate, but regrets that he is not yet in a position to provide the sum of Rupees 2,860, which it was hoped would be available from savings as the year advanced.

(True Extract.)

(Signed) CHARLES A. ORR, Colonel, R. E.,

Secretary to Government.

To the Acting Superintending Engineer, 7th Division.

" Controller of Public Works Accounts.

Ed. E. C. Shunker.

Govt. of [1871] ...

PUBLIC WORKS.

To

THE ACTING SUPERINTENDING

ENGINEER, 7th Divi...

&c., &c.

Dated January, 24th.

Recd. Encl.

R. O., 24th January 1871, No. 195.

JANUARY

Nos. 398-399

Water supply to the north side of Oo... camund.—Amended estimate of Rup... 13,470 for water supply to the north... of Ootacamund, sanctioned with remar...

682/71

682/71

Proceedings of the Madras Gover...ment, Public Works Department, 16th Ma...ch 1871.

Read the f...ing papers:—

No. 411. Endorseme...nt of th...venue Department.

(Here enter dated 8th February 1871.)

No. 412. From the Commissione of the Neilgherries.

(Here enter dated 16th February 1871, No. 14.)

No. 413. Endorsement of the Revenue Department, dated 9th March 1871.

Proceedings of the Board of Revenue dated 1st March 1871, No. 899:—

Read the following letter from the Commissioner of the Neilgherries, to the Acting Secretary to the Board of Revenue, dated Ootacamund, 4th February 1871, No. 12.

After the despatch of my letter of the 10th January 1871, No. 3, respecting compensation for land taken from Mr. Frend, I discovered errors* in the description and extent of land taken from him. This necessitated my making Mr. Frend another offer, which he is ready to accept if certain additions be made.

* By the Survey Department.

2. The errors were as follow:—

(1). I find the total area taken from him is Acres 12·45 and not Acres 12·22 as originally given by the Survey Department.

(2). Of these Acres 12·45.

11·25 are Swamp.
1·20 ,, Grass.

12·45

Net... 4·76 Swamp.
and 7·46 Grass.

12·22, as before stated.

3. Offering Mr. Frend the same rates as have been accepted by others,* his compensation amounts to Rupees 5,344. I formally tendered him this sum and now enclose his reply to the effect that he is willing to accept my offer provided 15 per cent. be added as allowed under Section 42 of Act X. of 1870, and 6 per cent. in the shape of interest from the

* 400 Rupees an Acre for Swamp.
200 ,, an Acre for Grass

	RS.
11·25 × 400 = ...	4,500
1·20 × 200 = ...	2,240
For inconvenience and delay as offered before	604
Total	5,344

time of taking possession. This will [illegible]e the amount to be paid to Rupees 6,948, as follows:—

	RS.	A.	P.
My offer	5,344	0	[illegible]
15 per cent. on that	80[illegible]	8	0
6 per cent. on do. from date of possession—30th August 1868 to 28th Februar[illegible] 1871, tw[illegible] a half years	802	8	0
Total...	6,948	0	0

I would recommend the Governmet's acceptance of Mr. Frend's proposa[illegible]

4. An early answer will oblige.

ENCLOSURE No. 1.—Letter from Mr. Frend.

SUBMITTED for the orders of Government in continuation of Board's Proceedings, 31st January 1871, No. 479.

TRANSFERRED to the Public Works Department.

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

No. 414. ORDER THEREON, 16th March 1871, No. 791.

CIVIL WORKS, No. 19.

HIS Excellency the Governor in Council authorizes the payment of Rupees 6,948 to Mr. Frend as compensation for such of his land as is required to be taken up for the Ootacamund Reclamation and Water Supply Project.

2. The amount will be provided by the following transfers, and the Commissioner of the Neilgherries will arrange for the adjustment of the claim before the close of the official year:—

	RS.
Tanjore.—New Sub-Magistrate's Cutcherry with two large and two small Jail wards with out-houses at Sheally. Estimate Rupees 23,960, sanctioned in G. O., No. 2,475, dated 28th July 1869	*854
Do.—Deputy Tahsildar's Cutcherry with do. do. at Vedarnium. Estimate Rupees 12,620, sanctioned in the above G. O. ...	*827
Do.—Out-houses for the existing Sub-Magistrate's Cutcherry at Teroovaloor. Estimate Rupees 2,290, sanctioned in the above G. O.	139
Do.—Two small wards to do. at Needamungalum. Estimate Rupees 3,630, sanctioned in the above G. O.	128
Do.—Range Office Building. Estimate Rupees 1,530, sanctioned in G. O., No. 2,221, dated 15th September 1870	*250

* Subject to the sanction of the Government of India.

		RS.
*Tinnevelly.**—Original Works, Communic[illegible]ations		1,860
Trichinopoly.—Minor New Works, "Civ[illegible]il Buildings"		178
Tanjore.—	Do. "Communications"	250
Godavery.—	Do. "Civil Buildings"	145
Do.—	Do. "Communications"	100
Tanjore.—	Do. "Civil Buildings"	16
Do.—Completing the Navigable Canal be[illegible]tween Negapatam and Vedarnium. Estimate Rupees [illegible],08,192, sanctioned in G. O. Nos. 3,101, 2,736, and 3,7[illegible]03, dated 19th October 1865, 29th August 1866, and 26th November 1868, respectively. Budget Item No. 245		†2,201
		6,948

(True Ex[illegible]tract.)

(Signed) CH[illegible]ARLES A. [illegible]ORR, Colonel, R.E.,
[illegible]ecret[illegible]ary to Government.

To the Superintending Engineers 1st, 6th, 7th, and 8th Divisions.
,, Commissioner of the Neilgherries.
,, Controller of Public Works Accounts.
,, Public, etc., Departments.
,, Revenue Department.

Exd. S. T. Augustin.

* Details will be given hereafter.
† Subject to the sanction of the Government of India.

Proceedings of the Madras Government, Public Works Department,
19th September 1872.

No. 272. Read the following letter from the Superintending Engineer, 7th Division, to the Secretary to Government, Public Works Department, dated Camp at Pollachy, 26th August 1872, No. 118:—

I HAVE the honour to submit, for the sanction of Government, a revised estimate* and comparative statement for the water-supply project north side of Ootacamund; the cause of excess over the sanctioned estimate† is fully explained in the accompanying letter‡ from the Range Officer. As the want of water is much felt, more especially in the dry months of the year, I beg that an allotment of Rupees 2,790 may be made in order that the work may be completed within the current official year.

* No. 28 of 1872-73, Rupees 16,260.

† G. O. No. 195 of 24th January 1871.

‡ No. 168 of 22nd August 1872.

No. 273. ORDER THEREON, 19th September 1872, No. 2,227.

CIVIL WORKS, No. 17.

WITH this letter the Superintending Engineer of the 7th Division submits a revised estimate of Rupees 16,260, or Rupees 2,790 in excess of the estimate last sanctioned in G. O. 24th January 1871, No. 195, for the project designed to supply drinking water on the north side of Ootacamund. This increase is fully accounted for by its occurrence chiefly in the tunnel, where an amount of rock was unexpectedly encountered, which it was most difficult to blast and otherwise remove in so confined a space. For the same cause the rates of brick-work and plastering have unavoidably exceeded ordinary local rates. His Excellency the Governor in Council sanctions the revised estimate, and as the early completion of the project is very desirable, the Financial Department will be requested to provide the sum of Rupees 2,790 from the funds at its disposal under Provincial Services.

(True Extract.)

(Signed) G. W. WALKER, Colonel, R.E.,
Secretary to Government.

To the Superintending Engineer, 7th Division, with three Enclosures.
,, Controller of Public Works Accounts.
,, Financial Department.

Exd. T. O'Connor.

Govt. of {1872} India.

PUBLIC WORKS.

To

THE SUPERINTENDING ENGINEER

7TH Division

&c., &c., &c.

Dated September 1872.

Read.

Encl.

G. O., 19th September 1872 No. 2,727

SEPTEMBER

Nos. 272 273

Water-supply Project at Ootacamund.—The revised estimate for the water-supply project on the north side of Ootacamund is sanctioned; the Financial Department is requested to provide Rupees 2,700 from funds under Provincial Services.

To be
Read 8th
682 W 13-3-84
to
Madras Revenue
Office
Lr to Govt 682 W
13-3-84

1872
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PROCEEDINGS

OF THE

OOTACAMUND IMPROVEMENT COMMITTEE,

ASSEMBLED AT THE

GOVERNMENT OFFICE, STONEHOUSE,

On the 14th June, 1881

With reference to G. O., 6th June 1881, *No.* 1,408 *W.*

PRESENT:—

Colonel R. H. Sankey, C.B., R.E., *President.*

MEMBERS.

Major-Genl H. Morgan
Mr. N. A. Roupell
Lieut.-Colonel J. O. Hasted
Major R. H. Meade
Surgeon-Major L. C. Nanney
Surgeon-Major J. Smith
Mr. G. T. Walch
Mr. J. O'Shaughnessy
Mr. W. E. Schmidt

Resolved that two Sub-Committees be appointed as follows:—

No. 1 consisting of

Mr. N. A. Roupell
Dy. Surgeon-Genl. M. C. Furnell
Mr. G. T. Walch
Mr. J. O'Shaughnessy

to consider and report on the present condition of the Water Supply and Drainage of Ootacamund, and the best method of improving both.

No. 2 consisting of

Mr. N. A. Roupell
Major-General Morgan
Surgeon-Major L. C. Nanney
" J. Smith
Mr. W. E. Schmidt
Mr. J. O'Shaughnessy

to report on the best means for removal of the existing objectionable occupation, improving the slaughter houses and markets, and planting and laying out public grounds.

The subjects chiefly calling for the attention of the first of these Sub-Committees are—

1. The adequacy or otherwise of the existing water supply for domestic purposes, for the flushing of drains, as also for such moderate use in regard to public pleasure grounds, gardens, &c., as may be considered indispensable.

(2.) The best means for economising the existing water supply by distributing the same through pipes, or of adding to it if necessary by the construction of one or more reservoirs at eligible sites.

(3.) Whether the reservoir water distributed by pipes, and if necessary filtered, can be considered sufficiently wholesome for drinking, or whether wells should be constructed with this object.

(4.) To what extent houses now insufficiently supplied, but which could be commanded under a system of pipe distribution, may fairly be called on to meet the outlay required for this special service, and whether those houses which have hitherto drawn their supplies from the existing distributing channels may be required to do more than meet the charges for proper valves, supply pipes and cisterns for their individual and special use.

882
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(5.) Whether the scheme for stone-lined drains for the Bazaar, estimated to cost Rs.86,100, meets all the requirements, or must be supplemented to cover the expense of house connections, drainage of back yards, &c.

(6.) What measures are needed to prevent the accumulation of filth in back yards, and the formation of rotting soil in such places.

(7.) What description of intercepting sewer, with flushing arrangements, would be best for securing the removal of sewage from the lake, and its delivery below the bund.

(8.) The outlay estimated approximately for meeting the above, and such other sanitary requirements immediatly connected therewith as may likewise appear to be called for.

The attention of the Second Sub-Committee will be devoted to the consideration of :—

(1.) The best means for bringing under regulation, improving, or if necessary, the entire removal of the existing objectionable occupation thoughout the station, indicating, in the latter case, the most eligible sites to which to remove the habitations.

(2.) The scope of the present Act, whether it gives sufficient power to the Municipal authorities to remove objectionable habitations, and to insure in future that none of a character not approved of by them shall be erected; also whether it confers adequate means for enforcing the proper maintenance of fences and enclosure walls, and the tidy and clean appearance of all land and compounds within the limits, the removal of filth accumulations, ruined walls and objectionable vegetation.

(3.) Whether the appointment of a specially paid Sanitary Officer is advisable.

(4.) The improvements urgently called for in the matter of slaughter houses, butchers' shops, markets, latrines &c.

(5.) The arrangements which should be made for laying out and planting up certain portions of Ootacamund, especially the margins of the lake; also in connection with this, the means for making the present Botanical Gardens of greater public utility than has been the case hitherto, by maintaining in it a nursery of selected trees for free distribution to the Municipality and to private persons anxious to improve the appearance of the place.

(6.) Whether the Superintendent of the Botanical Garden might not with advantage be assigned distinct duties in immediate connection with the planting and ornamentation of Ootacamund, and of extending his duties more expecially to the attainment of the objects now in view, than has hitherto been feasible.

(7.) The funds the Municipality have at disposal for meeting the above and other desirable objects immediatly connected therewith.

(True Extract.)

OOTACAMUND,
15*th June*, 1881.

COLONEL, R. E.
President of Committee.

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PROCEEDINGS

OF THE

OOTACAMUND IMPROVEMENT COMMITTEE,

ASSEMBLED AT THE

GOVERNMENT OFFICE, STONEHOUSE,

On the 14th June, 1881

With reference to G. O., 6th June 1881, No. 1,408 W.

PRESENT :—

Colonel R. H. Sankey, C.B., R.E., *President.*

MEMBERS.

Major-Genl H. Morgan	Surgeon-Major L. C. Nanney
Mr. N. A. Roupell	Surgeon-Major J. Smith
Lieut.-Colonel J. O. Hasted	Mr. G. T. Walch
Major R. H. Meade "	Mr. J. O'Shaughnessy

Mr. W. E. Schmidt

Resolved that two Sub-Committees be appointed as follows :—

No. 1 consisting of

Mr. N. A. Roupell	Mr. G. T. Walch
Dy. Surgeon-Genl. M. C. Furnell	Mr. J. O'Shaughnessy

to consider and report on the present condition of the Water Supply and Drainage of Ootacamund, and the best method of improving both.

No. 2 consisting of

Mr. N. A. Roupell	Surgeor-Major L. C. Nanney
Major-General Morgan	" J. Smith
Mr. W. E. Schmidt	Mr. J. O'Shaughnessy

to report on the best means for removal of the existing objectionable occupation, improving the slaughter houses and markets, and planting and laying out public grounds.

The subjects chiefly calling for the attention of the first of these Sub-Committees are—

1. The adequacy or otherwise of the existing water supply for domestic purposes, for the flushing of drains, as also for such moderate use in regard to public pleasure grounds, gardens, &c., as may be considered indispensable.

(2.) The best means for economising the existing water supply by distributing the same through pipes, or of adding to it if necessary by the construction of one or more reservoirs at eligible sites.

(3.) Whether the reservoir water distributed by pipes, and if necessary filtered, can be considered sufficiently wholesome for drinking, or whether wells should be constructed with this object.

(4.) To what extent houses now insufficiently supplied, but which could be commanded under a system of pipe distribution, may fairly be called on to meet the outlay required for this special service, and whether those houses which have hitherto drawn their supplies from the existing distributing channels may be required to do more than meet the charges for proper valves, supply pipes and cisterns for their individual and special use.

(5.) Whether the scheme for stone-lined drains for the Bazaar, estimated to cost Rs.86,100, meets all the requirements, or must be supplemented to cover the expense of house connections, drainage of back yards, &c.

(6.) What measures are needed to prevent the accumulation of filth in back yards, and the formation of rotting soil in such places.

(7.) What description of intercepting sewer, with flushing arrangements, would be best for securing the removal of sewage from the lake, and its delivery below the bund.

(8.) The outlay estimated approximately for meeting the above, and such other sanitary requirements immediatly connected therewith as may likewise appear to be called for.

The attention of the Second Sub-Committee will be devoted to the consideration of :—

(1.) The best means for bringing under regulation, improving, or if necessary, the entire removal of the existing objectionable occupation thonghout the station, indicating, in the latter case, the most eligible sites to which to remove the habitations.

(2.) The scope of the present Act, whether it gives sufficient power to the Municipal authorities to remove objectionable habitations, and to insure in future that none of a character not approved of by them shall be erected; also whether it confers adequate means for enforcing the proper maintenance of fences and enclosure walls, and the tidy and clean appearance of all land and compounds within the limits, the removal of filth accumulations, ruined walls and objectionable vegetation.

(3.) Whether the appointment of a specially paid Sanitary Officer is advisable.

(4.) The improvements urgently called for in the matter of slaughter houses, butchers' shops, markets, latrines &c.

(5.) The arrangements which should be made for laying out and planting up certain portions of Ootacamund, especially the margins of the lake; also in connection with this, the means for making the present Botanical Gardens of greater public utility than has been the case hitherto, by maintaining in it a nursery of selected trees for free distribution to the Municipality and to private persons anxious to improve the appearance of the place.

(6.) Whether the Superintendent of the Botanical Garden might not with advantage be assigned distinct duties in immediate connection with the planting and ornamentation of Ootacamund, and of extending his duties more expecially to the attainment of the objects now in view, than has hitherto been feasible.

(7.) The funds the Municipality have at disposal for meeting the above and other desirable objects immediately connected therewith.

(True Extract.)

OOTACAMUND,
15th June, 1881.

COLONEL, R. E.
President of Committee.

GOVERNMENT OF MADRAS.

PUBLIC DEPARTMENT.

682
78

23rd May 1877, No. 716.

Sanitary.

Read the following paper :—

No. 81. *From Surgeon-Major W. R. CORNISH, F.R.C.S., Sanitary Commissioner for Madras, to the Officiating Chief Secretary to Government, dated Madras, 19th May* 1877, *No.* 523.

Referring to G.O., No. 610, of 1st instant, I have the honor to remark that this is the first season since the Neilgherry Hills have been occupied by Europeans that cholera has continued for a considerable time in an epidemic form. The early months of the present year were exceptionally dry and the water-supply scanty and probably polluted, but the localization of cholera in the bazaars of our most important sanitarium is a very serious matter, and I would suggest that Dr. Whitton and the Engineer Officer of the range may be requested to submit a further report in regard to the defects of water-supply, and drainage of the native parts of the town.

2. It is stated in Dr. Whitton's report that in the Sanitary Report for 1875, it was recommended that wells should be dug in various parts of the station in anticipation of the scarcity of water, and in the 2nd paragraph that "the natives residing in the town are reduced to the necessity of drinking the impure water of the lake." It would be important to record with reference to this outbreak of cholera how many of the victims drank water from the lake contaminated by sewage and how many obtained their water from purer sources, and probably some explanation might be given why the recommendation to dig wells during the drought were not carried out.

3. The buildings in Mootoocharry have been allowed to grow up in a very unsatisfactory manner so far as sanitation is concerned, and I venture to suggest to His Grace in Council that the whole question of dealing with the drainage of Ootacamund bazaar, and the location of hutting grounds requires careful consideration followed by prompt action in dealing with the evils which now affect the health of the community.

No. 82. ORDER THEREON, 23rd May 1877, No. 716.

Resolved that Surgeon-General Gordon, C.B., with the Sanitary Commissioner in association with the Acting Commissioner of the Nilgiris, be appointed a Committee, to report on the sanitary condition of Ootacamund, and to suggest how it may be improved.

(True Extract.)

D. F. CARMICHAEL,
Offg. Chief Secretary.

To the Sanitary Commissioner, Madras.
" Surgeon-General Gordon, C.B.,
" the Acting Commissioner, Nilgiris.

Exd. T. O'Connor.

182
79

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Buildings and Roads.
Civil Works.

No. 268.

READ—the following letter from Colonel J. BEATTY, R.E., Superintending Engineer, Fourth Circle, to the Chief Engineer, Public Works Department, dated Coimbatore, 2nd January 1883, No. 1:—

I have the honor to submit, herewith, a revised estimate, amounting to Rs. 94,000, for the drainage of the Ootacamund Bazaar.

1 Plan.
1 Estimate.
1 Abstract.
1 Comparative Statement.
1 Duplicate Abstract.

2. The original estimate, which amounted to Rs. 57,200, was submitted with the report of the Committee on Improvements to the Station of Ootacamund, on which orders were passed in Proceedings, Madras Government, No. 286 W., of 1st February 1882.

3. The general plan of the bazaar, showing the position of the proposed drains, which was submitted by the Committee, has been checked and found correct, so that the lengths of the drains entered in the revised estimate are the same as those previously given.

4. The chief causes of the excess in the revised estimate are—

(i) The substitution of stone slab drains set in concrete for brick-in-surki drains on a concrete bed.

The stone-work will, of course, be more durable and cheaper in the end than the brick.

(ii) The original estimate provided only for sectioning the existing rough-stone saucer drains with concrete, and plastering them with cement. It is now proposed to substitute stone slab drains for the old rough-stone work.

5. The rates for the slab drains include the cost of the house connections.

6. Metalling with broken stone was provided for originally on either side of the drains, but now gravelling of greater width has been estimated for.

7. A sum of Rs. 401 is entered for cutting catch drains on the hill side above to divert flood-water and prevent it entering the bazaar.

8. As observed in the report, by means of the proposed drains the liquid sewage which now stagnates in many places and soaks into the soil will be quickly carried off, while the improvement in the appearance of the place will be marked.

No. 269.

ORDER—dated 29th January 1883, No. 314 W., Public Works.

The revised estimate, amounting to Rs. 94,000, for the drainage of the Ootacamund Bazaar, is sanctioned.

2. The excess of Rs. 36,800 over the original estimate for Rs. 57,200 is explained in the Superintending Engineer's letter above recorded.

3. This sanction has been registered as Provincial No. 217 W. of 1882-83 and classified as Miscellaneous Public Improvement, Original Works.

(True Extract.)

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

To the Superintending Engineer, Fourth Circle, with five Enclosures.
" Examiner, Public Works Accounts, with Abstract Estimate.
" Financial Department.

Essl. A. F. Goodall.
Spare Copies

BUILDINGS AND ROADS.
CIVIL WORKS.

Govt. of {1883} Madras.

PUBLIC WORKS.

Dated January, 29th.

Encl.

Recd.

G.O., 29th Jan. 1883, No. 314 W.

Litt 80682 w
813. 3. 84

JANUARY.
Nos. 268-269.

Ootacamund Bazaar.

A revised estimate for the drainage of the —, sanctioned.

Contents, three copies
with papers regarding
Ootacamund Market & Lake
Connecting with
Go 682 w 813. 3. 84

Lith 8068
813. 3

Go 682 [illegible]
[illegible] 3-[illegible]

Market

Written in a
design of Estates
to [illegible] Gul [illegible]
Dr. A Stevens
Indian [illegible]
9/9/81
[illegible]

682/2

Lit. 8068
§ 13. 3

Sanitary Commissioner's Office,

Madras, — 188

109

My dear Sanders

Send you "boiled down" as you desire the outcome of our subcommittee. I have omitted all reasons for our conclusions which were given in extenso in the first draft you saw. I would have sent it long ago but I have been waiting for the Tolls returns. It is not signed for I presume it is only pabulum for a full

30

Sanitary Commissioner's Office,

Madras, 188

109

My dear Sanders

Send you "boiled down" as you desire the outcome of our subcommittee. I have omitted all reasons for our conclusions which were given in extenso in the first draft you saw. I would have sent it long ago but I have been waiting for the table returns. It is not signed for I presume it is only pabulum for a future

80

Lib. 80 f 8

§ 13. 3

Litt 8068.
813. 3

110

upon, but if you wish it
signed return it, & I will
ask Roupell to do it.

Yours sincerely

M. C. Tunnell

Water Supply

	129,000		
Water	75,000		
		204,000	
Water		66,000	
			2,70,000
Drainage	2,10,000		
Kandal	30,000		
			2,40,000
Market & Bundy Stand			2,50,000
Slaughter Houses	15,000		2,70,000
Supply Woodlands	10,000		
Increase to existing plant	10,000		
Add. Cutters & mills	10,000		
Planting avenues	50,000		
~~[illegible]~~	40,000		
Scavenger Cries	10,000		
Bundy Stools, Jordan Petta, Charcoal Village	20,000		
Lighting	10,000		
Products	35,000		
Unproductive	90,000		
Capital due to increase of Estab.	9,00,000		125,000
			8,85,000

4 [illegible]

Prod. Slavon

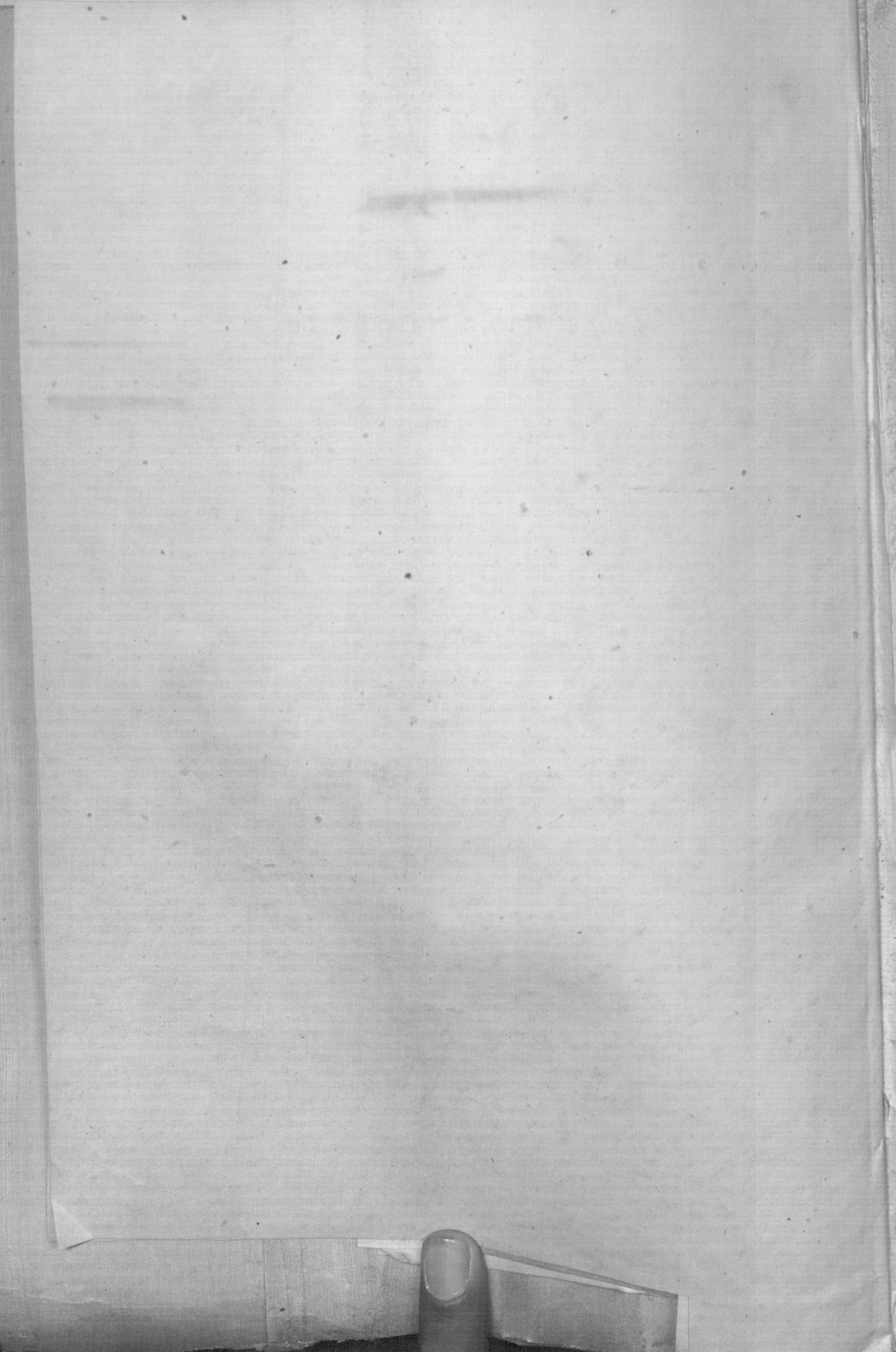
water supply [illegible] — 1,35,000

Damage — 1,20,00

half of the [illegible] 45000

3,00,00





Ootacamund Improvement

Probable cost, of all that is required

115

Water Supply	Delivery Main pipes &c	200,000	250,000
	Probable cost of acquiring possession of Catchment basins	50,000	
Drainage including Kandal			250,000
Removing objectionable Occupations Compensation &c			50,000
New Market			250000 ~~100000~~
Slaughter Houses			20,000
Bundy Stand			20,000
Sweepers Lines &c			10,000
			~~700,000~~ 856,000

35

EXECUTIVE ENGINEER'S OFFICE,

Ootacamund, 12th June 1879.

My dear Colonel.

I am just starting for Coonoor, but my Draftsman will send you the information you require about the Spans of Arrowood.

I will have a look at the Aqueduct cutting as I pass through this afternoon. It has long been cutting down. I have been afraid to touch it.

30

it. It will be a very expensive and tedious job.

The boulder on the Fairlawns road will be removed at once. Thank you for telling me of it.

All such Planting operations as are ever done in Ooty are done by the Municipality. I have nothing to do with them. I should thinks that Mr Jamieson — the Govern^t Gardener would be the best person to undertake the work. I shall be happy to supply you with any plans you may want.

Regarding the Gymkana Race Course, I shall be very happy to give such assistance as I can in drawing up a Plan & Estimate according to your wishes. I should think subscriptions

might be realized, and
loan raised by Debenture
Perhaps the Wellington Race
Stewards might assist with
a small grant, as they are in
funds? I should be happy
to undertake the work if
supplied with funds.

Yours sincerely

[illegible] Morant

Executive Engineer's Office,

Ootacamund, 25th August 1879.

My dear Colonel.

I beg to take the opportunity of sending with my draftsman a Colored plan of the Lake together with a letter and catalogue received from Mr. Jamieson. I calculate each tree will cost Rs one (1) to plant and bring to maturity.

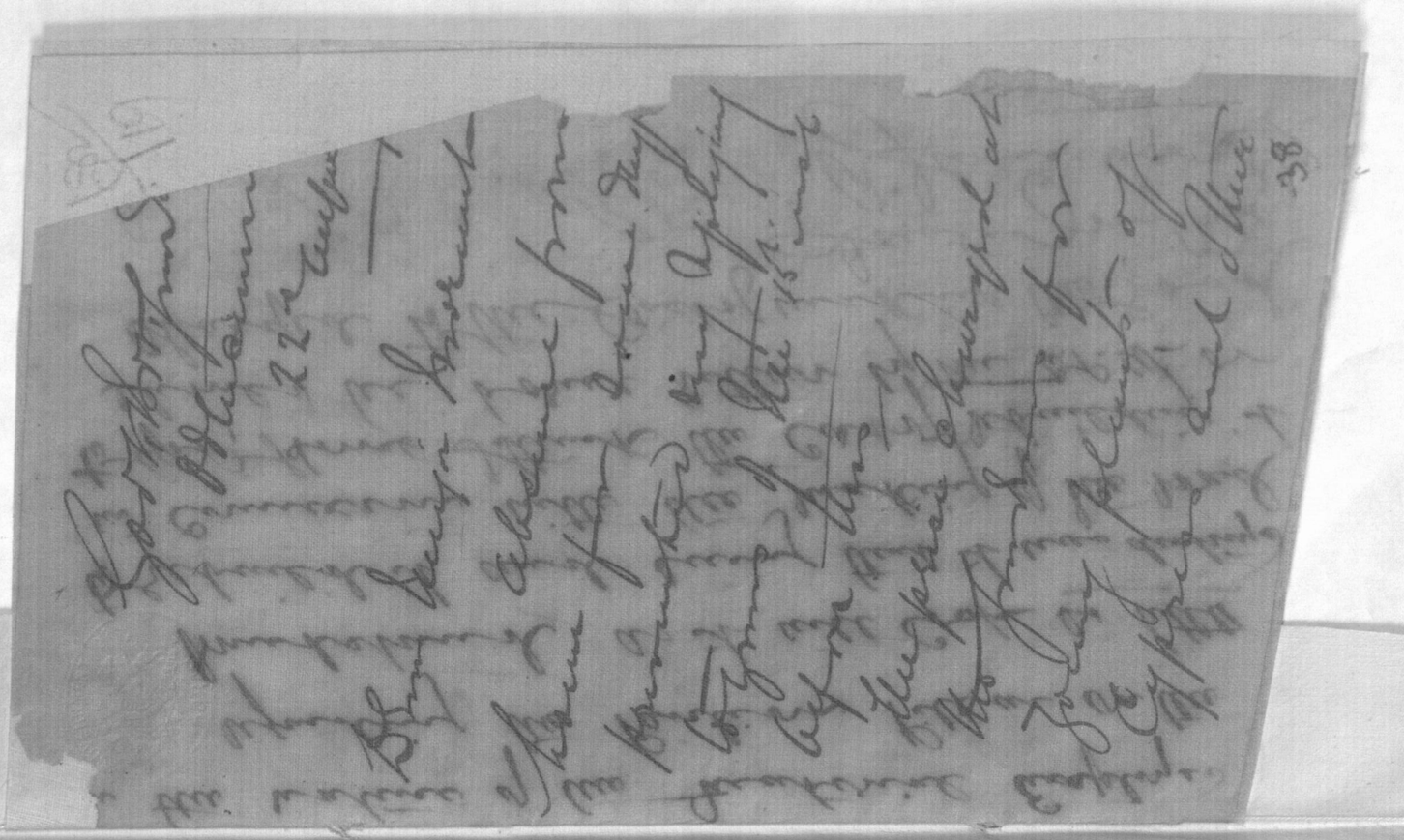
[illegible]

Cost of Seedling	—.4.—
Pitting	—.—.6
Fencing, watching weeding &c. for 3 or 5 years	—.11.6
Total Cost	1.—.—

Please kindly let me know what further information &c. you require, which I need hardly say I shall be happy to supply.

Yours sincerely

John Morant



[illegible] tires is
it amounts for planks
with this note Issued
on a copy of our priced
Catalogue. 18 inch or 2 feet
Pits are large enough for
Inch planks and pits
of that size can be dug
in 8 Dy for 14 or 15 Rupees
per 100 — I am unable
to say how much it
would cost to fence and
maintain the plants —
until they had grown
up the cost of the fence
would of course depend

the nature of the material employed
regarding the Pavilion Pillar on the
Brandstand, as it will cost so little
to rebuild it and seeing that it was destroyed
in connexion with the making of the road
to G.P.O. House I think the cost of rebuilding it
should be borne either by the D.P.W. or
charged to the cost of making the road

I am yours truly
A. Jamieson

[illegible]

To
Colonel Sankey. C. B.
Secretary to Government. D. P.
Woolstock

Russell
Commissioner

No 682 W
13. 3. 84

26th August 1881.

My dear Colt. Sankey,

I send herewith by Mr Roupell's desire the Site Plan of the proposed Market, with a memo of particulars some at least of which you will require in giving instructions to the architect at home but until we know the nature of the design it is impossible to give a complete specification; please let me know if there is anything else you require in connection with the market and I shall attend to it at once.

The Municipal Engineer Bombay says he did not receive my letter

40

40

asking him for tracings of the Crawford Market plans. I have asked him for them again by Telegraph but he has not replied.

I have the plan and section of the proposed supply channel from the Snowdon saddle to the Marlimund reservoir ready and the next thing that seems to me necessary to complete this subject - is to ascertain the area of Genl. Baker's and of Mr. Cowdell's properties that is to be acquired for the Marlimund and Dodabet reservoirs and to put some value upon it. I believe we can cut most of both properties off from the Catchment basins of the reservoirs

and supply the reservoirs from other grounds, and by this means reduce the cost of compensation to Genl. Baker and to Mr. Cowdell to a very small amount.

Shall I see to this point at once.

Yrs very sincerely

P. Shaughnessy.

Proposed Market for Ootacamund

~~The~~ It is proposed to construct a market at Ootacamund at a cost of about 2½ Lacs of Rupees, and to invite ~~[illegible]~~ home Architects and builders to submit designs & estimates for the work.

A ~~The~~ Survey of the site is attached hereto, and the following particulars are furnished for the guidance of the Architect who designs the building

The site is 680' long and 350' broad and the principal front should face South East.

The site will be levelled and the foundations will be constructed by the Municipal Establishment to suit the design of approved super-structure. The home architects and builders need not consider these portions of the work.

The building should provide 200 double and 200 single stalls. The double stalls are required for trades

which keep a stock of goods on hand and want a seperate compartment for this stock in addition to the shew room or ~~[illegible]~~ shop — The single stalls are required - for trades which renew stock daily - or which are merely working trades and require no stock except their tools & instruments,

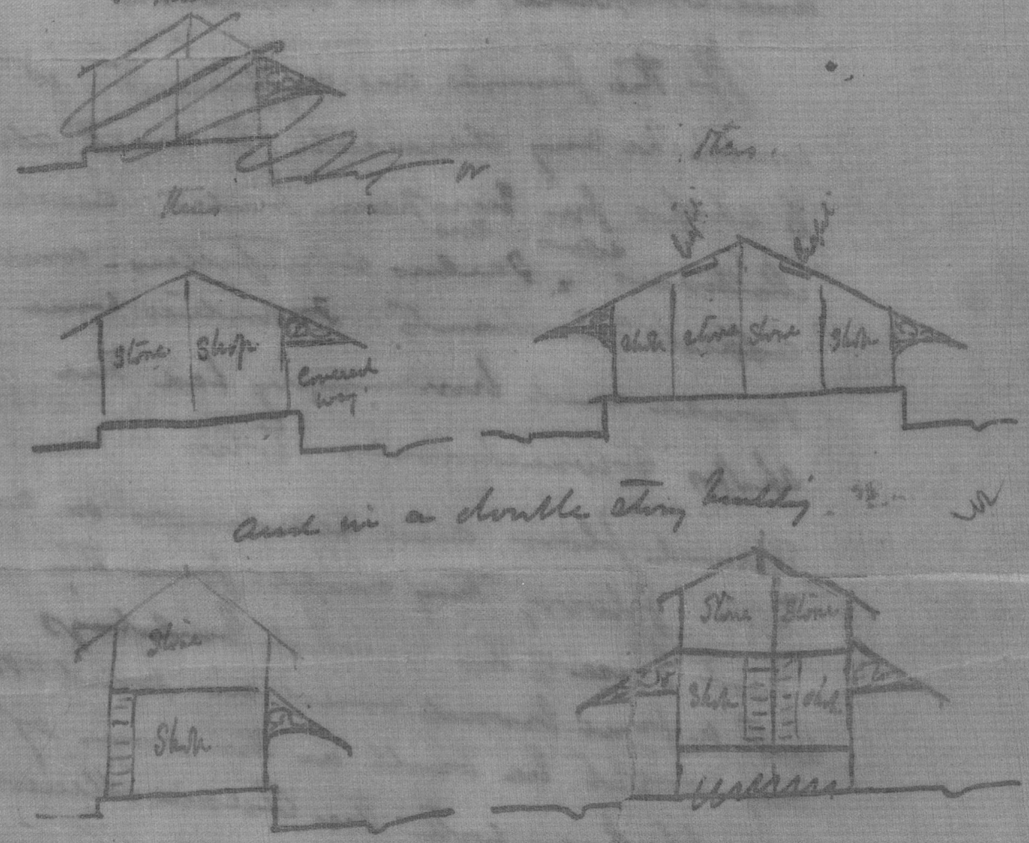
~~[illegible]~~ The different trades requiring double stalls, are approximately,

Corn dealers	60
Cloth - blankets carpets }	30
rugs &c	
Oil man stores	15
Tobacconists	6
Copper shops	8
Ghee and oil	30
Cotton seeds	8
Hawkers	15
Salt sellers	10
Tailors	10
Beer shops	4
Wines & Spirits	4
Total	200

The trades requiring single stalls are.

Beef butchers	15
Mutton do	25
Fish sellers	4
Bread —	6
Milk & butter	8
Poultry	25
Fruit	10
Brought forward	93
Vegetable sellers	60
Barbers	10
Money changers	6
Basket makers	8
Coblers	8
Tinmen	4
Braziers	5
Pot makers	6
Total	200

The double stalls might then a single storey building be constructed



and in a double storey building.

The single stalls should be in one story buildings

thus



or if there is an enclosure wall they might lean in a single row against it;
The stalls should be 10 to 12' square and the walls not less than 18' high.

The preparation of the site the building of foundations and the making of roads will cost 50,000 Rs and the superstructure should be designed to cost no more than 2 lacs or about 16,000 £s sterling nested and complete, in all respects—

If the funds are sufficient it would be very desirable to meet about 6 shops for European trades, such as Milliners & dress makers Tailors & Outfitters—wine & Spirit merchants. Furniture ware house and Ironmongery fed the shops & warehouses to be on the Ground floor and residences on an upper floor, they might form the front face of the market buildings with a fine broad road in front—or they might be built in the form of an Elipse with the Adam Memorial in the centre.

~~Thos.~~ J. B. Shuckleby

26/8/81

OOTACAMUND MUNICIPAL MARKET

SITE PLAN

Scale 50 F. 1 to an inch

UPPER BAZAAR ROAD

PRESENT MARKET

Water Course

LOWER BAZAAR ROAD

This ground to be taken in for Market buildings if required

680'

Municipal Engineers Office

Municipal Engineer

Supg. Engineer's Office, 4th Circle
Coimbatore, 8th February 1884

No 72
Dr.

From

The Superintending Engineer,
Fourth Circle.

To

The Chief Engineer,
Public Works Department.

Sir,

Enclosures 18
1 Survey
1 section
1 Plan
6 Details & Estimates with abstracts
1 abstract of 1 General abstract in duplicate.

I have the honor to submit herewith an estimate amounting to Rupees 40003 with plans, for the new Brick Sewer at Ootacammund, that is to receive the drainage both of the Upper and Lower Bazaars, between the Tonga stables near Glendower Hall and the Willow Bund, and convey it to the iron pipe Sewer; which is eventually to carry it into the Valley below Kandal at the Lower end of the Lake.

2. The position of the proposed sewer is shown on the plan and longitudinal section, from which it will be seen, that its length is about 6,580 feet, or nearly 1¼

mile

miles; and that it will have a uni-
-form fall of 8.8 inches per mile.
It will be laid underground; and is
to be of the best brickwork in mortar,
and plastered with Portland cement.
In section it will be 14 inches wide at
bottom and 12 inches high.

3. Along the line of this brick
sewer there will be masonry sumps or
catch pits, closed at top by wooden doors;
to act as traps for any solid refuse that
reaches the line of the sewer. Such solid
matter is to be removed by the Muni-
-cipal Conservancy Carts. In the Up-
-per part of the sewer the sumps will
be 3 feet square; in the lower part 3½
feet.

4. The Estimate also provides 3490
lineal feet of 6 inch stone branch drains
to convey the drainage of that part of
the Town between the Commerical Road
and the supply channel to the new brick
sewer.

5. Masonry undertunnels are also
provided

provided to pass Local Rainfall under
the brick sewer to the Lake supply
Channel.

6. Although the scheme of drainage
for the north side of the Lake will still be
incomplete until the pipe sewer has
been laid from the Willow Bund to the
end of the Lake; and liquid sewage
will still reach the Lake at one point,
it is expected that the works now proposed
will materially improve the present con-
-dition of the station. The brick
sewer must have the effect of stopping
all the solid matter that now falls into
the supply channel at different points
along its course, and also such as falls
into the Lake direct at places along
the upper part of its margin.

I have the honor to be,
Sir,
Your most obedt. servant.

J. Beatty Col, R.E.
Supg. Engineer, 4th Circle

From

The Supg. Engineer,

Fourth Circle.

No. 286 W d/ 1.2.82
" 287 W d/ 1.2.82
" 314 W d/ 29.1.83
" 931 W d/ 22.3.83
" 1536 W d/ 2.6.83
" 294 C d/ 8.2.84
" 467 E d/ 23.10.83
" 3059 W/B d/ 29.10.83
" 257 C d/ 5.2.84
~~" 314 W d/ 29.1.83~~

No. 682 W d/ 13/3/84

Dated 8th } February/84
Despd. 9th }
Recd. 11

No. 72

Encl. 18

Brick Sewer at Ootacamund:—

Submitting estimates for a — from the Tonga stables to the Willow Bund.

Recd. 8/3/84
Cere. 15/2/84

No. 114/W Supg. Engineer's Office 4th Circle.
Camp Ootacamund, 26th Feby. /84.

682/29

Quote

From

The Supg. Engineer,

Fourth Circle.

To

The Chief Engineer,

P. W. Department.

Sir,

With reference to your Memo: No. 4110 of 19th Instant, I have the honor to inform you that about 2,000 feet of the new Brick Sewer, commencing from the Willow Bund, have been put in hand in order to utilize the balance of the allotment provided for Bazaar Drainage.

2. All the drains that were considered necessary in the Bazaar will, it is expected, be completed in about a fortnight. And if the work at the brick sewer is allowed to go on without interruption, about 3,000 running feet of it will be more or less complete before 1st April.

3. When

3. When I inspected the drains this morning, I found 1700 running feet of brickwork of the brick sewer in progress, and three of the sumps about half done. It is found now that it will be better to turn a semi-circular arch over it, as the covering proposed in the estimate would hardly be strong enough. And it is found that, through the tunnel thus formed, 18 inches bed width, side walls two feet, and rise of arch [illegible] inches, a boy of 12 to 15 years can easily pass.

4. If the glazed earthenware pipes, mentioned in your Memo No. 410 C of 19th instant can be had of one foot diameter, they would probably be cheaper than brickwork, and be very suitable for the upper half of the sewer.

5. In that case I shall be obliged by your telegraphing to stop the brick work. But if the brick sewer be stopped and pipes cannot be purchased at once, part of the allotment for Bazaar Drains

Drains will have to be surrendered.

I have the honor to be,
Sir,
Your most obedt. servant.

L. Beatty Lt-Col. R.E.,
Supg. Engineer, 5th Circle.

From

The Superintending Engineer
IV Circle

No: 682 Wd/13/3/84

Dated 26th February 1884

Rec 1/3/84

No 114 W.

Enclo: nil.

Bazaar Drainage—

Informing that about 2000 feet of the New Brick Sewer have been put in hand in order to utilize the balance of the allotment provided for—and stating that glazed earthenware pipes can be had of one foot diameter they may be substituted for brick work of the upper half of the Sewer.

Acc: 8/3/84 R 13/3/84

No. 4196.

SUPERINTENDING ENGINEER'S OFFICE,
5TH CIRCLE, MADRAS,
Chepauk, 7th March 1884.

From

THE SUPERINTENDING ENGINEER,
5TH CIRCLE,

To

THE Chief Engineer
P. W. D.

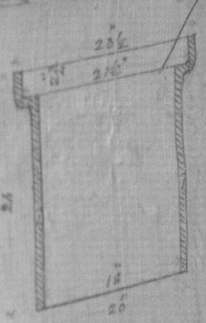
SIR,

Enclosures.

With reference to your Memorandum No. 410 C dated 19th Ultimo. I have the honor to report that the glazed earthenware pipes are intended to be used in the drainage works in Black Town.

2. The pipes were manufactured by Burn & Co. No. 7 Hastings Street Calcutta.

Their dimensions are length 2 feet, including the Socket of $2\frac{3}{4}$ inches inner diameter 18 inches outer



outer diameter 20 inches inner diameter at the socket 21½ inches outer, 23½ inches. The cost has been Rupees 6-4-- per pipe including freight &c.

3. The pipes are inferior to those made in England but would do for the drainage works at Cotacamund if laid sufficiently deep to be out of reach of vibration from the traffic.

About 1 in 15 of the pipes appear to be cracked or not well burnt and it would be advisable if an order is sent to Calcutta that some responsible person should examine the pipes before they are shipped.

I have the honor to be
Sir
Your Most Obedt Servant
Alex Brendexport
Coll. R.E.
Superintg Engr
5 Circle

132

D.W.Ch. 2096

From

THE SUPERINTENDING ENGINEER,
5TH CIRCLE,

To

THE Chief Engineer
P. W. Department.

Dated 7th March 1884
Recd.

No: 682 W d/13/3/84

ENCLOSURES.

With Ch. 1864

No. 4196.

Glazed Earthen Ware pipes.

Reports regarding the suitability of —

Circ: 8/3/84 R 13/3/84

Referred

P. W. D.

682/133

Ans 1262

Note by the Ch. Engr. P.W.D.

The estimate is submitted for the sanction of Govt.

2. ~~The Chief Engr.~~ It is suggested ~~Considers~~ that the floors of under-tunnels to pass the rainfall ~~except~~ should be slabbed, & that some provision for wings should be made at entrances and exits of the water channels.

14-2-84

14-2-84

~~14-2-84~~
12-3-84

No: 682 Wd/13-3-84

Circ: 15/2/84 R 19/2/84

Office Note No. 270 Nd/11th July 1881

682/134

To,

C.

In their letter recorded with G.O. 3652 d/25th November 1867, the Govt. of India sanctioned a grant from Imperial Funds of Rs 74,000 for constructing a Main Sewer for the drainage of Ootacamund. Please let me know whether there is anything on the records of your office to shew whether the money was actually spent, and, if not, why not.

The statement forwarded with your Office Note No. 356 d/6.7.81 seems to take no account of this grant.

(Intd.) R.H.S.
W.

Draft by R.P.
C.W.

C.A.W.

So far as I can ascertain the grant in aid of Rs 74,000 agreed to by India in Imperial Mr constructing the Main Sewer, was as a fact never availed of — why I have not as yet been able to ascertain precisely I wish this traced

[illegible]

8/7/81

Circ: 15/2/84

C Alt

Please see 182/136
~~to this~~

Wire to India for the plans & Estimates if there is any chance of them having been retained ~~there~~

Attt

1/7/81

Sir

I had already written to Madras to send up the plans if in our Records - and have now telegraphed for a

If not also

Indian

Circ: 15/2/84 R 19/2/84

the telegraphed to
R.S.

1.7.81

1882/137

My dear Sanderson

In letter No. 2941 dated 21st Sept. 1867 published with Pro. Madras Govt. No 537 dated 21st Sept. /67 Captain Nelloch's scheme plans & estimates (& presumably sections) were forwarded for the Sanction of the Govt. of India. Walsh

Circ: 15/2/84 R 19/2/84

the telegraphed to
R.S.

C A W

I wish a note sent to the C asking him to let me know as soon as possible what are the actual amounts spent in past years from either Imperial or Provincial Funds on

(1) the water supply
(2) the drainage of
(3) the reclamation of the lake at Ootacamund

The P.M.G. mentioned give some clue to the outlay, but there is nothing about e.g. the marshy mound or Dodabetta reservoirs upon which considerable sum was spent

Write C. 30.6.81.

Ascertain please also what was the result of the reference made to the Govt. in Ind. Nationalities

about an Imperial grant be improving the Sanitation of the place

[illegible]

28/6/82

[illegible]

In their letter recorded with G.O. 3652 d/25 Nov. 67, the Govt. of India sanctioned a grant of Rs 74,000. Nothing further on the subject seems to be on record.

The information called for from C will show the expenditure actually incurred from this and other sources.

R.S.
30.6

[illegible]

Acc: 15/2/84

List of papers sent herewith

× √	1	Detail section of Main Sewer Cotacamund Drainage.
× √	1	Detail plan showing direction of Main Sewer by Captain Tulloch R.E.
√	1	File of O. G. P. W. D.
√	7	Plans of Cotacamund Bazaar drainage
	1	Map showing Proposed Distribution Lines of Pipes
√	1	Plan of Madras drainage
√	1	Estimate for water supply improvement North side of Lake
	1	Explanatory memorandum to accompany estimate for drainage improvement.
√	1	List showing number of wells in Cot.

Cannot be found

Printed with 80 236 W.D. 1/2/82.

M. C. Tumell

No 239.

P.W. Deptt.

(141)

Memorandum.

The following plans are forwarded to G. T. Walch Esqr.

1. Detail section of Main Sewer – Ootacamund Drainage.

2. Detail plan showing direction of Main Sewer by Captain Tulloch R.E.

(By order)

R. Parson S.
Chief Assistant
P.W. Secretariat

Ootacamund
4th July 1881.

To G. T. Walch Esqr.
Branch Shoreham Hotel

Warley Lodge
4/7/88

My dear Jas. Sankey.

I am glad to get the plans though I must say I am disappointed at the want of completeness therein. No details of the man-holes & lamp holes or ventilators. No definiteness as to the actual lines for the sewer shows each point of change of direction where a man hole or lamp hole must be constructed. No detail for flushing arrangements & so on. Without the estimate,

which I see was returned by the
G. of I., it is impossible to
tell what Tulloch did for the
for - e.g. his plans show a
"glazed earthenware pipe 9"
diam." for 2070 feet but he
says nothing about this
in his report. So I hope
we will be able to have
the estimate found & send
it to me - I artist that
the two plans (tracings) which
we send are are office copies
perhaps the originals which
were to G. of I. & were returned
are more complete than these

copies & with them - where
they may be - will prob
be found the estimate
abstract & detail -
I think 4½" thickness of brick
in Portland cement, smooth
cemented inside, with a surrounding
of about the same thickness of
of cement concrete would
certainly be better than Tulloch's
9" naked brick -

Yours sincerely
[illegible]

Class. 5

INDIAN TELEGRAPH.

Local No. 152

To (Station) Ootacamund

From (Station) Madras 9/7

Words.	Day.	Hour.	Minute.	Official Instructions.
22	7	17.	17.	

To (Person) Chief Asst Public Works Secretariat

From (Person) Second Asst

1	2	3
Original	plans	of
Ootacamund	drainage	cannot
be	found	search
continues	Estimate	despatched
Office	today	

Recd. from

At Hrs. Mts., By L. N.

Sent to

At 7 Hrs. 1 Mts., By L. N.

Date OOTACAMUND 7-7-81

Telegraph Master.

S. F. No. 4000 - G. T. Press,—No. 183.—27-5-80.—1000000.

Traffic Code Form C1.

C.A.W.

Herewith Capt. Tulloch's estimate for the Aoty drainage scheme.

The general plan of city & the originals of the two plans already sent up cannot be found although the Library has been ransacked since yesterday. The search will continue tomorrow. Mr Pope thinks however that the plans already sent up to Aoty (although copies) are the identical ones forwarded to the G. of I. & returned by them. This might easily be verified by seeing whether the current No of the G. of I letter is

noted on the plans. It is just possible that the originals wanted were sent to the Supty Engr with G.O. No ~~3562~~ 3652 of 25.11.67, but there is not a single mark on the original G.O. to show this —

Your telegram of 6th reached me late on Tuesday evening, a memo. marked "urgent" was sent to the Genl Record dept. the first thing yesterday morning, calling for G.O. ~~3562~~ 3652 of 67, but this was not recd until it was too late for the post —

CY
7/7/81

S.W. Secretariat
Ootacamund
No 270 N
Office Note

EXAMINED
No 15 JUL 81
ACCOUNTS

82/146

To C

In their letter recorded with G.O. 3652 d/ 25 November 1867, the Govt of India sanctioned a grant from Imperial Fund of Rs 74,000 for constructing a main sewer for the drainage of Ootacamund. Please let me know whether there is anything on the records of your office to show whether the money was actually spent — and, if not, why not.

The Statement

forwarded with grant
Office Note No. 356 d/
6. 7. 81 seems to
take no account of
this grant.

[illegible]

W.

10/7/81

No 409
21/7/81

TO [illegible]

AFTER CAREFUL SEARCH, NOTHI[illegible]
CAN BE TRACED ON THE RECORDS OF TH[illegible]
OFFICE REGARDING THE RS.74,000 IN
QUESTION.

[illegible]

[illegible]ire: 15/2/84 [illegible]

Memo

At a meeting of the
Sub Committee
[illegible] Committee
[illegible] following were present
Dr. Rumpell
Dr. Funnell
Mr. Walch
Dr. Smith
Dr. Nanning
Samuel Baker
Mr. Schmidt
Mr. O'Shaughnessy
Col Sankey

The report of the Sub Committee
No 1 in rough draft was
read over & commented
on

It was generally agreed
that if the water of
Malcolmsch Reservoir
were distributed in pipes
the reservoir would in itself
be of sufficient capacity to
answer for a 5 months
supply of 20 gallons per di[illegible]

In 12,000 people at
Jeraibly some additi
Catch drains — also that
Dodabeth Reservoir and
meet the requirements of the
2000 people on South of
if the bund were raised
as to give a capacity of
6,000,000 gallons
— The sewer to extend in
a pipe back to the Wade
carrying cos Stables & to
a short distance below
bund
— Proposal to lower the
Calingula of the Lake
tatively so as to counte
act the Swampiness ab
upon end on assum
received without objec
— Acquirement of the
Catchment basins of the
Reservoirs accepted
as to prevent fouling of
water supply
— Drainage of Hand
to be provided for in
general scheme

[illegible]

2/8/81

Ootacamund Improvement Committee

Notice of Meeting

A general meeting of the Ootacamund Improvement Committee will be held at noon on Tuesday next the 2nd August in the Public Works Secretary's Room, Government Office, Stone house

(Sd) R. H. Sankey. Colonel R.E.
President of Committee

Ootacamund
30th July 1881

R.S. 30.7.81

11th Oct 1881

My dear Colt Sankey,

I am sorry I could not send you the information you require about the water supply Project owner. The map you gave me did not contain the whole of the Catchment of the Dodabet reservoir and I had to prepare a fresh map which I send herewith. This has caused the delay. I have for convenience of reference marked the proposed distributing pipes on it and if you do not more require for watch map which I sending to you also. I shall be glad to get it back

as I may want to refer to it again,

The only alterations that I recollect Mr Walch to have proposed on Major Tulloch's drainage scheme are the use of an iron pipe from Charing Cross to the Aquaharium instead of the earthenware pipe proposed by Major Tulloch.

The extension of this pipe up beyond the Carrying Co's stables

The extension of the main Conduit 400' below the Lake Bund - and I thinkll be made some alteration in the Section of the Masonry Conduit (sewer)

I think you mentioned that you would have the memorandum I gave you some days ago printed as a supplement to your report, if you think this necessary I should like to look over it - as it was written very hurriedly.

Yrs very sincerely

J. T. Sherrington

Mr O'Shaughnessy
11/10/82

CAW 682/82

These papers
connected with the
Ootacamund imprisonment
Scheme are returned
and should be kept
with the general file

I have not got
the general plan of
Ootacamund in illustration
of the committee re-
-commendations — If
not with the rest of
the file it may possibly
not have been returned
by the G of I to whom I
think it was sent —
If not found therefore
the G of I should be
addressed

As the drainage
scheme for the Ootz
Bazar amounting to

Rs 86,000 will almost immediately have to be commenced under order of the SE such plans & details as may be forthcoming of Major Morants' & Mr O'Shaughnessy's schemes for this work should be looked up, with all connecting papers and sent for information to the SE

= Similarly all papers and plans connected Capt. Tullock's proposed [illegible] sewer to carry off the [illegible] drainage & deliver it [illegible] the [illegible] should be sent to the SE for reconsideration & for the submission of a properly detailed estimate. Mr Walker's notes on this head [illegible] also be sent

= In like manner the papers connected with the improvements of the [illegible] [illegible] & [illegible] reservoirs with any plans should also be furnished with a request for the preparation of a properly detailed scheme

11.6.82 [illegible]

Cair

682/153

These papers connected with the Ootacamund improvement scheme are returned and should be kept with the general file.

= I have not got the general plan of Ootacamund in illustration of the Committee's recommendations - If not with the rest of the file it may possibly not have been returned by the Gt of India to whom I think it was sent. If not found therefore the G of I should be addressed.

= As the drainage scheme for the Ooty Bazaar amounting to Rs 86,000 will almost immediately have to be commenced under orders of the S.E. such plans and details as may be forthcoming of Major Morants' and Mr O'Shaughnessy's schemes for this work should be looked up, with all connecting papers and sent for information to the S.E.

= Similarly all papers & plans

Rs 86 ... will ...

connected with Capt Tulloch's proposed Oriform sewer to carry off the Bazaar drainage and deliver it below the bund should be sent to the ... for reconsideration and for the submission of a properly detailed Estimate. Mr Walch's notes on this had better also be sent.

" In like manner the papers connected with the improvement of the Marlimund and Dodabetta reservoirs with any plans should also be forwarded with a request for the preparation of a properly detailed scheme.

(S) R.A.S. W. 11/6/82

S.A.W.

Please send up complete file of originals on the above subjects with the plans.

R.S. 22/6

R.S.
C.A.W.

11.6.82

Arc: 13/2/84

Copy - 16/4

C.A.W.

I think the acc. packet of papers (which are all that can be found in the office) will give nearly all that is asked for in W's note.

Major Morant's & Mr O'Shaughnessy's Schemes are mentioned in GO. 1408 W dy 6 June 81.

The estimate for Capt Tulloch's scheme will be found in GO 3652 dy 25.11.67 & the plan in the big packet of plans accompanying.

Mr Walch's notes are printed with P.G. No 286 W dy 1.2.82

The subject of the Dodabetta & Marlimund

Reservoirs is also dealt with in the same Pros.

G
16/6/82

To W

Submitted

Are the papers to go please at once to the S.E. or after Mr Barlow's last letter (received yesterday) has been disposed of. A portion of the file is with that letter.

A.S.
10-6

Mr O'Shaughnessy's Project for the Ootacamund Bazaar Drainage

G.O. 1408 W of 6th June 1881.
" 286 W — " — 1st Feby 1882.
Plan of Bazaar, three sheets.
Sections of Streets and Lanes, one sheet.
Plans of drains, four sheets.
Estimates of Drains, three sheets.

Captain Tulloch's Main Drainage Scheme

G.O. 519 of 21st Feby 1867.
" 985 — " — 29th March — " —
" 2940 — " — 21st Septr — " —
" 2941 — " — 21st — " — " —
" 3462 — " — 7th Novr 1867
" 3652 — " — 25th — " — " —
" 1032 — " — 1st April 1868.
" 1500 — " — 12th May — " —
Captn Tulloch's detailed & abstract estimates
Detailed Plan showing direction of Main Sewer
Detailed Section of Main Sewer.
Notes by Mr Walch of 25/7/81 with section of Main Sewer.

No. 307 E of 22nd June 82

Memorandum.

The Chief Engineer has the honor to forward to the Supt. Engineer, South Circle, the papers specified in the accompanying list connected with Mr. O'Shaughnessy's project for the Ootacamund Bazaar Drainage, and to request that the scheme may be examined with the least practicable delay, in view to the early sanction of Govt. being obtained for the execution of the work by the Executive Engineer Nilgiri Division. The assignment for the current official year will probably amount to Rs 50,000.

2. The papers (list attached) in connection with Captain Tulloch's Main Drainage Scheme are also forwarded herewith for examination after Mr. O'Shaughnessy's

Surface Drainage Project
has been disposed of.

(Sig^d) R.H.S. Col. R.E.
Chief Eng^r P.W.D.

No. 301 E of 22^d June

To
The S.E. Fourth Circle
with papers as per
list

Decr 23/6

(P) R.E.

D.W.

I do not think the pipes suggested by the Hon^r Member would answer for main sewer at Ootacamund. But the suggestion might be referred by memo to S.E. for report.

Meanwhile inquiry shd be made respecting the pipes alluded to - & all facts ascertained as to their cost & dimensions, — also as to where they were made, & for what purpose.

[illegible]
19-2-84

P.W. Dept.

To 10.

In Circ: 15/2/84.

Estimate for Ooty Bazaar and [illegible] Lake Sewer — Rs. 40000.

Submitted for sanction.

I presume all points have been fully considered. —

I should have said that to form the bottom of sewer egg-shaped — which might possibly be cheaply done by chipping the tricks & making good with rough plaster — would have been an improvement on the section.

The floors of under-tunnels to pass the rainfall aught I think be slabbed, and some provision for wings made at entrances and exits of the water channels.

C.J.

13-2-84

The last suggestion may be brought to S.E.'s notice. It seems to me an improvement.

The section of the sewer was discussed by me with the S.E. at Ooty, & may be accepted.

In sanctioning the estimate, it should be stated that the Govt. trust to receive at a very early date the estimate for the iron pipe sewer to be laid from the Willow Bund to the west end of the Lake, to which

P.W. Dept.

allusion is made in para 6
of S.E.'s letter

M.
13-2-84

1864

682/159

To Dn.

For orders whether the S.E. IV may be told by wire to suspend work on the brick sewer at Ooty.

The S.E. V circle has not yet reported on the earthenware pipes on the Esplanade.

Cs
1.3.84

With C.No. 2096

Must await W's return on Tuesday - 3 days can make little matter one way or the other now. —

CeS
1-3-84

Reminder should be sent at once to S.E. V.

Meanwhile the questions raised by S.E. IV must stand over.

M.
3.3.84

(47)

P.W. Dept.

C/

682/16

P. W. Dept.

No. 410 C dated 19th February /84

Memo.

The Suptg. Engr. V circle is requested to have the large glazed earthenware pipes now lying on the opposite side of the road to the Christian College examined and reported on, with reference to their suitability for the sewerage works now being undertaken at Ootacamund.

The cost and dimensions of the pipes should be ascertained, as also

the place of manufacture and purpose for which procured.

No. 411 C dated 19th Febry/84

Copy of above forwarded to the Suptg. Engr. II circle to whom the particulars above noted will be communicated at an early date in view to his reporting whether the pipes in question can be suitably substituted for the masonry sewer referred to in his letter No. 72 of 8th Feby/84.

No. 410/411 C of 19-2-84

S.E. V circle

S.E. IV circle

19/2/84

P.W.D.

~~No. Hon'ble Sub-Member~~

Note.

The accompanying draft order, sanctioning an estimate amounting to Rs 40,000, for constructing a masonry sewer at Ootacamund, is recirculated.

Adverting to the Hon'ble Member's note of 17.2.84, the Chief Engineer, after making the requisite inquiries is of opinion that it would not be desirable to substitute earthenware pipes, similar to those on the Lighthouse esplanade, for the masonry sewer as estimated for. The change of

plan would cause considerable delay, & Govt are anxious to complete the intercepting drain as quickly as possible.

Further, the cost of the earthenware pipes would be considerably greater than the sewer as designed. The latter will cost Rs 70 for 20 running feet, while the pipes would cost Rs 70-9-6 for the same length, exclusive of excavation, cement, laying, and carriage from Madras to Ootacamund, which latter would be very heavy - Probably too about one fifteenth would have to be added to the above for breakage.

[signature]
8.3-84

CY
8/3

Public Works Department, 1883-84.

Current No. 1262
Letter No. 72
Dated the 8th Feb/84
From the S.E.IV Circle

NOTE OF REMARKS.

1. The accompanying estimate and plans provide for the construction of a Brick Sewer at Ootacamund, at an estimated cost of Rs. 40,000.

2. The Brick Sewer commences near the old weir at the back of Glendower Hall, and runs a distance of 6580 feet up to the Willow Bund where it is intended to meet the iron pipe sewer. During its course, the sewer receives the drainage of both the Upper and Lower Bazaars, and between the Tonga Stables and Willow Bund. The fall of the sewer is 1 in 600, or 8.8 inches to the mile. The general interior formation

of drain is rectangular, 14"X9" ± 12" is the height of center plane - in cross section. The top, bottom and sides are to be of good brickwork, resting on a concrete bed 5" deep. The exterior is to be plastered with cement. 1 sumph has been provided at end of drain, and 32 others at various points in its course. The sumphs are masonry cisterns which serve as traps for solid matter; and as they are covered on top with wooden doors, this matter may be periodically removed. Ten (10) tunnels to convey the rainfall on adjacent high ground under the sewer, to the lake beyond have been provided. In addition to the main catch-drain or sewer, a total length of 3,490 feet of minor tributary 6" stone drains have been calculated for in this estimate.

3. S.E. expresses his opinion that the work proposed will materially improve the condition of the [illegible]

12th Feb/84
[illegible]

C. No. 1262.

P. W. Secretariat.

682/1/83

Note by Budget Section.

Work

Construction of a brick sewer at Ootacamund.

Remarks and References.

Fund Provincial

Service Head Miscel. Public Impts.

Departmental Head Original Works

Amount of Estimate	Rs.	40,000
Expenditure in previous year	"	"
Allotment in current year	"	"
Balance required to complete	"	40,000
Total Rs...		

Note of available funds.

This estimate forms part of the Ootacamund bazar drainage scheme I think, and should therefore be treated as supplemental to the estimate for Rs 94,000 sanctioned in G.O. No 314 W of the 20th January 1883.

On the original estimate, expenditure to end of 1882-83 amounts to Rs 39,773, and Rs 40,000 is the grant for 1883-84. In Provincial budget for 1884-85, provision is made of Rs 14,200 - ~~Budget Clerk~~

Should S.E. require further funds during current year, early application should be made.

[illegible]

Note by Budget Section.

Feb: 17. 1884

682/164

Ootacamund Drainage.

Masonry sewer from
Tonga stables to Willow Bund
Estimate Rs. 40.000

For consideration of Chief Engineer.

I have observed on the Light house
esplanade on the opposite side
the road & the Stream College
a lot of large stout glazed
Earthern ware pipes - Would
not something of this sort
do for the proposed drain
be far more economical
& would not such pipes

Note by Budget Sect

Ansure for the continuation of the sewers from the hollow bund & the West End of the Lake. They will be under ground and protected from injury.

H.V.S.

17/2

Form No. 22.

No: 682 W

PUCLIC WORKS DEPARTMENT.

PROCEEDINGS OF THE MADRAS GOVERNMENT.

UNDER date the 13th March/84

READ the following:—

From the S. E. IV Circle No 72 of 8th Feby 1884
" " do do " 114 W of 26th " "
" " S. E. V Circle " 4196 of 7th March 1884
Note by the Ch. Engr P.W.D. of 14th Feby 1884

The estimate amounting to Rs 40,000, for the construction of a ~~brick~~ masonry sewer at Ootacamund, is sanctioned, as supplemental to the drainage estimate of Rs 94,000, referred to in G.O. No 314 W of 29th January 1883.

2. The expenditure on the original estimate, to the end of 1882-83, amounted to Rs 39,773; the current year's grant is

is Rs 40,000, and Rupees 14,200 have been provided for the work in the Provl Budget for 1884-84. If additional funds are required during the current official year, early application should be submitted by the Supty Engr.

3. The attention of the Supty Engr is called to the suggestion in para 2 of the Ch. Engrs note above recorded.

4. The Govt trust to receive, at a very early date, the estimate for the iron pipe sewer to be laid from the Willow Bund to the West end of the Lake, ~~to which~~ in continuation of the masonry ~~[illegible]~~

~~allusion is made in para 6 of the Supty Engr letter~~.

5. This sanction has been registered as Provl No 235 W of 1883-84, & classified as Miscellaneous Public Improvement, Original Works.

M.
14.2.84

Cy
14-2-84

17/3

To the S.E. IV Circle
with 17 enclos.
" Exec Engr
with genl abst estn
" Financial Dept.

Cy

82/168

with file -
SO 3652 W
dy 25.11.67

12-3-84

Recd 8/3/84
Circ: 15/2/84

17-3-73 ✓

1262,

Govt. of [1883] Mad

PUBLIC WORKS

Dated

Recd.

G. O. 13th March 4

Masonry Se

at Ootacam

Est. amt of the

for ~~the~~ const

Saint

Ammalli

NB

The file to

Refr

Tac

168
3