12982 8/256

Public Works (1896) Department.

G.O., No. 56845

Dated 15/2/96

[Despatch Abstract.]

Boring at Cochin — Dept informing the municipal Council Cochin that Govt is not prepared to continue the experimental — Record —

[P.W. 25.
2,000—23-10-96.]

BACK PAPERS.

G.O.	No.	Department.	Date.	G.O.	No.	Department.	Date.

FURTHER PAPERS.

G.O.	No.	Department.	Date.	G.O.	No.	Department.	Date.

No. 65 M., 11TH JANUARY 1896.

GOVERNMENT OF MADRAS.

LOCAL AND MUNICIPAL DEPARTMENT.

READ—again the following papers:—

G.O., No. 93 M., dated 21st January 1895.

G.O., Mis. No. 1159 M., dated 20th July 1895.

READ—also the following papers:—

No. 2483-C.

Note by the Chief Engineer, Public Works Department.

[Proceedings in the Local and Municipal Department, Mis. No. 1159 M., dated 20th July 1895.]

The undersigned does not consider that the increase is necessary at present; when it becomes necessary, it will probably be better to obtain a complete apparatus from England.

(Signed) J. PENNYCUICK, Col., R.E.,
Chief Engineer, P.W.D.

10*th August* 1895.

Transferred to the Local and Municipal Department with reference to G.O., Mis. No. 1159 M., dated 20th July 1895.

(Signed) J. PENNYCUICK, Col., R.E.,
Secretary to Government, P.W.D.

To the Local and Municipal Department.

Reference No. 1193, dated 24th August 1895.

The Chief Engineer will be requested to give his opinion as to whether the 120 feet of boring rods referred to in paragraph 8 of the Sanitary Engineer's letter can be obtained of sufficiently good quality locally, or should be indented for from Europe.

(Signed) W. FRANCIS,
Ag. Under Secy. to Government.

To the Chief Engineer, Public Works Department.

No. 2863-C.

MEMORANDUM.

With reference to memorandum from the Local and Municipal Department, No. 1193, dated 24th August 1895, the undersigned has the honour to state that it will be more satisfactory to obtain the boring rods in question from England.

(Signed) C. H. B. BURLTON,
Under Secy. to Govt., P.W.D.

3*rd October* 1895.

To the Local and Municipal Department.

From J. A. JONES, Esq., MEM. INST. C.E., F.R.S.E., Sanitary Engineer to Government, to the Chief Secretary to Government, dated Fort St. George, 8th October 1895, No. 2956.

With reference to G.O., No. 93 M., dated 21st January 1895, I have the honour to report as follows.

2. I visited Cochin in September and was fortunate enough to find the British Resident there, from whom and Captain Dawson, Assistant Resident, I obtained much assistance; indeed it had been arranged through the Dewan of Cochin that Mr. Hudson, the Chief Engineer, should be associated with me in my enquiries—for this the thanks of Government are due to the Government of Cochin and the more so that no permission had been previously asked for an officer to be allowed to investigate a project in a Native State—a course which I was unaware ought to have been adopted.

3. With Mr. Hudson I proceeded inland as far as the laterite hills where fresh water is to be found. The nearest point where we considered water in sufficient quantity might probably be available is near the Rajah's hill bungalow some miles east of Tripondrum and about ten miles from Ernacolum—this town being separated from Cochin by a backwater of two miles. There are several small backwaters between Ernacolum and the hill bungalow.

4. Mr. Hormusji Nowroji in his letter embodied in G.O., No. 1628 M., dated 3rd November 1894, was evidently under the impression that the laterite was near the surface in Ernacolum, but the outcrop is, as above stated, ten miles from Ernacolum, so that there would be little difference in the depth to be bored at Ernacolum or Cochin to meet the laterite.

5. At the point indicated, Mr. Hudson and I considered that an experimental well might be sunk to test the yield, and that if this was satisfactory, a gallery might then be formed across the valley meeting at either side, the bases of the laterite hills forming the valley referred to. The site is marked on the accompanying map. To carry out such an experiment would cost about Rs. 5,800 calculated as follows:—

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Loan of pumps testing yield and other cost of experiments—sum ..	1,200
Total ..	5,800

6. If the experiment is to be made, it would be advisable to arrange with the Government of Cochin for Mr. Hudson to carry it out, and to this course he has no objection.

7. The question, however, is what will be the expense of the scheme even if the experiments were satisfactory. The work of laying pipes across two miles of backwater will be a difficult one and requires a specially-fitted barge and a steam dredger. I have in an appendix given a rough estimate of the work, and I do not believe it can be done for less—it includes the cost of pipes for the conveyance only of water to Tripoonitara, Ernacolum and Mattancherry and the share of the Cochin Government, if they agreed to a joint scheme, is also noted; in addition to this provision would have to be made for distribution works in these towns.

8. The cost of pumping is also shown and the shares allocated.

Supposing that Government made a grant of half the proportionate cost, the annual expenditure which the town of Cochin would have to meet would be —

	Rs.
$\frac{4,01,540}{2}$ at 5·96 per cent.	11,966
Pumping charges	5,500
Maintenance and repairs	1,000
Establishment	1,500
Total ..	19,966

9. It appears to me that (even if the Cochin Government agreed to join in the scheme) the figures show that the cost is much above what Cochin (British) could possibly meet even aided by a liberal grant from Government.

10. Should Government decide this to be the case there are three other schemes which present themselves—

(1) Supply from the Periyár river at Alwaye by pipes and pumping. This would be more expensive than the scheme noted, because the distance is greater.
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(3) By condensation.
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As to proposal (2) self-propelling hopper barges to carry 300 tons cost about £ 5,000 each—supposing the supply to Cochin were to be limited to $7\frac{1}{2}$ gallons or say $\frac{17,600\times7\frac{1}{2}\times10}{2,240}$ = 589 tons, we should require say two such barges = £ 10,000, or say Rs. 1,80,000, and there would be an additional charge for pumping machinery in each; this we might put down at Rs. 30,000, or say in all Rs. 2,40,000.

11. Pumping the above quantity of water in and out daily would cost Rupees 12,000 per annum. A service tank at sufficient elevation would cost Rs. 20,000. The cost of transit might be taken at Rs. 40 daily or Rs. 14,600 per annum.

12. Supposing that Government in the case of Cochin went so far as to supply the barges and that the municipality had to provide and maintain the remainder of the scheme, the annual cost to the town would work out as follows:—

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One set of apparatus to produce 12,000 gallons daily costs £4,000, therefore for 132,000 = 4,000 × $\frac{132}{12}$ = £44,000, or say Rs. 7,92,000; this, without taking into account that it requires $4\frac{1}{2}$ lb. of wood to produce 16 lb. or 1·6 gallons of condensed water, places the plan of condensation altogether out of reach.

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15. I have asked Mr. Locke to have fresh samples of the water submitted to analysis after a longer time of pumping and at the same time to submit samples to the Government Bacteriologist of the North-Western Provinces, Professor Hankin—this will be a true test, and even then it is possible to purify the water by filtration—probably Anderson Process would render it perfectly safe. It is now perfectly palatable.

16. I therefore, in view of all the facts I have stated, strongly urge Government not to abandon the bore scheme, but to persevere even to 2,000 feet which is not at all a great depth. The scheme has not had a fair trial, and now that it is really the sole hope of Cochin I think that no effort should be spared to make it a success.

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Distribution works in Cochin	45,000	..	45,000	..
Total ..	6,91,080	..	3,48,290	3,42,790
Contingencies ..	1,04,670	..	53,250	51,420
Total ..	7,95,750	..	4,01,540	3,94,210
Annual cost of pumping ..	14,064	176 : 274	5,500	8,564

(Signed) J. A. JONES,
Sanitary Engineer to Government.

Reference No. 1646, dated 16th November 1895.

The above papers will be forwarded to the Public Works Department with the request that the Chief Engineer may be asked to give his opinion as to whether he thinks it advisable to leave the present Cochin boring apparatus where it is, or whether he would pull it up, supply the missing rods, and then keep it in store to be put to whatever use it may hereafter be thought advisable; and in the latter case whether he considers the Sanitary Engineer's estimate of Rs. 1,200 for raising it and carrying it to Madras reasonable.

(Signed) W. W. PHILLIPS,
Ag. Asst. Secy. to Govt.

To the Public Works Department,
with papers in original (to be returned).

Note by the Chief Engineer, Public Works Department.

The undersigned considers that, for the present, at all events, the apparatus should remain where it is.

(Signed) J. PENNYCUICK, Col., R.E.,
Chief Engineer, P.W.D.

26*th November* 1895.

No. 3724-C.

Transferred to the Local and Municipal Department with reference to its memorandum, No. 1646, dated 16th November 1895, the enclosures of which are herewith returned.

(Signed) J. PENNYCUICK, Col., R.E.,
Secretary to Govt., P.W.D.

28*th November* 1895.

To the Local and Municipal Department, with six enclosures.

Order—No. 65 M., dated 11th January 1896.

As the experimental boring at Cochin has not so far resulted in procuring a water-supply for the town, and as the expenditure up to date, including the cost of the apparatus, has exceeded Rs. 13,000, the Government is not prepared to continue the experiment. The municipal council will therefore be informed that if it desires to carry on the boring it must do so at its own cost, and that the existing apparatus will be placed at its disposal. The depth reached at present is 325 feet, and some of the boring rods have been broken; it is estimated that it will cost another Rs. 5,000 to continue the boring to a depth of 400 feet, beyond which the existing plant would not be effective.

2. As the removal of the apparatus to Madras would entail considerable expenditure, the Government considers that for the present, at any rate, it should remain where it is, but, as this course will involve a monthly expenditure on account of watchmen to look after it, the Sanitary Engineer will be requested to report on the 30th June next how matters stand, and what he would propose to do, in case no further use can be found for the apparatus.

3. The other schemes which have been proposed are, owing to their great cost, impracticable and the question of water-supply to Cochin must then, for the present, be postponed.

(True Extract.)

for *Chief Secretary.*

To the Chairman, Municipal Council, Cochin.
" Collector of Malabar.
" Sanitary Engineer.
" Public Works Department.
" Financial Department.

Ex-l. Shaik Karim.

P. W. CURRENT No. 1298

25.11.95 No 3724 C
30.10.95 - 2583 C
4.9.95 - 2449 C
6.8.95 - 2432 C
4.6.94 - 1475 C
24.12.92 - 3531 C
4.9.92 - 4170 C
Recd: 8.2.96

Govt. of {1896} Madras.

LOCAL AND MUNICIPAL.

No 568 Wtg 15 Feby: 1896.

Recorded.

Issued

Recd. *Encl.*

G.O., No. 65 M., 11th Jan. 1896.

12/2/96

T to B Coll

Copy 11.2.96

JANUARY.

2 Copies to usE

DESPATCHED 17 FEB 96

S. E. IV circle
S. E. IV "
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Cochin Water-supply and Boring Apparatus.

Informing, with remarks, the Municipal Council, Cochin, that Government is not prepared to continue the experimental boring at Cochin, that if it desires to continue the work it must do so at its own cost, and that the existing apparatus will be placed at its disposal.

CONCERNS BOTH BRITISH INDIA
AND INDIAN STATES.

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3. The other schemes which have been proposed are, owing to their great cost, impracticable and the question of water-supply to Cochin must then, for the present, be postponed.

(True Extract.)

J. F. PRICE,
Chief Secretary.

To the Chairman, Municipal Council, Cochin.
„ Collector of Malabar.
„ Sanitary Engineer.
„ Public Works Department.
„ Financial Department.

Exd. Shaik Karim.

Govt. of {1896} Madras.

LOCAL AND MUNICIPAL.

Issued

Recd. *Encl.*

G.O., No. 65 M., 11th Jan. 1896.

JANUARY.

Cochin Water-supply and Boring Apparatus.

Informing, with remarks, the Municipal Council, Cochin, that Government is not prepared to continue the experimental boring at Cochin, that if it desires to continue the work it must do so at its own cost, and that the existing apparatus will be placed at its disposal.

No. 65 M., 11TH JANUARY 1896.

GOVERNMENT OF MADRAS.

LOCAL AND MUNICIPAL DEPARTMENT.

READ—again the following papers:—

G.O., No. 93 M., dated 21st January 1895.

G.O., Mis. No. 1159 M., dated 20th July 1895.

READ—also the following papers:—

No. 2483-C.

Note by the Chief Engineer, Public Works Department.

[Proceedings in the Local and Municipal Department, Mis. No. 1159 M., dated 20th July 1895.]

The undersigned does not consider that the increase is necessary at present; when it becomes necessary, it will probably be better to obtain a complete apparatus from England.

10th August 1895. (Signed) J. PENNYCUICK, Col., R.E.,
Chief Engineer, P.W.D.

Transferred to the Local and Municipal Department with reference to G.O., Mis. No. 1159 M., dated 20th July 1895.

(Signed) J. PENNYCUICK, Col., R.E.,
Secretary to Government, P.W.D.

To the Local and Municipal Department.

Reference No. 1193, dated 24th August 1895.

The Chief Engineer will be requested to give his opinion as to whether the 120 feet of boring rods referred to in paragraph 8 of the Sanitary Engineer's letter can be obtained of sufficiently good quality locally, or should be indented for from Europe.

(Signed) W. FRANCIS,
Ag. Under Secy. to Government.

To the Chief Engineer, Public Works Department.

No. 2863-C.

MEMORANDUM.

With reference to memorandum from the Local and Municipal Department, No. 1193, dated 24th August 1895, the undersigned has the honour to state that it will be more satisfactory to obtain the boring rods in question from England.

3rd October 1895. (Signed) C. H. B. BURLTON,
Under Secy. to Govt., P.W.D.

To the Local and Municipal Department.

From J. A. JONES, Esq., MEM. INST. C.E., F.R.S.E., Sanitary Engineer to Government, to the Chief Secretary to Government, dated Fort St. George, 8th October 1895, No. 2956.

With reference to G.O., No. 93 M., dated 21st January 1895, I have the honour to report as follows.

2. I visited Cochin in September and was fortunate enough to find the British Resident there, from whom and Captain Dawson, Assistant Resident, I obtained much assistance; indeed it had been arranged through the Dewan of Cochin that Mr. Hudson, the Chief Engineer, should be associated with me in my enquiries—for this the thanks of Government are due to the Government of Cochin and the more so that no permission had been previously asked for an officer to be allowed to investigate a project in a Native State—a course which I was unaware ought to have been adopted.

3. With Mr. Hudson I proceeded inland as far as the laterite hills where fresh water is to be found. The nearest point where we considered water in sufficient quantity might probably be available is near the Rajah's hill bungalow some miles east of Tripondrum and about ten miles from Ernacolum—this town being separated from Cochin by a backwater of two miles. There are several small backwaters between Ernacolum and the hill bungalow.

4. Mr. Hormusji Nowroji in his letter embodied in G.O., No. 1628 M., dated 3rd November 1894, was evidently under the impression that the laterite was near the surface in Ernacolum, but the outcrop is, as above stated, ten miles from Ernacolum, so that there would be little difference in the depth to be bored at Ernacolum or Cochin to meet the laterite.

5. At the point indicated, Mr. Hudson and I considered that an experimental well might be sunk to test the yield, and that if this was satisfactory, a gallery might then be formed across the valley meeting at either side, the bases of the laterite hills forming the valley referred to. The site is marked on the accompanying map. To carry out such an experiment would cost about Rs. 5,800 calculated as follows:—

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Sinking one well, 25 feet deep	1,250
One curb including rods, carriage, &c., and erection	1,000
Cement concrete in curbs	46
Laterite steining for the 20 feet diameter well	1,200
Cement plastering	675
Rails	286
Sundries	143
	4,600
Loan of pumps testing yield and other cost of experiments—sum ..	1,200
Total ..	5,800

6. If the experiment is to be made, it would be advisable to arrange with the Government of Cochin for Mr. Hudson to carry it out, and to this course he has no objection.

7. The question, however, is what will be the expense of the scheme even if the experiments were satisfactory. The work of laying pipes across two miles of backwater will be a difficult one and requires a specially-fitted barge and a steam dredger. I have in an appendix given a rough estimate of the work, and I do not believe it can be done for less—it includes the cost of pipes for the conveyance only of water to Tripoonitara, Ernacolum and Mattancherry and the share of the Cochin Government, if they agreed to a joint scheme, is also noted; in addition to this provision would have to be made for distribution works in these towns.

8. The cost of pumping is also shown and the shares allocated.

Supposing that Government made a grant of half the proportionate cost, the annual expenditure which the town of Cochin would have to meet would be —

	Rs.
$\frac{4,01,540}{2}$ at 5·96 per cent.	11,966
Pumping charges	5,500
Maintenance and repairs	1,000
Establishment	1,500
Total ..	19,966

9. It appears to me that (even if the Cochin Government agreed to join in the scheme) the figures show that the cost is much above what Cochin (British) could possibly meet even aided by a liberal grant from Government.

10. Should Government decide this to be the case there are three other schemes which present themselves—

(1) Supply from the Periyár river at Alwaye by pipes and pumping. This would be more expensive than the scheme noted, because the distance is greater.
(2) Supply from Alwaye by properly designed "water in bulk" steamers.
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It is unnecessary to do more than refer to the Alwaye scheme as it would entail the expenditure for $4\frac{1}{2}$ miles more pipe and 36 feet more lift than the scheme estimated, and the Cochin Government's share would be somewhat less owing to the omission of Tripondrum.

As to proposal (2) self-propelling hopper barges to carry 300 tons cost about £ 5,000 each—supposing the supply to Cochin were to be limited to $7\frac{1}{2}$ gallons or say $\frac{17,600 \times 7\frac{1}{2} \times 10}{2,240} = 589$ tons, we should require say two such barges = £ 10,000, or say Rs. 1,80,000, and there would be an additional charge for pumping machinery in each; this we might put down at Rs. 30,000, or say in all Rs. 2,40,000.

11. Pumping the above quantity of water in and out daily would cost Rupees 12,000 per annum. A service tank at sufficient elevation would cost Rs. 20,000. The cost of transit might be taken at Rs. 40 daily or Rs. 14,600 per annum.

12. Supposing that Government in the case of Cochin went so far as to supply the barges and that the municipality had to provide and maintain the remainder of the scheme, the annual cost to the town would work out as follows:—

	Rs.
Pumping cost as in paragraph 11	12,000
Transit charges	14,600
Interest on Rs. 51,750 or distribution cost including contingencies at 5·96 per cent.	3,084
Repairs and maintenance of pipes	1,000
Establishment	1,500
Total ..	32,184

This is much more expensive than the first scheme put forward even after a grant of Rs. 2,40,000 to the municipality.

Condensation (3) is the next proposal. Suppose in this case the supply is limited to $7\frac{1}{2}$ gallons per head and that 17,600 people are to be supplied, the total would then be 132,000 gallons daily.

One set of apparatus to produce 12,000 gallons daily costs £4,000, therefore for 132,000 = $4,000 \times \frac{132}{12}$ = £44,000, or say Rs. 7,92,000; this, without taking into account that it requires $4\frac{1}{2}$ lb. of wood to produce 16 lb. or 1·6 gallons of condensed water, places the plan of condensation altogether out of reach.

13. There then still remains the plan of a deep boring, and I must record my deep regret as also that of many people in Cochin that Government have been advised to give up the attempt to procure water in this way.

14. Undoubtedly the chemical analysis of the water so far as we have gone is not good, but even that analysis I am far from being satisfied with, and Mr. Locke is also anxious to see some further attempt made with regard to the existing bore to secure good water. I have drunk the water, it tastes good and is pleasant, it is certainly better water than any other in Cochin. The water stands in the bore pipe one to two feet above ground, and it seems a matter of the greatest regret that what I believe, and I think I have shown, to be the only practical scheme should have been stopped on the report of the Geological Department who do not profess to have any basis whatever to go on for their advice. It was stated that rock might be many thousand feet below the surface, but we don't want to reach rock—we already have the water above ground. Impervious beds of clay are just as good as rock.

15. I have asked Mr. Locke to have fresh samples of the water submitted to analysis after a longer time of pumping and at the same time to submit samples to the Government Bacteriologist of the North-Western Provinces, Professor Hankin—this will be a true test, and even then it is possible to purify the water by filtration—probably Anderson Process would render it perfectly safe. It is now perfectly palatable.

16. I therefore, in view of all the facts I have stated, strongly urge Government not to abandon the bore scheme, but to persevere even to 2,000 feet which is not at all a great depth. The scheme has not had a fair trial, and now that it is really the sole hope of Cochin I think that no effort should be spared to make it a success.

17. Meantime, until I hear from Government, I will not act on any order which may be passed in the interval in reference to my No. 41-T. of 19th June 1895 regarding the removal of the apparatus and purchase of new apparatus which is still unanswered.

APPENDIX.

ROUGH estimate of infiltration works, engine house, &c., at site near Rajah's Hill bungalow, and pipes for the conveyance of water to Tripoonitara, Ernacolum, Mattancherry and British Cochin with the shares of the Cochin Government and British Cochin allocated.

	Approximate cost of works.	Proportion.	British Cochin.	Cochin Government.
	Rs.		Rs.	Rs.
Infiltration works	1,05,600	176 : 274	41,300	64,300
Pumps, boilers, &c., including erection	46,800	176 : 274	18,300	28,500
Engine and boiler house and its appendages	48,000	176 : 274	18,800	29,200
Pipes from infiltration to Tripondrum branch	1,02,960	176 : 274	40,260	62,700
Pipes from Tripondrum branch to Ernacolum branch ..	1,63,020	176 : 244	68,320	94,700
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Pipes for backwater	1,19,640	176 : 172	60,500	59,140
British Cochin main line	51,480	..	51,480	..
Distribution works in Cochin	45,000	..	45,000	..
Total ..	6,91,080	..	3,48,290	3,42,790
Contingencies ..	1,04,670	..	53,250	51,420
Total ..	7,95,750	..	4,01,540	3,94,210
Annual cost of pumping ..	14,064	176 : 274	5,500	8,564

(Signed) J. A. JONES,
Sanitary Engineer to Government.

Reference No. 1646, dated 16th November 1895.

The above papers will be forwarded to the Public Works Department with the request that the Chief Engineer may be asked to give his opinion as to whether he thinks it advisable to leave the present Cochin boring apparatus where it is, or whether he would pull it up, supply the missing rods, and then keep it in store to be put to whatever use it may hereafter be thought advisable; and in the latter case whether he considers the Sanitary Engineer's estimate of Rs. 1,200 for raising it and carrying it to Madras reasonable.

(Signed) W. W. PHILLIPS,
Ag. Asst. Secy. to Govt.

To the Public Works Department,
with papers in original (to be returned).

Note by the Chief Engineer, Public Works Department.

The undersigned considers that, for the present, at all events, the apparatus should remain where it is.

26*th November* 1895. (Signed) J. PENNYCUICK, Col., R.E.,
Chief Engineer, P.W.D.

No. 3724-C.

Transferred to the Local and Municipal Department with reference to its memorandum, No. 1646, dated 16th November 1895, the enclosures of which are herewith returned.

28*th November* 1895. (Signed) J. PENNYCUICK, Col., R.E.,
Secretary to Govt., P.W.D.

To the Local and Municipal Department, with six enclosures.

ORDER—No. 65 M., dated 11th January 1896.

As the experimental boring at Cochin has not so far resulted in procuring a water-supply for the town, and as the expenditure up to date, including the cost of the apparatus, has exceeded Rs. 13,000, the Government is not prepared to continue the experiment. The municipal council will therefore be informed that if it desires to carry on the boring it must do so at its own cost, and that the existing apparatus will be placed at its disposal. The depth reached at present is 325 feet, and some of the boring rods have been broken; it is estimated that it will cost another Rs. 5,000 to continue the boring to a depth of 400 feet, beyond which the existing plant would not be effective.

2. As the removal of the apparatus to Madras would entail considerable expenditure, the Government considers that for the present, at any rate, it should remain where it is, but, as this course will involve a monthly expenditure on account of watchmen to look after it, the Sanitary Engineer will be requested to report on the 30th June next how matters stand, and what he would propose to do, in case no further use can be found for the apparatus.

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(True Extract.)

J. F. PRICE,
Chief Secretary.

To the Chairman, Municipal Council, Cochin.
„ Collector of Malabar.
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Govt. of {1896} Madras.

LOCAL AND MUNICIPAL.

Issued 8.5.C
Dw 12-98/5-6

Recd. *Encl.*

G.O., No. 65 M., 11th Jan. 1896.

JANUARY.

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GOVERNMENT OF MADRAS.

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To the Chief Engineer, Public Works Department.

No. 2863-C.

Memorandum.

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3*rd October* 1895.

To the Local and Municipal Department.

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(Signed) J. A. JONES,
Sanitary Engineer to Government.

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he would pull it up, supply the missing rods, and then keep it in store to be put to whatever use it may hereafter be thought advisable; and in the latter case whether he considers the Sanitary Engineer's estimate of Rs. 1,200 for raising it and carrying it to Madras reasonable.

(Signed) W. W. PHILLIPS,
Ag. Asst. Secy. to Govt.

To the Public Works Department,
with papers in original (to be returned).

Note by the Chief Engineer, Public Works Department.

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26*th November* 1895. (Signed) J. PENNYCUICK, Col., R.E.,
Chief Engineer, P.W.D.

No. 3724-C.

Transferred to the Local and Municipal Department with reference to its memorandum, No. 1646, dated 16th November 1895, the enclosures of which are herewith returned.

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Secretary to Govt., P.W.D.

To the Local and Municipal Department, with six enclosures.

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2. As the removal of the apparatus to Madras would entail considerable expenditure, the Government considers that for the present, at any rate, it should remain where it is, but, as this course will involve a monthly expenditure on account of watchmen to look after it, the Sanitary Engineer will be requested to report on the 30th June next how matters stand, and what he would propose to do, in case no further use can be found for the apparatus.

3. The other schemes which have been proposed are, owing to their great cost, impracticable and the question of water-supply to Cochin must then, for the present, be postponed.

(True Extract.)

J. F. PRICE,
Chief Secretary.

To the Chairman, Municipal Council, Cochin.
" Collector of Malabar.
" Sanitary Engineer.
" Public Works Department.
" Financial Department.

Exd. Shaik Karim.

CONCERNS BOTH BRITISH INDIA AND INDIAN STATES.

Govt. of {1896} Madras.

LOCAL AND MUNICIPAL.

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G.O., No. 65 M., 11th Jan. 1896.

JANUARY.

Cochin Water-supply and Boring Apparatus.

Informing, with remarks, the Municipal Council, Cochin, that Government is not prepared to continue the experimental boring at Cochin, that if it desires to continue the work it must do so at its own cost, and that the existing apparatus will be placed at its disposal.

S.E. IV circle
S.E. V circle