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TAMIL NADU ARCHIVES

GOVERNMENT OF TAMIL NADU

Revenue DEPARTMENT

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R.R.
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2324

*Proceedings of the Madras Government, Public Works Department,
5th April 1877. No. 1,174.*

No. 144. Read again the following Proceedings of the Madras Government in the Public Works Department, dated 10th August 1876, No. 2,066 :—

Read also the following :—

Endorsement of the Financial Department, dated 28th August 1876, No. 1305.

From L. R. BURROWS, Esq., Acting President of the Municipal Commission, to the Hon'ble W. HUDLESTON, Chief Secretary to Government, dated Madras, 24th August 1876, No. 333.

In reply to the Order of Government, dated 12th August 1876, No. 1,451, Financial Department, I have the honor to report, for the information of His Grace the Governor in Council, that the Committee are of opinion that, in order to render the Red Hills water potable, filtration is absolutely necessary.

2. The Committee desire a professional opinion on the following points :—

1st.—Whether the supply can be rendered potable at all seasons of the year without filtration.

2nd.—Whether filtration can be effected without such a loss of head as would cut off the taps in the higher levels of the system from their supply.

3rd.—If pumping has to be resorted to, what would be the best and most economical method of applying it to the present system.

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TRANSFERRED to the Public Works Department, with reference to the Order in that Department, 10th instant, No. 2,066.

(Signed) W. HUDLESTON,
Chief Secretary.

No. 145. From J. CRAWFORD, Esq., Under Secretary to the Government of Bengal, Judicial Department, to the Secretary to the Government of Madras, Public Works Department, dated Calcutta, 12th January 1877, No. 106.

I AM directed to acknowledge the receipt of your letter No. 63, dated the 11th November 1876, and in reply to forward, for the information of His Grace the Governor, a copy of a letter No. 366, dated the 23rd ultimo, from the Officiating Chairman of the Corporation of the Town of Calcutta, furnishing the particulars required by the Madras Municipality on the subject of the water-supply of Calcutta.

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From C. T. METCALFE, Esq., Officiating Chairman of the Corporation of the Town of Calcutta, to the Under Secretary to the Government of Bengal, Judicial Department, dated Calcutta, the 23rd December 1876, No. 366.

I HAVE the honor to acknowledge receipt of your letter, No. 3,933, dated 11th instant, and to say that the water-supply works of Calcutta have been designed and carried out for the purpose of ensuring the delivery in Calcutta of 6,000,000 gallons of water per diem. The population of Calcutta by the last Census is 429,535.

2. The water-supply is taken from the river Hooghly near Barrackpore about 18 miles above Calcutta; it is pumped by three 50 H.P. compound beam engines into settling tanks which are six in number, with a total area of 750,000 superficial feet and a depth of 8 feet.

The water is allowed to remain in each tank in a quiescent state about 36 hours, after which it is run on to eight filter beds, the aggregate area of which is 160,000 S. feet. The total depth of filtering material in each bed is 4 feet 1 inch, and is composed as follows:—1 foot 3 inches of pebbles (in five layers) varying in size from 1½ inches in diameter to the size of peas 4 inches of coarse "Mugra" sand, and 2 feet 6 inches of fine river sand. Each filter, when working freely, should discharge 1,000,000 gallons in 24 hours; the water is conveyed by gravitation direct from the filters to Tallah Reservoirs by an iron main 42 inches in diameter and 14½ miles in length. The main is actually capable of delivering 8,000,000 gallons in 24 hours by simple gravitation.

3. At Tallah Station, just without the town, there is a reservoir capable of holding 1,000,000 gallons of water, three 50 H. P. engines working three pumps at twenty strokes per minute, each discharging 110-17 gallons per stroke, and one 75 H.P. engine working one pump at the same speed and discharging 200 gallons per stroke. These engines pump the water from the reservoir and distribute it under pressure over the northern division of the town during the day, and supply the reservoir at Wellington Square during the night.

4. At Wellington Square, a central position in the town, there is a covered reservoir which holds a day's supply or 6,000,000 gallons of water, and three 75 H.P. compound beam engines working three pumps at twenty strokes per minute, each pump discharging 132-50 gallons per stroke. These engines work at certain hours during the day and keep up a pressure of 50 feet in the southern division of the town.

5. In the Engineer's original design it was contemplated to have a reservoir at Tallah capable of holding a full day's supply in case of any accident to the 42 inch main, and the want of this work of precaution is a serious defect in the present arrangements.

No. 147-W.

No. 145-A.

NOTE BY THE CHIEF ENGINEER FOR IRRIGATION.

Madras Town, Supply.

THE particular point referred to the undersigned for opinion in the remarks made in circulation on the letter No. 106 of the 12th January last from the Government of Bengal, is whether an officer of the Public Works Department can be spared at the present time to advise the Municipality as to the best way of remedying the palpable defects of the arrangements under which at present the town of Madras is supplied with water from the Red Hills Tank.

2. It is considered that it is not practicable at the present time to detail an officer of the Public Works Department for this duty, which would necessarily occupy a very considerable time. The officers of the Irrigation Department whose qualifications are such as to render it likely that they would deal in a complete and satisfactory manner with the somewhat difficult questions which have to be settled are not numerous, and the duties on which they are employed are important, and cannot, without great inconvenience, be left uncared for. Moreover, Town supply arrangements form a distinct and special branch of engineering, and though officers of experience in hydraulic work and of judgment would learn how to deal with the problem of the Town supply, they would come to the work without that training and knowledge which are very desirable, not only in the interests of the Municipality, but in order that their recommendations may obtain the acceptance of those who have to decide upon the action to be taken upon them. It is therefore believed that it will be better

for the Municipality to consult an Engineer familiar with this branch of engineering; and as the supply of Madras and its drainage are very intimately connected, the undersigned concurs in General Walker's opinion that the Municipality can hardly do better than to consult Mr. Clark, who has worked out the scheme for the drainage of Madras, which it is understood is in abeyance only until the means of raising the requisite funds are decided upon.

3. Since the reference was made to the Government of Bengal for information, another point requiring to be looked into has come under notice, and that is the best point for drawing off water from the tank in order to ensure good and comparatively clean water being obtained. The dirtier the water, the greater will be the cost of filtering, and so this point is of considerable importance. The present is a favorable opportunity for settling what is the best place for tapping the Red Hills tank, because the water is unusually low, and moreover, possibly this season, it may be practicable to do what may be necessary in the bed of the tank more easily than at any future time within the next eight or ten years. The present off-take is near the south end of the tank, and the water here is comparatively shallow, and the soil of the foreshore of a soluble description which, under the action of the ripple of the water, is liable to be mixed up with the supply drawn off, thereby making it impossible to obtain water as pure as is the great body of that in the tank. It seems therefore probable that another off-take will have to be selected, and it is thought that in the neighbourhood of the spit of land on which several houses formerly stood a suitable place will be obtainable.

4. The level of the present off-take is clearly not suitable; it involves a great waste of water; it is not high enough to command Madras effectively; it will therefore not allow of any further loss of head in connection with filtering. The chief improvements required are, therefore, it is considered—

- (1.) The selection of a better point of off-take from the tank.
- (2.) The provision of suitable means of getting water from the tank.
- (3.) The conducting the water-supply to a pumping well.
- (4.) The raising of the water to at least the level of the high ground near the house now or formerly belonging to Mr. Ritchie.
- (5.) The construction of proper filters.
- (6.) The conveyance of the water after filtration by pipes in supersession of the present open channel.
- (7.) The substitution of smaller for the large pipes below the end of the open channel; the large pipes would probably do in part for the conveyance of water from the Red Hills to Kilpauk.

5. The water should be taken from the tank by means of a water tower to be built, where there is always plenty of water, and it should be conveyed thence to the pumping well by a culvert. The present season is favorable for building the tower and culvert and constructing the pumping well, and it is recommended therefore that a decision on this point should be come to at once, and, if a new off-take is to be adopted, that arrangements should at once be made for selecting the site of these works and commencing their construction, as the foundations of the tower will have to be laid at about 15 feet below the old full tank level, 31-31, and possibly lower, and the culvert will be of considerable length and must be carefully built. Good bricks will be

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the best material for the masonry and can probably be obtained from the Government brick yard near the Spur Tank.

FORT ST. GEORGE, (Signed) JOHN MULLINS, Lt.-Col., R.E.,
16th March 1877. Chief Engineer for Irrigation.

No. 146. ORDER THEREON, 5th April 1877, No. 1,174.

IRRIGATION, No. 9.

HIS GRACE the Governor in Council observes that, since in the Order of the 10th August last, No. 2,066, it was decided to lend the assistance of an officer as desired by the Municipality, the demands in connection with Famine Relief operations have not only absorbed every available member of the Public Works Department, but have necessitated the deputation by other Governments of many additional officers, and consequently there is no immediate probability of Government being able to spare an officer to the Municipality.

2. Moreover, on the receipt of the President's letter of the 24th August, it was considered desirable to ascertain through the Bengal Government what arrangements had been found necessary and efficacious in connection with the water-supply of Calcutta, and His Excellency in Council is of opinion, after consideration of the reply above recorded, that it will be necessary for the Municipality to obtain the advice of some Engineer who has designed and erected some large filtering water-supply arrangements elsewhere. The first thing, however, to be done is to obtain such data as are necessary to the formation of a reliable opinion on the measures which should be taken to improve the character and security of the water-supply of Madras, and the following is an outline of the data required. It will be noticed that in the letter from the Chairman of the Corporation of the Town of Calcutta is given much of the information necessary for guiding the selection of a suitable place for settling and filtering tanks.

1st.—A survey plan with section should be prepared showing the relative levels of the Red Hills tank in ordinary seasons and in seasons of drought.

The levels of different principal points in the city; the levels of the nearest available sites for settling and filtering reservoirs, the area being estimated according to the Calcutta data.

2nd.—The general position and size of pipes already laid, and sections of possible routes for mains from the Red Hills tank to the city.

3rd.—A careful description and probably some borings of the soil and sub-soil at sites supposed suitable for filters, &c., will be needed.

These data in full detail are essential for the consideration by any Engineer of the question as well as for the preparation of specifications.

3. When the Municipality shall have got ready the information above indicated, the Government will be prepared to transmit the papers to the Secretary of State with a request that they may be laid before a qualified Engineer for his opinion for the preparation of specifications in full, and, if possible, for obtaining contracts for the work from some one of the large firms who make works of this class their speciality. This Government consider that although a little more money may have to be paid apparently, i.e., the estimate or contract price may be higher, the work

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will be good, and extras, &c., less than if it be carried out by departmental agency or petty contract.

4. The attention of the President, Municipal Commission, will be drawn to the Note by the Chief Engineer for Irrigation, with the observation that it appears to the Government that much investigation will be necessary before it can be decided whether it will be preferable to let the water from the tank gravitate to filters near the town, the filtered water being afterwards pumped to the required level, or whether it should be pumped from the tank into filters placed at a convenient level near the tank.

(True Extract.)

John Mullins
Lieut.-Col., R.E.,
Secretary to Government, P.W.D.

To the Chief Engineer for Irrigation.
" Financial Department.
" Revenue "

Ed. E. C. Shunker.
Spare Copies

Revenue Department
No 2245
Govt. of Madras.
PUBLIC WORKS.

THE CHIEF ENGINEER FOR IRRIGATION,

Indulgent

10. D. to H. of Revenue 26.4.77

Issued

Recd. 23rd April 77 Encl.

G.O., 5th April 1877, No. 1,174.

Mr. Mas

APRIL

Nos. 144-146.

No 2324.

Communicated
to the Board of Revenue

25th April 1877 -

Madras Town Water-supply. - The Municipality requested to furnish information on certain points with the view of addressing the Secretary of State for India on the subject of the improvement of the —.

W. D. Mas