(1) பக்கங்களின் எண்ணிக்கை 70

(2) புதுக்கித் திருப்பிய நாள் ~~6.7~~ 6.7.88

(3) ஆதாரங்குறிப்பவர் சுருக்கொப்பம் long

# தமிழ்நாடு ஆவணக் காப்பகம்.

## தமிழ்நாடு அரசு

P.W.D துறை

அரசாணை எண். / மு. கோப்புத் தாள் எண். 2147/48 W அச்சகம் / பலவகை

நாள் : 16 - 7 - 1888 ~~198~~ .

அபர

மடிக்கவோ கண்டபடி கையாளவோ கூடாது

ஆவண. கா-1—18,000—15-6-87.

16th July 1888, No. 2147 W., Public Works.

2147/48

## GOVERNMENT OF MADRAS.

## PUBLIC WORKS DEPARTMENT.

**Buildings and Roads.**
**Military Works.**

Read—the following paper :—

Note by the Chief Engineer, Public Works Department, dated 7th July 1888.

Order—dated 16th July 1888, No. 2147 W., Public Works.

The investigations made of late years with the object of obtaining a pure water-supply for the troops stationed at Bangalore having failed to produce an efficient and economical scheme, the Government resolved to offer a reward of Rs. 1,000 for the best essay on the subject, on the conditions specified in the notification published in the *Fort St. George Gazette* of the 1st November 1887, and subsequent issues; the award being left to the Chief Engineer, Public Works Department.

2. A number of essays have been received in compliance with this invitation, and have been carefully examined by the Chief Engineer, who awards the prize to Mr. Standish Lee, Sanitary Engineer, Mysore. The sum of Rs. 1,000 will accordingly be paid to Mr. Lee by the Executive Engineer at Bangalore, and will be adjusted against Military Works under instructions from the Examiner, Public Works Accounts.

3. The essay submitted by Mr. A. H. Garratt, Executive Engineer, Bellary, is, in the opinion of the Chief Engineer, a very good one, and does him great credit. The essay of Mr. S. Tomlinson, Deputy Chief Engineer, Bombay Water Works, is also, in Colonel Hasted's opinion, a very creditable paper. Both these essays came near to winning the prize.

4. A copy of these Proceedings will be published in three successive issues of the *Fort St. George Gazette* for the information of competitors.

(Here enter No. 2148 W., dated 16th July 1888.)

(True Extract.)

(Signed) J. O. HASTED, Colonel, R.E.,
Secretary to Govt., P.W.D.

To the Superintending Engineer, V Circle.
" Examiner, Public Works Accounts.
" Military Department.
" Superintendent, Gazette Press.

Endorsement—dated 16th July 1888, No. 2148 W., Public Works.

Copy of the above forwarded for the information of the Government of India, Military Department.

Captain, R.E.,
Under-Secy. to Govt., P.W.D.

Exd. F. R. Bantleman.
Spare Copies

BUILDINGS AND ROADS.
MILITARY WORKS.

# Govt. of (1888) Madras.

## PUBLIC WORKS.

*Dated July, 16th.*

*Recd.* *Encl.*

**G.O., 16th July 1888, Nos. 2147, 2148 W**

**JULY.**

## Bangalore Water-supply Scheme

Forwarding to the Government of India, for information, Proceedings of this Government awarding to Mr. Standish Lee, Sanitary Engineer, Mysore, the prize of Rs. 1,000 offered for the best essay on the —.

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3
2147/48

# GOVERNMENT OF MADRAS.

## PUBLIC WORKS DEPARTMENT.

**Buildings and Roads.**
**Military Works.**

Read—the following letter from Colonel H. M. VIBART, R.E., Superintending Engineer, V Circle, to the Chief Engineer, Public Works Department, dated Bangalore, 20th October 1887, No. 2946 :—

With reference to G.O., of 12th July 1887, No. 1924 W., Public Works, I have the honor to forward an estimate showing approximately the amount of compensation required to be paid for the removal of Agram and Jaksandra villages with the hamlets of Venkatapuram and Maistrypalia attached to the latter. The compensation amounts to the large sum of Rs. 2,96,843. In addition to this a sum of Rs. 15,000 will be necessary to acquire some other lands besides the above. The total estimated cost will therefore aggregate Rs. 3,11,843.

2. As regards the proposal to take a pipe from the higher level tanks with the view of reduction in the estimated annual expenditure connected with Captain Romilly's project A, I beg to point out that the higher level tank water is required for cultivation and could not be indented on for the supply of the troops. With reference to the idea of pumping from the Cauvery, I beg to point out that the Cauvery at the railway bridge is some 600 or 700 feet lower than the station of Bangalore, and that, moreover, the water would have to be brought a distance of about 80 miles through a somewhat difficult country, so that the project indicated is not practically feasible. I propose shortly to visit the Arkavuty river with the view of utilising that river for the supply of Bangalore. The road to Nellamangalam crosses the river at a distance of 12 miles. At this point the catchment basin is about 335 square miles, while lower down, where the road from Bangalore to Magadi crosses it, the drainage amounts to 575 square miles.

3. Unfortunately the river is much lower than Bangalore. Probably at the point on Nellamangalam road, 12 miles from Bangalore, it is some 300 feet lower, and if water is obtained from that river, it will have to be pumped up fully 300 feet. Bangalore is situated on the water-shed between the two rivers of Arkavuty and Penaukeny, and these river-beds are about 12 miles distant west and east, and some 2 or 300 feet lower. It will be impossible to get water from either of these rivers without considerable pumping power. I propose shortly to visit these rivers. I enclose a sketch map showing the position of Bangalore with regard to these rivers with a short memorandum.

## ENCLOSURES.

**Statement** showing the approximate amount of compensation estimated for the purpose of taking Agram and Jaksandra villages, and the hamlets of Venkatapuram and Maistrypalia attached to the latter, for the improvement of Bangalore water-supply in the Agram Hobli, Bangalore taluk.

| Villages. | Particulars of land. | Dry Land. | | | | Wet Land. | | | | Garden. | | | | Total amount of compensation estimated. | Amount of 20 years' Cundayam due to Government. | Amount of compensation for the tank. | Houses, temples, and other building within the village site. | Bungalow, temples and mantapams out of the village site. | Amount of wells. | Total amount of compensation estimated. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Extent. | | Rate per acre. | Amount of compensation. | Extent. | | Rate per acre. | Amount of compensation. | Extent. | | Rate per acre. | Amount of compensation. | | | | | | | |
| | | ACRES. | GUNTAS. | RS. | RS. A. P. | ACRES. | GUNTAS. | RS. | RS. A. P. | ACRES. | GUNTAS. | RS. | RS. | RS. A. P. | RS. A. P. | RS. | RS. | RS. | RS. | RS. |
| Agram. | Assessed land under cultivation .. | 275 | 23 | 100 | 27,557 8 0 | 79 | .. | 150 | 11,850 0 0 | 7 | 21 | 200 | 1,505 | 40,912 8 0 | 23,720 12 0 | 20,000 | 15,000 | 1,020 | 4,545 | 1,65,267 |
| | Inam land .. | 102 | 5 | 200 | 20,425 0 0 | 36 | 9 | 250 | 9,056 4 0 | .. | .. | .. | .. | 29,481 4 0 | .. | .. | .. | .. | .. | .. |
| | Waste land fit for cultivation .. | 70 | 10 | 100 | 7,025 0 0 | .. | .. | .. | .. | .. | .. | .. | .. | 7,025 0 0 | .. | .. | .. | .. | .. | .. |
| | Village site, unassessed, Gomaul land, tank-bed and phoot karab .. | 235 | 25 | 100 | 23,562 8 0 | .. | .. | .. | .. | .. | .. | .. | .. | 23,562 8 0 | .. | .. | .. | .. | .. | .. |
| | Total .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 1,00,981 4 0 | .. | .. | .. | .. | .. | 1,65,267 |
| Jaksandra and the hamlets of Venkatapuram and Maistrypalia attached to it. | Assessed land under cultivation .. | 391 | 30 | 100 | 39,175 0 0 | 11 | 33 | 150 | 1,773 12 0 | 10 | 28 | 200 | 2,140 | 43,088 12 0 | 5,813 0 0 | 2,500 | 10,243 | 1,230 | 4,940 | 1,31,576 |
| | Inam land .. | 207 | 5 | 200 | 41,425 0 0 | .. | 37 | 250 | 231 4 0 | 12 | 2 | 300 | 3,615 | 45,271 4 0 | .. | .. | .. | .. | .. | .. |
| | Waste land fit for cultivation .. | 11 | 15 | 100 | 1,137 8 0 | .. | .. | .. | .. | .. | .. | .. | .. | 1,137 8 0 | .. | .. | .. | .. | .. | .. |
| | Village site, unassessed, Gomaul land, land bed, and phoot karabs. | 73 | 21 | 100 | 7,352 8 0 | .. | .. | .. | .. | .. | .. | .. | .. | 7,352 8 0 | .. | .. | .. | .. | .. | .. |
| | Total .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 96,850 0 0 | .. | .. | .. | .. | .. | .. |
| | Grand Total .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 2,96,843 |

*N.B.*—For the enlargement of Agram tank some other lands attached to the villages of Vankajee Rayarakar.y Haralookuntai, Yellakunta and Boomanally, which are not included in the above, are necessarily required for the purpose of tank-bed and the compensation of which will be nearly Rs. 15,000.

Bangalore,
20th September 1887.

(Signed) A. H. MACINTIRE,
Deputy Commissioner.

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## MEMORANDUM.

Bangalore is on very high ground, between the valleys of the Arkavuty and Penaukeny rivers, and it can only be supplied with a copious supply of water from either one or other of these rivers. About 15 miles to the east we find the very large tank of Ooscottah on the valley of the Penaukeny. This tank might be made available, but the water will have to be pumped up a height of 200 feet. To the west we have the Arkavuty on the road to Magadi; the Arkavuty is crossed at a distance of 19 miles from Bangalore, but the bed is some 350 or 400 feet lower than the city.

On the road to Nellamangalam, about 12 miles from Bangalore, the Arkavuty is crossed; here it is only about 220 feet below Bangalore. At this point the catchment basin of the Arkavuty is about 335 square miles, while the catchment basin of the Ooscottah tank is 650 square miles. On the road to Magadi, at a distance of 6 miles, a small drainage of 4 square miles is crossed, which is said to have a good deal of water, but I do not think it at all likely there will be found to be sufficient there. The levels of this drainage I do not know. About half way to Ooscottah and 2 miles to the left of the road is a drainage of about 65 square miles with a terminal tank which was constructed at the time of the last famine. This might be utilised, but the drainage area is not, I think, sufficiently great. General Mullins states that the water of the Ooscottah tank is not considered good by the natives, but I think it would be worth while to have the water analysed, and, if found good, this water might be pumped up to Bangalore. There is a hill close to the tank, height 2,887, and on this hill might be erected a stand-pipe so as to command the barracks at Bangalore, but the stand-pipe would have to be 143 feet in height. I propose to visit shortly Ooscottah tank, the river Arkavuty on the road to Nellamangalam, and the other two smaller drainages mentioned in this memorandum.

Bangalore,
20th October 1887.

(Signed) H. M. VIBART, Col., R.E.,
Superintending Engineer, V Circle.

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**Order**—dated 5th November 1887, No. 2940 W., Public Works.

Ordered to be forwarded to the Government of India.

(Here enter No. 2941 W., dated 5th November 1887.)

(True Extract.)

(Signed) J. O. HASTED, Colonel, R.E.,
Secretary to Govt., P.W.D.

To the Superintending Engineer, V Circle.

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**Letter**—to the Secretary to the Government of India, Military Department, dated Chepāk, 5th November 1887, No. 2941 W.

Adverting to your letter No. 1182 M.W., dated 11th June 1887, on the subject of the Bangalore water-supply, I am directed to forward copy of the accompanying letter, with enclosures, from the Superintending Engineer, V Circle, affording the information called for by the Government of India in respect to the cost of removal of the four villages which drain into the Agram tank, and offering remarks as to the other suggestions contained in paragraphs 4 and 5 of your letter under acknowledgment.

2. I am to add, that the question of supplying the troops with pure drinking water is still engaging the attention of this Government, as will be seen by their Proceedings, No. 2810 W., dated 20th October 1887, copy of which I am to forward for the information of the Government of India.

(Signed) J. O. HASTED, Colonel, R.E.,
Secretary to Govt., P.W.D.

Exd. J. Moses.
Spare Copies

BUILDINGS AND ROADS.
MILITARY WORKS.

Govt. of 1887 Madras.
PUBLIC WORKS.

*Dated November, 5th.*

*Recd.*

**G.O., 5th Nov. 1887, Nos. 2940, 2941 W.**

**NOVEMBER.**

## Bangalore Water-Supply

Forwarding to the Government of India copy of a report from the Superintending Engineer, V Circle, in connection with the scheme for the — for troops, and copy of certain Proceedings of the Government on the subject.

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# List of Essays received on the Bangalore Water Supply Scheme.

3
8/147/48

| C. No. | From whom | Date | Remarks |
|---|---|---|---|
| 9807 | 1 P. S. Ramayangar<br>Sub-Surveyor<br>Survey of India Dept<br>Cumbum | 28.11.87 | |
| 10081 | 2 Mr J. Ray<br>Planter<br>Mountain Glen Estate<br>Nilgiris | 7-12-87 | |
| 10251 | 3 Mr Douglas Betts<br>Chybassa. Singbhoom<br>Bengal<br>Thro: the Secy. to the Govt of India Mily Dept | 25.11.87<br>No 2467 Mil<br>8-12-87 | |
| 496 | 4 Mr W. E. Beveridge<br>Late Supervisor B.N.S.Ry<br>Tempy Estabt.<br>C/o J. Middleton Esqr<br>Salem | 15.1.88 | En: 3 Drawings |
| 10269<br>99<br>2193 | 5 General J. F. Fischer RE<br>Bangalore | 14.12.87<br>27.12.87<br>5.3.88 | <br><br>En: 1 Sketch Map |
| 2935 | 6 Mr Edgar Arthur Quarme<br>Engineer<br>Mandalay, Burma | 12-3-88 | En: 2 Sheets of Maps |
| 3789 | 7 Mr A. H. Garrett<br>Executive Engineer<br>Bellary | 23-4-88 | Encls: 1 Map. |
| 4149 | 8 Col H. N. Vibart RE<br>Supdg Engineer<br>V Circle<br>Madras | 377 of 4-5-88 | |

P.

| No | From whom | Date | Remarks- |
|---|---|---|---|
| 4378 | 9<br>Mr A. Mackenzie Cameron<br>Calcutta | 4.5-88 | ✓ |
| 4469 | 10<br>Mr R.W. Thompson<br>Civil Engineer<br>Bangalore | 12.5.88 | ✓ |
| 4470 | 11<br>Mr C.B. Target<br>Executive Engr<br>Upper Burma | 30th 4-88 | ✓ |
| 4471<br>4537 | 12<br>Mr S. Tomlinson<br>Assoc: M. Inst C.E.<br>F.R. Met. Soc:<br>Dy. Chief Engineer<br>in charge.<br>Bombay Water Works | 10/12 - 5.88 | ✓ Encl: 1 Drawing P |
| 4477<br>4516 | 13<br>Mr Standish Lee<br>Sanitary Engineer<br>Mysore State Service<br>Thro: the Supdt. Lawrence<br>Asylum Press Madras | 10th/11 5.88<br>No 1372 d/14.5.88 | ✓ Encl: 2 (1 Bound Copy with Plates)<br>Plates Nos IV & V will follow. |
| 4538 | 14<br>Mr R. Scaldwell<br>Executive Engineer<br>Palace Division<br>Bangalore | 14-5-88 | ✓ P |
| 4552 | 15<br>Major C.H.M. Kensington R.E.<br>Executive Engineer<br>Mysore Govt | 14.5-88 | ✓ Encl 10 (2 Drawings) P |

| No | From whom | Date | Remarks |
|---|---|---|---|
| 4570 | 16<br>Mr J.H. Stephens<br>Asst Engineer P.W.D<br>Madras | | ✓ |

List of Essays
received on the Bangalore
Water Supply Scheme.

15th May 1888.

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F
2/6/88

| Writer | Source of Supply | Distance from Bangalore miles | Area of [illegible] catchment sq. miles | Free Area sq. miles | Height of the bund [illegible] feet | Population to be supplied | No. of gallons per head per diem | Estimated cost | Annual outlay | Cost per head | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| G. L. Fischer | Hebbal Tank | 5 | 15 | 5.1* | 100 | 150,000 | 12½ | 3,00,000 | — | | * according to Mr. Lee.<br>Cost does not include distribution |
| R. M^c Garrett | New reservoir at Sagipalya Magadi Road | 6 | 4 | 4 | 200 | 4846 | abt 2 | 1,10,000 | 13,000 | | Drinking water for troops alone. |
| | Do. with increments to Sankey's reservoir | " | 6.5 | 6.5 | " | 1,50,000 | 6 | 7,75,000 | | | |
| Col. Vibart | Hesarghatta Tank | 13½ | 244 | — | 255 | 4846 | 10 | 6,46,000 | | | |
| | | " | " | " | " | 90,000 | 10 | 25,20,000 | | | |
| | | " | " | " | " | 1,50,000 | 10 | 44,00,000 | | | |
| W. Tiegot | Malakote Tank | abt 27 | — | — | — | 90,000 | 6¼ | 13,32,320 | | | |
| | New Reservoir at Gadisettahalli | " | — | — | — | " | " | 10,61,650 | | | |
| W. Tomkinson | Masonry lined Reservoir with pipes from Sankey's reservoir | — | — | — | — | 4846 | abt 12 | 1,15,428 | 12,771 | | Includes purchase of Tank |
| W. Lee | Magadi Road Reservoir (new) | 4 | 8.84 | 8.84 | 200 | 4846 | abt 12 | 1,65,000 | 25,824 | 5.32 | |
| | Flood gates on same stream alone. | " | — | — | — | 4846 | abt 2 | 75,000 | 14,652 | 3 | * without distribution. |
| | 3 Reservoirs on same stream lower down. | " | 30.5 | – | 400 | 1,55,856 | 20 | 6,80,000* | | | |
| [illegible] | Dam across S. Pinakini river | abt 11 | 805 | — | abt 280 | 90,000 | 6¼ | 10,65,819 | 1,41,580 | | |
| F. Hemlight | Improvement of Sankey's reservoir | — | — | — | — | 4846 | — | — | — | | |
| | New Reservoir at Sonnenhalli near Arty Barracks | – | 1⅓ | 1⅓ | 128 | 4846 | – | | | | |
| | Separation of part of Halsur Tank into new supply etc. | | | | | | | | | | |

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2147/48

Statement of Essays submitted on the
Bangalore Water Supply

| No. | Name of writer | Brief description |
|---|---|---|
| 1. | P. S. Ramaiyangar<br>Sub. Surveyor<br>Survey of India. | Recommends reservoir & wells. a very brief sketch ~~of no practical value~~. |
| 2. | Mr. T. Ray<br>Planter. Mountain Glen Estate<br>Nilgiris | Proposes reservoir on the ~~Hills~~ Nilgiris near Pykara waterfall – 6000 ft. above the sea with pipes to Bangalore. Distance 100 or to 150 miles conveying the water. a mere sketch, ~~also of no practical value~~. |
| 3. | Mr. Douglas Betts<br>Cheyleswa. Singhbhum<br>Bengal. | Recommends the method adopted in Cape Colony, of cutting a drift into a hill to obtain water in preference to sinking wells. ~~Not suitable at Bangalore~~. |
| 4. | Mr. W. E. Beveridge<br>late Supervisor on B. K. P. Railway. | Proposes to construct a double narrow gauge line of railway from the Ponnar (Pennákini) river, opposite Madras Railway, 12 miles from Bangalore. Pumps from wells into a cistern on bank from which water tanks on trucks could be placed & one train with 20,000 gallons of water sent to Bangalore hourly. Here to be discharged into a cistern on St. John's Hill from which it is could be distributed. ~~Of no practical value~~. |
| 5. | General Fisher R.E.<br>Bangalore | In 2 parts: 1 in manuscript, the other printed as 'Notes on Hebbal Project' with maps. The proposal is to enlarge the Hebbal Tank, about 5 miles N. of the Cantonment – to pump |

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| | | |
|---|---|---|
| | | up Reservoir on the Muntaswamy Hill, on which a reservoir is to be constructed after cutting off the top; water filtered & thence distributed by means of pipes to Bangalore. The water to be stored is 3 months' years supply, catchment area at least 10 sq. miles. Height to be pumped 100 feet. Calculates he can supply the troops, C. & M. Station & Pettah from this source. Estimate exclusive of distribution from Muntaswamy Hill - 3 lakhs. |
| 6. | Mr. Edgar Arthur Jeanne<br>Engineer<br>Mandalay. | Submits 2 schemes.<br>1. For digging out the Halsoor Tank & increasing its capacity enormously, enlarging catchment area as suggested by Capt. Pennelly & taking water thence by sub soil drainage. Cost stated to be Rs 50,219.<br>2. For constructing a reservoir by setting below Sankey's Tank & enlarging the catchment area. Cost without taking into account distribution Rs 1,60,000.<br>Writer favors No. 2 scheme. |
| 7. | Mr. A. H. Parrott<br>Executive Engineer Bellary. | In 2 parts<br>1. Proposes to construct a reservoir on the Magadi Road near Sunkadakatte the eminent catchment area near Bangalore, about 7 miles from Cantonment ~~supply water troops for drinking~~ catchment area 4 64½ sq. miles, height to be pumped 200 feet. Reservoir on a hill adjacent from where it could be distributed by pipes. Cost for drinking water alone Rs 1,10,000. Annual outlay not over Rs 13,000. Cost for supplying 65,000 gallons daily or about 1½ galls. per head to the troops Rs 4,57,000 Annual outlay not above Rs 62,000.<br>2. To supply troops, C. & M. Station & Pettah by means of the same reservoir and improving Sankey's Tank, by concreting the bed to prevent leakage, and sub soil drains to supplement the catchment channels. Cost 7¾ Lakhs. |
| 8. | Colonel Sibbert R.E.<br>Supt. Engr. | Proposes to pump up water from the Hesaraghatta Tank on the Arkavathy River distance from Parade Barracks 13½ miles height to be pumped 255 feet. Area of catchment basin 224 sq. miles in which are about 150 tanks. Tank Bank to be raised & 3 outlets to be constructed in it.<br>Cost of scheme if to supply 10 gallons a head to troops alone. Rs 5,96,000<br>" if to supply 10 gallons a head for 90,000 people. " 25,20,000<br>if to supply 10 gallons a head for 150,000 people. " 44,00,000. |
| 9. | Mr. A. Mackenzie Cameron<br>Calcutta. | A mere sketch. Proposes to pump from the Arkavathy at a distance of 19 miles from Bangalore. Cost of scheme 13 Lakhs. Working expenses per month Rs 3000. |
| 10. | Mr. R. W. Thompson<br>Civil Engineer<br>Bangalore. | Proposes wells for drinking water for troops & improving Halsoor Tank for water for other purposes. |

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2147/168

| | |
|---|---|
| 11. Mr. C. B. Taylor<br>Executive Engineer<br>Mandalay | Proposes drawing from the Malkote Tank near Nandidroog. or to form a new reservoir near Seegehally & bring the water by masonry duct & run the water by masonry duct & pipes to the site of Sankey's Tank. States that there is an error in levels previously given that there is an ample catchment area & a total fall of 45.03 feet, the distance from Bangalore to Malkote being 26½ miles. Rough Estimate of cost including distribution (1) Rs 13,32,320 (2) Rs 10,61,650. |
| 12. Mr. S. Tomlinson A.M.I.C.E.<br>Dy. Chief Engineer<br>Bombay Water Works. | A very carefully worked out essay, proposing a masonry reservoir in connection with Sankey's Tank to hold 1 year's supply for the troops. filter beds and pipes to the barracks. The Tank either to be bought from the Mysore Govt. if they establish their right to it, or rented. Estimated cost Rs 1,15,428. Of all the schemes for improving Sankey's Tank this seems the best. |
| 13. Mr. Standish Lee<br>Sanitary Engineer<br>Mysore | Proposes 2 schemes for the supply of troops alone and a third for the supply of the whole of Bangalore.<br>Scheme A. called the "Magadi Road stream scheme" provides for the construction of a Reservoir on the same stream as that referred to in Mr. Carnett's essay only lower down so as to secure a larger catchment area. Distance about 7 miles from Cantonment, catchment area 8.84 sq: miles containing no tanks & apparently only one or two villages, very little dry cultivation stream at site of dam about [illegible] feet wide. Gorge about 70 feet. the highest water will have to be pumped about 200 feet. Water to be pumped up to a stand pipe on high ground & distributed by pipes. Engines & pumps to be removed from Dhobies wells & utilised [illegible] part of existing distribution service to be used. Contents of reservoir 1 year's supply.<br>Cost of Project Rs 1,65,000<br>Annual charges with int. " 25,824<br>Cost per head " 5.32<br>Cost per 1000 galls " 1.18.<br>Scheme B. a modification of scheme A intended to supply only drinking water to the troops by means of flood gates across the stream higher up & filtering wells. New engines & pumps, piping &c.<br>Cost of Project – Rs 75,000<br>Annual charges – " 14,552<br>Cost per head – " 3<br>Cost per 1000 galls – " 4.4<br>Note Salary provide for quarters for Estab, hire of Telephone, & unforeseen charges.<br>Scheme C. for providing the whole of Bangalore with 20 galls per head, by damming the same stream & others thereby securing a very much larger catchment area 30.5 sq: miles.<br>Cost of Project without distribution Rs 6,80,000. |
| Mr. R. Sandwell<br>Executive Engineer<br>Palace Dn.<br>Bangalore. | Proposes a masonry dam across the South Pinakini river, at the site of breach in a very large old Tank, to impound spring water which would flow by percolation into a reservoir excavated in high ground above |

the West bank of the river, from whence water will be pumped up on a standpipe 97 feet high on high ground about 2¼ miles from the dam & thence supplied by gravitation to a service reservoir on high ground about 1⅔ miles N.E. of Hebbal Rock.

Provides for supplying 90,000 peoples with 6¼ gallons per head. Catchment area about 805 sq: miles containing number of Tanks some very large. Distance from Barracks about 11 miles, height the water has to be pumped about 280 ft. Filtering beds & distribution pipes provided.

Cost of Scheme. Rs 10,65,819

Yearly charges [illegible] 1,41,580.
[illegible] -

15. Major Kensington R.E.
Executive Engineer
Mysore

Proposes 6 schemes.

1. By improving Sankey's Tank & supplying troops there partly either by gravitation or partly by gravitation & partly by lift. Gives figures to prove the supply would suffice. No Estimate of cost.

2. Proposes a new reservoir at Sonnahalli near Artillery Barracks for supply of troops. Drainage area 1⅓ sq: miles obtained by a series of catch channels. Reservoir to contain 2½ years supply. Drainage area entirely uncultivated, surface very [illegible] & uncultivated, belongs to the Mily Dept & no compensation required. Spring level very high & a good well at site of reservoir. Supply to be drawn from a steined well along with reservoir instead of filtering. Height to be pumped 128 feet. No Estimate of cost.

Another Scheme was submitted by Major Kensington late in the month of June which cannot be considered as one of the competing essays. It is of considerable merit & is dealt with in another paper

16. Mr J. H. Stephens
Hon: Assist Engr P.W.D
Madras.

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2147/48

3. Provides for the separation of a portion of the Hebbal Tank by means of banks & supplying it by 2 channels from the Hebbal & Jivanhalli Tanks. Drainage area about 2 sq: miles & the reservoir would contain 2½ years storage for troops. Supply would not be pure unless a large area were taken up. No existing engine, pumps, pipes &c would be used. No Est: of cost.

4 & 5. As alternatives proposes to take up in one case the Bainamangala Tank, in the other the Kodihalli Tank & pump up water. No details given.

Proposes to improve Sankey's reservoir

1. By puddling the present catchment channels.
2. By underground drains
3. By silting in the reservoir to raise bed & stopping leakage through the bund.

Also to catch rainfall on the roofs of houses, in compounds & open places along the ridge, collect it by surface & underground drains into cisterns from which it could be raised by pumps

Note

13
2147/48

Under the orders of Govt. the following notification was published in the Fort St George Gazette of the 1st Nov. 1887 and succeeding issues.

Here enter notification as marked ]A

In response 16 Essays were received by the 15th May 188, but one of these special has not been considered an Essay, it being 2 separate reports by Col Vibart R.E. on a proposal made by him before Essays were advertised for, for pumping up water from the Arkavathy river for the supply of Bangalore. This proposal has been considered with the Essays & has been rejected chiefly on account of its cost.

Attached to this note is a statement giving a brief account of the Essays [illegible] submitted.

Of these. No. 1 may be rejected without further consideration.

No. 2. which proposes a reservoir on the Nilgiri Hills may also be rejected, the distance even if only 100 miles, as the shortest line is said to be, being prohibitive.

No. 3. Recommending the method adopted in Cape Colony may be rejected as unsuitable at Bangalore.

No. 4. Recommending that water should be brought in by train from the

Ponnur river may also for obvious reasons be rejected.

No. 5. Is a scheme by Lieut. Fiddler R.E. for enlarging Hebbal Tank & pumping up water. As an essay the paper is of no value, the catchment area is incorrectly stated, & it has been proved that the run off in years of minimum rainfall would be insufficient for the supply of Bangalore. Also that the Tank if enlarged as proposed would never fill. The estimate of cost is much too low. The scheme is doubtful and it provides only for raising the water, the cost of distribution [illegible] being [illegible] subsequently. Though as an essay it is valueless the idea may be worth further consideration as the Hebbal basin is undoubtedly the nearest & the highest point for obtaining water, though the quality may be doubtful.

No. 6. By Mr. [illegible] proposes 2 schemes. 1 for dredging out the Halsur Tank & 1 for [illegible] & adding to the [illegible] Sankey's reservoir. The improvement of the Halsur Tank is no real scheme and is one which can hardly under any circumstances provide a pure supply of water & the improvement of Sankey's Tank by the construction of a reservoir higher [illegible] below the bund cannot now be seriously contemplated as the [illegible] Mr. has constructed a dam below the bund [illegible] the surplus water, & if the schemes [illegible] for the utilization of the Tanks this is certainly not the best.

No. 7. This is a very good essay by Mr. Carrick C.E. of Bellary. He proposes a new reservoir in a new situation & one which proves after very full examination to be the most favourable for the collection of pure water within any reasonable distance of Bangalore. It is further than the Hebbal basin being 7 miles against 4 or 5 and the height above [illegible] is 200 feet against 100 feet. But the catchment area is nearly all uncultivated land with steep slopes, & what cultivation & huts there are can be bought up for a reasonable sum. This reservoir alone would Mr. Carrick estimates supply the troops & by enlarging it & also improving the Sankey's Tank he estimates that the whole population of Bangalore could be supplied with good water. From an engineering point of view the essay is admirably written, and the scheme is a well [illegible] one and promises to fulfil the conditions laid down.

No. 8. As above stated Col. Vibart's reports should not be considered as an essay & even if they were the cost of the schemes is prohibitive.

No. 9. Is a mere statement also proposing to pump water from the [illegible]

No. 10. Which proposes water for the supply of troops & the improvement of the Halsur Tank is for reasons given above rejected.

No. 11. Is a revival on Mr. Target's part of an old scheme intended to bring water in from near Nandidroog. It was before Mr. Gerald Mullins' report & rejected, but Mr. Target is of opinion that the levels then taken were in error & the fall is greater than supposed. Be that as it may the distance is very great and the water available not known with any certainty.

No. 12. A very well written essay by Mr. Tomlinson Dy. Chief Engineer Bombay water works. & the best proposal for supplying the troops from Sankey's Tank, but hardly can be considered a new idea.

No. 13. An excellent essay by Mr. Lee proposing a reservoir on the same stream as that selected by Mr. Garrett only lower down to secure a larger catchment area. He proposes also to put up a dam further down & catch other tributaries of this stream & with this very large area thus drained supply the whole of Bangalore, but it has been ascertained that the drainage area he would thus include receive the foul drainage of part of the Pettah & also ground drainage of part by Tanneries & this part of the scheme which is only a detail has been rejected. The other part possesses all the advantages of Mr. Garrett's scheme & more because it secures a much larger catchment area, and the essay itself is well written and excellently got up as an engineering paper.

No. 14. Is a new proposal made by Mr. Scaldwell to pump up water from the Pinakini River about 11 miles distant from Bangalore. The scheme is a peculiar one, as he provides no reservoir but by building a masonry dam across the river he expects to hold up the dribbling flow & catch it in a small reservoir. The drainage area is enormous being over 805 sq miles, but it contains a very large number of Tanks the nearest of which is the large Ooscotta Tank the water of which was analysed & pronounced suspicious. The weak feature in the scheme is there being no storage & there is considerable doubt whether in years of scanty rainfall when the Tanks above do not fill, there would be sufficient water. Having this doubt & considering the distance the water has to be brought & the height it has to be pumped, the scheme must be rejected.

No. 15 of the schemes proposed by Major Pennington & which have to be considered as essays written for a prize. The only one that requires consideration – the improvement of Sankey's Tank being no new idea – is the construction of a new reservoir for the supply of troops at Jalahalli. The drainage area is doubtless as pure as any near Bangalore & being under the Mil. Dept. can be entered & looked after, but the objections are that the drainage area is only 1½ sq miles & that is obtained by means of catchment drains which are liable to breach in any extraordinary heavy rain fall & also serve as shelter trenches for persons seeking a latrine. The scheme is neat, but cannot be considered ~~good~~ enough.

No. 16. Is another proposed, by Dr. [illegible] Sankey's Tank, and to supplement the supply of water by catching the rain fall & storing it in cisterns from which it would be raised by pumps. This has been rejected ~~also cannot be considered good enough~~.

From the above it will be evident that ~~from~~ of these essays ~~who~~ which fulfil the conditions laid down by Govt., very few are really good - in fact only 3. No. 7 by Mr. Emett. No. 12 by Mr. Tomlinson and No. 13 by Mr. Lee. and of these Mr. Lee's is considered best -

Jolo
3/7/88

For orders

# Statement of essays submitted on the Bangalore Water Supply.

17
2147/48

| Name of writer | Brief description |
|---|---|
| P. S. Ramayangar,<br>Sub Surveyor,<br>Survey of India. | Recommends reservoir & wells.<br>a very brief sketch. |
| Mr T. Ray Planter.<br>Mountain Glen Estate,<br>Nilgiris. | Proposes reservoir on the Nilgiris near Pykara waterfall – 6000 feet above the sea with pipes to Bangalore. Distance 100 to 150 miles according to line taken – a mere sketch. |
| Mr Douglas Betts<br>Chaybassa, Singhbhoom<br>Bengal. | Recommends the method adopted in Cape Colony, of cutting a drift into a hill to obtain water in preference to sinking wells. |
| Mr W. E. Beveridge<br>late Supervisor B.K.S. Ry | Proposes to construct a double narrow guage line of railway |

from the Ponair (Penakorum) river, alongside Madras Railway, 12 miles from Bangalore – pump from wells into a cistern or tank from which Water Tanks on trucks could be filled and one train with 20,000 gallons of water sent to Bangalore hourly – these to be discharged into a cistern on St. John's Hill from which it could be distributed.

5. Genl. Fisher, R.E.

In two parts – 1 in manuscript, the other printed as "Notes on Hebbal Project" with maps. The proposal is to enlarge the Hebbal Tank, about 5 miles north of the cantonment – to pump up therefrom to the Muntapum Hill, on which a reservoir will be constructed after cutting off the top, with filter beds and thence distribute by means of pipes to Bangalore. The water to be stored is 3 years supply, catchment area at least 10 square miles, height to be pumped 100 feet, calculates he can supply the troops, civil & military station and Pettah from this source – Estimate exclusive of distribution from Muntapum Hill – 3 lakhs.

6. Mr. Edgar Arthur Quarme
Engineer
Mandalay

Submits two schemes,

1. For digging out the Halsar tank and increasing its capacity enormously, – enlarging catchment area as suggested by Capt. Lomilly and taking water therefrom

by subsoil drainage – Cost stated to be Rs 50,249.

2. For constructing a reservoir by silting below Sankey's Tank and enlarging the catchment area. Cost without taking into account distribution Rs 1,60,000. Writer favors No. 2 scheme.

7. Mr. A. A. Garrett.
Ex: Engineer, Bellary.

In two parts.

1. Proposes to construct a reservoir on the Mergudi Road near Langaliya the nearest catchment area near Bangalore, about 7 miles from cantonment – catchment area 4 to 4½ sq: miles, height to be pumped 200 feet to reservoir on a hill adjacent from whence it could be distributed by pipes. Cost for drinking water alone Rs 1,10,000 – Annual outlay including interest Rs 13,000/- cost of supplying 60,000 gallons daily or about 12 gallons per head to the troops Rs 4,50,000, annual outlay including interest Rs 62,600/.

2. To supply troops, Civil & Military station and Pettah by means of the same reservoir and improving Sankey's tank, by concreting the bed to prevent leakage, and subsoil drains to supplement the catchment channels cost 7¾ lakhs.

8. Colonel Vibart, R.E.
Supt. Engineer.

Proposes to pump up water from the Hesurgata Tank on the Arkavatty River – distance from Parade Barracks 13½ miles – height to be pumped 253 feet. Area of –

| | |
|---|---|
| | catchment basin 224 square miles in which are about 150 tanks. Tank Bank to be raised and 3 settling beds constructed on it<br>Cost of scheme if to supply 10 gallons a head to troops alone .... Rs 5,96,000<br>-"- if to supply 10 gallons a head for 90,000 people.. Rs 25,20,000<br>-"- if to supply 10 gallons a head for 150000 people probably ... Rs 44,00,000 |
| 9. Mr A. Mackenzie Cameron Calcutta. | A mere sketch - proposes to pump from Arkavathy at a distance of 19 miles from Bangalore - Cost of scheme 13 lakhs - Working expenses per month Rs 3000/-. |
| 10. Mr R.W. Thompson Civil Engineer, Bangalore. | Proposes wells for drinking water for troops and improving Hulsur Tank for water for other purposes. |
| 11. Mr C.B. Target Executive Engineer, Mandalay | Proposes to improve the Malakote Tank near Nandidroog, or to form a new reservoir near Seegahully and bring the water by masonry duct and iron pipes to the sluice of Sankey's Tank. States that there is an error in levels previously given, that there is an ample catchment area and a total fall of 45.03 feet, the distance from Bangalore to Malakote being 26½ miles. Rough estimates of cost including distribution (1) Rs 13,32,000 (2) Rs 10,61,650. |
| Mr S. Tomlinson A.M.I.C.E. Deputy Chief Engineer, Bombay Water Works. | A very carefully worked out essay - proposing a masonry reservoir in connection with |

Sankey's Tank to hold one years supply for the troops, filter beds and pipes to the barracks the tank either to be bought from the Mysore Government if they establish their right to it, or rented. Estimated cost Rs 1,15,428. Of all the schemes for improving Sankey's Tank this seems the best.

13. Mr Standish Lee. Sanitary Engineer, Mysore.

Proposes two schemes for the supply of troops alone and a third for the supply of the whole of Bangalore.

Scheme A called the "Magadi Road Scheme" provides for the construction of a reservoir on the same stream as that referred to in Mr Garrett's essay only lower down so as to secure a larger catchment area - distance about 7 miles from cantonment catchment area 8.84 square miles containing no tanks and apparently only one or two villages, very little dry cultivation, stream at site of dam about 100 feet wide - gorge about 270 feet, height - water will have to be pumped about 200 feet. Water to be pumped up to a stand pipe on high ground and distributed by pipes. Engine and pumps to be removed from Dhobies wells and utilised here and part of existing distribution service to be used - contents of reservoir 6 years supply.

| | |
|---|---|
| Cost of project | Rs 1,65,000 |
| Annual charges including interest . . . | " 25,824. |
| Cost per head . . . . | 5.32 |
| Cost per 1000 gallons . . . . | 1.18 |

Scheme B. A modification of Scheme A intended to supply only drinking water to the troops by means of flood gates across the stream higher up and filtering wells New Engines & pumps, piping &c.

| | |
|---|---|
| Cost of Project ... | Rs 75,000 |
| Annual charges | 14,552 |
| Cost per head ... | 3 |
| Cost per 1000 gallons | 4.4 |

both estimates provide for quarters for establishment, line of Telephone & unforeseen charges.

Scheme C. for providing the whole of Bangalore with 20 gallons per head, by damming the same stream & others thereby securing a very much

30.5 square miles.

| | |
|---|---|
| Cost of Project internal distribution | Rs 6,80,000. |

14. Mr. R. Scaldwell.
Executive Engineer
Palar &c.
Bangalore.

Proposes a masonry dam across the south Pinakini river, at the site of breach in a very large old Tank, to impound spring water which would flow by percolation into a reservoir excavated in high ground along the west bank of the river, from whence water will be pumped up on a stand pipe 97 feet high on high ground about 2¼ miles from the dam and thence to flow by gravitation to a service reservoir on high ground about 1⅔ miles N.E. of Halsur Tank.

Provides for supplying

90,000 people with $6\frac{1}{4}$ gallons per head. Catchment area abt 805 square miles containing numbers of tanks some very large. Distance from barracks about 11 miles, height the water has to be pumped about 280 feet. Filtering beds and distribution beds provided

Cost of scheme ..... Rs 10,65,819

Yearly charges including interest .. 1,41,580

Major Kensington R.E.,
Ex: Engineer, Mysore.

Proposes five schemes.

1. By improving Sankey Tank and supplying troops alone entirely by gravitation & partly by lift. Gives figures to prove the supply would suffice. No estimate of cost.

2. Proposes a new reservoir at Sounahalli near Artillery Barracks for supply of troops. Drainage area $1\frac{1}{3}$ square miles obtained by a series of catch channels. Reservoir to contain $2\frac{1}{2}$ years supply. Drainage area entirely uninhabited and uncultivated, surface very bare - belongs to the Mility dept and no compensation required. Spring level very high and a good well at site of reservoir. Supply to be drawn from a

7 well alongside reservoir instead of filtering, height to be pumped 128 feet - No estimate of cost.

3. Provides for the separation of a portion of the

Halsur Tank by means of banks and supplying it by two channels from the Horken & Jevanhalli Tanks. drainage area about 2 sq miles and the reservoir would contain 2½ years storage for troops. Supply would not be pure unless a large area were taken up, but existing engines, pumps, pipes &c would be used. No estimate of cost.

4 & 5. As alternatives proposes to take up in one case the Binnamangalam Tank, in the other the Kodihalli Tank and pump up water. No details given.

Another

16. Mr J.A. Stephens,
Hon. Asst Engr P.W.D.
Madras

Another scheme was submitted by Major Kensington late in the month of June which cannot be considered as one of the Competing essays - it is of considerable merit and is dealt with in another paper.

Proposes to improve Sankey's reservoir

1. By puddling the present catchment channels.
2. By underground drains
3. By silting in the reservoir to sluice level and stopping leakage through the bund.

Also to catch rainfall on the roof of houses, in compounds and open places, along the bridges, gather it by surface & underground drains

drains into cisterns from which it could be raised by pumps &c.—

Public Works Department
7th July 1888

Note by the Chief Engineer P.W. Dept.—

25
2147/848

Under the orders of Government the following Notification was published in the Fort St George Gazette of the 1st November 1887 and subsequent issues.

Notification

" The investigations which have
" been made of late years with
" the object of procuring a pure
" water-supply for the troops
" stationed at Bangalore
" having failed in so far that
" no scheme for an absolutely
" pure water supply has been
" brought forward that will not
" involve an expenditure per
" head far in excess of that

which is in other large towns considered reasonable, the Govt. resolve to offer a reward of Rs 1000/- for the best essay which shall bring forward a workable and economical scheme for the supply of pure drinking water for the troops in Bangalore. Such scheme must be original and not simply a modification of any of the undermentioned proposals hitherto laid before the Govt, though any one or more of the suggestions contained in such proposals may be applied if necessary to such scheme. A further sum of Rs 1000/- will be given if such essay is adopted as the foundation of any scheme which the Govt. may resolve to carry out for the above purpose. It will rest with the Chief Engineer to decide whether any essay fulfils the requisite conditions and his decision will be final."

In response 16 essays were received by the 15th May 1888 but one of these should not be considered an essay, it being two separate reports by Colonel Vibart R.E., on a proposal made by him before essays were advertised for, for pumping up water from the Arkavatty river for the supply of Bangalore. This proposal has been considered with the essays and has been rejected simply on account of its cost.

Attached to this Note a statement giving a brief account of the essays submitted

Of these, No. 1 may be rejected without further consideration.

No. 2 which proposes a reservoir on the Nilgiri Hills may also be rejected, the distance, even if only 100 miles, as the shortest line is said to be, being prohibitive.

No. 3 recommending the method adopted in Cape Colony may be rejected as unsuitable at Bangalore

No. 4 recommending that water should be brought by train from the Sounair river may also for obvious reasons be rejected.

No. 5. Is a scheme by Grant Fischer R.E. for enlarging Hebbal Tank and pumping up therefrom. As an essay the paper is of no value, the catchment area is incorrectly stated, and it has been proved that the run off in years of minimum rain fall would be insufficient for the supply of Bangalore, also that the Tank if enlarged as proposed would never fill. The estimate of cost is more than doubtful, and it provides only for bringing the water to the top of Mantapam Hill leaving distribution works to be worked out subsequently. Though as an essay it is valueless the idea may be worth further consideration as the Hebbal basin is undoubtedly the nearest and the highest point for obtaining water, though the quality may be doubtful.

No. 6. By Mr. Quarme proposes two schemes. One for digging out the Hulsur Tank and the other for improving and adding to Sankey's reservoir. The improvement to the Hulsur Tank is no new scheme and is one which can hardly under any circumstances provide a pure supply of water, and the improvement of Sankey's tank by the construction of a reservoir by the silting process below the bund cannot now be seriously contemplated as the Mysore Government has constructed a dam below the bund to catch the surplus water, and of the schemes submitted for the utilisation of the Tank this is certainly not the best.

No. 7. This is a very good essay by Mr. Garrett, Executive Engineer of Bellary. It proposes a new reservoir in a new situation and one which proves after very full examination to be the most favorable for the collection of pure water within very reasonable distance of Bangalore. It is further than the Hebbal basin, being 7 miles against 4 or 5, and the height to be pumped is 200 feet against 100 feet, but the catchment area is nearly all uncultivated land with steep slopes, and what cultivation and huts there are can be bought up for a reasonable sum.

This reservoir alone would, Mr Garrett estimates, supply the troops, and by enlarging it and also improving the Sankey's Tank he estimates that the whole population of Bangalore could be supplied with good water.

From an engineering point of view, the essay is admirably written, and the scheme is a new one and promises to fulfil the conditions laid down.

No. 8 As above stated, Col. Vibart's reports should not be considered as an essay, and even if they were, the cost of the scheme is prohibitive.

No. 9. Is a mere sketch also proposing to pump water

from the Arkavathy

No. 10. which proposes wells for the supply of troops and the improvement of the Halsur Tank is for reasons given above rejected.

No. 11. Is a revival as Mr Target's part of an old scheme intended to bring water from near Nundidroog; it was referred to in General Millins report and rejected, but Mr Target is of opinion that the levels then taken were incorrect and the fall is greater than supposed. Be this as it may the distance is very great and the water available not stated with any certainty

No. 12. A very well written essay by Mr Tomlinson, Deputy Chief Engineer Bombay Water Works, and the best proposal for supplying the troops from Sankey's tank, but hardly to be considered a new idea.

No. 13. An excellent essay by Mr Lee proposing a reservoir on the same stream as that selected by Mr Garrett only lower down to secure a larger catchment area, he proposes also to go still further down and catch other tributaries of this stream and from the very large area thus drained supply the whole of Bangalore, but it has been ascertained

that the drainage areas he would thus include receive the full drainage of that part of the Pettah and also ground occupied by Tanneries, and this part of the scheme which is only a sketch has been rejected. The other part possesses all the advantages of Mr Garrett's scheme and more, because it secures a much larger catchment area, and the essay itself is well written and excellently got up as an engineering paper.

No. 14. Is a proposal made by Mr Scaldwell to pump up water from the Pinakini River about

11 miles distant from Bangalore. The scheme is a peculiar one, as he provides no reservoir, but by building a masonry dam across the river on rock expects to stop all sub soil flow and catch it in a small reservoir. The drainage area is enormous being over 800 square miles, but it contains a very large number of tanks the nearest of which is the large Ooscotta Tank the water of which was analysed and pronounced suspicious. The worst feature in the scheme is there being no storage, and there is considerable

doubt whether in years of scanty rainfall when the Tanks above do not fill, there would be sufficient water. Having this doubt and considering the distance the water has to be brought and the height it has to be pumped the scheme must be rejected.

No. 15. Of the schemes proposed by Major Kensington and which have to be considered as essays written for a prize — the only one that requires consideration — the improvement of Sankey's Tank being no new idea — is the construction of a new reservoir for the supply of troops at Soonahalli.

The

The drainage area is doubtless as pure as any near Bangalore and being under the Military Dept can be conserved and looked after, but the objections to it are that the drainage area is only 1½ square miles and that is obtained by means of catchment drains which are liable to breach in any extraordinary heavy rainfall and also serve as shelter trenches for persons seeking a latrine. The scheme is new, but cannot be considered good enough.

No 16. Is another proposal, by Mr Stephens to improve Sankey's Tank and to supplement the supply of

by catching the rainfal
and storing it in cisterns
from which it would be -
raised by pumps. This ha
been rejected.

From the above it will
be evident that of those
essays which fulfil the
conditions laid down by
Government, very few are
really good - in fact only
3 - No 7 by Mr Garrett, N
by Mr Tomlinson and No 13
by Mr Lee, and of these
Mr Lee's is considered
best.

[illegible] Colonel R.E.,
Chief Engineer

Essays - Bangalore
Water Supply

The Hon. Mr. P P Hutchins C.S.I.
The Hon. Mr. H E Stokes
H.E. the Commander in Chief
H.E. the Governor

C,

Seen. Col. Hasted's award is final. The 1000 Rs. s^d be given to Col Lee. But I think Mr Garrett may be informed that his essay does him great credit & came near to getting the prize. A similar compliment might be paid to Mr Tomlinson.

PFH
8 July

HEJ
8 July

C.G.A
9.7

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Milty Works

PUBLIC WORKS DEPARTMENT.

~~2147~~ 33 / 48

# PROCEEDINGS OF THE MADRAS GOVERNMENT.

UNDER date the [illegible]

READ the following

Note by the Chief Engineer Public Works Department dated 7th July 1888.

Consulting Engineer [illegible]

PFH
12 July

The investigations made of late years with the object of obtaining a pure water supply for the troops stationed at Bangalore having failed to produce an efficient and economical scheme, the Government resolved to offer a reward of Rs: 1000 for the best essay on the subject, on the conditions specified in the Notification published in the

the Fort Saint George Gazette of the 1st November 1887, and subsequent iſsues; the award being left to the Chief Engineer Public Works Department.

A number of eſsays have been received in compliance with this invitation, and have been carefully examined by the Chief Engineer, who awards the prize to Mr Standish Lee, Sanitary Engineer, Mysore. The sum of Rs 1000 will accordingly be paid to Mr Lee by the Executive Engineer at Bangalore, and will be adjusted against Military Works under instructions from the Examiner P. W. Accts.

The eſsay submitted by Mr

Mr A. H. Garrett, Executive Engineer, Bellary, is in the opinion of the Chief Engineer, a very good one, and does him great credit. The eſsay of Mr S. Tomlinson Deputy Chief Engineer Bombay Water Works is also, in Colonel Hasted's opinion, a very creditable paper. Both these eſsays came near to winning the prize.

A copy of these Proceedings will be published in three succeſsive iſsues of the Fort Saint George Gazette for the information of competitors.

To The Supdg. Engr. V. Circle
" Examiner P. W. Accts
" Military Dept.
" Supdt Gazette Press

Dy

H. E. M[illegible]

– Copy of the [illegible] for

for

for the information of the
Government of India Military
Department

~~The Hon P. P. Hutchins~~

J.W.
11/7/88

12/7

10/7

Note
It would be well that
the publication in the
Gazette should appear
simultaneously with the
issue of the Proceedings.

A. S.
13 VII 88

O.S. 4/7 11/7 13/7

[illegible] of 18 [illegible]

PUBLIC WORKS

No. 16th July 1888. 2147/2148 W

Bangalore Water Supply Scheme

Awarding to Mr. Standish Lee, Sanitary Engineer, Mysore, the prize of Rs 1000 offered for the best essay on the ——.

Bangalore Water Supply Scheme

Forwarding to the Govt. of India for information Pros. of this Govt awarding to Mr Standish Lee, Sanitary Engineer, Mysore, the prize of Rs 1000 offered for the best essay on the ——.