Date taken out.	For what purpose.			Initials of clerk taking the paper or of attender.	Date returned.	Initials of attender.
	Department.	C. No.	Year.			

8-8-96.]

Local & Munl. (1896) Department.

MISCELLANEOUS.

G.O., No. 1023 Mr

DATED 17th June 1896

[Despatch Abstract.]

Drainage and Water-supply.

Communicating, with remark, to the Municipal Council Vizianagram the resolution of the Sanitary Board on the improvement of Peddacheruvu and on the ----- schemes for the town of Vizianagram.

FOR WHAT PURPOSE.

BACK PAPERS.

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

FURTHER PAPERS.

G.O.	No.	Department.	Date.	G.O.	No.	Department.	Date.
Ms.	228 bb 96.						

Government of Madras.

LOCAL AND MUNICIPAL DEPARTMENT.

MISCELLANEOUS.

Read. *Regd.* } 1896. *Enclosures* *Spare copies*

G.O., No. 1023 M., 17th June 1896.

Drainage and Water-supply.

Communicating, with remark, to the Municipal Council, Vizianagram, the resolution of the Sanitary Board on the improvement of Peddacheruvu and on the — schemes for the town of Vizianagram.

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G.O.	No.	Department.	Date.	G.O.	No.	Department.	Date.
G.O.	228 & 236						

Government of Madras.

LOCAL AND MUNICIPAL DEPARTMENT.

MISCELLANEOUS.

Recd. } 1896. *Enclosures*

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GOVERNMENT OF MADRAS.

LOCAL AND MUNICIPAL DEPARTMENT.

READ—the following papers :—

I

Letter—from M.R.Ry. V. VENKATRAYASASTRI Garu, B.A., Chairman, Municipal Council, Vizianagram.
To—the Secretary to Government, Local and Municipal Department.
Dated—the 18th October 1895.
No.—189.

With reference to the Proceedings of the Madras Government, No. 1898 M., dated 8th December 1894, I have the honour to state that the Council, after carefully considering the various points touching the important question of drainage and water-supply schemes, with reference to the past reports and records, as also with reference to the financial condition of the Municipality, is of opinion that it is very necessary to take up not only the Peddacheruvu project, but also the entire drainage and water-supply schemes. The Council considers that, to take up the Peddacheruvu scheme alone without improving the entire drainage and the water-supply will go very little to improve the sanitation of the town in spite of the heavy charges the Municipality will have to incur, the rough estimate of this portion of the entire drainage scheme alone having been calculated to be no less than Rs. 50,000. The Government, while reviewing the budget of this Municipality for 1895–96, provided Rs. 600 towards the cost of preliminary levels to be taken in connection with the drainage scheme of the town. The entire cost of the drainage scheme, including the Peddacheruvu project, has been roughly calculated at over two lakhs of rupees. The Council, under its present financial condition, with a hopeless future, cannot venture to undertake any such large schemes unless the Government will greatly help it onwards financially, partly by a liberal grant and partly by a loan. It accordingly resolved that it cannot commit itself to a conclusion before knowing what aid could be obtained from the Government in connection with the drainage scheme. While the Council is fully aware of the necessity of improving drainage of the town, it considers that it is equally necessary to take the water project on hand, as in its opinion the drainage scheme may not be of much advantage to the town without a sufficient quantity of pure water-supply. It is true that by improving the condition of the drainage the sources of contamination for the tanks and wells in the town will be greatly minimised ; but considering the rapid increase of population the Council fears that unless every care is taken to have pure water-supply which could not be secured without a water-supply scheme, the town cannot be kept free from epidemics that seem to visit the place rather too often. The Sanitary Commissioner, in his recent tour of inspection, has examined the condition of water and impressed upon the Council the urgent necessity of taking up the water project along with the drainage if not earlier. He was so good as to inspect the surroundings of the town with a view to finding means for improving the condition of water, and he is of opinion that by tapping round the foot of the hill called the Red Hill (Bontu konda) which is not quite a mile and a half off the town, pure filtered water sufficient for the requirements of the town can be got and may be conducted to suitable localities in the town and thence piped into the dwellings. If the scheme thus investigated by Doctor King and roughly estimated by him at a lakh and half rupees should commend itself to the Sanitary Board and the Government, as I am sanguine it will, the Council is hopeful that the Honourable the Maharaja, who has always evinced much interest in any matter that is connected with the welfare of the townspeople and who has been particularly devoting his attention to this important subject for some time past as the Government is already aware, will with his princely generosity make a liberal grant towards the

project. In the interview between the Sanitary Commissioner and the Maharaja, the question was discussed with great interest and most enthusiasm, and I am told that the Maharaja was so good and generous as to express that he would most willingly support the scheme in the manner it deserves.

This matter was also thoroughly discussed before the Council, and I beg to forward copies of the resolutions on both the schemes for the information of Government.

The two projects, if taken together, seem to require between four and five lakhs of rupees. If loans be raised for undertaking the projects, the only source available for the Council towards the payment of interest and sinking fund is what could be raised in the shape of drainage and water tax as provided in the new bill which may be roughly calculated to be Rs. 10,000, a portion of it will have to be reserved for maintenance charges. I request that the Government will be pleased to sanction, at an early date, the two projects and grant a liberal aid so as to enable the Council to take up the two works on hand and also sanction a loan of a sum sufficient to meet the cost fully. I herewith return the Assistant Sanitary Engineer's report and plan.

ENCLOSURES.

Report on the Peddacheruvu at Vizianagram and proposal for its improvement.

The Peddacheruvu, an irrigation tank, which belongs to the estate of the Maharaja of Vizianagram, lies just below the town of Vizianagram. The water-spread of the tank at its full height is 150 acres. It has a depth of 20 feet and roughly a capacity of about 44 million cubic feet.

2. The tank has two irrigation sluices at about 8 feet below full tank level. Its capacity above the level of the sluices is about 27 million cubic feet.

3. Below the level of the sluices the tank has a depth of 12 feet and a capacity of about 17 millions cubic feet. There is no outlet for this water, and the tank falls very little below the level of the sluices, whatever little fall there is being due to evaporation and absorption.

4. The catchment area of the tank comprises (1) 350 acres of town area densely built over and inhabited ; (2) the Military Cantonment of Vizianagram ; (3) a large area of open country, most of which is under cultivation.

5. The town is fairly well provided with masonry open drains. These are, as a rule, in streets running east and west, and the contents of these drains are collected in closed drains which run from north to south and open into the tank at the various places indicated on the accompanying plan.

6. The reception of the town sewage into the tank is supposed to be the cause of the evil smell complained of. If so, it might naturally be expected that during the hot weather when the tank is low the smell would be more evident than in the wet weather when sewage is diluted with a large amount of fresh water ; also that in a dry year the smell would be prevalent to a greater extent than in a wet year. But strongly enough the reverse appears to be the case. To my enquiry on the subject Mr. Scott, the Principal Assistant Collector, Vizianagram, writes : —

"(1) I have only been in Vizianagram now for a little over a year and I am not able to state from personal knowledge whether the smell from the tank lasts a longer period and is stronger in a dry than in a wet year, nor do I think any reliable information could be obtained seeing however that the smell seems to get stronger as the tank fills and to die off as it empties, it may be inferred that the smell would last longer and be worse in a wet than in a dry year. Last year was a wet year and the smell was very strong.

"(2) The smell is most noticeable from about September to about the end of January. At least this was the case last year. I fancy, however, that its duration depends upon the supply of water in the tank. The smell exists without a break during this season. It is of course most apparent when a strong breeze is blowing. Last year, when the breeze blew towards my bungalow or my office, about 2 or 3 furlongs from the tank, I had to shut every door to keep it out. It was impossible at any time to go along the tank bund without feeling an inclination to be sick. The smell is precisely like that of indigo fresh from the press.

"(3) During the hot weather the smell is almost imperceptible and gives no cause for complaint."

I have been unable to obtain any furtner reliable information as to the duration and intensity of the smell with reference to the rainy character of the year. But during my inspection (in July) at the end of the dry season, when the tank was low, it did not smell, certainly not to any very disagreeable extent. This goes to corroborate Mr. Scott's statement and opinion.

7. The explanation of this apparent paradox—the emission of an offensive smell during the rainy season when the tank is full and the disappearance of the smell with the approach of hot weather—lies herein. During the hot weather only a very inappreciable amount of sewage enters the tank. On my inspection I found only one drain discharging into the tank, and the

quantity discharged was not more than what a population of ten or twenty would contribute, and this is so diluted by the large volume of water in the tank that it does not emit any offensive smell. Within the water shed of the tank there however resides a population of about 13,500, and there must be a large quantity of sewage due to this population, and if any further evidence on this point is required the open street drains afford it, for, there is always a fair flow through them. The aggregate flow of these drains must be a very considerable quantity, but not one hundredth part of it reaches the tank. The fact is that all this sewage is retained by the closed drains mentioned in paragraph 5 *ante*. These closed drains are very defective and have silted up very much. The sewage discharged by the surface drains is absorbed by the silt in the closed drains, and any excessive saturation of the silt is prevented by percolation through the defective masonry of the drains. Further, the silt is not uniformly deep. There are depressions in it here and there in which sewage is lodged. When the sewage of a whole dry season, which means about 8 months in the year, is absorbed and retained in closed drains in the manner described, it may be readily conceived that it must attain a very high degree of concentration and putrefaction. During the rains the closed drains run full—almost under pressure at times—and all the putrid mass of filth that has collected in them is washed into the tank. This *per se* would sufficiently account for the evil smell of the tank on the advent of the rains. There is probably another concurrent cause of the foul smell. All the organic filth washed into the tank during each monsoon settles to the bottom of the tank on the cessation of the rains. The oxygen in the bottom layer of water in tank with which the impurities are in contact is soon absorbed. The water being in a quiescent state the bottom layer of water is deprived of the means of re-oxygenation. The oxidation of the impurities is thus prevented and they continue to be in their putrescent state. There are certain organisms present in all waters and these thrive and multiply rapidly in water containing putrescent matter. But when there is any agitation of water as during the rains, both the water and the impurities come in contact with the atmospheric oxygen and the impurities are oxidised and the organisms die by myriads owing to the changed condition of existence and emit a repulsive smell. This is exactly analogous to what happens in the Cooum as described in paragraph 9 of Mr. Jones' report on the Cooum Improvement Scheme. From what has been said above, it will be apparent that frequent agitation of water during the hot weather would oxidise the impurities, retard the propagation of the organisms and consequently abate the nuisance. This theory received a curious confirmation in a circumstance narrated to me with reference to the Peddacheruvu. I was informed that only a few years ago the tank was not as odoriferous as it is now, and the reason ascribed for it is that in those days the elephants of the Samasthanam were turned into the tank occasionally for the purpose of agitating the water, and as my informant said to "dissolve" the bad smell. Though their notion about "dissolving" the smell seems to have been hazy, there is no doubt the correct remedy was applied, and it is a great pity that the practice was discontinued.

8. However this may be, it is positive that the sewage and filth of the town are responsible for the smell from the tank. The remedy should strike at the root of the evil, and it therefore ties in the prevention of the sewage entering the tank.

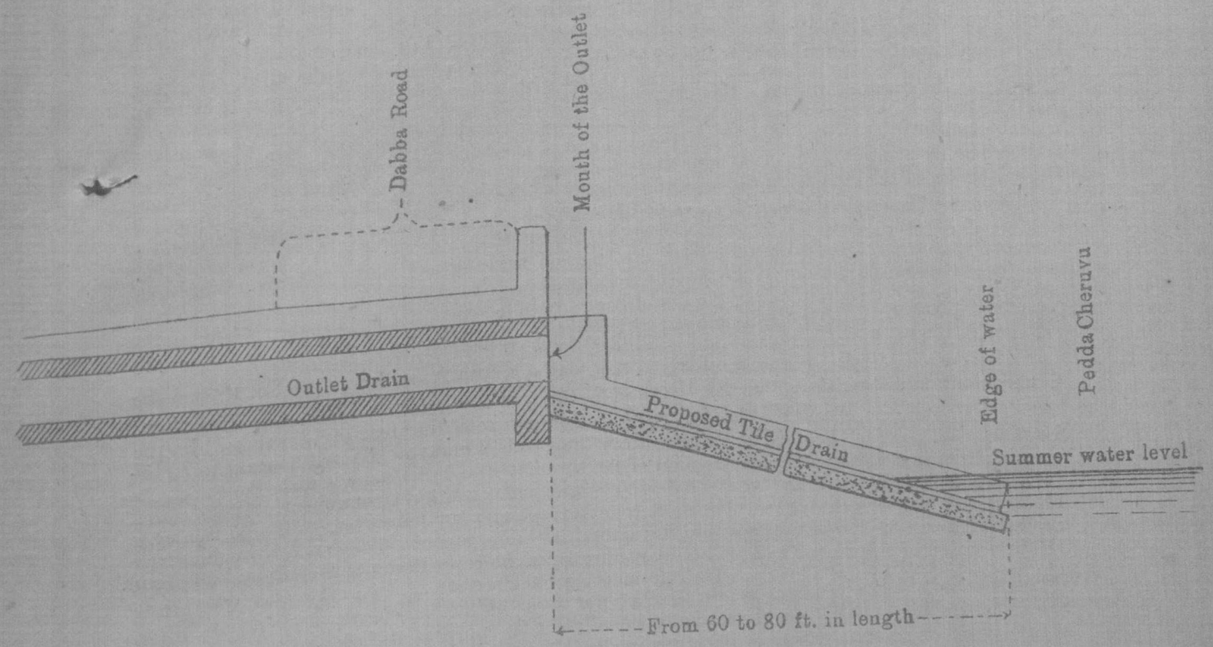
9. The levels admit of the construction of an intercepting sewer between the town and the tank as shown on plan. The sewer could be carried as far away from the town as desirable, for the ground falls rapidly below the tank and sewage could be utilized on a farm. But no sewage would reach the intercepting sewer unless the covered main drains in the town are cleared of silt and put into proper order. Even when all the defects in the main drains have been remedied the whole quantity of sewage produced within the water shed of the tank would not reach the intercepting sewer, for, several streets and lanes are undrained, and in addition to this the surface of the town is liable to so many other sources of pollution that the rain water, especially during the earlier showers flowing over the ground, will carry with it most of these impurities. It is therefore considered that to obtain the best results with reference to the improvement of the Peddacheruvu, the intercepting sewer should be of sufficient capacity to carry off quarter of an inch of rainfall per hour and the sewer allowed to surplus into the tank only during heavier rainfalls. A smaller intercepting sewer with its capacity limited to 15 or 20 gallons per head of the population will not effect the purpose in view, *i.e.*, keeping the sewage and filth of the town entirely out of the tank, unless the whole town is properly drained.

10. It is true that by providing a sewer large enough to intercept $\frac{1}{4}$ inch of rainfall the tank will be deprived of some water. Whether this will seriously affect the supply of the tank it is not possible to say until the extent of its water shed is ascertained by survey. However this may be, the health of the town must be considered a matter of more paramount importance than the irrigation of a few acres of land.

11. Seeing that the cost of the above proposals will be about half a lakh of rupees and that in all probability it will be some years before the sewer becomes a *fait accompli*, the following measures are recommended as being such as could be carried out at once.

12. The existing closed drains should be cleared of silt and repaired where necessary. If the construction of an intercepting sewer cannot be undertaken at once, the next best thing would be to see that the sewage reaches the tank regularly and before decomposition sets in. The daily discharge of freshly formed sewage will be followed by less serious results than when the sewage stagnates in the silted drains, decomposes there, and is discharged *en masse* into the tank with the first heavy shower.

13. Glazed tile drains should be laid from the mouth of the outlets to low water edge as shown on sketch below.



14. Another remedial measure that I would suggest is the construction of a low level sluice for scouring out the bed of the tank. The necessity of means for scouring out all drinking-water tanks or irrigation tanks circumstanced as Pedda Cheruvu is, deserves better recognition at the hands of local bodies. By attention to this matter many tanks would have been saved from the deterioration of their waters that has occurred. The cost of the sluice would be about Rs. 1,500.

15. The Chairman of the Municipality contends that the main sources of contamination to Pedda Cheruvu are the markets, bandy-pet and stables belonging to the Maharaja. That these places produce more impurities than an equal area of the town will be readily conceded; but the area of town draining into the tank is so large compared with that of the market, bandy-pet and stables, that the impurities contributed to the tank by the latter must bear only a very small proportion to the impurities contributed by the town. I, however, understand that these places are now better conserved than they were before. There is, no doubt, still room for improvement. Both the market and the bandy-pet require some surface drains. The droppings from the animals are allowed to accumulate several days before being removed by the contractor. There was a heap of several bandy loads in the bandy-pet and a similar heap on the margin of the tank. The manure should certainly be removed daily, for when allowed to accumulate a sudden shower is likely to carry some of it into the tank. The remedy, however, lies in the hands of the Chairman and the Magistrate. The Municipality, I understand, levies taxes on the market and bandy-pet.

16. To sum up the measures proposed for the improvement of the tank—

I. The repair of the existing drains and the construction of an intercepting drain.

II. (*a*) The clearing of silt from existing closed drains,
(*b*) the laying of tile drains from the outlets to the summer margin of water,
(*c*) the agitation of water in the tank occasionally,
(*d*) the scouring of the bed of the tank by construction of low level sluice.

Extract from the Proceedings of the Municipal Council, Vizianagram, dated the 7th September 1895.

* * * * *

3. The Chairman brings to the notice of the Council the remarks of the Sanitary Commissioner Dr. King regarding the urgent necessity of a water scheme even in preference to the drainage scheme which the Council has already resolved to undertake, provided the Government should render a liberal help.

The Council is of opinion that the water scheme is urgently needed for the town and that the Government should be addressed on the subject with a view to take up the water scheme in preference to the drainage scheme.

* * * * *

Extract from the Proceedings of the Municipal Council, Vizianagram, dated the 27th July 1895.

* * * * *

2. Read the following papers:—

(i) Report on Pedda Cheruvu and proposals for its improvement.

(ii) Proceedings of the Sanitary Board, dated 26th November 1894, No. 18, and the Government order thereon, dated 8th December 1894, Mis. No. 1898 M.

The Council considers that the construction of the proposed intercepting sewer will be the best means of abating the nuisance arising from the Pedda Cheruvu. Before, however, committing itself to undertaking the construction of the sewer, the Council would wish more definite information as to its cost and the share which will be borne by Government. The Council observes that the sewer can hardly be undertaken except as a preliminary to, and a portion of, a drainage scheme for the entire town costing several lakhs of rupees. The funds available from the imposition of a drainage rate will be hardly sufficient to cover the interest and sinking fund charges on a loan of Rs. 50,000 without providing for the periodical repairs, etc., necessary to the sewer.

* * * * *

Dis. No. 711, *dated* 19*th October* 1895.

Submitted.

L. C. Miller,
Assistant Collector in charge.

Forwarded.

2. The financial condition of the Vizianagram Municipality is most unsatisfactory, the toll revenue having dwindled away since the railway was opened. The only money which could be made available for water and drainage projects is that which could be raised by a special tax for the purpose. This is estimated by the Chairman at Rs. 10,000.

3. The town is in great need of both water-supply and drainage, but the former is, in my opinion, by far the most urgent want. Vizianagram is built for the most part on earth-filling valleys and pockets in a rough sheet of granite or gneiss and many years will have to elapse after the execution of a drainage scheme before the sewage logged sub-soil becomes pure enough to make wells safe. A water project would, on the other hand, produce an immediate and direct effect on the health of the town and as the means of the Council is so limited it should be taken up first.

4. As regards the drainage scheme the Pedda Cheruvu project is, in my opinion, the least important portion of it. I find that a good deal has been written about the offensive smell from this tank of late, but an intimate experience with the locality for many years and at all seasons leads me to differ from the views which have been expressed. The bad smell only appears under certain conditions which according to my experience are a steady breeze and a rapidly falling water level leaving a considerable area of fresh ground uncovered every day. The wind blows the scum of the

tank which contains large quantities of small insects and animal culae on to the land which is being uncovered where it rapidly decomposes. I have often been in a boat on the tank on such occasions and never remember noticing any offensive smell except along the shore. Of late the tank has been full for several years, a most unusual thing, and the tendency to a bad smell seems to be greater than formerly owing no doubt to this having assisted the increase of animal life. I have no doubt however but that a single bad monsoon will bring things back to their usual innocuous condition. I write this in the Daba Gardens bungalow on the bank of the tank. What little wind there is has been blowing into the bungalow all day and there has not been a vestige of a smell and I can testify to this being the normal condition of affairs. The offensive odour is only occasional and lasts for very short periods instead of being permanent for months as would be the case if it were directly due to the drainage of the town. I have never known it in the early part of the monsoon which is the time when the town is most liable to epidemics.

5. I do not mean to say that the exclusion of drainage from the tank is not a most desirable thing but merely to point out that the Rs. 50,000 in question would be spent on the least urgent portion of the less urgent of the two much desired projects (water and drainage). It is also worth considering whether the proposed end might not be attained at comparatively small expense by the laying of an iron pipe across the tank-bed.

6. As regards the Chairman's remarks about the Sanitary Commissioner's water project, the water-logged ground he refers to is close to the water-shed of the catchment area in which it lies, and unless there is an under ground flow (which is highly improbable considering the features of the country) its only ultimate source of supply is the rain which actually falls on a square mile or two. The proportion of the rainfall on ground a great deal of which is on a considerable slope which could be recovered by a system of wells such as Dr. King proposes must be very small, and I fear that the wells would run dry after a year or two, when the water of what probably is merely a subterranian tank with a small catchment area has been used up. It would be very unsafe to undertake such a project until a couple of years pumping with a powerful pump has demonstrated that the water-supply is one to be depended on.

7. I have detained this paper a few days to enable me to consult the Chairman.

8. The Chairman says that the Assistant Sanitary Engineer's report and plan referred to in the concluding portion of his letter were submitted by him direct to Government.

F. D'A.O. Wolfe-Murray,
Collector.

II

Memorandum No. 1715, dated 4th December 1895.

Referred to the Sanitary Board for remarks.

(By Order.)

W. W. Phillips,
Ag. Assistant Secretary to Government.

III

Letter—from J. A. Jones, Esq., M.I.C.E., F.R.S.E., Secretary, Sanitary Board (Engineering Branch).
To—the Chief Secretary to Government, Local and Municipal Department.
Dated—the 19th May 1896.
No.—1557.

With reference to Endorsement No. 1715, dated 4th December 1895, of the Acting Assistant Secretary, I have the honour to forward herewith resolution of the Sanitary Board, No. 1556, dated 19th May 1896, on the improvement of the Pedda Cheruvu and the drainage and water-supply schemes for the town of Vizianagram.

2. Rupees 2,000 may be allotted for the necessary surveys—if allotted soon the survey might be taken up at the latter end of 1896 and the plans prepared early next year.

ENCLOSURE.

Proceedings of the Sanitary Board, dated 19th May 1896, No. 1556.

* * * * *

Read—the following paper:—

Reference from the Acting Assistant Secretary to Government, No. 1715, dated 4th December 1895, forwarding, for remarks, file of papers regarding the improvement of the Pedda Cheruvu and the drainage and water-supply schemes for the town of Vizianagram.

Resolution—No. 1556, dated 19th May 1896

The Sanitary Board considers that a water-supply scheme should have preference to a drainage scheme, and recommends that the Sanitary Engineer be directed to include the preparation of such a scheme in his next year's programme, and that the Municipal Council be requested to allot the funds for any surveys which may be necessary.

2. The Sanitary Board notes with pleasure the proposed liberality of His Highness the Maharaja of Vizianagram.*

* Extract from note, dated 4th September 1895, of the Sanitary Commissioner for Madras.
"The Maharaja promised and authorized me to state so officially that he would be willing to contribute one and a half lacs towards the scheme."

(True Extract.)

J. A. JONES,
Secy., Sanitary Board (Engineering Branch).

To the Chief Secretary to Government, Local and Municipal Department, with file of papers.

Order—No. 1023 M., dated 17th June 1896.

The remarks of the Sanitary Board in which the Government concurs will be communicated to the Municipal Council, Vizianagram, with the request that a sum of Rs. 2,000 may be placed at the disposal of the Sanitary Engineer without delay for a survey in view to the preparation of a water-supply scheme.

2. The Sanitary Engineer should include this in the list of water-supply and drainage schemes to be undertaken by him in 1897.

3. The Government notes with much pleasure the liberal offer of the Maharaja of Vizianagram to contribute one and a half lakhs of rupees towards the cost of such scheme as may be eventually approved.

(True Extract.)

J. F. PRICE,
Chief Secretary

To the Chairman, Municipal Council, Vizianagram
(through the Collector of Vizagapatam).
,, Sanitary Board.
,, ,, Engineer,
,, Maharaja Mirza Sir Pasup Ananda Gajapati Raz Mani Sultan Bahadur, G.C.I.E., of Vizianagram.

No. 189

Municipal office
Vizianagaram
18th October 1895

Local & Municipal Dept.
CURRENT No. 3695/96

From

M. R. Ry V. Venkatrayasastrigaru Bat
Chairman, municipal Council
Vizianagaram.

To

The Chief Secretary to Government
Fort Saint George. Madras.

Sir,

With reference to the Proceedings of the Madras Government dated 8th December 1894, I have the honor to state that the Council, after carefully considering the various points touching the important question of drainage and water-supply schemes with reference to the past reports and records as also with reference to the financial condition of the municipality, is of opinion that it is very necessary to take up not only the Pedda Cheruvu project but also the entire drainage and water-supply schemes. The Council considers that to take up the Peddacheruvu scheme alone without improving the entire drainage and the water-supply will go very little to improve the sanitation of the town in spite of the heavy charges the municipality will have to incur, the rough estimate of this portion of the entire drainage scheme alone

having been calculated to be no less than Rs 50.000-
The Government while reviewing the budget of this
municipality for 1895-96 provided Rs 600 towards
the cost of preliminary levels to be taken in connection
with the drainage scheme of the town - The entire
cost of the drainage scheme including the Peddacherwu
project has been roughly calculated at over two lakhs
of rupees - The Council under its present financial
condition with a hopeless future can not venture
to undertake any such large schemes unless the
Government will greatly help it onwards ——
financially partly by a libral grant and partly
by a loan - It accordingly resolved that it cannot
commit itself to a conclusion before knowing what
aid could be obtained from the Government
in connection with the drainage scheme - While
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drainage of the town, it considers that it is equally
necessary to take the water project on hand, as in
its openion the drainage scheme may not be of
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which is not quite a mile and a half off the town
pure filtered water sufficient for the requirements
of the town can be got and may be conducted to
suitable localities in the town and thence piped
into the dwellings - If the scheme thus investigated
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lakh and half rupees should commend itself
to the Lanitary Board and the Government, as I am
sanguine it will, the Council is hopeful that
the Hoible the Maharajah, who has always evinced
much interest in any matter that is connected with
the welfare of the townspeople and who has been

early the [illegible] to this important subject for some time past as the Government is already aware, will with his princely generosity make a liberal grant towards the project - In the interview between the Sanitary Commissioner and the Maharajah, the question was discussed with great interest and most enthusiasm and I am told that the Maharajah was so good and generous as to express that he would most willingly support the scheme in the manner it deserves -

This matter was also thoroughly discussed before the Council and I beg to forward copies of the resolutions on both the schemes for the information of Government -

The two projects if taken together seem to require between four and five lakhs of rupees - If loans be raised for undertaking the projects the only source available for the Council towards the payment of interest and sinking fund is that could be raised in the shape of drainage and water tax as provided in the new bill which may be roughly calculated to be Rs 10000 - portion of it will have to be reserved for maintenance charges - I request that the Government will be pleased to sanction at an early date the two projects and grant a liberal aid so as to enable the Council to take up the two works on hand and also sanction a loan of a sum sufficient to meet the Cost fully - I herewith return the Assistant Sanitary Engineers report and plan -

I have the honor to be
sir
Your most obedient servant

V. Venkatasawmi
Chairman. M.C -

7

No. 4334 of 1895
COLLECTOR'S OFFICE, VIZAGAPATAM.

SANITARY ENGINEER
Register No. 4321
15 DEC 95
TO THE GOVERNMENT OF MADRAS

From The Chairman, M.C.
Vizianagaram

To The Chief Secretary to Government,
Fort St. George,
Madras.

No. 189
Enclosures 2.

Dated 18th October 1895.

Despatched

Received

MUNICIPAL OFFICE,
DESPATCHED
19 OCT 95
VIZIANAGARUM.

Dis 2047/1/98
Submitted
Sanitary Engineer
Vizianagaram 19.10.95 ACM in charge
I Mar 1 R.M.M.

Subject

Expressing the opinion of the Municipal Council Vizianagaram, in the question of Peddacheruvu scheme & the drainage & water-supply schemes for the Town of Vizianagaram.

Report on the Pedda cheruvu at Vizianagram and proposal for its improvement.

The Pedda cheruvu an irrigation tank, which belongs to the estate of the Maharaja of Vizianagram, lies just below the town of Vizianagram. The water spread of the tank at its full height is 150 acres. It has a depth of 20 feet and roughly a capacity of about 44 million cubic feet.

2. The tank has two irrigation sluices at about 8 feet below full tank level. Its capacity above the level of the sluices is about 27 million cubic feet.

3. Below the level of the sluices the tank has a depth of 12 feet, and a capacity of about 17 millions cubic feet. There is no outlet for this

this water, and the tank falls very little below the level of the sluices, whatever little fall there is, being due to evaporation & absorption.

4. The catchment area of the tank comprises (1) 350 acres of town area densely built over and inhabited, (2) the Military Cantonment of Vizianagram, (3) a large area of open country most of which is under cultivation.

5. The town is fairly well provided with masonry open drains. These are as a rule in streets running east & west, and the contents of these drains are collected in closed drains which run from north to south and open into the tank at the various places indicated on the accompanying plan.

6. The reception of the town sewage into the tank is supposed to be the cause of the evil smell complained of. If so it might naturally be

be expected that during the hot weather when the tank is low the smell would be more evident than in the wet weather when sewage is diluted with a large amount of fresh water; also that in a dry year the smell would be prevalent to a greater extent than in a wet year. But strangely enough the reverse appears to be the case. To my enquiry on the subject Mr. Scott, the Principal Asst. Collector, Vizianagram, writes

"(1) I have only been in Vizianagram now for a little over a year and I am not able to state from personal knowledge whether the smell from the tank lasts a longer period and is stronger in a dry than in a wet year, nor do I think any reliable information could be obtained. Seeing however that the smell seems to get stronger as the tank fills and to die off as it empties, it may be inferred that the smell would last

longer

longer and be worse in a wet than in a dry year. Last year was a wet year and the smell was very strong".

"(2) The smell is most noticeable from about September to about the end of January. At least this was the case last year. I fancy, however, that its duration depends upon the supply of water in the tanks. The smell exists without a break during this season. It is of course so much apparent when a strong breeze is blowing. Last year when the breeze blew towards my bungalow or my office about two or three furlongs from the tank I had to shut every door to keep it out. It was impossible at any time to go along the tank bund without feeling an inclination to be sick. The smell is precisely like that of Indigo — fresh from the press."

"(3) During the hot weather the smell is almost imperceptible and gives no cause for complaint"

J

Ge. No. 10252
17-6-96.

I have been unable to obtain any further reliable information as to the duration and intensity of the smell with reference to the rainy character of the year. But during my inspection (in July) at the end of the dry season, when the tank was low, it did not smell, certainly not to any very disagreeable extent. This goes to corroborate Mr. Scott's statement & opinion.

7 The explanation of this — apparent paradox — the emission of an offensive smell during the rainy season when the tank is full and the disappearance of the smell with the approach of the hot — weather — lies herein. During the hot weather only a very inappreciable amount of sewage enters the tank. On my inspection I found only one drain discharging into the tank, and the quantity discharged was not more than what a —

population

population of ten or twenty would contribute, and this is so diluted by the large volume of water in the tank that it does not emit any offensive smell. Within the water shed of the tank there however resides a population of about 13500, and there must be a large quantity of sewage due to this popu-lation, and if any further evidence on this point is required the open street drains afford it, for, there is always a fair flow through them. The aggregate flow of these drains must be a very considerable quantity, but not one hundredth part of it reaches the tank. The fact is that all this sewage is retained by the closed drains mentioned in para 5 ante. These closed drains are very defective and have silted up very much. The sewage discharged by the surface drains is absorbed by the silt in the closed drains, and any excessive saturation of the silt is prevented by percolation through the defective masonry of the drains. Further, the silt is not uniformly deep. There are depressions in it here and there in which sewage is lodged. When the sewage of a whole dry season, which means about 8 months in the year, is absorbed & retained in closed drains in the manner described, it may be readily conceived that it must attain a very high degree of concentration & putrefaction. During the rains the closed drains run full — almost under pressure at times — and all the putrid mass of filth that has collected in them is washed into the tanks. This *per se* would sufficiently account for the evil smell of the tanks on the advent of the rains. There is probably another concurrent cause of the foul

foul smell. All the organic filth washed into the tank during each monsoon settles to the bottom of the tank on the cessation of the rains. The oxygen in the bottom layer of water in tank with which the impurities are in contact is soon absorbed. The water being in a quiescent state the bottom layer of water is deprived of the means of re-oxygenation. The oxidation of the impurities is thus prevented and they continue to be in their putrescent state. There are certain organisms present in all waters and these thrive & multiply rapidly in water containing putrescent matter. But when there is any agitation of water as during the rains both the water and the impurities come in contact with the atmospheric oxygen and the impurities are oxidised, and the organisms die by myriads

owing

Read

owing to the changed condition of existence and emit a repulsive smell. This is exactly analagous to what happens in the Cooum as described in para 9 of Mr. Jones' Report on the Cooum Improvement Scheme. From what has been said above, it will be apparent that frequent agitation of water during the hot weather would oxidise the impurities, retard the propagation of the organisms and consequently abate the nuisance. This theory receives a curious confirmation in a circumstance narrated to me with reference to the Sedda Cheruvu. I was informed that only a few years ago the tank was not as odoriferous as it is now, and the reason ascribed for it is that in those days the elephants of the samasthanam were turned into the tank occasionally for the purpose of agitating

the

he water, and as my informant
aid to "dissolve" the bad smell. —
hough their notion about "dissolving"
he smell seems to have been hazy
here is no doubt the correct remedy
was applied, and it is a great
pity that the practice was dis-
continued.

8. However this may be, it
is positive that the sewage & filth
of the town are responsible for the
smell from the tank. The remedy
should strike at the root of the
evil, and it therefore lies in the
prevention of the sewage entering
the tank.

9. The levels admit of the
construction of an intercepting
sewer between the town and the
tank as shown on plan. The sewer
could be carried as far away from
the town as desirable, for the
ground falls rapidly below the
tank and sewage could be

utilized

utilized on a farm. But no sewage
would reach the intercepting sewer
unless the covered main drains
in the town are cleared of silt and
put into proper order. Even when
all the defects in the main drains
have been remedied the whole
quantity of sewage produced
within the watershed of the tank
would not reach the intercepting
sewer, for several streets & lanes
are undrained, and in addition
to this the surface of the town is
liable to so many other sources of
pollution that the rain water,
especially during the earlier showers
flowing over the ground will
carry with it most of these im-
-purities. It is therefore considered
that to obtain the best results with
reference to the improvement of the
Sedda between the intercepting
sewer should be of sufficient capa-
-city to carry off ¼ of an inch

of

of rainfall per hour and the sewer allowed to surplus into the tank only during heavier rainfalls. A smaller intercepting sewer with its capacity limited to 150 to 20 gallons per head of the population will not effect the purpose in view i.e., keeping the sewage & filth of the town entirely out of the tank, unless the whole town is properly drained.

10. It is true that by providing a sewer large enough to intercept ¼ inch of rainfall the tank will be deprived of some water. Whether this will seriously affect the supply of the tank it is not possible to say until the extent of its water shed is ascertained by survey. However this may be, the health of the town must be considered a matter of more paramount importance than the irrigation of a few acres of land.

11. Seeing that the cost of the above proposals will be about half a lakh of rupees and that in all probability it will be some years before the sewer becomes a fait accompli the following measures are recommended as being such as could be carried out at once

12. The existing closed drains should be cleared of silt and repaired where necessary. If the construction of an intercepting sewer cannot be undertaken at once the next best thing would be to see that the sewage reaches the tank regularly and before decomposition sets in. The daily discharge of freshly formed sewage will be followed by less serious results than when the sewage stagnates in the silted drains, decomposes there, and is discharged en masse into the tank with the first heavy shower.

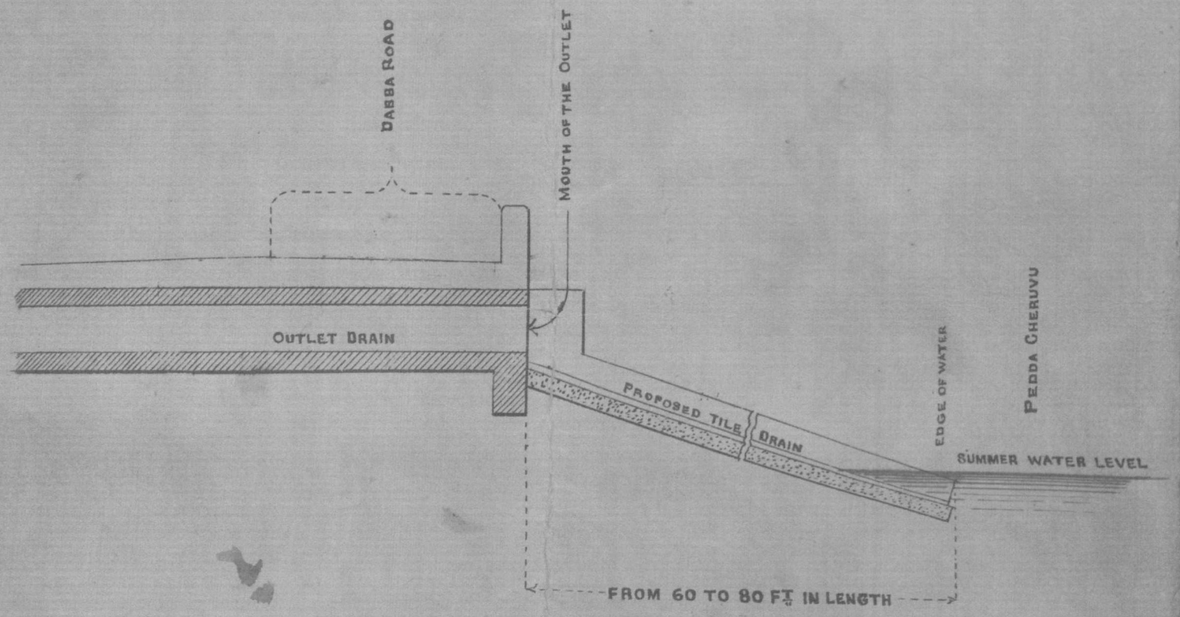
13. Glazed tile drains should be laid from the mouth of the

outfall

SURVEY OFFICE, 28 OCT 1907 MADRAS.

Despatch 1913

fleto to low water edge as shown
n sketch below.



Another remedial measure that

that I would suggest is the construction of a low level sluice for scouring out the bed of the tank. The ne-cessity of means for scouring out all drinking water tanks or irri-gation tanks circumstanced as Pedda Cheruvu is, deserves better recognition at the hands of Local Bodies. By attention to this matter many tanks would have been saved from the deterioration of their waters that has occurred. The cost of the sluice would be about Rs 1500.

15. The Chairman of the Immi-cipality contends that the main sources of contamination to Pedda Cheruvu are the markets, bandy-pet & stables belonging to the Maharajah. That these places produce more impurities than an equal area of the town will be readily conceded; but the area of town draining into the tank is so large compared with that of the

the market, bandyppet & stables, that
the impurities contributed to the
tank by the latter must bear
only a very small proportion
to the impurities contributed by
the town. I, however, understand
that these places are now better
conserved than they were before.
There is, no doubt, still room for
improvement. Both the market
and the bandy-pet require some
surface drains. The droppings
from the animals is allowed to
accumulate several days before
being removed by the contractor.
There was a heap of several
bandyloads in the bandy-pet and
a similar heap on the margin of
the tank. The manure should
certainly be removed daily, for when
allowed to accumulate a sudden
shower is likely to carry some
of it into the tank. The remedy,
however, lies in the hands of the
Chairman and the Magistrate.

The

The Municipality, I understand, levies
taxes on the market & bandy-pet.

16. To sum up the measures pro-
posed for the improvement of the tanks

I. The repair of the existing
drains & the construction of an
intercepting drain.

II (a) The cleaning of silt from
existing closed drains,

(b) the laying of tile drains
from the outlets to the summer
margin of water,

(c) the agitation of water in
the tank occasionally,

(d) the scouring of the bed of
the tank by construction
of low level sluice.

Asst. Sanitary Engineer
to Govt.

Office of Sanitary Engineer
Fort St. George, 13th September 1894

tcl
hdlo

SANITARY ENGINEER
Register No 4321
5 NOV 1895
TO THE GOVERNMENT OF MADRAS

CHIEF SECRETARY
1 NOV. 1895
GOVERNMENT OF MADRAS

Encl to 21
Sa 13/96
24/18 Oct 1894

Encl. I to Proceedings
of the Sanitary Board
No. 18 of 26. Nov 1894.

4/
2595 Nov 95

17/9

Extract from the Proceedings of the municipal Council Vizianagaram at a meeting held on the 7th September 1895

Present.

1. M R. Ry V. Venkatrayasastri garu. B.A. Chairman. M.C
2 - K. V. Krishnarau Pantulu garu. Councillor.
3 - Y. Appalanarasaiya Pantulu garu -
4 - N. Chinnajiviraw garu -
5 - S. Ramamurti garu -
6 - P. Venkanna garu -
7 - D. Suryaprakasalingum garu -

x x x

3. The chairman brings to the notice of the Council the remarks of the Sanitary Commissioner, Doctor King regarding the urgent necessity of a water scheme even in preference to the drainage-scheme which the Council has already resolved to undertake provided the Government should render a liberal help.

The Council is of openion that the water scheme is urgently needed for the town and that the Government should be addressed on the subject with a view to take up the water scheme in preference to the drainage scheme.

x x x

(Signed) V. Venkatrayasastri
Chairman M.C

(True Extract)

Municipal Office
Vizianagaram

V. Venkatrayasastri

SANITARY ENGINEER
Number 4321
Dated 5-10-93
TO THE GOVERNMENT OF MADRAS

Extract from the Proceedings of the municipal Council Vizianagaram at a meeting held on the 27th July 1895.

Present

1 M.R.Ry V.Venkatraya sastri garu B.A. Chairman. M.C
2. R. Marris Esqr. Principal asstt. Collector & ex. officio Councillor
3 M.R.Ry K.V. Krishnaraw Pantulu garu. Councillor
4 - P. Ramamurti garu -
5 - Mohomed Pasha Sahib garu -
6 - Ch. Somayajulu Pantulu garu -
7 - Ch. Ramamurti Pantulu garu -
8 - D. Suryaprakasalingum garu -
9 - N. Pattiyya garu -

× × ×

2. Read the following papers-

(1) Report on Reddacheruvu and proposals for its improvement

(2) Proceedings of the Sanitary Board dated 26th November 1894 No 1? and the Government order thereon dated 8th December 1894 No 1898 M. Misc -

The Council considers that the construction of the proposed intercepting sewer will be the best means of abating the nuisance arising from the Reddacheruvu. Before, however, committing itself to undertaking the construction of the sewer, the Council would wish more definite information as to its cost and the share which will be borne by Government. The Council observes that the sewer can hardly be undertaken except as a preliminary to, and a portion of a drainage scheme for the

rupees - The funds available from the imposition of a drainage rate will be hardly sufficient to cover the interest and sinking fund charges on a loan of Rs 50,000 without providing for the periodical repairs &c necessary to the ~~sewer~~ -

× × ×

(Signed) V. Venkatrayasastri

Chairman M.C

(True Extract)

V. Venkatrayasastri.
Chairman M.C.

SANITARY ENGINEER
Letter No 4321
5 DEC 5
TO THE GOVERNMENT OF MADRAS

Encl No 20
Sa 13/5/6

1/5/95 Wash

Forwarded.

2. The financial condition of the Visianagram Municipality is most unsatisfactory. The toll revenue having dwindled away since the railway was opened. The only money which could be made available for water and drainage projects is that which could be raised by a special tax for the purpose. This is estimated by the Chairman at Rs. 10000.

3. The town is in great need of both water supply and drainage, but the former is in my opinion by far the most urgent want. Visianagram is built for the most part on earth filling valleys and pockets in a rough sheet of granite or gneiss and many years will have to elapse after the execution of a drainage scheme before the sewage logged subsoil becomes pure enough to make wells safe. A water project would on the other hand produce an immediate and direct effect on the health of the town and as the means of the council is so limited it should be taken up first.

4. As regards the drainage scheme the Peddacherruvu

project

project is in my opinion the least important portion of it. I find that a good deal has been written about the offensive smell from this tank of late, but an intimate experience with the locality for many years and at all seasons leads me to differ from the views which have been expressed. The bad smell only appears under certain conditions which according to my experience are a steady breeze and a rapidly falling water level leaving a considerable area of fresh ground uncovered every day. The wind blows the scum of the tank which contains large quantities of small insects and animalculae on to the land which is being uncovered where it rapidly decomposes. I have often been in a boat on the tank on such occasions and never remember noticing any offensive smell except along the shore. Of late the tank has been full for several years, a most unusual thing, and the tendency to a bad smell seems to be greater than formerly owing no doubt to this having assisted the increase of animal life. I have no doubt however but if a single bad monsoon will bring things back

back to their usual innocuous condition. I write this in the Saba Gardens Bungaloo on the bank of the tank. What little wind there is has been blowing into the bungalow all day and there has not been a vestige of a smell and I can testify to this being the normal condition of affairs. The offensive odour is only occasional and lasts for very short periods instead of being permanent for months as would be the case if it were directly due to the drainage of the town. I have never known it in the early part of the monsoon which is the time when the town is most liable to epidemics.

5. I do not mean to say that the exclusion of drainage from the tank is not a most desirable thing, but merely to point out that the Rs 50,000 in question would be spent on the least urgent portion of the least urgent of the two much desired projects (water and drainage). It is also worth considering whether the proposed end might not be attained at comparatively small expense by the laying of an iron pipe across the tank bed.

Rs

6. As regards the Chairman's remarks about the Sanitary Commissioner's water project, the water logged ground he refers to is close to the watershed of the catchment area in which it lies and unless there is an underground flow (which is highly improbable considering the features of the country) its only ultimate source of supply is the rain which actually falls on a square mile or two. The proportion of the rainfall on ground a great deal of which is on a considerable slope which could be recovered by a system of wells such as Dr. King proposes must be very small and I fear that the wells would run dry after a year or two, where the water of what probably is merely a subterranean tank with a small catchment area has been used up. It would be very unsafe to undertake such a project until a couple of years pumping with a powerful pump has demonstrated that the water supply is one to be depended on.

7. I have detained this paper a few days to enable me to consult the Chairman.

8. The Chairman says that the Assistant Sanitary Engineer's report and plan referred to in the concluding portion of his letter were submitted by him direct to Government.

Collector.

Local & Municipal Dept.
CURRENT No. 3595/M

SANITARY ENGINEER
Register No. 4321
TO THE GOVERNMENT OF MADRAS

19 P

From The Collector
Vizagapatam

To The Chief Secretary to Govt.
Local & Municipal Depts.

Dated 16 November 1895
Recd 17
Encls 4 (one plan)

No. 1715
Referred to the Sanitary Board for remarks.
(By order)
W. D. Phillips
Ag Assistant Secretary

V.R.
3/12/95
Fort St George
4th December 95

Enclosure to letter No. 1556 of 1896

C no 4334

CHIEF SECRETARY
21. NOV. 1895
GOVERNMENT OF MADRAS

Recd 17
Se 13/96

Submitting with remarks & opinion the Vizianagram Mr. Chairman's letter on the question of the drainage & water supply schemes of the Municipality

To

The Joint Secretary to the Sanitary Board
(Engineering Branch)

endt)

a. 3. XII. 95

S. B. 1—17-3-95—200.

GOVERNMENT OF MADRAS.

No. 1557

OFFICE OF SANITARY BOARD,

Fort St. George, 19 May 1896.

Local & Municipal Dept.
CURRENT No. 1482/M

From

J. A. JONES, ESQ., MEM. INST. C.E., F.R.S.E.,
SECRETARY, SANITARY BOARD (ENGINEERING BRANCH),

To

The Chief Secretary to Government,
Local & Municipal Dept.

SIR,

With reference to endorsement No. 1715 dated 4th December 1895 of the Asst. Secretary, I have the honor to forward herewith Resolution of the Sanitary Board No. 155 dated 19 May 1896. on the improvement of the Eddacherum and the Drainage & Water Supply Schemes for the town of Vizianagaram.

7

2. Rs 2,000 may be allotted for the necessary surveys - if allotted soon the survey might be taken up at the latter end of 1896 & the plans prepared early next year.

I

I have the honor to be,
Sir,
Your most obt. Servt.

Secretary, Sanry. Bd.
Engrg. Brch:

S.E.
23 200—30-8-95.

GOVERNMENT OF MADRAS.

SANITARY BOARD OFFICE.

SANITARY ENGINEERING BRANCH.

Proceedings of the Sanitary Board, No. 1556 dated 19 May 1896.

Present

The Hon'ble Lol: D. McNeil Campbell, R.E., President
Surgeon Lieut. Col. W.G. King, M.B., C.M., D.P.H., Sanitary Commissioner for Madras.
J.A. Jones Esq., Mem. Inst. C.E., F.R.S.E., Sanitary Engineer to Government

READ the following:—

Reference from the Ag: Assistant Secretary to Government No. 1715, dated 4th December 1895 forwarding for remarks file of papers regarding the improvement of the Peddacherruvu and the Drainage and Water-Supply Schemes for the town of Vizianagaram.

Resolution.

The Sanitary Board considers that a water supply scheme should have preference to a drainage scheme and recommends that the Sanitary Engineer be directed to include the preparation of such a scheme in his next year's programme and that the Municipal Council be requested to allot the funds for any surveys which may be necessary.

2 The Sanitary Board notes with pleasure the proposed liberality of His Highness

the Maharajah of Vizianagaram+.

36

'True Extract'

Secretary
Sanitary Board (Engineering Branch)

To

The Chief Secretary to Govt
Local and Municipal Department.
with file of papers.

22
Pol

+ Extract from ~~Report~~ Note dated 4th September 1895 of the Sanitary Commissioner for Madras.

"The Maharajah promised and authorized me to state so officially that he would be willing to contribute one and a half lacs towards the scheme."

Local & Municipal Dept. 1896
No. CURRENT No. 1482 /96

From

The Secretary
Sanitary Board
Engineering Branch

To

The Chief Secretary
to Government,
Local & Municipal Dept.

No. 1557

Dated 19
Despd 19 } May 1896
Received

Enc — 1 with C. No. 3595 - 96 of 1896 with

Subject.

Forwarding Resolution of the Sanitary Board No. 1556 dated 19 May 1896 on the improvement of the Peddacheruvu and the drainage & Water Supply Schemes for the town of Vizianagaram.

1896

Enclosure to letter No. 1557 of 1896.

From

The Secretary
Sanitary Board
Engineering Branch

To

The Chief Secretary
to Government
Local & municipal Dept.

No 1556
Dated 19 May 1896

Enc — 1

Subject

Water Supply of Vizianagram

Proceedings of
the Sanitary Board on
the improvement of the
Peddacheruvu and the
drainage & Water Supply
Schemes of Vizianagaram

[5]
700—6-4-96.

LOCAL AND MUNICIPAL DEPARTMENT.

Papers to be read in Proceedings:—

Again G.O., dated 189 , No.

227

Current No 3595 of 1895, dated 16 November from the Collector of Vizagapatam
Current No. 1482 of 1896, dated 19 May from the Secretary, Sanitary Board, Engineering Branch.

Order. No 1023 Mmis dt 17-6-96.

The remarks of the Sanitary Board, in which the Government concurs, will be communicated to the municipal council, Vizianagram with the request that a sum of Rs 2,000 may be placed at the disposal of the Sanitary Engineer without delay for a survey of the town in view to the preparation of a water supply scheme.

2. The Sanitary Engineer should include this scheme in the list of water supply and drainage schemes to be undertaken by him in 1897.

3. The Government notes with much pleasure the liberal offer of the Maharajah of Vizianagram to contribute one and a half lakhs of rupees towards the cost of the

Water-Supplies

Visiana(gram)

such
~~water-supply~~ Scheme as
may be favourably approved
1/4/96

WWD
8.6.96

RD
12/6/96

✓

W.m
Misc.

10254

To

The Chairman, M.C. Vizia
(thro' the Collector of
" Sanitary Board
" Sanitary Engineer (with
M. The Maharajah Moo
Ananda Gajapati Raz
Bahadur, G.C.I.E. of

Bengal Secretariat
outside Cut.

en given for copying ____
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ven signed ____ } 189.

AGAIN G.O., No. DATED
189 ,

RENT No.

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GOVERNMENT .. A .. A A A A A A A A

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Government of Madras.

LOCAL AND MUNICIPAL DEPARTMENT.

MISCELLANEOUS.

Recd. } 1896. *Enclosures*

Regd. *Spare copies*

G.O., No. 1023 M., 17th June 1896.

Drainage and Water-supply.

Communicating, with remark, to the Municipal Council, Vizianagram, the resolution of the Sanitary Board on the improvement of Peddacheruvu and on the — schemes for the town of Vizianagram.

GOVERNMENT OF MADRAS.

LOCAL AND MUNICIPAL DEPARTMENT.

READ—the following papers :—

I

Letter—from M.R.Ry. V. Venkatrayasastri Garu, B.A., Chairman, Municipal Council, Vizianagram.
To—the Secretary to Government, Local and Municipal Department.
Dated—the 18th October 1895.
No.—189.

With reference to the Proceedings of the Madras Government, No. 1898 M., dated 8th December 1894, I have the honour to state that the Council, after carefully considering the various points touching the important question of drainage and water-supply schemes, with reference to the past reports and records, as also with reference to the financial condition of the Municipality, is of opinion that it is very necessary to take up not only the Peddacheruvu project, but also the entire drainage and water-supply schemes. The Council considers that, to take up the Peddacheruvu scheme alone without improving the entire drainage and the water-supply will go very little to improve the sanitation of the town in spite of the heavy charges the Municipality will have to incur, the rough estimate of this portion of the entire drainage scheme alone having been calculated to be no less than Rs. 50,000. The Government, while reviewing the budget of this Municipality for 1895–96, provided Rs. 600 towards the cost of preliminary levels to be taken in connection with the drainage scheme of the town. The entire cost of the drainage scheme, including the Peddacheruvu project, has been roughly calculated at over two lakhs of rupees. The Council, under its present financial condition, with a hopeless future, cannot venture to undertake any such large schemes unless the Government will greatly help it onwards financially, partly by a liberal grant and partly by a loan. It accordingly resolved that it cannot commit itself to a conclusion before knowing what aid could be obtained from the Government in connection with the drainage scheme. While the Council is fully aware of the necessity of improving drainage of the town, it considers that it is equally necessary to take the water project on hand, as in its opinion the drainage scheme may not be of much advantage to the town without a sufficient quantity of pure water-supply. It is true that by improving the condition of the drainage the sources of contamination for the tanks and wells in the town will be greatly minimised ; but considering the rapid increase of population the Council fears that unless every care is taken to have pure water-supply which could not be secured without a water-supply scheme, the town cannot be kept free from epidemics that seem to visit the place rather too often. The Sanitary Commissioner, in his recent tour of inspection, has examined the condition of water and impressed upon the Council the urgent necessity of taking up the water project along with the drainage if not earlier. He was so good as to inspect the surroundings of the town with a view to finding means for improving the condition of water, and he is of opinion that by tapping round the foot of the hill called the Red Hill (Bontu konda) which is not quite a mile and a half off the town, pure filtered water sufficient for the requirements of the town can be got and may be conducted to suitable localities in the town and thence piped into the dwellings. If the scheme thus investigated by Doctor King and roughly estimated by him at a lakh and half rupees should commend itself to the Sanitary Board and the Government, as I am sanguine it will, the Council is hopeful that the Honourable the Maharaja, who has always evinced much interest in any matter that is connected with the welfare of the townspeople and who has been particularly devoting his attention to this important subject for some time past as the Government is already aware, will with his princely generosity make a liberal grant towards the

project. In the interview between the Sanitary Commissioner and the Maharaja, the question was discussed with great interest and most enthusiasm, and I am told that the Maharaja was so good and generous as to express that he would most willingly support the scheme in the manner it deserves.

This matter was also thoroughly discussed before the Council, and I beg to forward copies of the resolutions on both the schemes for the information of Government.

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Enclosures.

Report on the Peddacheruvu at Vizianagram and proposal for its improvement.

The Peddacheruvu, an irrigation tank, which belongs to the estate of the Maharaja of Vizianagram, lies just below the town of Vizianagram. The water-spread of the tank at its full height is 150 acres. It has a depth of 20 feet and roughly a capacity of about 44 million cubic feet.

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5. The town is fairly well provided with masonry open drains. These are, as a rule, in streets running east and west, and the contents of these drains are collected in closed drains which run from north to south and open into the tank at the various places indicated on the accompanying plan.

6. The reception of the town sewage into the tank is supposed to be the cause of the evil smell complained of. If so, it might naturally be expected that during the hot weather when the tank is low the smell would be more evident than in the wet weather when sewage is diluted with a large amount of fresh water ; also that in a dry year the smell would be prevalent to a greater extent than in a wet year. But strongly enough the reverse appears to be the case. To my enquiry on the subject Mr. Scott, the Principal Assistant Collector, Vizianagram, writes : —

"(1) I have only been in Vizianagram now for a little over a year and I am not able to state from personal knowledge whether the smell from the tank lasts a longer period and is stronger in a dry than in a wet year, nor do I think any reliable information could be obtained seeing however that the smell seems to get stronger as the tank fills and to die off as it empties, it may be inferred that the smell would last longer and be worse in a wet than in a dry year. Last year was a wet year and the smell was very strong.

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7. The explanation of this apparent paradox —the emission of an offensive smell during the rainy season when the tank is full and the disappearance of the smell with the approach of hot weather—lies herein. During the hot weather only a very inappreciable amount of sewage enters the tank. On my inspection I found only one drain discharging into the tank, and the

quantity discharged was not more than what a population of ten or twenty would contribute, and this is so diluted by the large volume of water in the tank that it does not emit any offensive smell. Within the water shed of the tank there however resides a population of about 13,500, and there must be a large quantity of sewage due to this population, and if any further evidence on this point is required the open street drains afford it, for, there is always a fair flow through them. The aggregate flow of these drains must be a very considerable quantity, but not one hundredth part of it reaches the tank. The fact is that all this sewage is retained by the closed drains mentioned in paragraph 5 *ante*. These closed drains are very defective and have silted up very much. The sewage discharged by the surface drains is absorbed by the silt in the closed drains, and any excessive saturation of the silt is prevented by percolation through the defective masonry of the drains. Further, the silt is not uniformly deep. There are depressions in it here and there in which sewage is lodged. When the sewage of a whole dry season, which means about 8 months in the year, is absorbed and retained in closed drains in the manner described, it may be readily conceived that it must attain a very high degree of concentration and putrefaction. During the rains the closed drains run full—almost under pressure at times—and all the putrid mass of filth that has collected in them is washed into the tank. This *per se* would sufficiently account for the evil smell of the tank on the advent of the rains. There is probably another concurrent cause of the foul smell. All the organic filth washed into the tank during each monsoon settles to the bottom of the tank on the cessation of the rains. The oxygen in the bottom layer of water in tank with which the impurities are in contact is soon absorbed. The water being in a quiescent state the bottom layer of water is deprived of the means of re-oxygenation. The oxidation of the impurities is thus prevented and they continue to be in their putrescent state. There are certain organisms present in all waters and these thrive and multiply rapidly in water containing putrescent matter. But when there is any agitation of water as during the rains, both the water and the impurities come in contact with the atmospheric oxygen and the impurities are oxidised and the organisms die by myriads owing to the changed condition of existence and emit a repulsive smell. This is exactly analogous to what happens in the Cooum as described in paragraph 9 of Mr. Jones' report on the Cooum Improvement Scheme. From what has been said above, it will be apparent that frequent agitation of water during the hot weather would oxidise the impurities, retard the propagation of the organisms and consequently abate the nuisance. This theory received a curious confirmation in a circumstance narrated to me with reference to the Peddacheruvu. I was informed that only a few years ago the tank was not as odoriferous as it is now, and the reason ascribed for it is that in those days the elephants of the Samasthanam were turned into the tank occasionally for the purpose of agitating the water, and as my informant said to "dissolve" the bad smell. Though their notion about "dissolving" the smell seems to have been hazy, there is no doubt the correct remedy was applied, and it is a great pity that the practice was discontinued.

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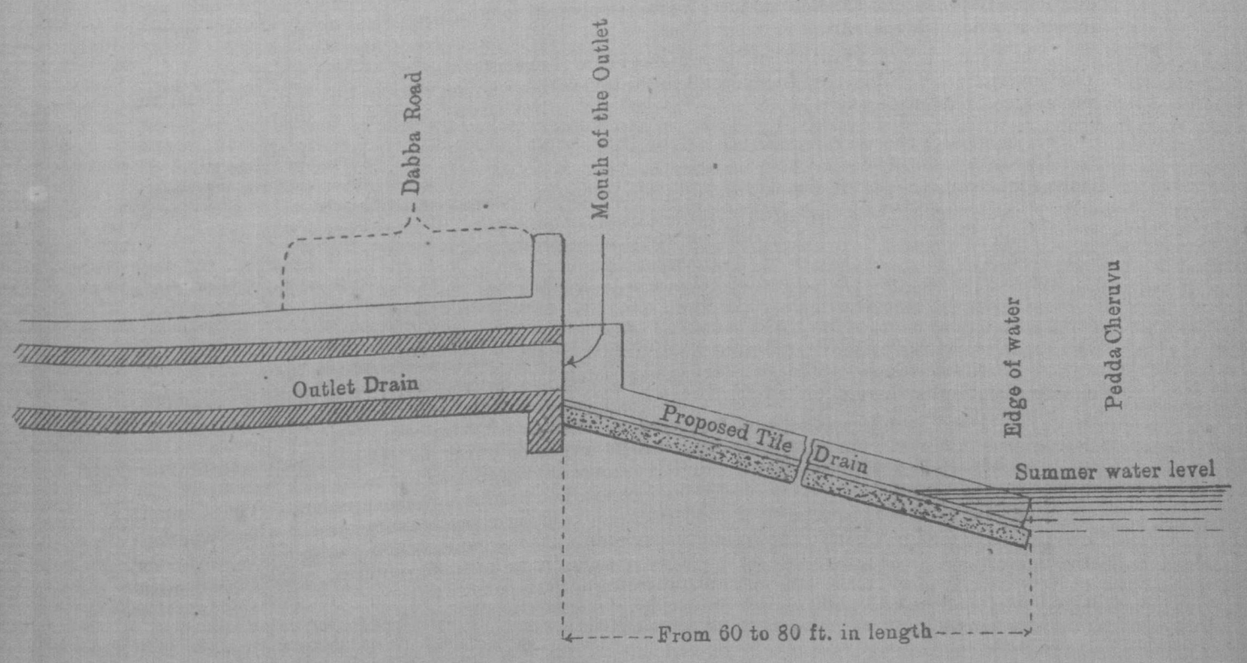
9. The levels admit of the construction of an intercepting sewer between the town and the tank as shown on plan. The sewer could be carried as far away from the town as desirable, for the ground falls rapidly below the tank and sewage could be utilized on a farm. But no sewage would reach the intercepting sewer unless the covered main drains in the town are cleared of silt and put into proper order. Even when all the defects in the main drains have been remedied the whole quantity of sewage produced within the water shed of the tank would not reach the intercepting sewer, for, several streets and lanes are undrained, and in addition to this the surface of the town is liable to so many other sources of pollution that the rain water, especially during the earlier showers flowing over the ground, will carry with it most of these impurities. It is therefore considered that to obtain the best results with reference to the improvement of the Peddacheruvu, the intercepting sewer should be of sufficient capacity to carry off quarter of an inch of rainfall per hour and the sewer allowed to surplus into the tank only during heavier rainfalls. A smaller intercepting sewer with its capacity limited to 15 or 20 gallons per head of the population will not effect the purpose in view, *i.e.*, keeping the sewage and filth of the town entirely out of the tank, unless the whole town is properly drained.

10. It is true that by providing a sewer large enough to intercept $\frac{1}{4}$ inch of rainfall the tank will be deprived of some water. Whether this will seriously affect the supply of the tank it is not possible to say until the extent of its water shed is ascertained by survey. However this may be, the health of the town must be considered a matter of more paramount importance than the irrigation of a few acres of land.

11. Seeing that the cost of the above proposals will be about half a lakh of rupees and that in all probability it will be some years before the sewer becomes a *fait accompli*, the following measures are recommended as being such as could be carried out at once.

12. The existing closed drains should be cleared of silt and repaired where necessary. If the construction of an intercepting sewer cannot be undertaken at once, the next best thing would be to see that the sewage reaches the tank regularly and before decomposition sets in. The daily discharge of freshly formed sewage will be followed by less serious results than when the sewage stagnates in the silted drains, decomposes there, and is discharged *en masse* into the tank with the first heavy shower.

13. Glazed tile drains should be laid from the mouth of the outlets to low water edge as shown on sketch below.



14. Another remedial measure that I would suggest is the construction of a low level sluice for scouring out the bed of the tank. The necessity of means for scouring out all drinking-water tanks or irrigation tanks circumstanced as Pedda Cheruvu is, deserves better recognition at the hands of local bodies. By attention to this matter many tanks would have been saved from the deterioration of their waters that has occurred. The cost of the sluice would be about Rs. 1,500.

15. The Chairman of the Municipality contends that the main sources of contamination to Pedda Cheruvu are the markets, bandy-pet and stables belonging to the Maharaja. That these places produce more impurities than an equal area of the town will be readily conceded; but the area of town draining into the tank is so large compared with that of the market, bandy-pet and stables, that the impurities contributed to the tank by the latter must bear only a very small proportion to the impurities contributed by the town. I, however, understand that these places are now better conserved than they were before. There is, no doubt, still room for improvement. Both the market and the bandy-pet require some surface drains. The droppings from the animals are allowed to accumulate several days before being removed by the contractor. There was a heap of several bandy loads in the bandy-pet and a similar heap on the margin of the tank. The manure should certainly be removed daily, for when allowed to accumulate a sudden shower is likely to carry some of it into the tank. The remedy, however, lies in the hands of the Chairman and the Magistrate. The Municipality, I understand, levies taxes on the market and bandy-pet.

16. To sum up the measures proposed for the improvement of the tank—

I. The repair of the existing drains and the construction of an intercepting drain.

II. (*a*) The clearing of silt from existing closed drains,
(*b*) the laying of tile drains from the outlets to the summer margin of water,
(*c*) the agitation of water in the tank occasionally,
(*d*) the scouring of the bed of the tank by construction of low level sluice.

Extract from the Proceedings of the Municipal Council, Vizianagram, dated the 7th September 1895.

* * * * *

3. The Chairman brings to the notice of the Council the remarks of the Sanitary Commissioner Dr. King regarding the urgent necessity of a water scheme even in preference to the drainage scheme which the Council has already resolved to undertake, provided the Government should render a liberal help.

The Council is of opinion that the water scheme is urgently needed for the town and that the Government should be addressed on the subject with a view to take up the water scheme in preference to the drainage scheme.

* * * * *

Extract from the Proceedings of the Municipal Council, Vizianagram, dated the 27th July 1895.

* * * * *

2. Read the following papers:—

(i) Report on Pedda Cheruvu and proposals for its improvement.

(ii) Proceedings of the Sanitary Board, dated 26th November 1894, No. 18, and the Government order thereon, dated 8th December 1894, Mis. No. 1898 M.

The Council considers that the construction of the proposed intercepting sewer will be the best means of abating the nuisance arising from the Pedda Cheruvu. Before, however, committing itself to undertaking the construction of the sewer, the Council would wish more definite information as to its cost and the share which will be borne by Government. The Council observes that the sewer can hardly be undertaken except as a preliminary to, and a portion of, a drainage scheme for the entire town costing several lakhs of rupees. The funds available from the imposition of a drainage rate will be hardly sufficient to cover the interest and sinking fund charges on a loan of Rs. 50,000 without providing for the periodical repairs, etc., necessary to the sewer.

* * * * *

Dis. No. 711, *dated* 19*th October* 1895.

Submitted.

L. C. MILLER,
Assistant Collector in charge.

Forwarded.

2. The financial condition of the Vizianagram Municipality is most unsatisfactory, the toll revenue having dwindled away since the railway was opened. The only money which could be made available for water and drainage projects is that which could be raised by a special tax for the purpose. This is estimated by the Chairman at Rs. 10,000.

3. The town is in great need of both water-supply and drainage, but the former is, in my opinion, by far the most urgent want. Vizianagram is built for the most part on earth-filling valleys and pockets in a rough sheet of granite or gneiss and many years will have to elapse after the execution of a drainage scheme before the sewage logged sub-soil becomes pure enough to make wells safe. A water project would, on the other hand, produce an immediate and direct effect on the health of the town and as the means of the Council is so limited it should be taken up first.

4. As regards the drainage scheme the Pedda Cheruvu project is, in my opinion, the least important portion of it. I find that a good deal has been written about the offensive smell from this tank of late, but an intimate experience with the locality for many years and at all seasons leads me to differ from the views which have been expressed. The bad smell only appears under certain conditions which according to my experience are a steady breeze and a rapidly falling water level leaving a considerable area of fresh ground uncovered every day. The wind blows the scum of the

tank which contains large quantities of small insects and animal eulae on to the land which is being uncovered where it rapidly decomposes. I have often been in a boat on the tank on such occasions and never remember noticing any offensive smell except along the shore. Of late the tank has been full for several years, a most unusual thing, and the tendency to a bad smell seems to be greater than formerly owing no doubt to this having assisted the increase of animal life. I have no doubt however but that a single bad monsoon will bring things back to their usual innocuous condition. I write this in the Daba Gardens bungalow on the bank of the tank. What little wind there is has been blowing into the bungalow all day and there has not been a vestige of a smell and I can testify to this being the normal condition of affairs. The offensive odour is only occasional and lasts for very short periods instead of being permanent for months as would be the case if it were directly due to the drainage of the town. I have never known it in the early part of the monsoon which is the time when the town is most liable to epidemics.

5. I do not mean to say that the exclusion of drainage from the tank is not a most desirable thing but merely to point out that the Rs. 50,000 in question would be spent on the least urgent portion of the less urgent of the two much desired projects (water and drainage). It is also worth considering whether the proposed end might not be attained at comparatively small expense by the laying of an iron pipe across the tank-bed.

6. As regards the Chairman's remarks about the Sanitary Commissioner's water project, the water-logged ground he refers to is close to the water-shed of the catchment area in which it lies, and unless there is an under ground flow (which is highly improbable considering the features of the country) its only ultimate source of supply is the rain which actually falls on a square mile or two. The proportion of the rainfall on ground a great deal of which is on a considerable slope which could be recovered by a system of wells such as Dr. King proposes must be very small, and I fear that the wells would run dry after a year or two, when the water of what probably is merely a subterranian tank with a small catchment area has been used up. It would be very unsafe to undertake such a project until a couple of years pumping with a powerful pump has demonstrated that the water-supply is one to be depended on.

7. I have detained this paper a few days to enable me to consult the Chairman.

8. The Chairman says that the Assistant Sanitary Engineer's report and plan referred to in the concluding portion of his letter were submitted by him direct to Government.

F. D'A.O. WOLFE-MURRAY,
Collector.

II

Memorandum No. 1715, dated 4th December 1895.

Referred to the Sanitary Board for remarks.

(By Order.)

W. W. PHILLIPS,
Ag. Assistant Secretary to Government.

III

Letter—from J. A. JONES, Esq., M.I.C.E., F.R.S.E., Secretary, Sanitary Board (Engineering Branch).
To—the Chief Secretary to Government, Local and Municipal Department.
Dated—the 19th May 1896.
No.—1557.

With reference to Endorsement No. 1715, dated 4th December 1895, of the Acting Assistant Secretary, I have the honour to forward herewith resolution of the Sanitary Board, No. 1556, dated 19th May 1896, on the improvement of the Pedda Cheruvu and the drainage and water-supply schemes for the town of Vizianagram.

2. Rupees 2,000 may be allotted for the necessary surveys—if allotted soon the survey might be taken up at the latter end of 1896 and the plans prepared early next year.

Enclosure.

Proceedings of the Sanitary Board, dated 19th May 1896, No. 1556.

* * * * *

Read—the following paper :—

Reference from the Acting Assistant Secretary to Government, No. 1715, dated 4th December 1895, forwarding, for remarks, file of papers regarding the improvement of the Pedda Cheruvu and the drainage and water-supply schemes for the town of Vizianagram.

Resolution—No. 1556, dated 19th May 1896.

The Sanitary Board considers that a water-supply scheme should have preference to a drainage scheme, and recommends that the Sanitary Engineer be directed to include the preparation of such a scheme in his next year's programme, and that the Municipal Council be requested to allot the funds for any surveys which may be necessary.

2. The Sanitary Board notes with pleasure the proposed liberality of His Highness the Maharaja of Vizianagram.*

* Extract from note, dated 4th September 1895, of the Sanitary Commissioner for Madras.
"The Maharaja promised and authorized me to state so officially that he would be willing to contribute one and a half lacs towards the scheme."

(True Extract.)

J. A. Jones,
Secy., Sanitary Board (Engineering Branch).

To the Chief Secretary to Government, Local and Municipal Department, with file of papers.

Order—No. 1023 M., dated 17th June 1896.

The remarks of the Sanitary Board in which the Government concurs will be communicated to the Municipal Council, Vizianagram, with the request that a sum of Rs. 2,000 may be placed at the disposal of the Sanitary Engineer without delay for a survey in view to the preparation of a water-supply scheme.

2. The Sanitary Engineer should include this in the list of water-supply and drainage schemes to be undertaken by him in 1897.

3. The Government notes with much pleasure the liberal offer of the Maharaja of Vizianagram to contribute one and a half lakhs of rupees towards the cost of such scheme as may be eventually approved.

(True Extract.)

J. F. Price,
Chief Secretary

To the Chairman, Municipal Council, Vizianagram
(through the Collector of Vizagapatam).
" Sanitary Board.
" " Engineer.
" Maharaja Mirza Sir Pasup Ananda Gajapati Raz Mani Sultan Bahadur, G.C.I.E., of Vizianagram.

Government of Madras.

LOCAL AND MUNICIPAL DEPARTMENT.

MISCELLANEOUS.

Recd. } 1896. *Enclosures*
Regd. } *Spare copies*

G.O., No. 1023 M., 17th June 1896.

Drainage and Water-supply.

Communicating, with remark, to the Municipal Council, Vizianagram, the resolution of the Sanitary Board on the improvement of Peddacheruvu and on the — schemes for the town of Vizianagram.

GOVERNMENT OF MADRAS.

LOCAL AND MUNICIPAL DEPARTMENT.

READ—the following papers :—

I

Letter—from M.R.Ry. V. VENKATRAYASASTRI Garu, B.A., Chairman, Municipal Council, Vizianagram.
To—the Secretary to Government, Local and Municipal Department.
Dated—the 18th October 1895.
No.—189.

With reference to the Proceedings of the Madras Government, No. 1898 M., dated 8th December 1894, I have the honour to state that the Council, after carefully considering the various points touching the important question of drainage and water-supply schemes, with reference to the past reports and records, as also with reference to the financial condition of the Municipality, is of opinion that it is very necessary to take up not only the Peddacheruvu project, but also the entire drainage and water-supply schemes. The Council considers that, to take up the Peddacheruvu scheme alone without improving the entire drainage and the water-supply will go very little to improve the sanitation of the town in spite of the heavy charges the Municipality will have to incur, the rough estimate of this portion of the entire drainage scheme alone having been calculated to be no less than Rs. 50,000. The Government, while reviewing the budget of this Municipality for 1895–96, provided Rs. 600 towards the cost of preliminary levels to be taken in connection with the drainage scheme of the town. The entire cost of the drainage scheme, including the Peddacheruvu project, has been roughly calculated at over two lakhs of rupees. The Council, under its present financial condition, with a hopeless future, cannot venture to undertake any such large schemes unless the Government will greatly help it onwards financially, partly by a liberal grant and partly by a loan. It accordingly resolved that it cannot commit itself to a conclusion before knowing what aid could be obtained from the Government in connection with the drainage scheme. While the Council is fully aware of the necessity of improving drainage of the town, it considers that it is equally necessary to take the water project on hand, as in its opinion the drainage scheme may not be of much advantage to the town without a sufficient quantity of pure water-supply. It is true that by improving the condition of the drainage the sources of contamination for the tanks and wells in the town will be greatly minimised ; but considering the rapid increase of population the Council fears that unless every care is taken to have pure water-supply which could not be secured without a water-supply scheme, the town cannot be kept free from epidemics that seem to visit the place rather too often. The Sanitary Commissioner, in his recent tour of inspection, has examined the condition of water and impressed upon the Council the urgent necessity of taking up the water project along with the drainage if not earlier. He was so good as to inspect the surroundings of the town with a view to finding means for improving the condition of water, and he is of opinion that by tapping round the foot of the hill called the Red Hill (Bontu konda) which is not quite a mile and a half off the town, pure filtered water sufficient for the requirements of the town can be got and may be conducted to suitable localities in the town and thence piped into the dwellings. If the scheme thus investigated by Doctor King and roughly estimated by him at a lakh and half rupees should commend itself to the Sanitary Board and the Government, as I am sanguine it will, the Council is hopeful that the Honourable the Maharaja, who has always evinced much interest in any matter that is connected with the welfare of the townspeople and who has been particularly devoting his attention to this important subject for some time past as the Government is already aware, will with his princely generosity make a liberal grant towards the

project. In the interview between the Sanitary Commissioner and the Maharaja, the question was discussed with great interest and most enthusiasm, and I am told that the Maharaja was so good and generous as to express that he would most willingly support the scheme in the manner it deserves.

This matter was also thoroughly discussed before the Council, and I beg to forward copies of the resolutions on both the schemes for the information of Government.

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ENCLOSURES.

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quantity discharged was not more than what a population of ten or twenty would contribute, and this is so diluted by the large volume of water in the tank that it does not emit any offensive smell. Within the water shed of the tank there however resides a population of about 13,500, and there must be a large quantity of sewage due to this population, and if any further evidence on this point is required the open street drains afford it, for, there is always a fair flow through them. The aggregate flow of these drains must be a very considerable quantity, but not one hundredth part of it reaches the tank. The fact is that all this sewage is retained by the closed drains mentioned in paragraph 5 *ante*. These closed drains are very defective and have silted up very much. The sewage discharged by the surface drains is absorbed by the silt in the closed drains, and any excessive saturation of the silt is prevented by percolation through the defective masonry of the drains. Further, the silt is not uniformly deep. There are depressions in it here and there in which sewage is lodged. When the sewage of a whole dry season, which means about 8 months in the year, is absorbed and retained in closed drains in the manner described, it may be readily conceived that it must attain a very high degree of concentration and putrefaction. During the rains the closed drains run full—almost under pressure at times—and all the putrid mass of filth that has collected in them is washed into the tank. This *per se* would sufficiently account for the evil smell of the tank on the advent of the rains. There is probably another concurrent cause of the foul smell. All the organic filth washed into the tank during each monsoon settles to the bottom of the tank on the cessation of the rains. The oxygen in the bottom layer of water in tank with which the impurities are in contact is soon absorbed. The water being in a quiescent state the bottom layer of water is deprived of the means of re-oxygenation. The oxidation of the impurities is thus prevented and they continue to be in their putrescent state. There are certain organisms present in all waters and these thrive and multiply rapidly in water containing putrescent matter. But when there is any agitation of water as during the rains, both the water and the impurities come in contact with the atmospheric oxygen and the impurities are oxidised and the organisms die by myriads owing to the changed condition of existence and emit a repulsive smell. This is exactly analogous to what happens in the Cooum as described in paragraph 9 of Mr. Jones' report on the Cooum Improvement Scheme. From what has been said above, it will be apparent that frequent agitation of water during the hot weather would oxidise the impurities, retard the propagation of the organisms and consequently abate the nuisance. This theory received a curious confirmation in a circumstance narrated to me with reference to the Peddacheruvu. I was informed that only a few years ago the tank was not as odoriferous as it is now, and the reason ascribed for it is that in those days the elephants of the Samasthanam were turned into the tank occasionally for the purpose of agitating the water, and as my informant said to "dissolve" the bad smell. Though their notion about "dissolving" the smell seems to have been hazy, there is no doubt the correct remedy was applied, and it is a great pity that the practice was discontinued.

8. However this may be, it is positive that the sewage and filth of the town are responsible for the smell from the tank. The remedy should strike at the root of the evil, and it therefore ties in the prevention of the sewage entering the tank.

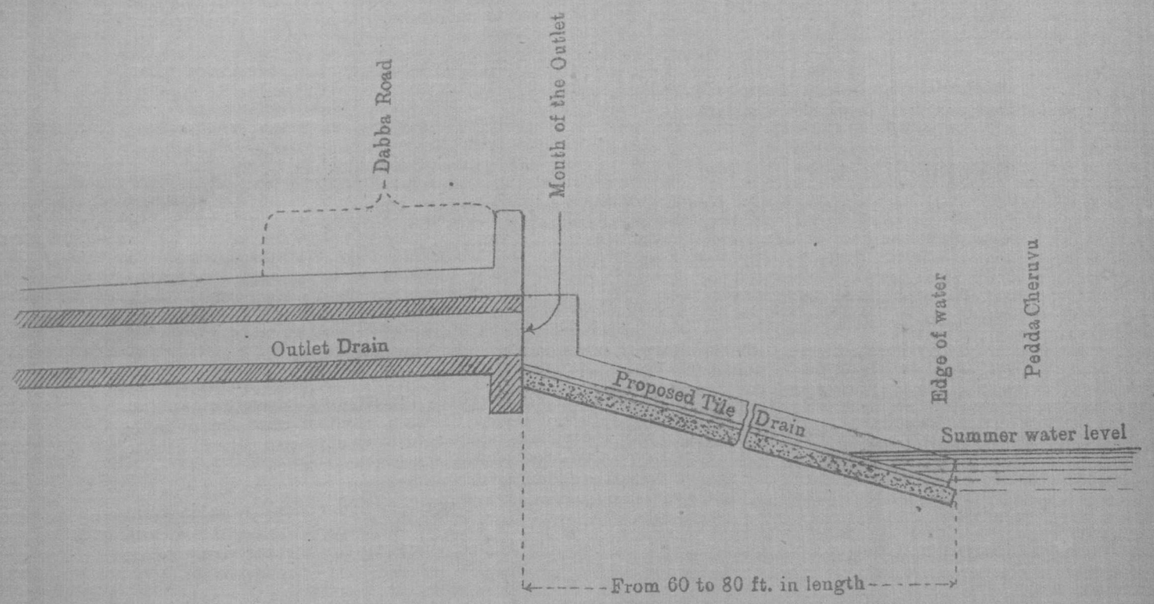
9. The levels admit of the construction of an intercepting sewer between the town and the tank as shown on plan. The sewer could be carried as far away from the town as desirable, for the ground falls rapidly below the tank and sewage could be utilized on a farm. But no sewage would reach the intercepting sewer unless the covered main drains in the town are cleared of silt and put into proper order. Even when all the defects in the main drains have been remedied the whole quantity of sewage produced within the water shed of the tank would not reach the intercepting sewer, for, several streets and lanes are undrained, and in addition to this the surface of the town is liable to so many other sources of pollution that the rain water, especially during the earlier showers flowing over the ground, will carry with it most of these impurities. It is therefore considered that to obtain the best results with reference to the improvement of the Peddacheruvu, the intercepting sewer should be of sufficient capacity to carry off quarter of an inch of rainfall per hour and the sewer allowed to surplus into the tank only during heavier rainfalls. A smaller intercepting sewer with its capacity limited to 15 or 20 gallons per head of the population will not effect the purpose in view, *i.e.*, keeping the sewage and filth of the town entirely out of the tank, unless the whole town is properly drained.

10. It is true that by providing a sewer large enough to intercept $\frac{1}{4}$ inch of rainfall the tank will be deprived of some water. Whether this will seriously affect the supply of the tank it is not possible to say until the extent of its water shed is ascertained by survey. However this may be, the health of the town must be considered a matter of more paramount importance than the irrigation of a few acres of land.

11. Seeing that the cost of the above proposals will be about half a lakh of rupees and that in all probability it will be some years before the sewer becomes a *fait accompli*, the following measures are recommended as being such as could be carried out at once.

12. The existing closed drains should be cleared of silt and repaired where necessary. If the construction of an intercepting sewer cannot be undertaken at once, the next best thing would be to see that the sewage reaches the tank regularly and before decomposition sets in. The daily discharge of freshly formed sewage will be followed by less serious results than when the sewage stagnates in the silted drains, decomposes there, and is discharged *en masse* into the tank with the first heavy shower.

13. Glazed tile drains should be laid from the mouth of the outlets to low water edge as shown on sketch below.



14. Another remedial measure that I would suggest is the construction of a low level sluice for scouring out the bed of the tank. The necessity of means for scouring out all drinking-water tanks or irrigation tanks circumstanced as Pedda Cheruvu is, deserves better recognition at the hands of local bodies. By attention to this matter many tanks would have been saved from the deterioration of their waters that has occurred. The cost of the sluice would be about Rs. 1,500.

15. The Chairman of the Municipality contends that the main sources of contamination to Pedda Cheruvu are the markets, bandy-pet and stables belonging to the Maharaja. That these places produce more impurities than an equal area of the town will be readily conceded; but the area of town draining into the tank is so large compared with that of the market, bandy-pet and stables, that the impurities contributed to the tank by the latter must bear only a very small proportion to the impurities contributed by the town. I, however, understand that these places are now better conserved than they were before. There is, no doubt, still room for improvement. Both the market and the bandy-pet require some surface drains. The droppings from the animals are allowed to accumulate several days before being removed by the contractor. There was a heap of several bandy loads in the bandy-pet and a similar heap on the margin of the tank. The manure should certainly be removed daily, for when allowed to accumulate a sudden shower is likely to carry some of it into the tank. The remedy, however, lies in the hands of the Chairman and the Magistrate. The Municipality, I understand, levies taxes on the market and bandy-pet.

16. To sum up the measures proposed for the improvement of the tank—

I. The repair of the existing drains and the construction of an intercepting drain.

II. (*a*) The clearing of silt from existing closed drains,
(*b*) the laying of tile drains from the outlets to the summer margin of water,
(*c*) the agitation of water in the tank occasionally,
(*d*) the scouring of the bed of the tank by construction of low level sluice.

Extract from the Proceedings of the Municipal Council, Vizianagram, dated the 7th September 1895.

* * * * *

3. The Chairman brings to the notice of the Council the remarks of the Sanitary Commissioner Dr. King regarding the urgent necessity of a water scheme even in preference to the drainage scheme which the Council has already resolved to undertake, provided the Government should render a liberal help.

The Council is of opinion that the water scheme is urgently needed for the town and that the Government should be addressed on the subject with a view to take up the water scheme in preference to the drainage scheme.

* * * * *

Extract from the Proceedings of the Municipal Council, Vizianagram, dated the 27th July 1895.

* * * * *

2. Read the following papers:—

(i) Report on Pedda Cheruvu and proposals for its improvement.

(ii) Proceedings of the Sanitary Board, dated 26th November 1894, No. 18, and the Government order thereon, dated 8th December 1894, Mis. No. 1898 M.

The Council considers that the construction of the proposed intercepting sewer will be the best means of abating the nuisance arising from the Pedda Cheruvu. Before, however, committing itself to undertaking the construction of the sewer, the Council would wish more definite information as to its cost and the share which will be borne by Government. The Council observes that the sewer can hardly be undertaken except as a preliminary to, and a portion of, a drainage scheme for the entire town costing several lakhs of rupees. The funds available from the imposition of a drainage rate will be hardly sufficient to cover the interest and sinking fund charges on a loan of Rs. 50,000 without providing for the periodical repairs, etc., necessary to the sewer.

* * * * *

Dis. No. 711, *dated* 19*th October* 1895.

Submitted.

L. C. Miller,
Assistant Collector in charge.

Forwarded.

2. The financial condition of the Vizianagram Municipality is most unsatisfactory, the toll revenue having dwindled away since the railway was opened. The only money which could be made available for water and drainage projects is that which could be raised by a special tax for the purpose. This is estimated by the Chairman at Rs. 10,000.

3. The town is in great need of both water-supply and drainage, but the former is, in my opinion, by far the most urgent want. Vizianagram is built for the most part on earth-filling valleys and pockets in a rough sheet of granite or gneiss and many years will have to elapse after the execution of a drainage scheme before the sewage logged sub-soil becomes pure enough to make wells safe. A water project would, on the other hand, produce an immediate and direct effect on the health of the town and as the means of the Council is so limited it should be taken up first.

4. As regards the drainage scheme the Pedda Cheruvu project is, in my opinion, the least important portion of it. I find that a good deal has been written about the offensive smell from this tank of late, but an intimate experience with the locality for many years and at all seasons leads me to differ from the views which have been expressed. The bad smell only appears under certain conditions which according to my experience are a steady breeze and a rapidly falling water level leaving a considerable area of fresh ground uncovered every day. The wind blows the scum of the

tank which contains large quantities of small insects and animal culae on to the land which is being uncovered where it rapidly decomposes. I have often been in a boat on the tank on such occasions and never remember noticing any offensive smell except along the shore. Of late the tank has been full for several years, a most unusual thing, and the tendency to a bad smell seems to be greater than formerly owing no doubt to this having assisted the increase of animal life. I have no doubt however but that a single bad monsoon will bring things back to their usual innocuous condition. I write this in the Daba Gardens bungalow on the bank of the tank. What little wind there is has been blowing into the bungalow all day and there has not been a vestige of a smell and I can testify to this being the normal condition of affairs. The offensive odour is only occasional and lasts for very short periods instead of being permanent for months as would be the case if it were directly due to the drainage of the town. I have never known it in the early part of the monsoon which is the time when the town is most liable to epidemics.

5. I do not mean to say that the exclusion of drainage from the tank is not a most desirable thing but merely to point out that the Rs. 50,000 in question would be spent on the least urgent portion of the less urgent of the two much desired projects (water and drainage). It is also worth considering whether the proposed end might not be attained at comparatively small expense by the laying of an iron pipe across the tank-bed.

6. As regards the Chairman's remarks about the Sanitary Commissioner's water project, the water-logged ground he refers to is close to the water-shed of the catchment area in which it lies, and unless there is an under ground flow (which is highly improbable considering the features of the country) its only ultimate source of supply is the rain which actually falls on a square mile or two. The proportion of the rainfall on ground a great deal of which is on a considerable slope which could be recovered by a system of wells such as Dr. King proposes must be very small, and I fear that the wells would run dry after a year or two, when the water of what probably is merely a subterranian tank with a small catchment area has been used up. It would be very unsafe to undertake such a project until a couple of years pumping with a powerful pump has demonstrated that the water-supply is one to be depended on.

7. I have detained this paper a few days to enable me to consult the Chairman.

8. The Chairman says that the Assistant Sanitary Engineer's report and plan referred to in the concluding portion of his letter were submitted by him direct to Government.

F. D'A.O. Wolfe-Murray,
Collector.

II

Memorandum No. 1715, dated 4th December 1895.

Referred to the Sanitary Board for remarks.

(By Order.)

W. W. Phillips,
Ag. Assistant Secretary to Government.

III

Letter—from J. A. Jones, Esq., M.I.C.E., F.R.S.E., Secretary, Sanitary Board (Engineering Branch).
To—the Chief Secretary to Government, Local and Municipal Department.
Dated—the 19th May 1896.
No.—1557.

With reference to Endorsement No. 1715, dated 4th December 1895, of the Acting Assistant Secretary, I have the honour to forward herewith resolution of the Sanitary Board, No. 1556, dated 19th May 1896, on the improvement of the Pedda Cheruvu and the drainage and water-supply schemes for the town of Vizianagram.

2. Rupees 2,000 may be allotted for the necessary surveys—if allotted soon the survey might be taken up at the latter end of 1896 and the plans prepared early next year.

Enclosure.

Proceedings of the Sanitary Board, dated 19th May 1896, No. 1556.

* * * * *

Read—the following paper :—

Reference from the Acting Assistant Secretary to Government, No. 1715, dated 4th December 1895, forwarding, for remarks, file of papers regarding the improvement of the Pedda Cheruvu and the drainage and water-supply schemes for the town of Vizianagram.

Resolution—No. 1556, dated 19th May 1896.

The Sanitary Board considers that a water-supply scheme should have preference to a drainage scheme, and recommends that the Sanitary Engineer be directed to include the preparation of such a scheme in his next year's programme, and that the Municipal Council be requested to allot the funds for any surveys which may be necessary.

2. The Sanitary Board notes with pleasure the proposed liberality of His Highness the Maharaja of Vizianagram.*

* Extract from note, dated 4th September 1895, of the Sanitary Commissioner for Madras.
"The Maharaja promised and authorized me to state so officially that he would be willing to contribute one and a half lacs towards the scheme."

(True Extract.)

J. A. Jones,
Secy., Sanitary Board (Engineering Branch).

To the Chief Secretary to Government, Local and Municipal Department, with file of papers.

Order—No. 1023 M., dated 17th June 1896.

The remarks of the Sanitary Board in which the Government concurs will be communicated to the Municipal Council, Vizianagram, with the request that a sum of Rs. 2,000 may be placed at the disposal of the Sanitary Engineer without delay for a survey in view to the preparation of a water-supply scheme.

2. The Sanitary Engineer should include this in the list of water-supply and drainage schemes to be undertaken by him in 1897.

3. The Government notes with much pleasure the liberal offer of the Maharaja of Vizianagram to contribute one and a half lakhs of rupees towards the cost of such scheme as may be eventually approved.

(True Extract.)

J. F. Price,
Chief Secretary

To the Chairman, Municipal Council, Vizianagram
(through the Collector of Vizagapatam).
,, Sanitary Board.
,, ,, Engineer.
,, Maharaja Mirza Sir Pasup Ananda Gajapati Raz Mani Sultan Bahadur, G.C.I.E., of Vizianagram.

Government of Madras.

LOCAL AND MUNICIPAL DEPARTMENT.

MISCELLANEOUS.

Recd. } 1896. *Enclosures*
Regd. } *Spare copies*

G.O., No. 1023 M., 17th June 1896.

Drainage and Water-supply.

Communicating, with remark, to the Municipal Council, Vizianagram, the resolution of the Sanitary Board on the improvement of Peddacheruvu and on the — schemes for the town of Vizianagram.

GOVERNMENT OF MADRAS.

LOCAL AND MUNICIPAL DEPARTMENT.

READ—the following papers :—

I

Letter—from M.R.Ry. V. VENKATRAYASASTRI Garu, B.A., Chairman, Municipal Council, Vizianagram.
To—the Secretary to Government, Local and Municipal Department.
Dated—the 18th October 1895.
No.—189.

With reference to the Proceedings of the Madras Government, No. 1898 M., dated 8th December 1894, I have the honour to state that the Council, after carefully considering the various points touching the important question of drainage and water-supply schemes, with reference to the past reports and records, as also with reference to the financial condition of the Municipality, is of opinion that it is very necessary to take up not only the Peddacheruvu project, but also the entire drainage and water-supply schemes. The Council considers that, to take up the Peddacheruvu scheme alone without improving the entire drainage and the water-supply will go very little to improve the sanitation of the town in spite of the heavy charges the Municipality will have to incur, the rough estimate of this portion of the entire drainage scheme alone having been calculated to be no less than Rs. 50,000. The Government, while reviewing the budget of this Municipality for 1895–96, provided Rs. 600 towards the cost of preliminary levels to be taken in connection with the drainage scheme of the town. The entire cost of the drainage scheme, including the Peddacheruvu project, has been roughly calculated at over two lakhs of rupees. The Council, under its present financial condition, with a hopeless future, cannot venture to undertake any such large schemes unless the Government will greatly help it onwards financially, partly by a liberal grant and partly by a loan. It accordingly resolved that it cannot commit itself to a conclusion before knowing what aid could be obtained from the Government in connection with the drainage scheme. While the Council is fully aware of the necessity of improving drainage of the town, it considers that it is equally necessary to take the water project on hand, as in its opinion the drainage scheme may not be of much advantage to the town without a sufficient quantity of pure water-supply. It is true that by improving the condition of the drainage the sources of contamination for the tanks and wells in the town will be greatly minimised ; but considering the rapid increase of population the Council fears that unless every care is taken to have pure water-supply which could not be secured without a water-supply scheme, the town cannot be kept free from epidemics that seem to visit the place rather too often. The Sanitary Commissioner, in his recent tour of inspection, has examined the condition of water and impressed upon the Council the urgent necessity of taking up the water project along with the drainage if not earlier. He was so good as to inspect the surroundings of the town with a view to finding means for improving the condition of water, and he is of opinion that by tapping round the foot of the hill called the Red Hill (Bontu konda) which is not quite a mile and a half off the town, pure filtered water sufficient for the requirements of the town can be got and may be conducted to suitable localities in the town and thence piped into the dwellings. If the scheme thus investigated by Doctor King and roughly estimated by him at a lakh and half rupees should commend itself to the Sanitary Board and the Government, as I am sanguine it will, the Council is hopeful that the Honourable the Maharaja, who has always evinced much interest in any matter that is connected with the welfare of the townspeople and who has been particularly devoting his attention to this important subject for some time past as the Government is already aware, will with his princely generosity make a liberal grant towards the

project. In the interview between the Sanitary Commissioner and the Maharaja, the question was discussed with great interest and most enthusiasm, and I am told that the Maharaja was so good and generous as to express that he would most willingly support the scheme in the manner it deserves.

This matter was also thoroughly discussed before the Council, and I beg to forward copies of the resolutions on both the schemes for the information of Government.

The two projects, if taken together, seem to require between four and five lakhs of rupees. If loans be raised for undertaking the projects, the only source available for the Council towards the payment of interest and sinking fund is what could be raised in the shape of drainage and water tax as provided in the new bill which may be roughly calculated to be Rs. 10,000, a portion of it will have to be reserved for maintenance charges. I request that the Government will be pleased to sanction, at an early date, the two projects and grant a liberal aid so as to enable the Council to take up the two works on hand and also sanction a loan of a sum sufficient to meet the cost fully. I herewith return the Assistant Sanitary Engineer's report and plan.

ENCLOSURES.

Report on the Peddacheruvu at Vizianagram and proposal for its improvement.

The Peddacheruvu, an irrigation tank, which belongs to the estate of the Maharaja of Vizianagram, lies just below the town of Vizianagram. The water-spread of the tank at its full height is 150 acres. It has a depth of 20 feet and roughly a capacity of about 44 million cubic feet.

2. The tank has two irrigation sluices at about 8 feet below full tank level. Its capacity above the level of the sluices is about 27 million cubic feet.

3. Below the level of the sluices the tank has a depth of 12 feet and a capacity of about 17 millions cubic feet. There is no outlet for this water, and the tank falls very little below the level of the sluices, whatever little fall there is being due to evaporation and absorption.

4. The catchment area of the tank comprises (1) 350 acres of town area densely built over and inhabited ; (2) the Military Cantonment of Vizianagram ; (3) a large area of open country, most of which is under cultivation.

5. The town is fairly well provided with masonry open drains. These are, as a rule, in streets running east and west, and the contents of these drains are collected in closed drains which run from north to south and open into the tank at the various places indicated on the accompanying plan.

6. The reception of the town sewage into the tank is supposed to be the cause of the evil smell complained of. If so, it might naturally be expected that during the hot weather when the tank is low the smell would be more evident than in the wet weather when sewage is diluted with a large amount of fresh water ; also that in a dry year the smell would be prevalent to a greater extent than in a wet year. But strongly enough the reverse appears to be the case. To my enquiry on the subject Mr. Scott, the Principal Assistant Collector, Vizianagram, writes : —

"(1) I have only been in Vizianagram now for a little over a year and I am not able to state from personal knowledge whether the smell from the tank lasts a longer period and is stronger in a dry than in a wet year, nor do I think any reliable information could be obtained seeing however that the smell seems to get stronger as the tank fills and to die off as it empties, it may be inferred that the smell would last longer and be worse in a wet than in a dry year. Last year was a wet year and the smell was very strong.

"(2) The smell is most noticeable from about September to about the end of January. At least this was the case last year. I fancy. however, that its duration depends upon the supply of water in the tank. The smell exists without a break during this season. It is of course most apparent when a strong breeze is blowing. Last year, when the breeze blew towards my bungalow or my office, about 2 or 3 furlongs from the tank, I had to shut every door to keep it out. It was impossible at any time to go along the tank bund without feeling an inclination to be sick. The smell is precisely like that of indigo fresh from the press.

"(3) During the hot weather the smell is almost imperceptible and gives no cause for complaint."

I have been unable to obtain any furtner reliable information as to the duration and intensity of the smell with reference to the rainy character of the year. But during my inspection (in July) at the end of the dry season, when the tank was low, it did not smell, certainly not to any very disagreeable extent. This goes to corroborate Mr. Scott's statement and opinion.

7. The explanation of this apparent paradox—the emission of an offensive smell during the rainy season when the tank is full and the disappearance of the smell with the approach of hot weather—lies herein. During the hot weather only a very inappreciable amount of sewage enters the tank. On my inspection I found only one drain discharging into the tank, and the

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"(3) During the hot weather the smell is almost impereeptible and gives no cause for complaint."

I have been unable to obtain any further reliable information as to the duration and intensity of the smell with reference to the rainy character of the year. But during my inspection (in July) at the end of the dry season, when the tank was low, it did not smell, certainly not to any very disagreeable extent. This goes to corroborate Mr. Scott's statement and opinion.

7. The explanation of this apparent paradox—the emission of an offensive smell during the rainy season when the tank is full and the disappearance of the smell with the approach of hot weather—lies herein. During the hot weather only a very inappreciable amount of sewage enters the tank. On my inspection I found only one drain discharging into the tank, and the

quantity discharged was not more than what a population of ten or twenty would contribute, and this is so diluted by the large volume of water in the tank that it does not emit any offensive smell. Within the water shed of the tank there however resides a population of about 13,500, and there must be a large quantity of sewage due to this population, and if any further evidence on this point is required the open street drains afford it, for, there is always a fair flow through them. The aggregate flow of these drains must be a very considerable quantity, but not one hundredth part of it reaches the tank. The fact is that all this sewage is retained by the closed drains mentioned in paragraph 5 *ante*. These closed drains are very defective and have silted up very much. The sewage discharged by the surface drains is absorbed by the silt in the closed drains, and any excessive saturation of the silt is prevented by percolation through the defective masonry of the drains. Further, the silt is not uniformly deep. There are depressions in it here and there in which sewage is lodged. When the sewage of a whole dry season, which means about 8 months in the year, is absorbed and retained in closed drains in the manner described, it may be readily conceived that it must attain a very high degree of concentration and putrefaction. During the rains the closed drains run full—almost under pressure at times—and all the putrid mass of filth that has collected in them is washed into the tank. This *per se* would sufficiently account for the evil smell of the tank on the advent of the rains. There is probably another concurrent cause of the foul smell. All the organic filth washed into the tank during each monsoon settles to the bottom of the tank on the cessation of the rains. The oxygen in the bottom layer of water in tank with which the impurities are in contact is soon absorbed. The water being in a quiescent state the bottom layer of water is deprived of the means of re-oxygenation. The oxidation of the impurities is thus prevented and they continue to be in their putrescent state. There are certain organisms present in all waters and these thrive and multiply rapidly in water containing putrescent matter. But when there is any agitation of water as during the rains, both the water and the impurities come in contact with the atmospheric oxygen and the impurities are oxidised and the organisms die by myriads owing to the changed condition of existence and emit a repulsive smell. This is exactly analogous to what happens in the Cooum as described in paragraph 9 of Mr. Jones' report on the Cooum Improvement Scheme. From what has been said above, it will be apparent that frequent agitation of water during the hot weather would oxidise the impurities, retard the propagation of the organisms and consequently abate the nuisance. This theory received a curious confirmation in a circumstance narrated to me with reference to the Peddacheruvu. I was informed that only a few years ago the tank was not as odoriferous as it is now, and the reason ascribed for it is that in those days the elephants of the Samasthanam were turned into the tank occasionally for the purpose of agitating the water, and as my informant said to "dissolve" the bad smell. Though their notion about "dissolving" the smell seems to have been hazy, there is no doubt the correct remedy was applied, and it is a great pity that the practice was discontinued.

8. However this may be, it is positive that the sewage and filth of the town are responsible for the smell from the tank. The remedy should strike at the root of the evil, and it therefore ties in the prevention of the sewage entering the tank.

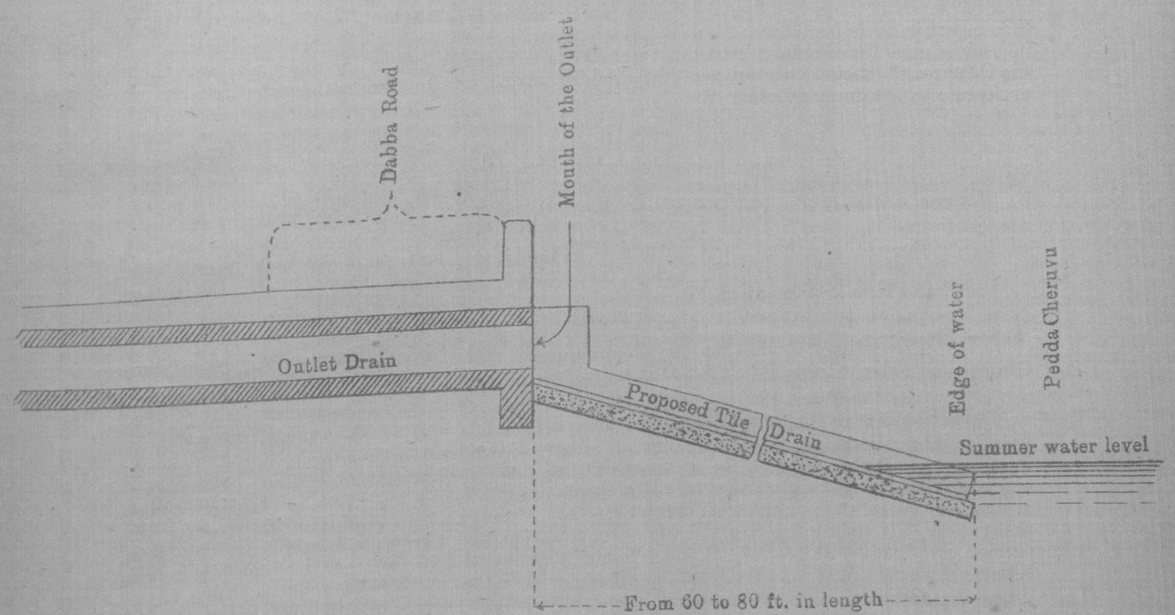
9. The levels admit of the construction of an intercepting sewer between the town and the tank as shown on plan. The sewer could be carried as far away from the town as desirable, for the ground falls rapidly below the tank and sewage could be utilized on a farm. But no sewage would reach the intercepting sewer unless the covered main drains in the town are cleared of silt and put into proper order. Even when all the defects in the main drains have been remedied the whole quantity of sewage produced within the water shed of the tank would not reach the intercepting sewer, for, several streets and lanes are undrained, and in addition to this the surface of the town is liable to so many other sources of pollution that the rain water, especially during the earlier showers flowing over the ground, will carry with it most of these impurities. It is therefore considered that to obtain the best results with reference to the improvement of the Peddacheruvu, the intercepting sewer should be of sufficient capacity to carry off quarter of an inch of rainfall per hour and the sewer allowed to surplus into the tank only during heavier rainfalls. A smaller intercepting sewer with its capacity limited to 15 or 20 gallons per head of the population will not effect the purpose in view, *i.e.*, keeping the sewage and filth of the town entirely out of the tank, unless the whole town is properly drained.

10. It is true that by providing a sewer large enough to intercept $\frac{1}{4}$ inch of rainfall the tank will be deprived of some water. Whether this will seriously affect the supply of the tank it is not possible to say until the extent of its water shed is ascertained by survey. However this may be, the health of the town must be considered a matter of more paramount importance than the irrigation of a few acres of land.

11. Seeing that the cost of the above proposals will be about half a lakh of rupees and that in all probability it will be some years before the sewer becomes a *fait accompli*, the following measures are recommended as being such as could be carried out at once.

12. The existing closed drains should be cleared of silt and repaired where necessary. If the construction of an intercepting sewer cannot be undertaken at once, the next best thing would be to see that the sewage reaches the tank regularly and before decomposition sets in. The daily discharge of freshly formed sewage will be followed by less serious results than when the sewage stagnates in the silted drains, decomposes there, and is discharged *en masse* into the tank with the first heavy shower.

13. Glazed tile drains should be laid from the mouth of the outlets to low water edge as shown on sketch below.



14. Another remedial measure that I would suggest is the construction of a low level sluice for scouring out the bed of the tank. The necessity of means for scouring out all drinking-water tanks or irrigation tanks circumstanced as Pedda Cheruvu is, deserves better recognition at the hands of local bodies. By attention to this matter many tanks would have been saved from the deterioration of their waters that has occurred. The cost of the sluice would be about Rs. 1,500.

15. The Chairman of the Municipality contends that the main sources of contamination to Pedda Cheruvu are the markets, bandy-pet and stables belonging to the Maharaja. That these places produce more impurities than an equal area of the town will be readily conceded; but the area of town draining into the tank is so large compared with that of the market, bandy-pet and stables, that the impurities contributed to the tank by the latter must bear only a very small proportion to the impurities contributed by the town. I, however, understand that these places are now better conserved than they were before. There is, no doubt, still room for improvement. Both the market and the bandy-pet require some surface drains. The droppings from the animals are allowed to accumulate several days before being removed by the contractor. There was a heap of several bandy loads in the bandy-pet and a similar heap on the margin of the tank. The manure should certainly be removed daily, for when allowed to accumulate a sudden shower is likely to carry some of it into the tank. The remedy, however, lies in the hands of the Chairman and the Magistrate. The Municipality, I understand, levies taxes on the market and bandy-pet.

16. To sum up the measures proposed for the improvement of the tank—

I. The repair of the existing drains and the construction of an intercepting drain.

II. (*a*) The clearing of silt from existing closed drains,
(*b*) the laying of tile drains from the outlets to the summer margin of water,
(*c*) the agitation of water in the tank occasionally,
(*d*) the scouring of the bed of the tank by construction of low level sluice.

Extract from the Proceedings of the Municipal Council, Vizianagram, dated the 7th September 1895.

* * * * *

3. The Chairman brings to the notice of the Council the remarks of the Sanitary Commissioner Dr. King regarding the urgent necessity of a water scheme even in preference to the drainage scheme which the Council has already resolved to undertake, provided the Government should render a liberal help.

The Council is of opinion that the water scheme is urgently needed for the town and that the Government should be addressed on the subject with a view to take up the water scheme in preference to the drainage scheme.

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Extract from the Proceedings of the Municipal Council, Vizianagram, dated the 27th July 1895.

* * * * *

2. Read the following papers:—

(i) Report on Pedda Cheruvu and proposals for its improvement.

(ii) Proceedings of the Sanitary Board, dated 26th November 1894, No. 18, and the Government order thereon, dated 8th December 1894, Mis. No. 1898 M.

The Council considers that the construction of the proposed intercepting sewer will be the best means of abating the nuisance arising from the Pedda Cheruvu. Before, however, committing itself to undertaking the construction of the sewer, the Council would wish more definite information as to its cost and the share which will be borne by Government. The Council observes that the sewer can hardly be undertaken except as a preliminary to, and a portion of, a drainage scheme for the entire town costing several lakhs of rupees. The funds available from the imposition of a drainage rate will be hardly sufficient to cover the interest and sinking fund charges on a loan of Rs. 50,000 without providing for the periodical repairs, etc., necessary to the sewer.

* * * * *

Dis. No. 711, dated 19th October 1895.

Submitted.

L. C. MILLER,
Assistant Collector in charge.

Forwarded.

2. The financial condition of the Vizianagram Municipality is most unsatisfactory, the toll revenue having dwindled away since the railway was opened. The only money which could be made available for water and drainage projects is that which could be raised by a special tax for the purpose. This is estimated by the Chairman at Rs. 10,000.

3. The town is in great need of both water-supply and drainage, but the former is, in my opinion, by far the most urgent want. Vizianagram is built for the most part on earth-filling valleys and pockets in a rough sheet of granite or gneiss and many years will have to elapse after the execution of a drainage scheme before the sewage logged sub-soil becomes pure enough to make wells safe. A water project would, on the other hand, produce an immediate and direct effect on the health of the town and as the means of the Council is so limited it should be taken up first.

4. As regards the drainage scheme the Pedda Cheruvu project is, in my opinion, the least important portion of it. I find that a good deal has been written about the offensive smell from this tank of late, but an intimate experience with the locality for many years and at all seasons leads me to differ from the views which have been expressed. The bad smell only appears under certain conditions which according to my experience are a steady breeze and a rapidly falling water level leaving a considerable area of fresh ground uncovered every day. The wind blows the scum of the

tank which contains large quantities of small insects and animal culae on to the land which is being uncovered where it rapidly decomposes. I have often been in a boat on the tank on such occasions and never remember noticing any offensive smell except along the shore. Of late the tank has been full for several years, a most unusual thing, and the tendency to a bad smell seems to be greater than formerly owing no doubt to this having assisted the increase of animal life. I have no doubt however but that a single bad monsoon will bring things back to their usual innocuous condition. I write this in the Daba Gardens bungalow on the bank of the tank. What little wind there is has been blowing into the bungalow all day and there has not been a vestige of a smell and I can testify to this being the normal condition of affairs. The offensive odour is only occasional and lasts for very short periods instead of being permanent for months as would be the case if it were directly due to the drainage of the town. I have never known it in the early part of the monsoon which is the time when the town is most liable to epidemics.

5. I do not mean to say that the exclusion of drainage from the tank is not a most desirable thing but merely to point out that the Rs. 50,000 in question would be spent on the least urgent portion of the less urgent of the two much desired projects (water and drainage). It is also worth considering whether the proposed end might not be attained at comparatively small expense by the laying of an iron pipe across the tank-bed.

6. As regards the Chairman's remarks about the Sanitary Commissioner's water project, the water-logged ground he refers to is close to the water-shed of the catchment area in which it lies, and unless there is an under ground flow (which is highly improbable considering the features of the country) its only ultimate source of supply is the rain which actually falls on a square mile or two. The proportion of the rainfall on ground a great deal of which is on a considerable slope which could be recovered by a system of wells such as Dr. King proposes must be very small, and I fear that the wells would run dry after a year or two, when the water of what probably is merely a subterranian tank with a small catchment area has been used up. It would be very unsafe to undertake such a project until a couple of years pumping with a powerful pump has demonstrated that the water-supply is one to be depended on.

7. I have detained this paper a few days to enable me to consult the Chairman.

8. The Chairman says that the Assistant Sanitary Engineer's report and plan referred to in the concluding portion of his letter were submitted by him direct to Government.

F. D'A.O. WOLFE-MURRAY,
Collector.

II

Memorandum No. 1715, dated 4th December 1895.

Referred to the Sanitary Board for remarks.

(By Order.)

W. W. PHILLIPS,
Ag. Assistant Secretary to Government.

III

Letter—from J. A. JONES, Esq., M.I.C.E., F.R.S.E., Secretary, Sanitary Board (Engineering Branch).
To—the Chief Secretary to Government, Local and Municipal Department.
Dated—the 19th May 1896.
No.—1557.

With reference to Endorsement No. 1715, dated 4th December 1895, of the Acting Assistant Secretary, I have the honour to forward herewith resolution of the Sanitary Board, No. 1556, dated 19th May 1896, on the improvement of the Pedda Cheruvu and the drainage and water-supply schemes for the town of Vizianagram.

2. Rupees 2,000 may be allotted for the necessary surveys—if allotted soon the survey might be taken up at the latter end of 1896 and the plans prepared early next year.

ENCLOSURE.

Proceedings of the Sanitary Board, dated 19th May 1896, No. 1556.

* * * * *

Read—the following paper :—

Reference from the Acting Assistant Secretary to Government, No. 1715, dated 4th December 1895, forwarding, for remarks, file of papers regarding the improvement of the Pedda Cheruvu and the drainage and water-supply schemes for the town of Vizianagram.

Resolution—No. 1556, dated 19th May 1896.

The Sanitary Board considers that a water-supply scheme should have preference to a drainage scheme, and recommends that the Sanitary Engineer be directed to include the preparation of such a scheme in his next year's programme, and that the Municipal Council be requested to allot the funds for any surveys which may be necessary.

2. The Sanitary Board notes with pleasure the proposed liberality of His Highness the Maharaja of Vizianagram.*

* Extract from note, dated 4th September 1895, of the Sanitary Commissioner for Madras.
"The Maharaja promised and authorized me to state so officially that he would be willing to contribute one and a half lacs towards the scheme."

(True Extract.)

J. A. JONES,
Secy., Sanitary Board (Engineering Branch).

To the Chief Secretary to Government, Local and Municipal Department, with file of papers.

Order—No. 1023 M., dated 17th June 1896.

The remarks of the Sanitary Board in which the Government concurs will be communicated to the Municipal Council, Vizianagram, with the request that a sum of Rs. 2,000 may be placed at the disposal of the Sanitary Engineer without delay for a survey in view to the preparation of a water-supply scheme.

2. The Sanitary Engineer should include this in the list of water-supply and drainage schemes to be undertaken by him in 1897.

3. The Government notes with much pleasure the liberal offer of the Maharaja of Vizianagram to contribute one and a half lakhs of rupees towards the cost of such scheme as may be eventually approved.

(True Extract.)

J. F. PRICE,
Chief Secretary

To the Chairman, Municipal Council, Vizianagram
(through the Collector of Vizagapatam).
,, Sanitary Board.
,, ,, Engineer.
,, Maharaja Mirza Sir Pasup Ananda Gajapati Raz Mani Sultan Bahadur, G.C.I.E., of Vizianagram.