4th November 1887, No. 1125 M., Local and Municipal.

GOVERNMENT OF MADRAS.

LOCAL AND MUNICIPAL DEPARTMENT.

Read—again the following paper :—

G.O., dated 31st August 1887, Mis. No. 863 M., Local and Municipal.

Read—the following Memorandum regarding the possible contamination of the water of the Seven Wells by No. 2 Sewer of the new drainage scheme :—

I have for years interested myself in the sanitation of the 1st District, to which I have been attached since 1875. The district includes the whole of Black Town, with Royapuram and Tondiarpet, and extends from the Ennore Toll-gate on the north to the General Hospital Bridge on the south.

2. As the water-supply and drainage of the town are important factors in connection with the hygiene of the district, I have given as much time to the consideration of these points as I could spare, which is known to the various Presidents of the Municipality who have been in office, during my tenure as District Surgeon. During the famine, in all outbreaks of cholera and other epidemic diseases, on the question of vaccination, and with regard to the sanitary improvements of all localities in the district, my help has been sought by the municipality and other authorities, to whom I have afforded my advice on all occasions.

3. At the time of my first taking charge of the district, the "Red Hills Tank" water project had been nearly completed, and it was in contemplation then to do away with the "Seven Wells water," with which the garrison of Fort St. George, the military hospital, and shipping in the port were supplied, as it was thought that the Red Hills supply was ample for both purposes; but some mishap attending the town reservoir, which affected the quality of its water, being reported to the Surgeon-General by me, the Surgeon-General brought the same to the notice of the authorities, and in the end it was considered advisable to retain the supply of the Seven Wells for the military, inasmuch as the Red Hills project had not been sufficiently tested both as to the quality of its water and its possible continuance. Since that time, the occurrence of a prolonged drought and famine and other circumstances, with the breaching of the Red Hills tank bund, all which affected the Red Hills water-supply, showed the prudence of having kept up the resources of the Seven Wells, and its great utility in supplying pure water in the present unsatisfactory condition of the Red Hills water is an undoubted boon to the military.

4. Then in regard to the disposal of sewage, ever since the drainage scheme of Black Town was commenced, I have taken the greatest interest in its construction, so far as the little time that I could spare would allow me.

5. When the well of the Ráyapuram pumping station was completed, Mr. Jones applied for leave to England, which I thought it inadvisable to grant, when such other important work as the construction of the main sewers, &c., had to be done; but as it was on account of his health he required the leave, I requested in writing that he should promise to come back as soon as he was better. No heed was taken of this suggestion; on the contrary, he was permitted to spend his time in England, trying to get up another scheme—the lighting of Madras by electricity—on which he wrote a

volume, while the sewers here were in other hands. At that time, too, I expressed my opinion to the then President in a conversation with him, that the construction of a sewer with brick and lime, so deep in the sub-soil water, did not appear safe, and that under such conditions I thought it would be better to use iron pipes, which could be made infinitely more water-tight; but this was objected to on the score of expense. About the same time, I also recollect that the late Engineer of the Harbour Works, Mr. Beardmore, telling me, he had advised that the sewers be at least constructed of + Portland cement and bricks, as at present in England, the construction of a sewer or drain with lime mortar not being thought of since the introduction of cement. I may here mention, too, that whilst conversing with Colonel Puckle, then commanding the regiment at Ráyapuram, who, I believe, was an officer of the Public Works Department, I found that he also was of opinion that iron pipes would have been more safe at so great a depth and under so much water pressure, and in the long run would altogether be cheaper, whilst the laying of the pipe in such a situation would be infinitely more easy.

Done so in 1902

6. Keeping these things in mind, I have patiently continued to look for results, and I have heard of certain doubts being entertained regarding the soundness of the sewers as to water-tightness, which is one of the essential conditions of a sewer, both in a sanitary point and in the expense attending it; for when sewage has to be pumped through it, if it leaks, contamination of the sub-soil water must occur, whilst the addition of every bucket of unnecessary water by leakage entering into it, entails additional expense for pumping to get rid of it.

7. I confess that I had not heard that Colonel Pennycuick had reported upon the drainage scheme, in consequence of the Commissioners having expressed doubts in regard to its soundness, as I had heavy work at the time, and the unsettled state I was in, in regard to the continuance or otherwise of the Auxiliary Medical School, had so occupied my attention, that I was not aware of what had actually occurred. When the teaching season came to an end at the latter part of June, I had more time to spare, and I attended a general meeting at the municipal office to consider the municipal budget estimate for the year. At this meeting an item in the estimate asking for a grant of Rs. 600 for the maintenance of the sewage farm in connection with the out-fall sewage channel of the pumping station attracting the attention of the Commissioners, a discussion ensued, which ended in certain of the Commissioners proposing that I should be asked to first draw up a sanitary report upon the place, and if I approved of the sewage being used in the cultivation of the farm, the grant should then be passed. I accordingly drew up a report and forwarded it to the President,—a copy of which report is appended; but what was done with the report I have not heard. I had shown clearly that the grant asked for was not only not required, but that the money that was realized from the sale of grass at this farm was enough to cover all expenses during the year, and would leave a balance of Rs. 400 to credit.

8. It was when I was engaged drawing up this report, I had opportunities to observe, at different times, that the fluid in the out-fall channel appeared too watery, or over-diluted; and connecting its condition in my mind with the rumours that were then about in regard to the leakage of sub-soil water into the sewers, and knowing from what I saw that No. 2 sewer was broken and reconstructed in several places, I was disposed to examine matters more closely for myself. In the meanwhile I carefully thought out the system of sewers that was under construction on the "Separate system," by which the existing or old sewers were to be utilized for the out-fall into the sea of all storm water during the fall of rain, and new sewers were to be constructed to draw off by pumping all the sewage which daily runs into them from the surface drains, and conveyed to farms for the cultivation of grass. I was glad, therefore, after the first rainfall in the town in the early part of June, to have had an opportunity of seeing how the system worked.

9. On the morning after the rain, I examined the out-fall channel which receives the sewage of the Ráyapuram pumping station, and considering that the old main drains were opened to let the collections of rain-fall escape into the sea, and that these main drains were shut off by valves from the pumping stations, I expected the channel of the new sewers to be empty, instead of which there was a good flow of water —not sewage—along it. I then visited the pumping station at Ráyapuram, and there I found the engine at work, pumping sewage as I was informed, but which, on an examination of it, turned out to be water. I then went to the pumping station which is situated near the Fort, and which is the main feeder of the Ráyapuram station with sewage at ordinary times, and here I found that it was not at work all night, as the sewage which came into it daily on other occasions had now been shut off from it, and diverted into the sea with the rain that fell during the night through the old main drain. I again visited all these places at noon, and found things exactly as they were in the morning, water with very little or no sewage being pumped up by the pump at Ráyapuram. I again next morning visited the out-fall channel, and although 24 hours had elapsed, I found that the fluid was still very little different to what it was the day before, a bottle of which fluid I brought away with me to the Monegar Choultry.

10. After making these observations personally, and having a knowledge previously of the unsafe condition of No. 2 sewer, I felt I was justified in believing that the water which I saw pumped up at the Ráyapuram station came through *leaks* in the sewer, which I brought to the notice of the Commissioners at meeting, and asked the Commissioners to carefully investigate all these facts and circumstances, before they sanctioned another lakh of rupees towards the sewage scheme. It will therefore be observed that what I wanted was, simply a thorough investigation to be made by the Commissioners before they sanctioned the lakh of rupees.

11. Since bringing the circumstances described above to the notice of the Commissioners, I have perused Colonel Pennycuick's report upon the municipal drainage scheme, which I had not seen before, and I here find that this officer acknowledges he could not examine the sewers which he was deputed to report upon, but had taken Mr. Jones' statements for granted on which he based his report especially of the condition of No. 2 sewer. That officer's statement as shown in paragraph 6 of his letter is as follows:—

> *"It was not practicable for me at the time of my visit to make a thorough examination of the interior of the sewer, but Mr. Jones informed me that this had previously been done, and that there were no signs of a crack or of settlement of any kind, but that the leakage was distributed over the whole surface of the sewer—was, in fact, what is known as 'sweating.' It may be taken as certain that this is the case; in such soil as that in which the sewer is laid, if there were anything in the shape of a crack or a deformation of the sewer itself, the discharge would probably be fifty fold what it actually is."*

12. Taking the above admission in connection with the fact that I know that No. 2 sewer had been broken in several places and reconstructed, which, added to the knowledge that the Red Hills water-supply has of late so deteriorated, I considered it my duty, without any further delay, to report my anxieties to His Excellency the Governor in regard to the danger to which the Seven Wells water is exposed, in consequence of No. 2 main sewer lying so near to the vicinity of the Seven Wells. In fact, this new sewer is along the water-shed of the Seven Wells. I am therefore of opinion that, under the circumstances noted, there is danger to the safety of the Seven Wells water, and that sewage should not be permitted to pass through this sewer until all possible danger to the contamination of the water be averted.

MADRAS,
29th July 1887.

(Signed) D. R. THOMPSON, M.D.,
Surgeon, 1st District.

Order—dated 31st August 1887, Mis. No. 863 M., Local and Municipal.

Dr. Thompson's memorandum will be forwarded, through the Public Works Department, to Colonel Pennycuick, for remarks.

(True Extract.)

(Signed) H. E. STOKES,
Ag. Chief Secretary.

To the Public Works Department.

READ—also the following paper :—

G.O., dated 8th October 1887, No. 2635 W., Public Works.

Read—the following letter from Lieutenant-Colonel J. PENNYCUICK, R.E., Superintending Engineer, VI Circle, dated 21st Sept. 1887, No. 1166-T.J :—

I have the honor to return the memorandum by Dr. Thompson received with your No. 3114 C, of 18th instant, and to state that, in my opinion, it does not require * * any serious answer.

* * * *

3. That portion of Dr. Thompson's memorandum which refers to the supposed leakage from outside into the sewer is merely a *réchauffée* of a speech made by him at a meeting of the Municipal Commissioners a short time ago, and having in this portion labored to show that the outside water leaks into the sewer, he now proceeds to add that he expects the sewage to leak out ; that is to say, that two mutually destructive processes are to take place at once.

4. The first process is possible, though, as a matter of fact, it does not take place ; the second wholly impossible, and all fears on that score may be dismissed * * .

5. The sewage in the sewer is under no pressure except that due to its own depth, while the outside of the sewer is in water under a head of several feet ; any leakage must therefore be from the outside inwards, and not the other way.

6. I am not prepared to enter into a discussion with Dr. Thompson * * , but there is certainly nothing in his remarks to lead me to reconsider the views which I expressed after my inspection of these works in January last.

7. I do not know what experience Dr. Thompson has had in the gauging of flowing water, or whether what he vaguely calls a "good flow" represents a hundred gallons an hour, a thousand or a million ; consequently, I cannot tell how much of the "good flow" which Dr. Thompson saw in June was leakage, how much real sewage, and how much rain water, but I do know what I myself saw *and measured* in January, and I repeat, what I said then, that it may be taken as certain that if there were anything in the shape of a crack or deformation of the sewer, the discharge would have been fifty-fold what it actually was.

8. As for the suggestion that the sewage will leak out, it cannot even be seriously answered.

Order—dated 8th October 1887, No. 2635 W., Public Works.

Communicated to the Local and Municipal Department, with reference to G.O., No. 863 M., dated 31st August 1887.

(True Extract.)

(Signed) W. L. C. BADDELEY, Captain, R.E.,
Under Secy. to Govt., P.W.D.

To the Local and Municipal Department,
with Dr. Thompson's memorandum.

ORDER—dated 4th November 1887, No. 1125 M., Local and Municipal.

Communicated to the President, Municipal Commission, Madras, and to Dr. Thompson, C.I.E.

(True Extract.)

H. E. STOKES,
Chief Secretary.

To the President, Municipal Commission, Madras.
,, Surgeon-Major D. R. Thompson, M.D., C.I.E.

Exd. A. Raitt.

Gobt. of {1887} Madras.

LOCAL AND MUNICIPAL.

Issued

Recd. *Encl.*

G.O., 4th Nov. 1887, No. 1125 M.

NOVEMBER.

Water Supply.

Communicating to the President, Municipal Commission, Madras, and to Dr. Thompson, C.I.E., Proceedings, Public Works Department, forwarding remarks of the Superintending Engineer, VI Circle, on Dr. Thompson's memorandum regarding contamination of Seven Wells water.

GOVERNMENT OF MADRAS.

LOCAL AND MUNICIPAL DEPARTMENT.

READ—the following paper:—

From Lieutenant-Colonel J. PENNYCUICK, R.E., Officiating Chief Engineer for Irrigation, to the Secretary to Government, Public Works Department, dated Chepauk, 28th January 1887, No. 2 W.

In accordance with the instructions conveyed in G.O., No. 3085 W., of 20th November 1886, I have carefully inspected the Madras drainage works, and have the honor to submit the following report on the subject:—

2. The questions to be considered appear to range themselves under the following heads:—

1st.—The leakage into No. 2 main sewer.
2nd.—The necessity for a revision of the original estimate for the whole drainage project.
3rd.—The sufficiency of the revised estimate.
4th.—The quality and economy of the work already executed.

3. With regard to the first point, it was found on my inspection that the water was running with a depth of three inches in a sewer two feet in diameter with a fall of 1 in 1,320; it was kept at this depth by an eight-horse-power engine, working at not more than a third of its nominal power, and driving an eight-inch centrifugal pump at about one-third full bore. Even this power was not used constantly, the engine being obliged to stop frequently, in order to allow of sufficient accumulation of water for the pump to work.

4. The actual quantity of water being lifted did not exceed one-fourth of a cubic foot per second, and the lift being thirteen-and-a-half feet, the useful power exerted in pumping was about one-third of a horse power; the actual average work being done by the engine was probably one-and-a-half horse power, as there is notoriously considerable waste of force in working pumping or any other machinery much below its full power, but the smaller quantity is the additional pumping power which would be rendered necessary by the leakage, when the latter is added to the sewage at the main pumping station instead of being separately pumped up.

5. These figures are in themselves sufficient to show the insignificance of the leakage, which is about what would be discharged by an aperture of one inch in diameter under a head of twenty feet. It must be borne in mind that this is the accumulated leakage from a length of two thousand feet of sewer, of which fully one-half is laid at a depth of from 15 to 25 feet under ground, in a heavily water-charged stratum. I myself saw this sewer during its construction, and was struck with the enormous amount of sub-soil water which had to be pumped from the excavation.

6. It was not practicable for me at the time of my visit to make a thorough examination of the interior of the sewer, but Mr. Jones informed me that this had previously been done, and that there were no signs of a crack or of settlement of any

kind, but that the leakage was distributed over the whole surface of the sewer,—was, in fact, what is known as "sweating." It may be taken as certain that this is the case; in such soil as that in which the sewer is laid, if there were anything in the shape of a crack or a deformation of the sewer itself, the discharge would probably be fifty-fold what it actually is.

7. About 200 feet of the length of this sewer has been opened and laid in puddle, and Mr. Jones suggested for my consideration the advisability of extending this puddle for a further distance from No. 7 to No. 9 man-hole. I am of opinion that this is not necessary, and that it will be better to leave the sewer as it is. It would probably be quite impossible to stop the leakage entirely by any amount of puddling, and the quantity is at present so insignificant that any possible reduction would not be worth the trouble, expense and risk of injury by opening out the excavation in order to get at the outside of the sewer.

8. In a word, so far as this point is concerned, I am of opinion that the leakage is, in itself, not worth noticing, and that, considering the nature of the ground and the conditions under which the sewer had to be constructed, the work has been most excellently done, and that the Commissioners have every reason to be satisfied therewith.

9. With regard to the revised estimate, it appears that the latter amounts to Rs. 9,41,000, being Rs. 1,33,500 in excess of the original estimate. Of this excess, Rs. 64,022 is due to the change of site of the pumping station and to the necessity for purchasing new engines and boilers, instead of taking over those belonging to the Harbour Works as originally intended, and Rs 16,981 to a change in the site of the outfall station—contingencies which the Engineer could not have foreseen, and for which he is in no way responsible.

10. The balance of Rs. 52,497 may be said broadly to be due to increased cost of pumping and excavation in the construction of the main sewers,—other minor excesses on some items being balanced, as always happens in large works, by savings on others.

11. With regard to this latter item, I am of opinion that, considering the known nature of the ground and the difficulties likely to be experienced in sinking the excavations, Mr. Jones would have done well to make a larger provision for the pumping and excavation than that provided in his original estimate, but the difficulty of estimating charges of this kind with any approach to accuracy is notorious, and it may safely be said that no serious blame would be ascribed to an officer of the Public Works Department for an excess of similar amount under similar circumstances.

12. The sufficiency of the revised estimate is not a point on which I am qualified to speak with confidence, but, as far as can be judged from an examination of the detailed estimates and a comparison of them with the actual cost of completed work, the estimate appears to be sufficient.

13. Looking, however, to the fact that unforeseen contingencies constantly arise in the execution of works of this kind, it would seem desirable to include in the estimate, as is now invariably done in the Public Works Department for all large projects, a certain sum for "unforeseen works," from which separate estimates for individual works can be sanctioned as occasions arise. Probably Rs. 59,000 would be enough for this purpose, making the total up to Rs. 10,00,000.

14. With regard to the fourth point mentioned in paragraph 2 of this report, I can only say that I consider the quality of the work done and in progress to be excellent and its cost remarkably moderate.

15. Mr. Jones' proceedings in connection with these works appear to have been subjected to no small amount of hostile and exceedingly unfair criticism, and I therefore think it desirable to say in conclusion that, in my opinion, these proceedings leave nothing to be desired; that the work is being carried out in a most efficient and economical manner; and that the Commissioners have every reason to be satisfied with the manner in which the funds provided by them are being expended.

No. 379-C.

Transferred to the Local and Municipal Department, with reference to G.O., No. 1144 M., dated 17th November 1886.

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

ORDER—dated 10th February 1887, Mis. No. 120 M., Local and Municipal.

Communicated to the President, Municipal Commission, Madras.

(True Extract.)

Ag. Chief Secretary.

To the President, Municipal Commission, Madras.
" Public Works Department.

Exd. A. Raitt.

Govt. of {1887} Madras.

LOCAL AND MUNICIPAL.

Issued

Recd. *Encl.*

G.O., 10th February 1887, No. 120 M.

Bd. No. 600 W. & 28/2/87

FEBRUARY.

Recorded
Sd/ J.O.H

Drainage Works.

Communicating to the President, Municipal Commission, Madras, endorsement of the Public Works Department, forwarding report from the Chief Engineer for Irrigation on —.

OOE

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[25]

Local and Municipal Department.

CHIEF SECRETARIAT, MADRAS.

PROCEEDINGS OF THE MADRAS GOVERNMENT.

Read the following paper:—

D. O. letter from J. D. Rees Esqre, dated 31st July 1887, forwarding Dr. Thompson's memo regarding contamination of seven wells' water.

Order thereon dated 31st August 1887 No. 863 Mn. Mis.

Dr. Thompson's memorandum will be forwarded, through the Public Works Department, to Col Pennycuick for remarks.

(True Extract)

W S Meyer
Asstt. Secretary

To

The Public Works Department
with Dr. Thompson's memo in original

Ph

Σ.2
Pk 753./87

Serfa Turquemes [illegible]

8C 1648 T J

SUPERINTENDING ENGINEER
23 SEP 87

P.W.C. No. ~~6990~~ 7533/87

√E.1

Gobt. of (188) Madras.
Local & Municipal Dept.

No. 3114 C of 15th Septr 1887

(4)

Forwarded to Col. Pennycuick R.E. in original.

2. To be returned with his reply.

To

The P. W. Deptt.

E.1

For atten. Col. R.E.
Chief Engineer P. W. Dept.

B 7.9.87

Proceedings, dated 31st August 1887
No. 863 M (mis).

B. No. 2635 W d/8-10-87

Subject.

Forwarding to Col. Pennycuick for remarks Dr. Thompson's Memorandum regarding contamination of sewer wells water.

Mem
7.9.87

B. No 600 W. 28.2.87
No 379 C. 3.2.87
B. No 3085 W. 20.11.86
Nos. 3907/3908 C. 8-11.86
G.O. 2845/2846 W. 30.10.82
P.W. Despatch No 45/2846 W. 30.10.82.
No 742 E. 14.9.82
" 638 E. 25.8.82.

86/A IX
M. 10.9.87

G. 7.9.87. R. 14.9.87.

OFFICE OF THE SUPERINTENDING ENGINEER,
6TH CIRCLE.

Veerapandy 21st September 1887.

No. 1166 T.J : D/23rd

From
Lieut. Col. J. Pennycuick R.E.
~~The~~ Superintending Engineer,
6th Circle.

To
The Chief Engineer
Public Works Department.

Sir,

I have the honor to return the memorandum by Dr. Thompson, received with your No. 3114 C of 18th Instant, and to state that in my opinion it does not require or deserve any serious answer.

ENCLOSURE. 1

2 It appears to be simply a new phase in the series of utterly unjustifiable attacks which have for some time past been made by a certain section of the Municipal Commissioners upon Mr. Jones in connection with the Madras Drainage Works.

3. That portion of Dr. Thompson's memorandum which refers to the supposed leakage from outside into the sewer is merely a *rechauffée* of a speech made by him at a meeting of the Municipal Commissioners a short time ago, and

having

Supdg Engineer Veerapandy

having in this portion laboured to show that the outside water leaks into the sewer he now proceeds to add that he expects the sewage to leak out; that is to say that two mutually destructive processes are to take place at once.

4 The first process is possible though as a matter of fact it does not take place, the second wholly impossible, and all fears on that score may be dismissed as absurd.

5 The sewage in the sewer is under no pressure except that due to its own depth while the outside of the sewer is in water under a head of several feet, any leakage must therefore be from the outside inwards and not the other way.

6. I am not prepared to enter into a discussion with Dr. Thompson upon a subject of the alphabet of which he is clearly ignorant, but there is certainly nothing in his remarks to lead me to reconsider the views which I expressed after my inspection of these works in January last.

7. I do not know what experience Dr. Thompson has had in the gauging of flowing water or whether what he vaguely calls a "good flow" represents a hundred gallons an hour, a thousand, or a million. Consequently I cannot tell how much of the "good flow" which Dr. Thompson saw in June was leakage, how much real sewage, and how much rain water, but I do know what I myself saw and measured in January and I repeat what I said then, that it may be taken as certain that if there were anything in the shape of a crack or deformation of the sewer, the discharge would have been fifty fold what it actually was.

8. As for the suggestion that the sewage will leak out, it cannot even be seriously answered.

I have the honor to be,
Sir
Your Most obedient Servant,
Lieutt Col. R.E.
Superintending Engineer C. Circle

Supdg Engineer [illegible]

B. No 2635 W./8th Octr 1887

P. W. D. 6TH CIRCLE.

From

The Superintending Engineer,
6th Circle.

To

The Chief Engineer
P. W. D.

No. 1166 T. J.

Dated 21st
Received } Septr 1887

Enclosure 1.

B. No 2635 W./8th Octr 1887

Returns with his opinion Dr. Thomson's memorandum regarding contamination of sewer wells water —

With order

Communicated to the Local and Municipal Department with reference to G.O. No. 863 M. dated 31st August 1887.

27.9.87

No 3114 C. 15.9.87
B. No 600 W. 28.2.87.
" 3085 W. 20.11.86
No 379 C. 3.2.87
" 3907/3908 C. 8-11.86
G.O. 2845/2846 W. 30.10.82.

To, The L & M. dept with Dr. Thompson's Memo
8/11

19/10

C. 27.9.87. R. 7.10.87.

3RD SEPTEMBER 1888, Nos. 993, 994 M., LOCAL AND MUNICIPAL.

GOVERNMENT OF MADRAS.

LOCAL AND MUNICIPAL DEPARTMENT.

READ—the following paper:—

From A. P. MACDONNELL, Esq., C.S.I., Secretary to the Government of India, Home Department (Municipalities), to the Chief Secretary to the Government of Madras, dated Simla, 3rd August 1888, No. 136.

I am directed to acknowledge the receipt of the Administration Report of the Madras Municipality for the year 1886-87, together with the orders passed thereon by His Excellency the Governor in Council, forwarded with your endorsement, No. 501A M., dated the 14th May 1888.

2. Owing to a new bye-law which permits infants to be vaccinated after they are six months old, instead of within three months of their birth, the total number of operations during the year fell by 47·4 per cent. The cost of each case vaccinated amounted to 10 annas and 1 pie, against 5 annas and 2 pies in 1885-86.

3. It is observed that on drainage and sewerage a sum of Rs. 1,71,760 was spent during the year; and in paragraph 23 of the orders of the Madras Government, mention is made of the apprehensions expressed by some of the Commissioners that the work already done on the sewers was unsatisfactory. If these apprehensions are well founded, the case is one which calls for the serious attention of His Excellency the Governor in Council. Colonel Pennycuick's inquiries tended to show that the apprehensions were unfounded, but this conclusion is not altogether beyond question judging from the remark made in paragraph 108 of the report that, in spite of the efforts made to remedy the original errors in construction, "the infiltration of sub-soil water was not entirely prevented." In these circumstances, and looking to the slight incline in the sewers in Madras, which does not allow of a free outfall, the special attention of the Municipal Commissioners should be called to the grave danger to which the water-supply is exposed from the use of sewers which permit the percolation of fæcal matter, and it should be impressed upon the engineering authorities that sewers to serve the use for which they are intended must be constructed so as to prevent foul water from them percolating into the soil.

4. The only other points which call for notice from the Government of India are the insufficiency of the conservancy staff and the intermittent working of the scavengers employed. In order to place the system of conservancy on a satisfactory basis, I am to suggest that a larger staff of workmen is required, and that a sufficient number of competent Inspectors should be entertained to guide and direct the working of this staff and to bring to the prompt notice of the proper authorities all insanitary defects.

ORDER—dated 3rd September 1888, No. 993 M., Local and Municipal.

Communicated to the Municipal Commissioners of Madras, for information and guidance.

Supdg Engineer Periyar Project

2. With reference to paragraph 3 of their letter, the Government of India will be furnished with a copy of G.O., dated 4th November 1887, No. 1125 M., which contains some further remarks from Colonel Pennycuick on the subject of the alleged leakage from the sewers.

No. 26337
8.10.87

(True Extract.)

M C Baddeley

Under Secy. P.W.D
for Ag. Chief Secretary.

To the President, Municipal Commission, Madras.
" " Public Works Department.

ENDORSEMENT—dated 3rd September 1888, No. 994 M., Local and Municipal.

Copy forwarded to the Government of India, Home Department, with copy of G.O., dated 4th November 1887, No. 1125 M.

J. F. PRICE,
Ag. Chief Secretary.

Exd. A. Raitt.

8|C

D/ 7. 10. 87

Supg Engineer Periyar

B. No 2635 W. 8.10.87 No 6388. 25.8.82
No 3114 C. 15.9.87
B. No 600 W. 28.2.87
No 379 C. 3.2.87
B. No 3085 W. 20.11.86
No $\frac{3907}{3908}$ C. 8.11.86
No 742 E. 14.9.82

No. 2945 Wd/19 Septr 1888 (2)

Recorded
Recorded

14.9.88

15/9/88

9/26/9
C. R. 9.88. R. 19.9.88
vrs 13/9
17.9. I. 25/9

Pv. Cho 9186

Govt. of {1888} Madras.

LOCAL AND MUNICIPAL.

(2)

8.S.C.

Issued.

Recd. *Encl.*

R/ 12.9.88.

G.O., &c., 3rd September 1888,
Nos. 993, 994 M.

No. 2945 Wd/19 September 1888

SEPTEMBER.

Municipal Report.

Communicating to the President, Municipal Commission, Madras, letter from the Government of India on the report of the Madras Municipality for 1886-87.

to Records

Elmshurst.
Bedford
August 24th. 1888.

Sir,

I have the honour to inform you that I leave England per B.I.S.N the 'Dorunda' sailing on ~~August~~ Sept. 20th arriving at Madras on or about the 20th of October.

I have the honour
to be
Sir,
Your most obed. servt.
J. F. Somers Rue.
Ast. Eng. 1st Grade.

To the
Chief Engineer and Secretary to Government.
Madras.

Supdg Engineer Periyar Proj

B. No 1745 W. 12.6.88
No 2045 C. 30.5.88
" 4057 C. 12-11.87
B. No 2620/2621 W. 5.10.87
No 3198 C. 22.9.87
B. No 2533 W. 23.9.87

P.W. C No 9189

③

R/: 12.9.88

No B 2944 W. d/ 19 September 1888

Recorded.

Recorded.

14.9.88

17/9/88

E

19/9

24 ⑨

6.14.9.88 134:9 17/9 19 9.88

25/9

Date taken out.				Initials of Referencer.	Date returned.	Initials of attender.
	Department.	C. No.	Year.			

Supt Engineer Peninsular

[R. O. / 10]
5,000—14-5-10.

MADRAS RECORD OFFICE.

Block No.

Paper taken out of the Records from the charge of the Referencer,

Dept. P. W ~~Press~~ Mis. Rout. No. 2940 W, dated 19 · 9 · 1886 , Rack No. , Range,

Date taken out.	For what purpose.			Initials of Referencer.	Date returned.	Initials of attender.
	Department	C. No.	Year.			
15·12·10	P. W. MR	12719 2733	ue 11	[illegible]	19/4/11	[illegible]

O. P.W. 9. 88

Letter from Horace Walpole Esqre, C.B.
Assistant Secretary, India office, to
Col J Pennycuick R.E., 47 Duke Street,
S W Dy Whitehall S. W 28th May 1888
No 949 P.W.

I am directed by the Secretary of State for India to acknowledge receipt of your letter of the 7th Instant, and, in reply, to inform you that the accountant General of this office has been authorized to advance to you the sum of £ 300 on account of your pay, such advance to be subject to adjustment on your arrival at Madras

With reference to the concluding paragraph of your letter, I have to inform you that the Government of Madras have been informed by the Secretary of State that he was unable to sanction your application to be allowed to draw full pay for the first three months of your deputation to this country and two thirds pay for the remaining period.

It is open, however, for you to

Col R.E.
Supg Engineer Periyar Project

RAS RECORD OFFICE

to decide whether you will draw full pay for the first three months and half pay for the remaining period, or draw two thirds pay for the whole period of your deputation.

True Copy

E-1.
No 9050/88

J Pennycuick
Col R.E.,
Superintending Engineer
Periyar Project Works

Enclosure in No. 659 P.R
5-9-88

O. RW. 9.88.

No. 659. P.R

Office of the Supg Engineer
Periyar Project Works
Periyar 5 September/88
D/6:

From
Col J. Pennycuick R.E.
Superintending Engineer,
Periyar Project Works.

To
The Chief Engineer
Public Works Deptt.

Enclo: 1.

Sir,

I have the honor to submit a copy of a letter No 949 P.W of 28 May 1888, received by me from the India Office, and to request information as to whether I may exercise the option referred to in the last paragraph, and if so whether any special conditions were attached thereto.

2 Unless there were any such conditions it would of course be to my advantage to draw full pay for three months and half for two, than two thirds for five months.

3. I should have brought this matter forward before, but had expected that the decision of the Secretary of State would have been communicated to me by Government.

I have the honor to be
Sir
Your most obdt Servt
J Pennycuick Col RE
Supg Engineer Periyar Project

E.G. 896 W. 19.3.88. Origl
" 3334 W. 6.12.87. do
" 3075 W. 15.11.87. do

15/12/0

~~No B 2942 W d/19th Septr~~ 1888

PH 12 Sept

(1)

Colonel Pennycuick will be furnished with a copy of para 3 of despatch from the Secretary of State No 1 dated 9th February 1888, from which he will observe that he is at liberty to exercise the option referred to. The only condition attached appears to be that if he elects to draw full pay for the first three months and half pay for the remaining period of his stay in England, the privilege leave due to him at the time of his departure will be absorbed.

WCR
11.9.88

Jell
12/9/88

J
19/9

To
Col. J. Pennycuick, R.E.
S.E. Periyar Project
with copy of para 3 of the despatch
Ex. P.W. Accts with ditto.

WMg
S 25/9

6-11.9.88 B-15-9-88
MS 109.9 Hud 12/9 on 13/9

RWC No 9050

(1)

From.
The ~~Supdg~~ Engineer
Periyar Project

896 W 15.3.88

To,
The Chief Engineer
P.W.D.

No 659.P.R
Dated 5: September 1888

R/10.9.88

Enclo: 1

No 2942 W d/19th September 1888

Submits copy of letter received from the India Office, & requests to be informed whether he may exercise the option to draw full pay for three months & half pay for two months of his deputation to England and if so whether any special conditions are attached thereto.

With order

MILITARY DEPARTMENT, SEPTEMBER 1888, No. .

GOVERNMENT OF MADRAS.

MILITARY DEPARTMENT.

Quarters.

Read the following paper :—

No. . *From Brigadier-General M. PROTHEROE, C.B., C.S.I., Quarter Master General, Madras Army, to Brigadier-General A. KENNEY-HERBERT, Secretary to Government, Military Department; dated Ootacamund, 28th August 1888, No. 3104-A.*

With reference to O.G. No. 4724 of the 11th ultimo, I am desired to report, for the information of Government, that, under His Excellency the Commander-in-Chief's orders, the following arrangements have been made with regard to the provision of suitable and convenient accommodation for the Lady Nurses at Bangalore :—

South Station Hospital.—Two Lady Nurses have been provided with accommodation in public buildings * adjoining the hospital which have been converted into suitable quarters for them.

North Station Hospital.—The Lady Superintendent and two Lady Nurses are accommodated in a hired house conveniently situated with reference to the hospital, at a rent of Rs. 75 per mensem, the extra Lady Nurse now at Bangalore † being temporarily accommodated in the same house.

2. It was in contemplation to provide accommodation for the Lady Nurses attached to the North Station Hospital by conversion of a part of No. 3 range, married quarters of the British Infantry Barracks, which it was found possible to make available, but His Excellency has now decided that it would be in every way preferable and economical that three Apothecaries attached to the same hospital, who now are provided with hired quarters at Rs. 115 per mensem, should be accommodated in the married quarters in question, the Lady Nurses being accommodated in a private house close to the North Station Hospital, which will shortly be vacated by its present occupant, and the rent of which is stated to be the same, viz., Rs. 75, as that already sanctioned by Government.

3. The Commander-in-Chief has accordingly requested the General Officer Commanding Bangalore Division to arrange with the Public Works Department for the hire of the house in question on its vacation, and as this arrangement will effect a saving of Rs. 40 per mensem, His Excellency trusts that it will have the approval of Government.

* 1. Quarters for two Hospital Sergeants.
2. Part of Medical Subordinates' block of quarters.

† Proceedings of Government, No. 3677, dated 2nd June 1888.

No. . ORDER THEREON, 7th September 1888, No. 6090.

The arrangements made under the orders of His Excellency the Commander-in-Chief for the accommodation of the Lady Nurses at Bangalore are approved.

(True Extract.)

(Signed) A. KENNEY-HERBERT, Brigdr.-Genl.,
Secretary to Government.

To the Quarter Master General.
" Public Works Department.
" Controller of Military Accounts.

Exd. E. C. Shunker.

Order thereon No. 2941 Wd/19 September 1888

Communicated to the Suptg Engr V Circle.

50/ J. O. H.

S. E V Circle
Exr P.W. a

Govt. of {1888} Madras.

MILITARY.

To
THE QUARTER MASTER GENERAL,
&c., &c., &c.

Dated September, .

Issued.

Recd. Encl.

G.O., 7 September 1888, No. 6090

No. 2941 Wd/19 Sept 1888

SEPTEMBER.
Nos. .

Quarters.

Lady Nurses.—Arrangements made under the orders of His Excellency the Commander-in-Chief for the accommodation of the — at Bangalore, approved.

MILITARY DEPARTMENT, SEPTEMBER 1888, No. .

GOVERNMENT OF MADRAS.

MILITARY DEPARTMENT.

Quarters.

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No. . *From Brigadier-General M. PROTHEROE,* C.B., C.S.I., *Quarter Master General, Madras Army, to Brigadier-General A. KENNEY-HERBERT, Secretary to Government, Military Department; dated Ootacamund, 28th August* 1888, *No.* 3104-*A.*

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(True Extract.)

(Signed) A. KENNEY-HERBERT, Brigdr.-Genl.,
Secretary to Government.

To the Quarter Master General.
„ Public Works Department.
„ Controller of Military Accounts.

Exd. E. C. Shunker.

---

* 1. Quarters for two Hospital Sergeants.
2. Part of Medical Subordinates' block of quarters.

† Proceedings of Government, No. 3677, dated 2nd June 1888.

Order thereon No. 2941 W d/
19 Septr: 1888

Communicated to
the Supdg Engr V Circle

Sd/ J. O. H.

Govt. of {1888} Madras.

MILITARY.

To
THE QUARTER MASTER GENERAL,
&c., &c., &c.

Dated September, .

Issued.

Recd. Encl.

G.O., 7 September 1888, No. 6090

No 2941 W d/ 19 September 1888

SEPTEMBER.
Nos. .

Quarters.

Lady Nurses.—Arrangements made under the orders of His Excellency the Commander-in-Chief for the accommodation of the — at Bangalore, approved.

S. E. V Circle
Ex. P. W. D

MILITARY DEPARTMENT, SEPTEMBER 1888, No. .

GOVERNMENT OF MADRAS.

MILITARY DEPARTMENT.

Quarters.

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No. . ORDER-THEREON, 7 September 1888, No. 6090

The arrangements made under the orders of His Excellency the Commander-in-Chief for the accommodation of the Lady Nurses at Bangalore are approved.

(True Extract.)

A. Kenney-Herbert
Brigdr.-Genl.,
Secretary to Government.

To the Quarter Master General.
„ Public Works Department. ✓
„ Controller of Military Accounts.

Exd. E. C. Shunker.

1690 ~~"~~ 7. 6. 88.
1499 " 21. 5. 88
1300 " 2. 5. 88.
847 " 14. 3. 88.
1909-10 " 26. 6. 88
969 " 24. 3. 88.

P.W.C. No 9212

B

No 2941 W d/19th Sept 1888

Communicated to the Supt of Engineer V Circle

Govt. of {1888} Madras.

MILITARY.

To
THE QUARTER MASTER GENERAL,
&c., &c., &c.

5C. 10.

Jdl
10/9/88

Dated September,

Issued.

Recd.

SECRETARY TO GOVERNMENT, P.W. DEPARTMENT, MADRAS.
-8 SEP.

Encl.

G.O., 7 September 1888, No. 6690

Rd: 13.9.88.

No 2941 W.d/19th September 1888

SEPTEMBER.
Nos. 86/87

Quarters.

Lady Nurses.—Arrangements made under the orders of His Excellency the Commander-in-Chief for the accommodation of the — at Bangalore, approved.

S.E. V Circle with 1 S.C
Ex P.W.A. ✓

19/9

15.9 19 26/9 24/9

With order

Endorsement on Disallowance List No. 131 from the Contingent Bill of the Cuddapah Division Office for July 1888.

No 1209

Submitted to the Chief Engineer with a request, the charge may be authorised.

H Smalley Col RE
Superintending Engineer 3rd Circle

8th September 1888.

To
The Chief Engineer
P.W. Department
Madras

From Rev. Cho 9156

The Supdg. Engineer

(G) 3rd Circle

To

The Chief Engineer

P. W. D.

Madras

~~H~~
No 2938 W.d/19th September 1888
B

PRH
15 Sep

The admission of

the charge is sanctioned

WOB
12.9.88

JOH
14/9/88

Dated 8th }
Recd 12th } September 1888.

Enclo. 1.

No 2938 W.d/19th September 1888

No. 1209

Subnitting disallowance list No. 131 from the Contgt. bill of Cuddapah Dn. for July/88 with a request that the charge for killing a snake may be passed.

To

The Supdg: Engr: III Circle
" Examr. P. W. A. with
disallowance list

19/9

With Order

Pd 26/9. 26/9
R. 17.9.88
C 17.9.88 Ord 23.9