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MADRAS RECORD OFFICE.**Government of Madras.***Public Works* **DEPARTMENT.**

G.O. No.	1141	Press
		Mis.
Dated	8-6-	18 63.

Not to be folded or roughly handled

*Proceedings of the Madras Government Public Works Department,
5th June 1863.*

No. 128. Read the following Proceedings of the Madras Government in the Military Department, dated 28th May 1863, No. 1,738:—

Referring to the Superintending Engineer 4th Division }
papers relating to the conservancy of Fort Saint George, } (Vide Military Proceedings, 28th May 1863,
for his views, and for a full report of the measures taken } Nos. 544-545.)
and the work executed in connection with its drainage. }

No. 129. ORDER THEREON, 5th June 1863, No. 1,441.

Communicated to the Superintending Engineer 4th Division for early report.

(Signed) W. I. BIRDWOOD, Colonel, R. E.,
Secretary to Government.

MILITARY DEPARTMENT.

PROCEEDINGS OF THE MADRAS GOVERNMENT.

Read the following papers :—

From the Quarter Master General, Fort Saint George, 4th May 1863, No. 3692; to the Secretary to Government, Military Department.

I have the honor, by order of His Excellency the Commander-in-Chief, to forward for the consideration and orders of Government, a letter from the Officer Commanding Centre Division, with enclosures, relating to the Conservancy of Fort Saint George.

2. His Excellency thinks, the suggestions of the Major General and of the Conservancy Committee, deserving of adoption, and recommends, that the Barrack Master, be constituted sole Superintendent of Conservancy matters in the Fort, that all existing Conservancy Establishments be placed under his orders, and that he be requested, in conjunction with the Major General and the Garrison Surgeon, to draw up a Code of Rules to be rigidly observed by all residents in the Fort, particularly with reference to their retention of their servants' families, besides horses, dogs, and other causes of impurity within the Fort.

3. At the same time, His Excellency thinks, that the Public Works Department should place itself in communication with the Barrack Master, in order to carry out the different suggestions made by the Committee, Garrison Surgeon, and Officer Commanding the Division. Estimates for the cost of executing the same, to be asked for at once.

4. His Excellency, desires me to say, that this subject has very often been before Government, the last time being in February 1862, when the nuisances prevalent in the Fort were forcibly expiated on by several Writers, and Government, was pleased to order the Public Works Department, to remedy the nuisances occasioned by the Drain at the North East angle of the Fort. A Wind-mill at that point, is the only apparent work executed in consequence; and as the evil, on account of which it was erected, still continues, many more wind-mills should be erected to raise much more water to sluice the Drain, if other measures cannot be resorted to.

From the Officer Commanding Centre Division, Fort Saint George, 24th April 1863, No. 1068; to the Quarter Master General, Fort Saint George.

Fatal cases of Cholera, both amongst the European Troops and Natives in Fort Saint George, during the early part of last month, induced me to assemble a Committee consisting of Officers as per margin,* whose duty was directed towards ascertaining the cause of sickness, and to suggest remedial measures against a recurrence or more extended action of disease.

2. I have now the honor to forward the Proceedings of the Committee and other documents as noted,† for the consideration of the Commander-in-Chief, and to recommend the proposals of the Committee especially that relating to the Conservancy and more efficient supervision of the same.

3. There are causes for sickness, against which it would be difficult to provide, except at a serious expense, the level of the Fort is low and the ditch is far below the level of the sea, into this ditch doubtless much noxious filth is deposited, but it is easy to remedy some defects in Drains and in the Conservancy system.

4. It is proposed to place the Conservancy under the superintendence of the Barrack Master; at present there is no supervising control. Heads of Offices, Civil and Military, Regimental Authorities, Barrack Master, Engineer, Commissariat, families of Officers, and other Residents, all divide the work under no one controlling power, and yet without including families, the expense to Government is nearly 600 Rupees.

5. I would, however, earnestly recommend the attention of the Drain, referred to in paragraph 4, page 3, and at page 11 of the Proceedings, which runs close to, if not immediately under

* Lieutenant Colonel Worster, Royal Artillery,
Barrack Master,
Surgeon Major Gordon, 69th Regiment.
Lieutenant Wood, Royal Engineers.

† Proceedings of Committee, dated 15th April 1863.
Report of Acting Garrison, Assistant Surgeon Chipperfield, 23rd March 1863.
Letter from Deputy Inspector General of Hospitals, Dr. McKenna, 7th March 1863.

the North East Angle of the Soldiers' Barracks; almost all the fatal cases of Cholera have occurred in that Barrack Room, and I have moved the Company there stationed to Palaveram. It would be advisable not again to occupy it, unless an alteration is made in the Drain, if this is done, in all probability, that Barrack Room, will become as healthy as the other Barrack Rooms generally are.

6. I am of opinion, that Dust Bins should be provided to every Cook-house, into these, refuse should be deposited, it is constantly left in places where it ought not to be, or in case of rains, it chokes up the Drains and generates disease, especially where the Drains are covered. Where such facility of deposit exists, it would be preferable to have open Drains, where such refuse would be seen and carted away.

7. My attention has been drawn to this subject by a perusal of the Report of the Special Sanitary Committee, Punjab, Doctor Hathaway, dated 14th May 1862, sent by you, for my information, and I found that many of his recommendations have been adopted at Military Stations in the Bengal Presidency.

8. The Assistant District Engineer has been requested to prepare, at an early date, and submit Plans and Estimates of the proposed alterations in the Drainage; these I shall forward, as soon as I receive them.

Proceedings of a Committee assembled, agreeably to Garrison Order of the 7th March 1863, to report on the Sanitary condition of the Fort, with the view to suggest improvements, Sanitary arrangements.

The Committee composed as follows:—

PRESIDENT.

Lieut.-Colonel WORSTER, Royal Artillery

MEMBERS.

Surgeon Major GORDON, 69th Regiment.

Lieutenant WOOD, Royal Engineer

Assembled at the 1st Assistant District Engineer's Office on 11th March 1863, at 11 A. M.

General Preliminary observations.—1. In reference to the Sanitary condition of the Fort, the Committee would observe, that, notwithstanding its general salubrity and freedom from epidemic disease, there have been instances, not only of the weakly and susceptible, but, of those apparently in good health, falling victims to noxious influences, which have had their origin within and about its walls.

Conditions militating against Sanitation.—2. Surrounded by a ditch of almost stagnant water, (which is at times peculiarly offensive from the decomposition of dead fish and organic matter,) under-run by Drains; which, in many instances, can but be considered as noisome sewers,—subject to foetid odours from disturbed night soil and surreptitiously deposited faecal matter in the gully-shoots of house Drains,—and above all to the over-powering emanations from the Black Town Tunnel, more especially during the North East Monsoon;—it is a matter of surprise that the general health of the residents in the Fort has not been materially interfered with: while it is evident that conditions exist for the generation of mephitic gases in a concentrated form; under the influence of which the strongest might be prostrated.

3. It therefore appears to the Committee, that, without an entire cleansing, and in some instances remodelling of the Drains, and a more frequent replenishing of the water of the ditch; the scavenging arrangements however systematically they may be executed, will, but be a mitigation of the evils so justly complained of.

Recommendations generally regarding Drains now existing.—4. 1st. The Committee would recommend, as a first and very necessary step towards Sanitary improvement, that the Drains should at once be freed from all deposits, and that a new direction be given to such as run immediately beneath any Buildings, and that the inlets of all be so guarded, that they can no longer become receptacles for filth and impure refuse water, which alone

This is urgently necessary. should be carried away by special pipe-drainage adapted for the purpose. The present Drains would then remain, for carrying off surface water solely, for which indeed, they were originally constructed. The Committee are aware, that these present drains, are of a form inadmissible under the generally improved drainage system of the present day: in special cases it may happen that on

a close inspection and examination, some few will require to be removed: but the Committee hope that the precautions before mentioned, with reference to the inlets of the Drains, will obviate the great expense of entirely re-placing the existing ones, by the new and generally used drainage pipes.

Organization of a system of Scavenging.—5. 2nd. An organized system of Scavenging might then be successfully introduced, and the Committee consider that the whole of the arrangements should be entrusted to the Department which without doubt should be the controlling authority in these matters, viz., the Barrack Master's.

6. The Establishments and Attendants of other Departments being transferred to that Officer. The night duties remaining as at present with the Barrack Serjeant; extra aid, which would absolutely be necessary for daily duties, being afforded by the Quarter Master Serjeant of the Garrison.

7. Pending the receipt of further information, as regards the present arrangements for Scavenging and their cost—the Committee adjourns.

24th March 1863.—8. The Committee re-assembled this day: when the replies to queries on the Sanitary arrangements from the residents and heads of Offices, also a letter relative to the Black Town Tunnel or Sewer from the Deputy Inspector General of Hospitals, were read.

9. The Committee have already described the latter as an overpowering nuisance, but as it does not come within the Sanitary Conservancy of the Fort, and can only be checked by the action of Government: the long urged desire for its abolition, can only be repeated by the Committee.

Present Conservancy arrangements are inefficient.—10. On a general view of the Conservancy arrangements of individuals, as afforded by the replies abovementioned, the Committee are confirmed in their opinion; that unless the Conservancy arrangements are put under one sole authority, empowered to overlook every out-office (those of private residences included); the Sanitary condition of the Fort will remain as it is at present, both unsatisfactory and uncertain.

Recommendations for the future.—11. In addition to recommending that the Carts and Sweepers now employed by the Public Works Department should be transferred to the Barrack Department, the Committee would also suggest that the Privies of all Public Offices should be made externally accessible; that all residents should be called upon to provide closeable receptacles or dust bins for the storage of dry refuse which the Scavengers can readily remove by day, and that to complete the efficiency of these arrangements, glazed Stone-ware piping should be provided for carrying off the foul water from houses. These Stone-ware glazed pipes should be efficiently trapped and guarded at their inlets to prevent the insertion of solid refuse. The new Privies for the Regiment and Office Clerks, which have been in course of erection for some time; should be completed as soon as possible and thus obviate the periodical nuisance attending the cleansing of those at present in use.

This is absolutely necessary, unless a Control is exercised, it is left to Native servants who crowd their families into any available corner. In March I ordered all their families out.

(Signed) W. A. McC.

Dust bins should be provided.

Also Stone-ware glazed Piping.

Absolutely required.

(Signed) W. A. McC.

And Latrines now in progress of erection.

This cannot be done till water is obtained: it would have been preferable to have built these Privies in such manner as to have carried out the recommendations contained in the Report of the special Sanitary Commissioner in the Punjab, Dr. Hathaway.

(Signed) W. A. McC.

Cost of existing Conservancy Establishment—12. The cost of existing arrangements as far as the Committee can judge, are about Rupees 592 per mensem, as shewn in the Statement accompanying this Report.

Statement A.

			Rs.	A.	P.
Day.....	8 Carts, 18 Sweepers and 1 Maistry.	Engineer's Department.....	212	0	0
Day.....	4 Toties.....	Paid by the Barrack Master.....	17	8	0
Day.....	10 Toties, 9 Sweepers and 1 Maistry.	Under the Barrack Master, paid by the Commissariat.....	70	0	0
Regimental,.....	10 Toties and 14 Sweepers.....	Paid by the Commissariat.....	105	14	0
Military Offices.....	13 Toties.....		40	4	0
Night.....	2 Carts.....	Paid by the Barrack Master.....	24	0	0
Night.....	4 Toties and 3 Carts.....	Under the Barrack Department, paid by the Commissariat.....	92	8	0
	3 Civil Offices.....		30	0	0
		Total Rupees..	592	2	0

13. The Establishments and payments amounting to this very large sum appear to be divided between the Barrack Master, the 1st Assistant District Engineer, the Commissariat Department, Heads of Offices in the Fort, and the Regimental Authorities.

And its present control.

14. It is obvious that neither economy nor efficiency can result from such a course of administration; the Committee therefore will not again repeat their conviction of the absolute necessity of placing the whole of this Establishment under one authority who shall be responsible for its efficiency.

15. The Committee having considered the letter of Dr. Chipperfield, offering certain suggestions on the Sanitary condition of the Fort: observe, that* these suggestions, are entirely in accordance with those general principles, which the Committee have laid down in the preceding

Dr. Chipperfield's letter on Sanitary condition of Fortress, appended.

(Signed) W. A. McC.

portion of this Report: as necessary to be acted on to produce an improvement in the Sanitary and Conservancy arrangements within and about the Fortress. Certain matters of detail are entered into by Dr. Chipperfield, many of which the Committee while entirely agreeing with, are of opinion should be considered fully after the general Conservancy arrangements are remodelled. It appears to the Committee that their province is more particularly to expose the deficiency of the existing Conservancy arrangements with a view to their being corrected, after which process, many matters of detail will require special handling. These details the Committee conceive may more fitly be left in the hands of such controlling authority as may be entrusted with the future Conservancy arrangements; for the efficient administration of which the Committee would recommend that full and ample powers be conceded.

16. If however the Committee may be permitted to touch upon such matter of details; they would (after the execution of such measures as they have recommended regarding the removal of deposit from the existing Drains) most earnestly deprecate the continuance in its present course of the large Sewer flowing from the Barracks towards the sea. It appears to be a

Referred to in my letter transmitting these Proceedings.

(Signed) W. A. McC.

matter of urgent necessity that this Sewer should be re-formed with suitable glazed piping, which should carry its contents in as direct a course as possible away from the Barracks through the North Gate of the Fort, and discharge them into the large Black Town Sewer near its mouth, or directly into the sea, according as circumstances dictate. The present existing Sewer might then be rooted up along with the adjacent earth, and removed entirely to a distance from the Fort, the soil of the locality being made good with fresh sea sand.

17. This the Committee are of opinion would be one of the first and most important works to be undertaken after the cleansing of the other Drains and remodelling generally of the Sanitary arrangements.

From Assistant Surgeon W. N. Chipperfield, Acting Garrison Assistant Surgeon and Ex-officio Sanitary Officer of the Fort, Madras, 23rd March 1863, No. 28; to the Brigade Major, Fort Saint George.

I have the honor, as Sanitary Officer of the Fort, to submit the following observations, which you may think fit to lay before the Sanitary Committee now sitting under the presidency of the Barrack Master.

2. I believe the Fort, generally speaking, to be a very healthy place. With the exception of the Parcherry (about to be re-built, I believe) there is no over-crowding of residences now. It has natural advantages, in its situation on the sea-board, where the purifying principle of ozone exists in far greater quantity than does inland. But nevertheless there are grave defects in its Conservancy—using the term in its widest sense—which in case of an outbreak of epidemic disease, would, in all probability, favor its spread, and which, in my humble opinion, can and should be remedied.

3. Under existing circumstances, the refuse matters, Chicken skins, offal, blood, vegetable parings, &c., and waters used for cooking both meat and vegetables, gram water, bath-water, &c., must become sources of nuisance and impurity of the air. The former, the solid refuse, must remain in an exposed spot, subject to the attacks of crows and kites, until the Scavenger's Cart arrives; and the latter, the liquid refuse, must be permitted to enter the drains, and there, by speedily undergoing a putrefactive process, become, by the time they reach the Fort Ditch, into which the drains open, a source of offensive effluvia.

4. I would suggest, that every resident be required to provide a covered dust-bin for the reception of solid refuse, and the Scavengers be directed themselves to enter the premises daily and remove the contents, and that a responsible person be placed over these individuals to see that the work is properly performed.

5. The liquid matters must be permitted to run into the drains, unless iron Carts be provided for their removal, in which case the residents might be required to furnish covered earthenware vessels of sufficient capacity to contain twenty-four hours' supply of this liquid refuse. Now these matters cannot fail to be a source of nuisance, and therefore they should not be permitted to enter the Fort Ditch. I think that a fundamental error was originally committed in permitting Drainage of any kind to enter the Fort Ditch; the water in which must be stagnant at certain times. That this opinion is correct, is proved by the fact that there now exists in the Ditch, and especially near the mouths of the drains, a deep layer of highly offensive mud, resembling sewer silt. It may be said that the drains so discharging themselves, are surface drains only; but in reality they are much more, for every house has its drain opening into the main drain, and the liquid refuse alluded to above, and all bath-room water finds its way therein. At first view the latter might be supposed to be innocuous and rather advantageous as a means of washing out the drains, but it is a matter of notoriety to those engaged in inquiries into sanitation that such is not the case, and this is proved by the nauseous stench emitted from sinks and drains in which soap suds can accumulate and decompose. I believe it to be an impossibility to prevent Native servants from thrusting all manner of rubbish into those Drains, for present convenience is a matter which they regard infinitely more than they do the anger or reproof of their employers, which follows detection. Every occupant of public Quarters in the Fort must have personal experience that, under the influence of certain winds, these Drains become very offensive, noxious gases accumulating in them, are carried backwards and escape at the head gratings.

6. Another error in the present drains is their rectangular shape, which favors subsidence, and accumulation of the solid matters suspended in the fluid they convey. I would suggest that these Drains be re-placed by a system of glazed earthenware pipes, with well closed joints, and that the entire sewerage of the Fort surface or otherwise, be conveyed directly into the sea instead of into the ditch. Of course means of flushing such a system of Drains should be provided; I believe such partly exist, in the large reservoir erected over the Magazine at the North end of the Government Office, more than two years since. It is not for me, to estimate the cost of such a proceeding, nor to point out how the matter may be effected. I am told there are Engineering difficulties, but I am at a loss to conceive of such in the present instance, which Science may not overcome.

7. With reference to the removal of the night soil, I think an improvement upon existing arrangements might be effected. At present the Sweepers may be observed every morning conveying the soil in tubs and various vessels through the South Sea Gate, and depositing it, not so much in the sea, as upon the sand close to the groin opposite that Gate. The morning removal, is preferable to an evening one, for many reasons, not the least being, that the wind is generally off shore in the morning and therefore the odour is not carried back into the Fort. But still the throwing of the soil upon the Beach so as to be under the influence of the flowing-wave, is objectionable. It would be preferable, perhaps, to have a narrow tramway running along the top of the groin and projecting from its extremity as a kind of platform, with an iron tilting Cart running upon this tramway, and so arranged, as to tilt all matters placed therein directly into the sea itself during the recession of the surf, so as to come under the influence of the ebbing-wave. Or, instead of the tramway and iron tilting Cart, a tube of sufficient calibre, and with sufficient incline, might be carried out some distance into the sea, upon the piles which were driven about two years since, and its distal end immersed. The proximal extremity of this tube might be furnished with a small reservoir with close fitting, hinged lid, and arrangement made for flushing at sufficient pressure to ensure the matters placed therein, being discharged; this might be assisted, probably, by a kind of syphon arrangement at the sea-end of the tube, whichever course were pursued, a sweeper should be placed in charge at certain hours, at which time the night soil, from all the Premises in the Fort, should be required to be removed. Or, instead of the Tories employed by the residents individually conveying the night soil to the Beach, they might be required to deposit it in tubs, well coated with coal tar, placed in an enclosed yard, say near the Saint Thomé Gate, and from thence it might be removed in the tubs by public sweepers as is now done with the soil from the Barracks.

8. Connected with this subject, another source of nuisance may be mentioned. Upon favorable morning, numerous fisher men carry their nets a long distance out into the sea, just opposite to the Fort. Ropes are attached to the extremities of the nets and they are drawn ashore. In this way large quantities of fish are taken, but, in addition to this, numerous medusæ or jelly fish, and other matters which cannot be utilized, are drawn to the shore, and thrown upon the Beach where they speedily undergo decomposition and become a source of nuisance. Further than this, dead animals, dogs, cats, and bandicoots, are buried on this part of the Beach at such slight depths, that the carcasses often become exposed, and emit a most offensive stench. As these are preventible matters, it appears to me, that there can be no question that they should at once cease to exist. The dictum of a former Municipal Commissioner of Madras, that "stinks are healthy" cannot possibly be accepted now. Experts in Sanitary Science, are well aware, that animal exhalations and the gases given off during the decomposition of organic matters are deleterious to health. It may happen that they exist, even in a concentrated form, for a long time without proving actual exciting causes of disease, but it wants but a ferment to bring their peculiar noxious elements into play and then suddenly, but surely, they claim their victims, sparingly perhaps at first, but soon in increasing numbers as the demon of impurity, marches onwards with irresistible stride. But more than this; the constant inhalation of an atmosphere loaded with septic gases lowers the tone of health, vitiates the secretions, preclives the body to disease and destroys that power of resisting infection and disease, which is possessed, to a large extent, by persons in a state of robust health. The proof of this lies close at hand. The residents of Black Town, and all the offensive parts of Madras, are peculiarly prone to fall victims to epidemics; the mortality amongst the attacked is frightful.

"Sic etiam brevi ipse sibi homo accerimū venenū compararet."

9. There is another matter connected with the Fort Ditch which should be alluded to. Whenever it is considered necessary to let off any of the water from the Ditch, a sluice is opened which conveys the fluid, not into the sea, but into the river Cooum, and thus, that impure steam is still further polluted, for no one can speak of the water of the ditch as otherwise than most impure. This can only be done at certain times, for, in consequence of the general equality of level of the water of the river with that of the ditch, the discharge can only take place when the former is very low. I think this should be remedied by having a sluice so constructed as to let off the ditch water directly into the sea during the low water of neap-tide, and then advantage could be taken of letting in a fresh supply of sea-water through the flood gates at the spring-tide.

10. I trust it will be considered that this letter is written in a spirit of inquiry and suggestiveness rather than in one of dictation. I have taken advantage of the assembling of a Sanitary Committee to bring to notice matters which recent occurrences have caused me specially to investigate, and which appear to me to be of the gravest importance; and in doing so I am acting strictly in accordance with the instructions of the head of my Department, who, in a Circular, addressed some months ago to the Executive Medical Officers of the Presidency, says:—

"The District Surgeons are responsible for the Sanitary condition of their respective Districts. The Garrison Assistant Surgeon for that of the Fort," and

"Each Medical Officer in his own range should consider himself an "ex-officio" Sanitary Officer in as far as reporting through the Deputy Inspector General of Hospitals, in all matters affecting or likely to affect the public health."

11. I have done myself the honor of addressing you directly upon this subject, in order to save time, but a copy of this letter will be forwarded to the Deputy Inspector General of Hospitals, Presidency Division.

From the Deputy Inspector General of Hospitals, Presidency Division, Madras, 7th March 1863, No. 433; to the Brigade Major, Fort Saint George.

I have the honor to request you will be so good as to submit to the Major General Commanding, the following observation, with reference to the few cases of Cholera that have lately occurred in the Fort.

As the North East wind blows during the day at present, and must carry the emanations of the great North East Drain, over some part of the Fort, which may in all probability give some rise to disease, the drain might be flushed with fresh water, as sea water occasions, more rapid and more offensive putrefaction to decomposing animal matters than any other liquid.—Norton's Fluid might be used freely both day and night,—and thus to a certain degree, render the emanations less prejudicial.

ORDER, No. 1738, 28th May 1863.

Before passing orders on the subject of the foregoing papers, the Governor in Council directs, that they be referred to the Department Public Works for the views of the Superintending Engineer of the Circle, and for a full and detailed report of the measures taken and the work executed in connection with the Drainage of the Fort under the previous orders of Government on this subject, and last adverted to in paragraph 8 of the Proceedings of Government marginally noted.*

*No. 4505, 9th December 1861.

2. Meanwhile the Governor in Council sees no objection to the Conservancy of the Fort being placed under the sole control of the Barrack Master so far as discipline is concerned, but without interfering with existing arrangements of supply by other Departments, pending the decision of the Government of India on the Barrack Department question generally.

(True Extract.)

W. H. R. Stephenson
Deputy Secretary to Government.

To the Quarter Master General.

- „ Public Works Department. *With 20 spare Copies*
- „ Barrack Master.
- „ Brigade Major, Fort Saint George.
- „ Adjutant General.
- „ Prin. Insp. Genl. Medical Dept.
- „ Controller of Military Finance.
- „ Military Accountant.

Exd. R. Stephenson.

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