

1. Number of pages
Date of repair. 5-10-57
Serials of Reference
M.R.O. 1-50,000-16-10-58

MADRAS RECORD OFFICE.

Government of Madras.

Public Works DEPARTMENT.

Cons. & 20. 4. 1858

G.O. No.

597

Press
Mis.

56-57
Dated

16. 4. 1958

Not to be folded or roughly handled

26-10-57

1A

Fort Saint George, Public Works Consultation of 20th April 1858.

No. 56. Read the following letter from Captain T. THOMPSON, Town Major, Fort Saint George; to Colonel C. A. BROWNE, Secretary to Government, Military Department, dated 12th March 1858, No. 1009.

SIR,

I have the honor to forward for submission to Government the accompanying Report from Surgeon J. Sanderson, Garrison Surgeon of Fort Saint George, on the causes of the offensive smells so frequently prevalent in Fort Saint George, and its vicinity, and offering some suggestions for their removal, or palliation, and am directed to offer the Right Honorable the Governor's recommendation that the Report should be taken into early consideration.

* Report of a Committee of which the Civil Architect was President, dated 23rd October 1857,—already sent with letter dated 10th November 1857, No. 3068. The papers noted in the margin* accompany the Garrison Surgeon's Report.
Letters from Reverend J. Braidwood,—Acting Garrison Engineer.—Captain Johnston, Engineers.—B. W. Wright Esq., Manager in the Locomotive Department, Madras Railway.—Dr. Mayer's Minute,—letter with sketch to Garrison Assistant Surgeon from Mr. W. Patterson.

Letter from Garrison Surgeon J. SANDERSON; to Captain H. ROBERTS, Military Secretary, to the Right Honorable the Governor, dated 6th February 1858.

SIR,

1. In obedience to the instructions conveyed in your letter of the 6th Ultimo, by desire of the Right Honorable the Governor relative to the offensive odours experienced and complained of by many of the residents in Fort Saint George, and desiring me to institute an inquiry into the cause of them; as well as to propose remedial measures.

2. I do myself the honor to offer the following observations, and to beg of you to lay them before his Lordship.

3. Previous however to receiving your communication and in consequence of a desire expressed by the Right Honorable the Governor personally to me on the subject referred to in your letter. I had in company with the Garrison Assistant Surgeon and Colonel Haines, Military Secretary to His Excellency the Commander in Chief visited all the places brought under my observation by the former Gentleman; a resident in the Fort.

4. Colonel Haines afforded me much information of a practical nature, on several points immediately connected with the subject under inquiry from the local knowledge he possessed of Aldershot Camp where he had been stationed for two years previous to his coming to India, and where measures had been adopted both for the preventing of a dissemination and the neutralizing of the offensive and noxious vapours incidental to a Camp containing so many human beings.

5. I have also on several other occasions, inspected the localities, and through the kindness of Colonel Stavely, Commanding H. M's. 44th Regiment was enabled to consult with the Quarter Master of that Corps; as well as, visit with him the "Latrine" attached to the barracks occupied by the men of that Regiment.

6. This Officer as well as the Colonel had been stationed at Aldershot previous to coming to India and had witnessed the happiest results from the system adapted of neutralizing the same kind of noxious and foetid vapours that were found to emanate from the privies similar to the one inspected by us.

7. With the view also of obtaining correct information relative to the usefulness or otherwise of the Chimney erected over the great drain; the outlet of which opens into the sea, to the north of the Fort, and from which the most insufferably foetid odours emanate; I thought it

necessary to address the Reverend Mr. Braidwood who has been residing along with several others for some continuous years on the Esplanade of Black Town as well as the Superintendent of the Sailor's Home.

8. I was fully aware of the complaints made by many of the residents of the Fort on the same point. I therefore did not consider it necessary to seek for further information from them.

9. At the suggestion of the Garrison Assistant Surgeon, Conductor Patterson was consulted on the remedial part of the subject and I thought it advisable to ask Professor Mayer's opinion on the construction of the Chimney in a scientific point of view with reference to its usefulness in both neutralizing and aiding in the dispersing of the noxious gases.

10. I have also carefully perused the able report of the Committee appointed in 1852 to examine and report upon a plan submitted by Captain Boulderson for cleaning the drains of Black Town by means of Sea water pumped up by a steam engine; as also the report of a Committee convened by his Lordship's order in the month of March last year.

11. With the information obtained from such sources, I have no hesitation in stating, that the complaints made by the residents in the Fort as well as by those on the Esplanade of Black Town are strictly correct.

12. The Chief source of the foetid and noxious odours complained of by the Fort residents and others is from the drain that opens into the sea, to the north of the Fort. This might in my opinion be modified to some extent by greater care being practised, and a more punctual system of opening the sluice gates being adopted; not allowing them to be shut for forty-eight continuous hours; as I found on inquiry, they had been, and then only one sluice gate being opened instead of both, so that, the contents of the drain flowed out more slowly than it would otherwise have done, had both been opened.

13. This simple fact tended very much to favor the formation of the noxious and foetid gas, which is immediately formed on the sewerage becoming exposed to the atmosphere and from the stones and daily accumulation of sand at the mouth of the sewer, and additional opposition is formed to its flowing rapidly into the sea.

14. To remedy this state of matters, the mouth of the drain should be carefully watched daily; both sluice gates should be opened twice a day, when the tide is advancing, and the sand should be prevented accumulating; as it had done to some considerable extent when I examined it. But in offering these suggestions, I feel that they merely tend to palliate the evil, and that too, to a very small extent.

15. I would therefore beg to call his Lordship's attention, to the practical nature of the letter accompanying this, written by Conductor Patterson, with a rough Sketch of the plan he proposes for obviating this mighty evil. Appended is also a drawing showing more clearly the Conductor's views; obligingly executed at the Garrison Engineer's office.

16. The plan proposed, I am enabled to state, on the authority of Captain Johnston, Consulting Engineer of Railways, and Mr. Wright, Superintendent of Locomotives, to the Madras Railway Company; is based on sound principles.

17. The same principle is also distinctly recommended by the Committee appointed in 1852; already alluded to. At page 4 para. 13 of their report, the Committee say, "It has been satisfactorily proved by H. M's. Sanatory Commissioner, that the most perfect, as well as the most economical system is to lead the sewer down, and then if necessary; pump up its contents for discharge; and it is agreed that the cost of sufficient pumping applied in this way is greatly below that of sufficient flushing through the same Districts."

18. With reference to the usefulness of the "Chimney;" the impression of those residing within its influence is adverse to its beneficial effects; as his Lordship will perceive on a perusal of Mr. Braidwood's letter, appended and which is confirmed by those who have and are residing in the Fort.

19. The Garrison Assistant Engineer's note on the subject (which is also appended) I have no doubt, will convey better than any words from me can express the opinion, the originator himself of the building has had, of its usefulness.

20. In a scientific point of view no doubt exists in my mind, as to its inutility in remedying an evil of such magnitude.

21. In Professor Mayer's opinion; without the aid of fire it can do little good and with its aid; it can never neutralize sufficiently the foetid gases formed in the drain: for, from the surface only, are these gases formed while it remains there.

22. If this be correct, how can an outlet of this kind relieve the mass of fluid filth, which is perhaps three feet in depth; full of the elements from which these foetid gases are formed and ready to enter into still further decomposition in coming into contact with the atmosphere.

23. With these remarks, I would beg to call his Lordship's attention to Dr. Mayer's able Minute on the subject; which is also appended and to express a hope that Conductor Patterson's plan, of having a well formed, to receive all the contents of the drain at no great distance from the Beach. A small Steam Engine placed near to it; to empty it into the pipes which he proposes should be carried to a certain distance into the Sea on Screw piles, be adopted; as the surest and most efficacious remedy.

24. With reference to the several Privies within the Fort, which I found to be justly considered as a nuisance by those living close to them. I would beg to propose that the system of using charcoal, in a finely powdered state be adopted in a similar way to what has been done in like places at Aldershot. That plan consisted in having a bag of finely powdered Peat Charcoal, always in the buildings, and at stated hours of the day (every 2nd or 3rd hour) a small quantity of it was sprinkled over the surface of the contents of the vessels made use of by the men. This might easily be done here, by the same rules being established at each of those public places.

25. There may be some difficulty in getting Peat Charcoal, though I have no doubt; it might be brought from the Neilgherries; but the ordinary charcoal might be used in the way proposed.

26. The present system of chunaming the walls and flooring of the houses, should also be continued and a greater amount of care might be advantageously bestowed on the places, where the Urinary Tubs are placed, to prevent any uneven surface being made, which will hold any portion of the urine and thereby favor its decomposition by exposure to the sun.

27. The Tubs made use of should, in my opinion have each a lid, made to fit closely, so that when they are moved at night on to the cart; as little of the smell might escape as possible, and before doing so, charcoal should be sprinkled over the surface of the contents. Great care should also be bestowed on the election of the proper part of the Beach, where the Tubs are to be emptied. On no account should they be allowed to be emptied on the side of the Fort from whence the wind is blowing. At present, I am informed, that there is one place only selected for this purpose, and that quite irrespective of this principle.

28. In conclusion I would respectfully beg to call his Lordship's attention to the report of the Committee appointed by his Lordship in March last. It contains many valuable suggestions on the several points within the Fort connected with this enquiry and therefore renders it unnecessary for me to say more, than to allude to them.

29. Had this report not been laid before his Lordship, I should have considered it my duty to have called his attention to the necessity that exists at present of flushing the great drain in the Fort, more frequently; to the covering up of the open drain which is found to exist on the north side of the Fort, when the sluice gate is shut, a drain containing sewerage to the depth of at least three feet; to a greater amount of care in opening the sluice gate at proper times, and more frequently than I was informed it was, but am sure I need not and in conclusion, I beg to express my regret, that so long a time should have elapsed before forwarding this report.

Letter from Reverend J. BRAIDWOOD, to Garrison Surgeon J. SANDERSON, dated 16th January 1858.

MY DEAR DR. SANDERSON,

Your letter of the 11th found me at Palaveram. I regret that I have not been able sooner to send you a reply.

You ask my opinion as to the *Chimney* erected to the north of the Fort. This I will give in a word or two; and it is in accordance with the conviction of others residing on the premises. Some time ago when a favourable view of the beneficial effects of the *Chimney* appeared in the News-papers, I felt disposed to contradict it. Now that I am *asked* for an opinion, I have no hesitation in saying that the *smell*, as often as it comes, is more intolerable and pestiferous than ever I felt it before the *Chimney* was put up.

From the exhalations being *concentrated*, it may be that they come less frequently; but I can testify that, since the *Chimney* was erected, I have been several times more overcome and sickened than during all the five years, that I spent in the adjacent house now occupied by Mrs. Anderson. You are aware that both it and the Mission Premises face the Fort.

It is impossible for any one, night or day, to come under the action of such vapours without injury to health. I remain in my present position because of other considerations that weigh more with me than that of health.

Letter from 1st Lieutenant H. L. PRENDERGAST, Acting Garrison Engineer; to Garrison Surgeon J. SANDERSON, dated Friday 15th.

MY DEAR SANDERSON,

The *Chimney* was completed on the 16th June 1857, on the 3rd August, charcoal was burnt over the drain for 1 day only. On the 15th September charcoal was again burnt in both gratings for 2 or 3 hours. On the 21st September a chatty of charcoal was placed in the chimney and this continued 4 or 5 days for 12 hours. On the 10th December the communication with the drain was cut off. Dr. Kelly asked Rawlins to shut it up as he says on account of "the charcoal obstructing the draft." I would have answered your note before; but my people have all had leave for the feast; and not having been here myself, I could not answer your questions.

Letter from Captain C. C. JOHNSTON, Engineers; to Garrison Surgeon J. SANDERSON, dated 16th January 1858.

MY DEAR SANDERSON,

I think the proposed arrangement a very good one, and unattended with any practical difficulty as far as I can carry it in my eye, the road is sufficiently elevated to allow of the discharge pipe being carried under it.

Letter from W. BARTON WRIGHT, Esq., Manager in the Locomotive Department, Madras Railway; to Garrison Surgeon, J. SANDERSON, dated 18th January 1858.

MY DEAR DR. SANDERSON,

I have somewhat hastily run over the report you handed me this morning (herewith returned).

The plan proposed is quite practicable and I believe that the sole efficient means of draining Black Town is by means similar to that now proposed.

Many of the drains, I *understand*, are below the mean level of the Sea. I have long considered that Steam power is the only Agent by which Madras can be effectually drained. To do

this properly the present system of drainage must be entirely altered; all the drains should be covered, a Cesspool (of sufficient depth to allow of the necessary fall or incline in the Drains and Culverts) should be made near the Sea and an Engine erected to raise the filth a sufficient height to allow it to void into the Sea. Another Engine should be erected *west* of the Town for the purpose of pumping water, and wash out the drains and carry the filth down to the Cesspool. There would of course be many details requiring explanation, which I have not at present time to go into.

The power of Engine required to do the work as referred to in the Report by Mr. Paterson will depend upon the quantity of filth and the height to which it must be lifted.

Care must be exercised in adopting a description of pump that will lift and pass thick filth. The proposed plan of discharge pipe with an elbow joint is good. This will require to be firmly fixed and supported to resist the surf. The proposed plan should be quite independent of the present *Chimney*, if it is carried into effect, the communication between the drain and the *Chimney* should be cut off.

DOCTOR MAYER'S MINUTE.

On the receipt of the Minutes above alluded to, I consulted with Doctor Mayer whose valuable suggestions with my own I beg now to offer for the consideration of Government.

1. We do not think that the raising of the *Chimney* will remove the evil complained of, the odour would still be emitted and although more widely diffused in the atmosphere it would still be liable to be carried, by currents of wind, amongst the buildings in its vicinity.

2. Destroying the offensive gases by fire therefore seems to hold out the only hope of effectually getting rid of this great nuisance, but as sulphureted Hydrogen is not only on inflammable but also an explosive gas when mingled with oxygen in certain proportions this process must be undertaken with care and consideration.

3. The arrangement we propose for the above purpose with the view of destroying the offensive gas and avoiding accident is the following.

4. To close the top of the *Chimney* and to divide it by a septum or partition from the top nearly to the bottom, leaving the partition so arranged that the gases from the drain should mingle with atmospheric air in their passage upwards and downwards to the fire place, for unless the Hydrogen gas is diluted in the proportion of one to 14 parts, it cannot be destroyed by fire with safety.

5. The accompanying Plan will at once explain the mode we propose for destroying the offensive effluvia, and it will be observed that the fire place is to be erected outside of the *Chimney* but connected with it at a distance of about 4 feet, having in the connecting passage three separate partitions of wire gauze interposed so as to prevent the return of any inflamed gas, should such an accident by any possibility occur after the precautions we have taken for its prevention.

6. The *Chimney* will thus only be used for receiving and mixing the gases with the atmospheric air, the air being admitted by openings in the door, and sides of the *Chimney*, each opening having attached to it a Tube of Tin or Zinc at least one foot long and pointing upwards, to prevent the effluvia escaping laterally.

7. The opening from the drain to the *Chimney* will require to be contracted in size, and should be in the ratio of 1 to 20 in reference to the openings for admitting the atmospheric air. By this arrangement the fear of explosion will be effectually obviated as it has been ascertained that the gases do not explode if mingled in proportion not exceeding 1 to 14.

(Signed) J. MAYER.

Letter from Mr. W. PATTERSON; to Doctor VANSOMEREN, Garrison Assistant Surgeon.

SIR,

The more maturely I consider your project, the more practicable does it become, as being the only efficient remedy to cure the offensive and unhealthy effluvia arising from the drain situated at the north-east angle of the glaces, and fortunately every means at the present time is on the spot necessary to carry out this project, Engine, Pump, Pipes, and men to work the Engine. Nor are the works requisite for the working of the Engine attended with any Engineering difficulties, being simply the sinking a Well, the carrying the discharge Pipe across the road, and into the Sea, and a shed to cover the Engine, and protect the party working it from the weather, sun and rain.

One of the Engines lately received from England for the Department Public Works would answer admirably to carry out this desirable purpose, the Engine would require a platform five feet square to stand upon, this platform would be placed upon the ground owing to the height of the road above the level of the Sea, the other points to be attended to are viz., a Well at such a distance from the Chimney as not to injure its foundation, the Well to be of sufficient depth for water to rise in it (which is absolutely necessary) to mix with the filth from the drain, to admit of the pumps working, and also to increase the flow of the filth along the discharge Pipe, a channel from the drain with an incline to allow the filth to flow into the Well and mix with the water, the discharge Pipe to be carried across the road at a depth of six inches below its level, then carried along the top of the present Tunnel, extended further out by means of a groin, or on the top of screw piles. Not having the means or the time requisite to take levels to correctly ascertain what inclination could be given to the discharge Pipe, but assuming that a depth of two fathoms is to be obtained about 25 yards from where a boat floats and 35 yards from the mouth of the Well, and that the level of the road is 10 feet above the level of the Sea, this would allow an incline of two inches to each yard, ample.

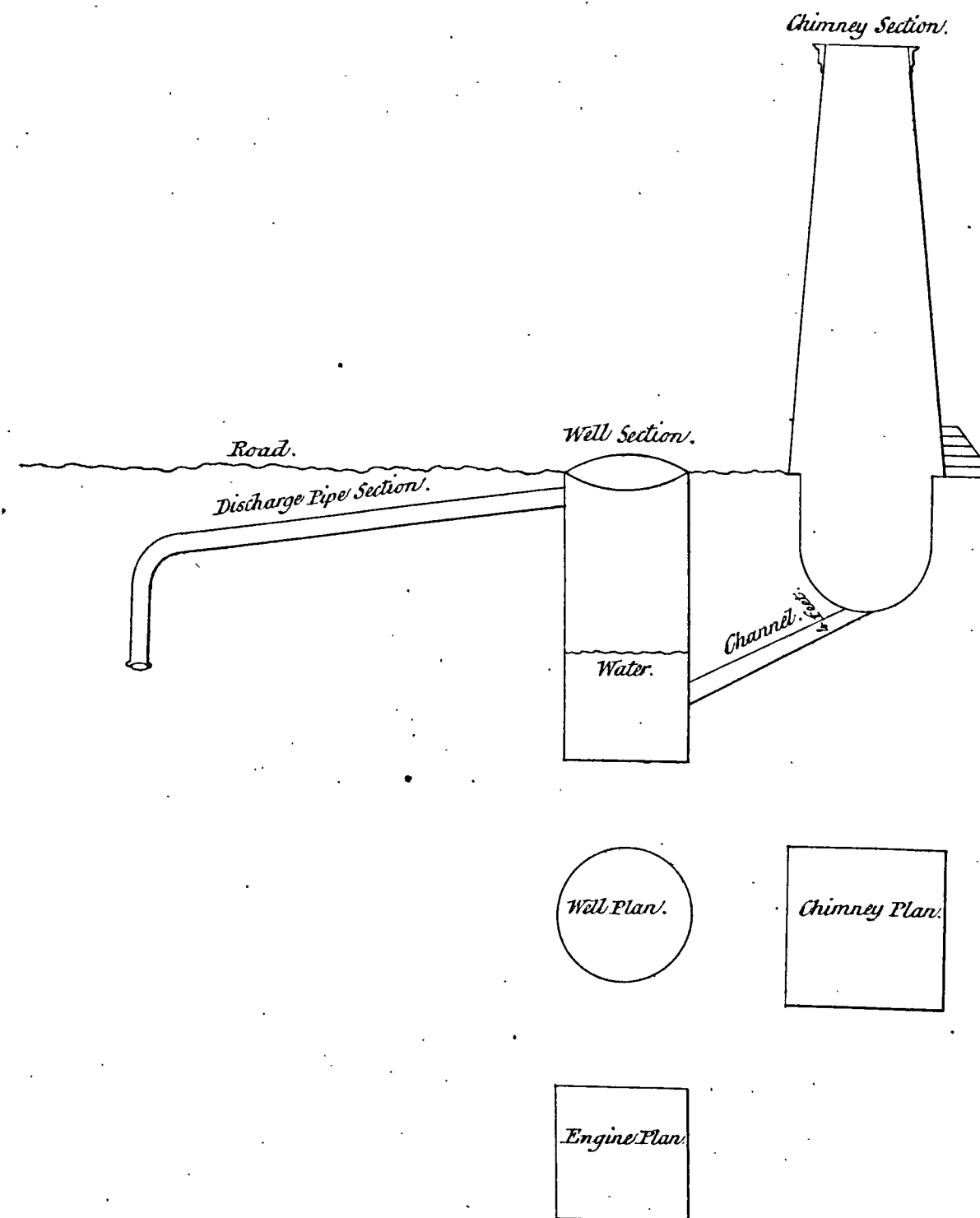
And as it would not answer to have the mouth of the discharge Pipe open, and perpendicular to the roads, nor submerged, as the flow of water from the waves into the mouth of the discharge pipe, would retard the flow of the filth from the discharge Pipe, and unless some mode is adopted to carry the filth downwards into the Sea, without the wind or atmosphere being able to act upon would only be a partial remedy, as we would still be regaled with puffs of this effluvia, to obviate this entirely a knee joint should be placed at the extreme end of the discharge Pipe, vertical to the action of the waves.

The cost of working one of these Engines six Horse power would be very trifling, and would only require to be worked twice a day morning and evening, besides looking at the working of one of these Engines at Madras the Head Quarters of the Public Works Department in another point of view it would be a most desirable object I should imagine, to the Public Works Department. These Engines, I should consider, are for the purpose of draining foundations of bridges, &c., and it would be a great desideratum to many who will have these Engines under their charge to obtain a practical knowledge of their working from Mr. Tomkinson, Engineer Department Public Works.

Judging others as I do myself, I should consider this knowledge to be a boon at which many in the Department Public Works would only be too glad to avail themselves of, and although to some it might be a little inconvenient at first, the satisfaction they would afterwards feel when they had mastered this knowledge, would more than compensate for any little feeling of annoyance.

Should your project Sir, meet the approval of Government, which it deserves, the most qualified man for carrying it out is Mr. Tomkinson, Engineer Department Public Works from the same Manufactory in which these Engines were made acquainted with all recent improvements, and of very varied and practical experience.

The well to be enclosed at top to prevent effluvia from rising.



Fort Saint George, Public Works Consultation of 20th April 1858.

No. 57.

ORDER THEREON, No. 697; dated 16th April 1858.

Ordered that the above letter, together with its enclosures, be communicated to the Chief Engineer for report, and in view to the suggestions contained in the papers being taken into consideration when framing the estimates ordered in Extract Minutes of Consultation 11th December 1857, No. 2305, for the construction of Privies for the use of the Clerks of the office establishments, and for flushing the drains in the Fort.

(Signed) H. FORBES,
Acting Secretary to Government.

No. 1009

Don Major's Office

From
The Town Major
Fort Saint George
To
The Secretary to Government
Military Department
Fort Saint George

22

I have the honor to forward for
submision to Government the accom-
-panying Report from Surgeon A.
Sanderson, Garrison Surgeon of Fort
Saint George, on the causes of the offen-
-sive smells so frequently prevalent
in Fort Saint George, and its vicinity,
and offering some suggestions for
their removal, or palliation, and am
directed to offer the Right Honorable
the Governor's recommendation that
the Report should be taken into early
consideration. -

The papers noted in the
margin accompany the Garrison
Surgeon's Report.

I have the honor to be

Dr.
Hans & Hart Obergfarsant

W. Thompson

Town & Mayor

Fort Saint George
12th March 1858.

*Papierby
L. A.*

5- On the receipt of the Minutes above alluded to I consulted with Dr. Meyer whose valuable suggestions with my own I beg now to offer for the consideration of Government.

1 We do not think that the raising of the chimney will remove the evil complained of, the odour would still be emitted and although more widely diffused in the atmosphere it would still be liable to be carried by currents of wind amongst the buildings in its vicinity.

2 Destroying the offensive gas by fire therefore seems to hold out the only hope of effectually getting rid of this great nuisance, but as ~~as~~ Sulphureted Hydrogen is not only ~~on~~ inflammable but also an explosive gas when mingled with oxygen in certain proportions this process must be undertaken with care and consideration.

3 The arrangement we propose for the above purpose with the view of destroying the offensive gas and avoiding accident is the following.

4 To close the top of the chimney and to divide it by a septum or partition from ~~near~~ the top to the bottom having the partition so arranged that the Gases from the Drain should mingle with atmospheric air in their passage upwards and downwards to the fire place, for unless the Hydrogen gas is diluted in the proportion of ¹⁴ one to ~~the~~ parts, it cannot be destroyed by fire with safety.

5 The accompanying plan will at once explain the mode we propose for destroying the offensive effluvia, and it will be observed that

that the fire place is to be erected outside of the chimney but connected with it at a distance of about 4 feet having in the connecting passage three separate partitions of wire gauze interposed so as to prevent the return of any inflamed gas, should such an accident by any possibility occur after the precautions we have taken for its prevention

6 The Chimney will thus only be used for receiving and mixing the gases with the atmospheric air, the air being admitted by openings in the door and sides of the chimney, each opening having attached to it a tube of Tin or Zinc at least one foot long and pointing upwards, to prevent the effluvia escaping laterally.

7 The opening from the drain to the chimney will require to be contracted in size, and should be in the ratio of 1 to 20 in reference to the openings for admitting the atmospheric air. By this arrangement the fear of explosion will be effectually obviated as it has been ascertained that the gases do not explode if mingled in proportion ^{not} exceeding 1 to 14.

Wm. H. P.

To Doctor Vandermere
Sir

The more maturely I consider your proposal the more practicable does it become, as being the only efficient remedy to cure the offensive and unhealthy effluvia arising from the Drain situated at the North East angle of the Glacis. And fortunately every means at the present time, in the Port of Newbury to carry out this project. Engine, Pump, Pipes, and Men to work the Engine. Nor are the works requiring for the working of the Engine attended with any Engineering difficulties, being simply the sinking a well, the carrying the discharge pipe across the road, and into the Drain, and a shed to cover the Engine, and protect the party working it from the weather, Sun and Rain.

The Engine lately received from England for the Dept^y Public Works would answer admirably to carry out this desirable purpose. The Engine would require a platform five feet square to stand upon, this platform would be placed upon the ground rising to the height of the road above the level of the Sea. The other points to be attended to are viz I tell at such a distance from the Chimney as not to injure premises.

Some time ago when a
favourable view of the bene-
ficial effects of the Chim-
ney ~~was~~ appeared in the News-
papers, I felt disposed to
contradict it. Now that
I have asked for an opinion,
I have no hesitation in say-
ing that the smell is as often
as it comes, so more intolerable
and pestiferous than ever
I felt it before the chimney
was put up.

From the exhalations
being concentrated, it may
be that they come less
frequently, but I can

19
testify that since the
Chimney was erected, I
have been several times
more overcome and
sickened than during
all the five years, that I
spent in the adjacent house
now occupied by Mrs. Ander-
son. You are aware that
both it and the Mission Pres-
byterian face the Fort.

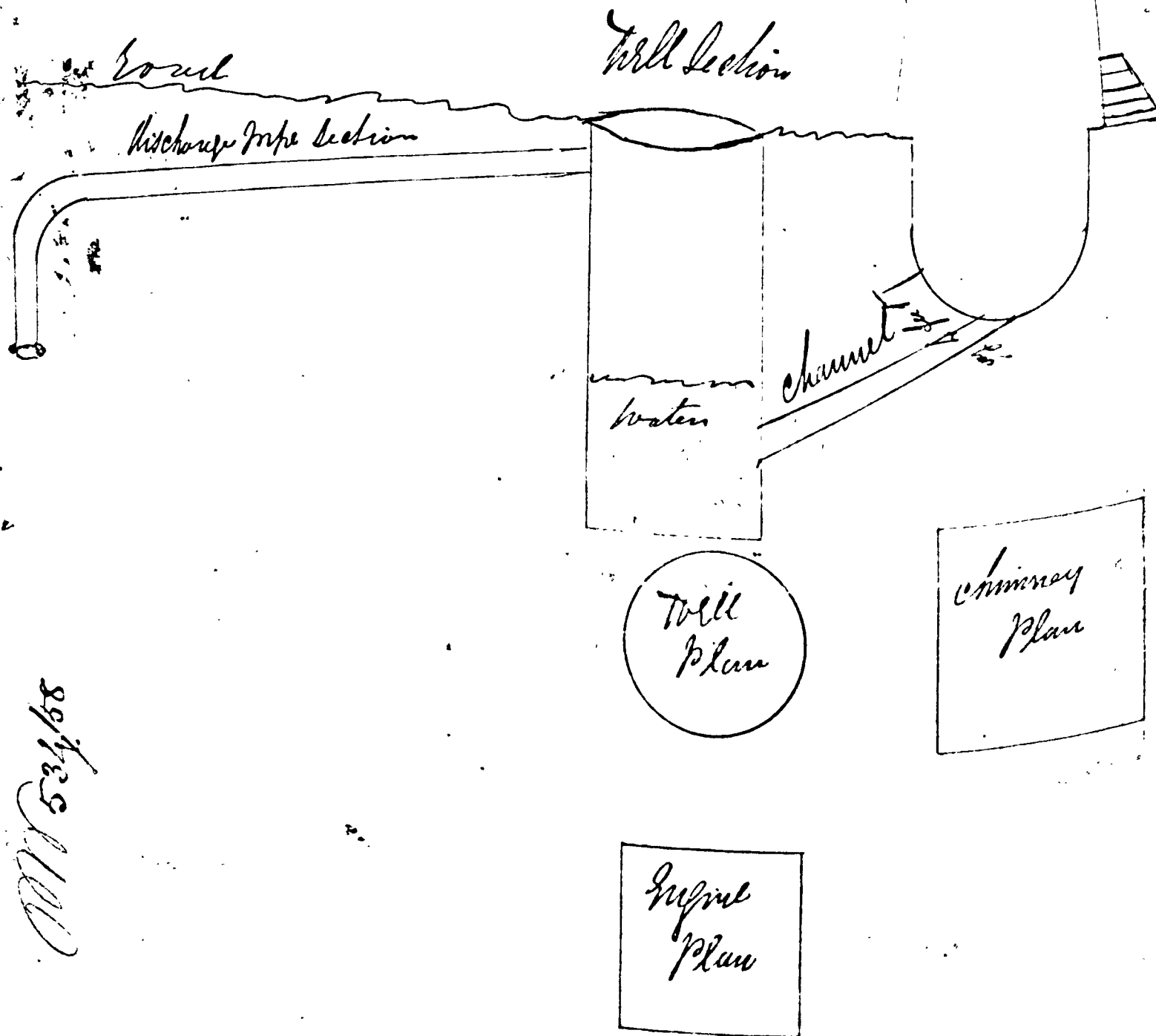
It is impossible for
any one, night or day, to
come under the action of
such vapours without
injuring health. I demand

The Well is to be enclosed at top to prevent effluvia from rising.

To: James Henderson Esq.

Genl. Patton

Chimney Section



MS 534/68

171
Sas. Fred. Church

Mr. James Henderson Esq.

Dear Sir, I have the honor to acknowledge the receipt of your letter of the 11th inst. and in reply to inform you that the same has been forwarded to the proper authorities for their consideration.

Your letter of the 11th inst. found me at Palaveram. I regret that I have not been able sooner to send you a reply.

You ask my opinion as to the chimney erected to the north of the Fort. This I will give in a word or two; and it is in accordance with the Committee of others residing on the premises.

in my present position less
of other considerations that
weight more with me than that



My dear Sir,
I have the honor to acknowledge
the receipt of your letter of the 16th
inst. and in reply to inform you
that the same has been forwarded
to the proper authorities for their
consideration.



of health.
I am, Sir, very respectfully,
your most Obedt. Servt.
John Braidwood

My dear Sanderson. 21A

The chimney was
completed on the 16th June
1857. on the 3rd August, charcoal
was burnt over the drain
for 1 day only. On the
15th Sept^r charcoal was again
burnt in both gratings for
2 or 3 hours. On the 21st
Sept^r a quantity of charcoal
was placed in the chimney
and this continued for 5

Dr. Sanderson

Gannet Bay

January 16th 1881 2517

My dear Sanderson.

I think the proposed
arrangement a very good one,
& unattended with any
practical difficulty. As far
as I can carry out my
eye, the work is sufficient
described below of the
discharge pipe being carried
under it. If my air

W. H. H. H. H.

Mean Level of the Sea.

There are many reasons that
Steam power is the only agent by
which drainage can be effectually
achieved. If we thus properly
the present system of drainage
must be entirely altered, all the
drains should be covered, a deep-
pool of sufficient depth to allow
of the necessary fall or incline in
the drains & Culverts should be
made near the sea, and an engine
erected to raise the silt to a sufficient
height to allow it to void into the
Sea. Another engine should be

James
John W. Miller
James G. Smith
James G. Smith
James G. Smith

erected West of the Farm for the
purpose of pumping water & waste
over the drains and carry the silt
down to the deep pool. There would
of course be many details requiring
Explanation, which I have not at
present time to go into.

The power of engine required to
do the work as referred to in the
Report by Mr. Patterson will depend
upon the quantity of silt and the
height to which it must be lifted.

Care must be exercised in
selecting a description of Pump
that will lift and pass thick
silt.

The proposed Plan of Discharge
with an Union joint is good.
This will require to be firmly fixed
& supported to resist the Prof.

The proposed Plan should be made
independent of the present Ministry,
if it is carried into effect, the
Communication between the Prince
and the Ministry should be cut
off.

Believe me,
Very truly yours,
W. M. M. M.

J. M. M. M. Sep. 12. Q.

on 12. 1842
James M. M. M.

To
Capt. H. Roberts
Military Secretary
to the Right Honble the Governor

Sir -
1. In obedience to the
instructions conveyed in your
letter of the 6th ultimo by desire
of the Right Honorable the Governor
relative to the offensive disorders
experienced and complained of
by many of the residents in Fort
St. George, and desiring me to
institute an inquiry into the cause
of them, as well as to propose
remedial measures.

2. I do myself the honor to
offer the following observations and
to beg of you to lay them before his
Excellency.

3. Previous however to receiving from
Communication and in consequence
of a desire expressed by the Right
Honble the Governor personally to me
on the subject, referred to in your
letter. I had in Company with
the Garrison Agent, Surgeon and
Colonel Haines, Military Secretary
to His Excellency the Commander
in Chief, visited all the places
brought under my observation by
the former Gentleman: A resident
in the Fort.

4. Colonel Haines afforded
me much information of a practical
nature, on several points immedi-
ately connected with the subject
under inquiry: from the local
knowledge he possessed of
Aldershot Camp, where he had
been stationed for two years pre-
vious to his coming to India, and
where measures had been adopted
both for the preventing of a
severe punishment.

dissemination and the neutralizing of the offensive and noxious vapours incidental to a camp. Containing so many human beings.

5. I have also on several other occasions, inspected the localities, and through the kindness of Colonel Stanley Commanding H.M. 4th Regt was enabled to consult with the Quarter Master of that Corps, as well as visit with him the "Latrine" attached to the Barracks occupied by the Men of that Regiment.

6. This Officer as well as the Colonel has been stationed at Aldershot previous to coming to India and had witnessed the happiest results from the system adopted of neutralizing the same kind of noxious and fetid vapours that were found to emanate from the Prisons similar to the one inspected by us.

7. With the view also of obtaining correct information relative to the usefulness or otherwise of the Chimney erected over the Great Drain, the outlet of which opens into the Sea, to the North of the Fort, and from which the most undeniably fetid odours emanate: I thought it necessary to address the Revd Mr Brandwood who has been residing along with several others for some continuous years on the Esplanade of Black Town as well as the Superintendent of the Sailors Home.

8. I was fully aware of the Complaints made by many of the residents of the Fort on the same point. I therefore did not consider it necessary to seek for further information from them.

9. At the suggestion of the

Witnessed & sworn to
who was present

Garrison Assistant Surgeon, 35
Conductor Patterson was consulted on the remedial part of the subject, and I thought it advisable to ask Professor Mayer's opinion on the Construction of the Chimney, in a scientific point of view with reference to its usefulness in both neutralizing, and aiding in the dispersing of the noxious gases.

10. I have also carefully perused the able report of the Committee appointed in 1852 to examine and report upon a plan submitted by Capt. Boulderson for cleaning the drains of Black Town by means of sea water pumped up by a Steam Engine; as also the report of a Committee convened by his Lordship's order in the month of March last year.

11. With the information obtained from such sources I have no hesitation in stating, that the Complaints made by the residents in the Fort as well as by those on the Esplanade of Black Town are strictly correct.

12. The Chief source of the fetid and noxious odours complained of by the Fort residents and others is from the Drain, that opens into the Sea, to the North of the Fort.

This might in my opinion be modified to some extent by greater care being practised, and a more punctual system of opening the sluice gates being adopted; not allowing them to be shut for forty eight continuous hours, as I found on inquiry they had been, and then only one sluice gate being opened instead of both - is that, the Contents of the drain flowed out more slowly than it would otherwise have done had both been opened.

13. This simple fact tends very much

much to favor the formation of the noxious and fetid gas, which is immediately formed on the sewage becoming exposed to the atmosphere & from the stones and daily accumulation of sand at the mouth of the sewer, an additional appropriation is formed to its flowing, rapidly into the sea.

14. To remedy this state of matters, the mouth of the Drain should be carefully watched daily; both sluice gates should be opened twice a day, when the tide is advancing, and the Sewer should be prevented, accumulating; as it had done to some considerable extent when I examined it.

But in offering these suggestions I feel that they merely tend to palliate the evil, and that too, to a very small extent.

15. I would therefore beg to call his Lordship's attention, to the practical nature of the letter accompanying this, written by Conductor Patterson, with a rough sketch of the plan he proposes for obviating this mighty evil.

Appended is also a drawing, showing more clearly the Conductors views; ably executed at the Garrison Engineers Office.

16. The plan proposed, I am enabled to state, in the Authority of Captain Johnston, Consulting Engineer of Railways, and Mr. Wright, Superintendent of Locomotives, to the Madras Railway Company; is based on sound principles.

17. The same principle is also distinctly recommended by the Committee appointed in 1852; already alluded to. At Page 4 Para 13 of their Report, the Committee say, "It has been satisfactorily proved by H. M. Sanatory Commissioners, that the most perfect, as well as the most economical system is to lead the sewer down, and then

then if necessary, pump up the contents for discharge; and it is agreed that the cost, of sufficient pumping applied in this way, is greatly below that of sufficient flushing through the same districts." 18. With reference to the usefulness of the "Chimney", the impression of those residing within its influence is adverse to its beneficial effects; as his Lordship will perceive on perusal of Mr. Broadwoods letter appended - and which is confirmed by those who have, and are residing, in the Fort.

19. The Garrison Assistant Engineer's note on the subject (which is also appended) I have no doubt, will convey better than any words from me can express the opinion the originator himself of the building has had, of its usefulness.

20. In a scientific point of view no doubt exists in my mind, as to its inability in remedying an evil of such magnitude.

21. In Professor Lazenby's Opinion, without the aid of fire it can do little good and with its aid; it can never neutralize sufficiently the fetid gases formed in the drain: for, from the surfaces only, are these gases formed while it remains there.

22. If this be correct, how can an outlet of this kind relieve the mass of fluid filth, which is perhaps three feet in depth, full of the elements from which these fetid gases are formed and ready to enter into still further decomposition in coming into contact with the atmosphere.

23. With these remarks I would beg to call his Lordship's attention to my prayer, all minute

on the subject, which is also
appended and to express a hope
that Conducta Pattersons plan,
of having, a well formed, to
receive all the contents of the
drain at no great distance from
the Beach. A small Steam
Engine placed near to it, to
pump it into the Piles which she
proposes should be carried to
a certain distance into the sea
on screw piles, be adopted, as
the surest and most efficacious
remedy.

24. With reference to the several
Privies within the Fort, which I
found to be justly considered
as a nuisance by those living
close to them. I would beg to
propose that the system of using
Charcoal, in a finely powdered
state be adopted in a similar
way to what has been done in
like places at Aldershot. That
plan consisted in having a bag
of finely powdered Peat Charcoal,
always in the buildings, and at
stated hours of the day (every 2nd
or 3rd hour) a small quantity of
it was sprinkled over the surface
of the contents of the vessels made
use of by the men. This might
easily be done here, by the same
rules being established at each
of these public places.

25. There may be some dif-
ficulty in getting Peat Charcoal,
tho I have no doubt, it might
be brought from the Keigherries;
But the ordinary Charcoal might
be used in the way proposed.

26. The present system of
Chimneying the walls and
flooring of the houses, should
also be continued and a greater
amount of care might be ad-
vantageously bestowed on the
places, where the Urinary Tubs
are

are placed, to prevent any
miasm surface being made,
which will hold any portion of
the urine and thereby favor its
decomposition by exposure to the
sun.

27. The Tubs made use of should,
in my opinion have each a lid,
made to fit closely, so that when
they are hoisted at night on to the
Cart, as little of the smell might
escape as possible, and before
doing so, Charcoal should be
sprinkled over the surface of
the contents. Great care should
also be bestowed on the selection
of the proper part of the Beach,
where the Tubs are to be emptied.
On no account should they be
allowed to be emptied on the
side of the Fort from whence
the wind is blowing. At present
I am induced, that there is one
place only, selected for this
purpose, and that quite inap-
propriate.

28. In Conclusion I would
respectfully beg to call his
Lordships attention to the report
of the Committee appointed by his
Lordship in March last. It con-
tains many valuable suggestions
on the several points within the Fort
connected with this enquiry and
therefore renders it unnecessary
for me to say more, than to
allude to them.

29. Had this report not been
laid before his Lordship I
should have considered it my
duty to have called his attention
to the necessity that exists at
present of flushing the great
Drain in the Fort, more frequently,
to the covering up of the open
drain which is found to exist
on the North side of the Fort,
when the sluice gate is shut.

A brain containing knowledge
to the depth of at least three
feet; to a greater amount of
care in opening the sluice
gate at proper times, and more
frequently than I was informed
it was - but I am sure I need
not - and in conclusion I beg
to express my regret, that so
long a time should have elapsed
before forwarding this report -

I have the honor to be

Sir

Your Most Obedt Servt

Wm. A. M.

Garrison, N. Y.

Madison
6 February 1858

MS. A. 9. 2. 334/58.

711 and 18 1/2 Oct 53 48

207.
1838
By Law 26th April
at 534.

at 534.
at 534.
at 534.
at 534.

at 534.
at 534.
at 534.

at 534.
at 534.
at 534.

at 534.
at 534.
at 534.

at 534.

at 534.

at 534.

at 534.

at 534.

at 534.

at 534.

at 534.

at 534.

at 534.

at 534.

at 534.

at 534.

at 534.

at 534.

at 534.