Local & Munl. (189) Department.

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[Despatch Abstract.]

Sanitation

Communicating to the Municipal Council of Coïmbatore the report of the Sanitary Commissioner on the unhealthiness of Coïmbatore and requesting it to report what steps it proposes to take to carry out the recommendations of the Sanitary Commissioner.

BACK PAPERS.

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

FURTHER PAPERS.

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Government {1898} of Madras.

LOCAL AND MUNICIPAL.

Recd. } 1898. *Enclosures*

Regd. } *Spare copies*

G.O., No. 1571 M., 7th September 1898.

SEPTEMBER.

Sanitation.

Communicating to the Municipal Council of Ootacamund the report of the Sanitary Commissioner on the unhealthiness of Ootacamund, and requesting it to report what steps it proposes to take to carry out the recommendations of that officer.

GOVERNMENT OF MADRAS.

LOCAL AND MUNICIPAL DEPARTMENT.

Read—the following paper:—

From Surgeon-Major H. THOMSON, M.B., D.P.H., Acting Sanitary Commissioner for Madras, to the Secretary to Government, Local and Municipal Department, dated Fort St. George, 22nd August 1898, No. 1831-S.

I have the honour to forward herewith my report upon the unhealthiness of Ootacamund.

Enclosure.

Report upon the unhealthiness of Ootacamund.

On receipt of a wire from Government, dated 17th June 1898, directing me to proceed to Ootacamund and to advise on the sanitary condition of that station, I left Madras on the evening of the 19th for this purpose. On the following afternoon I arrived at Ootacamund. I met the chief municipal and the several medical officers in the station, and from information received from them regarding the prevalence of enteric fever (a list of fever cases treated by each medical officer having been drawn up for me), the situation of the infected houses and sources of water-supply, &c., I was greatly assisted in forming a general idea of the several causes at work in producing the unhealthiness of the station.

2. To give an accurate answer to the question "What is the cause of the present unhealthiness in the station of Ootacamund?" is impossible without the aid of a bacteriological laboratory, where examinations of water, milk and air could be made. It is only possible for me to put together the data which were likely to have caused or assisted in causing the outbreak of fever in some places in Ootacamund.

3. That fever prevails in a high degree in some of the native bazaars, is known by the municipal mortality returns, but I could get no definite information regarding the amount and nature of sickness affecting the population of the bazaars. The medical men have had no "calls" to treat cases in the bazaars and know very little of the actual state of the health of the people. A death is reported as from fever or any other disease to the sanitary inspector, who reports to the municipal registrar who registers it. The death may have been from any disease; the word fever is so vague, all acute diseases being accompanied by a certain amount of fever. The person becomes ill and either recovers or dies, when his death is reported, no medical aid having been asked for.

4. Main Bazaar, Mettucherry and Kandal are the localities shown in the municipal mortality returns as having the greatest increase in the number of deaths, but generally over the whole bazaars (native quarters) there is an increase in the death-rate under the heading "fever" during the months of February, March, April and May 1898, falling slightly in June. The cause for this rise in the mortality during the months February to June 1898 is, I believe, the insanitary conditions amid which the people live. The effect of these conditions which previously lay dormant was brought into action by the following circumstances:—

(1) Scarcity of drinking-water supply due to drought.
(2) Lowering of the water level of the lake.
(3) Excavation of the sewage silt from the lake in close proximity to the native quarters most affected.
(4) Fly pest—famous carriers of disease—which prevailed during these months.

5. *Drainage.*—The drainage of the Main Bazaar is most objectionable in that it is only a surface drainage, open to the air, disconnected with the houses—a receptacle for material which it was never intended for. Bad as this system is, it is rendered still worse by a vertical iron grating intercepting between the drains and the main sewer at the lower levels, the grating constantly choking and preventing the onward flow of the drain contents which back up and overflow—a foul stinking mess. The thorough drainage with house connection of the bazaars, I understand, is to be carried out soon. There is therefore no need to comment on it. Only it will take some time and the change in position from vertical to horizontal of the iron gratings can easily and quickly be effected with, I think, improvements in the flow of the drain contents.

6. *Ventilation of the main sewer.*—Several of the manholes are only closed by an open grating which is supposed to be all that is necessary for the ventilation of the sewer. This is quite right, but it is conducive to discomfort to passers-by and to dishealth to those who live in their neighbourhood. Several of these manholes are situated near and alongside the lower bazaar road. The sewer should be ventilated by means of a pipe at least 12 feet in height carrying the foul gases above the level of the neighbouring houses and the manholes should be made air-tight.

7. Kandal bazaar is partially drained by open surface drains as in the Main Bazaar, which discharge into the Sigur stream. Other localities, such as Mettucherry, houses near Charing Cross market, and lower parts of Agraharam, Kodapamund, Old Ooty, Vanarpett, have absolutely no drainage system, the sewage from these places finding its way naturally into the Old Ooty stream which discharges into the lake near Erin cottage. This is a mistake as it pollutes the lake. The sewage from these places should be made to enter the main sewer, and this can only be done by a drainage system for the whole town. Mettucherry, an overcrowded, unhealthy locality, should certainly be at once drained.

8. A sewage farm should be opened on the ground below the old Mill to receive the outflow of the main sewer and the sewage of Kandal. This would prevent the fouling of the Sigur stream and absorb gases arising from decomposing sewage which poisons the air about this place and may possibly be a cause for the unhealthiness prevailing in Kandal, as it is a large milk-supplying centre and milk absorbs gases with great ease and is a capital growing medium for all forms of germs of disease.

9. *Dwelling houses.*—These generally are badly constructed, ventilated and drained, in some localities in Main Bazaar greatly overcrowded, and should be removed.

(*a*) Karupanna Pillai street—lane running behind houses 3, 4, 5, and 6, Subaraya street, and No. 35, backyard of Aboo Sait street.

(*b*) Another confined lane which should be opened up.

Frontage.—Karupanna Pillai street Nos. 5 to 13 and Aboo Sait street Nos. 16 to 27 back of Nos. 8, 9 and 10 Karupanna Pillai street, very bad.

Few of the houses have any sub-soil drainage; the floors, being earthern with no ventilating air space or damp-proof flooring, permit of the entrance of ground air when the rooms become heated. This usually happens at night when the occupants are crowded together in close rooms for the sake of warmth during the hours of sleep and is a most potent factor in predisposing the person to disease. The places mentioned above where overcrowding exists should be opened up by the removal of some of the wretched structures called houses to allow of the perflation of air and light and so do away with the existing foul-smelling, badly-ventilated lanes and narrow alleys which cannot but be poisonous to the unfortunates living in them. This can be effected under Municipal Act, section 187. The council have the power to enforce the construction of proper buildings, &c., and they are not exercising that power as they ought

to. Houses are being erected which do not comply with the requirements of section 180, the fault therefore lying with the council for permitting them to be erected, such as, a number of houses in Mettucherry, Syed Hussain's new house, Charcoal street, Beef Butcher street Nos. 31, 32, 33 and a house below these, Usman Sahib.

10. *Water-supply.*—The northern side of the lake where all the bazaars are situated is supplied with water by pipe from the Marlimund reservoir. I noticed in the bazaar that several water standards were erected near the open surface drains and public latrines. Some of these drains being choked were full of stinking sewage. During March and April the water-supply from Marlimund was intermittent which must necessarily have allowed absorption of foul gases from the open drains into the supply water pipes, the water standards being often near the drains. This should be seen to and the standards moved from the proximity of drains and latrines. Some localities, Kodapamund, &c., are not supplied with pipe water, but depend on streams or shallow surface wells. Owing to the want of drainage and the hilly nature of the station, the overcrowded collections of native houses where they exist have so fouled their surroundings that in my opinion all the streams are polluted and very few of the wells are free from filth contamination through soakage.

11. The purity of the Ootacamund water-supply is now under the consideration of Government. Specimens of water from several frequented sources of supply have been sent for bacteriological examination, the result of which will show whether contamination of a dangerous nature exists. The supply from the reservoirs of Marlimund and Dodabetta have been frequently reported on.

12. *Marlimund* is an unsuitable impounding basin on account of the presence of private cultivation and human habitations within its catchment area, the existence of considerable peaty matter in its bed and its unprotected state permitting of free trespass. These defects can be remedied doubtless at great expense. Filter beds should be provided for this reservoir.

13. *Dodabetta* is a better source of water-supply. The jungle in its catchment area should be thinned and private property bought up. Filter beds should be provided.

14. *Wells* are of the nature known as shallow surface wells and as the houses are built on the steep slopes of the hill sides, soakage from the houses to those below is much facilitated. In the majority of cases, the wells are unprotected and water is raised by a rope and bucket. The position of these wells in a number of cases I inspected is most dangerous from their proximity to houses and latrines. In the bazaars, the conditions are still worse, soakage from houses and drains occurring everywhere. Under section 228, the council has the power to deal with any well that is considered dangerous. Numbers of such wells exist in the bazaars which in my opinion should be filled up. Under sections 216, 224 the council has the power to prevent the fouling of houses and their surroundings which ultimately contaminate the water in these wells. Under section 180, the council has the power to enforce construction of properly built wells.

15. *Dhobies* have a most abominable practice of washing soiled linen in the foul streams at Kodapamund, Vannarpett and in the natural drains carrying off the sewage from the Mettucherry and Kandal valleys. Under section 188, the council has the power to prohibit dhobies using the foul water of such places as Kandal, Mettucherry, &c., for the washing of linen. Properly constructed washing platforms supplied with tap water should be provided and their use enforced. Buildings for the storage of soiled and clean linen with laundry arrangements should also be provided and only such dhobies as are licensed should be permitted to wash soiled clothing.

16. *Milk-supply.*—The milk-supply of the station is obtained from—

(*a*) three dairies kept by Europeans;
(*b*) a number of cow-sheds kept by native owners chiefly located in Kandal, Kodapamund, Pudumund and Old Ooty.

17. *Dairies.*—They are not built nor are they maintained on strict sanitary principles. The supply of milk to the dairies is obtained partly from cattle kept by the dairy owner, but largely during the season from the native owner of cow-sheds.

The European residents obtain their milk chiefly from these dairies, the consumers being in a state of happy ignorance of the source and conditions under which the milk they drink is supplied to them, believing that it is the produce of the dairy.

18. *Cow-sheds*, though licensed, are constructed under no sanitary principles; they are invariably overcrowded, badly lighted, ventilated and drained, or not at all, and are kept in an extremely filthy condition. No regulations for the inspection of the cattle housed in these sheds are enforced by the municipality. Native cow owners milk their cows on their premises, the milk being stored there in open chatties until time of distribution, then distributed in tin cans and bottles. This milk is taken to the particular dairy or house, any surplus milk left being conveyed to the bazaar and sold or made into butter. The milk is open to pollution in many ways:—

(*a*) dirty water used for cleaning the vessels or adulterating the milk,
(*b*) dirty, badly ventilated and drained sheds in which the cows are housed and milked,
(*c*) owners live under the same roof as the cattle,
(*d*) temporary storage of butter or milk in the dwelling room until disposed of,
(*e*) dirty unprotected vessels and means by which milk is conveyed to its destination.

All these are likely means of contamination, more especially if disease is present in the family of the cow-shed owner. For instance, fever has been very prevalent in Kandal which is a large milk-producing centre and how far this may be a cause for the unhealthiness of Ootacamund is difficult to prove. To remedy the notoriously insanitary conditions under which milk is drawn and sold to the general public, I would recommend that the Municipal Act, section 188, be revised and strengthened by the issue of a bye-law enforcing all cow-owners who offer the milk from their cows for sale, no matter how many head they possess, to be licensed and that their cow-sheds be built according to plans issued by the Sanitary Board or approved by the Municipal Council. That regulations be made for the inspection of cattle in cow-sheds, for prescribing and regulating the lighting, ventilating, cleansing, drainage and water-supply of cow-sheds and dairies.

19. *Bake-houses.*—In the bazaars there are several unlicensed bakeries. The following I inspected:—

Ram Pillai—Kandal bazaar.
Imam Khan—Bakehouse No. 34.
Syed Husain—41, Charcoal street.
Syed Karim—No. 9, Mosque street.

They were in a most insanitary state, used as overcrowded dwelling houses, the rolling benches being used as sleeping cots. These men have been reported, fined by Magistrate, and treat the penalty with contempt by continuing to follow their calling.

Licensed Bake-houses.—I Inspected:—

Dais—Mettucherry. Very insanitary. Should be discontinued as a bakery.
Bastian—Commercial road.
Heath—Agraharam.

Their bake-houses could be greatly improved by a little more attention to cleanliness and drainage of the premises and its surroundings. The outturn of bread from these houses is large and a certain amount of control over their sanitary arrangements should be undertaken by the municipality by causing regular inspection by a competent inspector.

20. *Aerated water manufactories.*—Those kept by Europeans (Messrs. Spencer & Co., Oakes & Co., and Smith & Co.) are clean and in a good sanitary state. Charcoal filters are used (Spencer, spongy iron) and the water is not boiled: Pasteur or Berkfield filters are much to be preferred and are more reliable.

Those kept by natives (Mahomed Sahib & Co., Esuf Sait's lines, Commercial Road, and C. Ponnambalam Moodaliar, Agraharam) are dirty and the surroundings and building are dirty and unsuited for the location of machinery for the manufacture of ærated water; they should have their license withdrawn.

21. *Slaughter-houses.*—Beef and mutton slaughter-houses are both clean and without smell. Cattle pens should be provided for both; at present there is no provision made for cattle being kept prior to their slaughter. There is no place for the slaughter of pigs, which is a want that should be supplied.

22. I would strongly recommend that a bye-law be framed by the municipal council necessitating the regular inspection by a competent inspector under the order of the Civil Surgeon of all animals previous to their being slaughtered, of slaughter-houses, cow-sheds, dairies, bake-houses, ærated water manufactories, hotels, and chattrams (native lodging houses) that a set of rules be framed and enforced, setting forth the sanitary principles to be observed in their construction and maintenance and that the requirements be rigidly adhered to by the council.

23. *Excrement and Refuse Removal—Native Community.*—Night-soil is disposed of chiefly by means of the Pail system of conservancy from public latrines and in some instances from private latrines where they exist. No dry earth is used in any of the latrines, a large number of them being of an old pattern in an unclean and insanitary state. The majority of the houses have no latrines, the open surface drains, washing platforms in the backyards or the ground surface within a small enclosure serving the purpose. It is needless to say that this allows of a great deal of soakage. The municipality, by means of iron night-soil carts, collect and remove the excreta to the depot at Tittacul, 3 miles distant, where it is buried in shallow trenches. Excrement is also disposed of partly by the sewer system (*i.e.*, from two public latrines on the water system and by means of the open drains in the bazaar). House and street refuse is removed in municipal rubbish carts and buried or burnt at the Tittacul depot.

24. *European Community.*—Houses are mostly provided with latrine accommodation by the house-owner. The latrine is chiefly for the use of the servants connected with the house and as such is seldom or never inspected by the house-holder. Many of these latrines are badly built, unprovided with impermiable floors or drains permitting of soakage. The latrines are cleaned by contract with the municipality or privately by the tenant.

25. *Defects and Remedies—Public Latrines.*—The old pattern, of which there are a large number with broken irregular floors, cramped space, bad ventilation, should be replaced by more modern patterns. The use of dry earth is absolutely necessary; otherwise the latrines should be connected with the sewer and flushed with water.

There are some inhabited localities where public latrine accommodation is much wanted, *i.e.*, main bazaar, &c.

26. *Private Latrines.*—Their possession of a good type with proper drainage should be insisted on under section 207 by the council for both Native and European houses.

27. *Night-soil and Rubbish Depot.*—The disposal by burial in this locality is objectionable, the smell from decomposition being very offensive. This can easily be remedied by the use of a good incinerator by means of which both night-soil and rubbish can be destroyed. The incinerator need not be located at a distance from the town, but be placed as near to its work as possible. With modern incinerators there is absolutely no smell.

28. *Conservancy Staff.*—There are 65 miles of roads and streets within municipal limits. The number of toties and sweepers is very inadequate and should be increased. Without a sufficiency of this staff, it is impossible to suppose that the municipality can be maintained in a sanitary condition. As an instance of the amount of work the municipality expect of their conservancy staff, the following is a case which came under my notice:—

One man has to keep the whole of Kodapamund clean, he is sweeper and toti combined, to which is added the municipal private scavenging of two hack stables and two bungalows. How he can be expected to accomplish this amount of work is a mystery to me.

29. *Nuisances.*—The provisions of the Municipal Act and bye-laws are not enforced. These laws are overlooked or glossed over by small fines and warnings, a sort of nominal punishment, the law being administered by a Deputy Tahsildar. As long as this state of things is permitted, improvement cannot be expected. I would recommend that all offences against municipal law be dealt with by a European Magistrate.

30. In the preceding remarks I have confined myself entirely to the cause of unhealthiness amongst the native population for the reason that in my opinion the unhealthiness amongst Europeans is in a great measure dependent on the health of the native community, through the necessities of labour and food supplies.

31. The health of the European population during the earlier months of 1898 has not as a whole been much affected, but unfortunately during this time several prominent members of society died under circumstances in no way connected with the health condition of the station. Fever appeared in three houses in a particularly marked way affecting all the people living in the house, and thus with the aid of the newspapers a considerable amount of uneasiness prevailed. Also a few sporadic single cases of enteric occurred on both sides of the lake in houses at long distances apart, one case in a whole household being sick. In a few of these cases I shall endeavour to trace the cause of sickness.

32. *Primrose Lodge.—Sisters of the Church School.*—Dates of commencement of fever in those taken ill in this house—

Case 1 arrived from Bangalore on January 30th, but did not return to school till February 3rd; took ill February 4th; went to hospital February 10th; left hospital April 20th; returned to school May 4th; school opened February 7th.

Case 2 began May 3rd.
" 3 " " 5th.
" 4 " " 5th.
" 5 " " 5th.
" 6 " " 8th.
" 7 " " 14th.
" 8 " " 14th.
" 9 " " 14th; this case left for Coonoor morning of the 14th.
" 10 " " 15th.

The incubation period of typhoid is usually from 12–14 days, but may be from two or three days to three weeks. The first case evidently contracted the disease prior to her arrival at Ootacamund. Her fever for the first few days was not recognized as typhoid and the dejecta were not disinfected, but are believed to have been taken away by the night-soil cart. The remaining nine cases all occurred within 10 days of each other, commencing from the 3rd May. There are ten inhabitants in the house, nine of whom have fallen victims to the disease. About the time of the outbreak, end of April, the following servants in the house were sick; nature of fever and dates of attack I am unable to give:—

Butler, six days, probably not fever.
Sweeper woman, fever, five weeks away from work.
Kitchen boy, one week with fever and died.
Maty, sick, probably fever.

The kitchen boy only a week away and dying from fever, leads one to believe that he had attended to his duty while suffering from fever.

Water-supply by pipe from Marlimund used only for domestic purposes. The supply was intermittent during April and May and water was stored in tubs near the tap in the compound. In the lower part of the compound about 50 feet below the house are some pools of water which during April were used in the manufacture of bricks. These pools are holes dug in marshy ground filled by soakage from the hillside on which are situated the Convent School and Primrose Lodge with a number of servants' out-houses. It is said that in April when the pools gave a scanty supply of

water the coolies came to the house tap for water, and although there is no direct evidence, it is quite possible that they may have dipped their dirty vessels into the tubs used by the house for storing water. It is my belief that the infection was transmitted by the servants who were themselves sick or by the stored tap water.

Drinking Water.—The Lady Superior reports that it is always brought from the club two bucketfuls daily. The water is always boiled, passed through a chatty filter and finally through a block carbon water Caraffe filter. The distance from the club and the fact that one or two steep hills have to be climbed leads one to suppose that the nearest water available would be taken. Boiling first and then filtering the water is not conducive to its purity and makes the statement made to me by two of the sufferers very likely, that the drinking water was sometimes very dirty with things floating in it; at other times it was clean.

Milk-supply—Is obtained from cows fed and housed on the premises and milked in the presence of a European. The milk is always boiled by one of the sisters.

33. *Mrs. Lissenburg residing on the Coonoor Road.*—This family returned from Bangalore on the 17th February. On the 4th March the first case of fever occurred and within 14 days the whole family of six were attacked, ages ranging from 3 years to 17 years. The Civil Surgeon of Ooty can certify that two of these cases were typhoid and the supposition is that they were all of this nature.

This house is not supplied with pipe water. They get their drinking water from an open channel which, starting from a shola on Dodabetta, passes through several compounds and is open to all kinds of pollution. They use no filter and the water is never boiled. Their milk-supply is got from Old Ooty and is always boiled.

The house above the Lissenburg's occupied by Mrs. Marshall about 30 yards distant is not supplied with pipe water and obtains water from the same open channel. Mrs. Marshall was in the habit of visiting and inquiring after the health of the Lissenburg family. She got fever and died on the 9th June.

The source of infection in these cases is plainly from polluted water taken from the open channel near the house.

34. *Mr. Meyers, Military Works Department, Granby Lodge.*—The whole of this family, both parents and two children, became sick with fever. Their house is not supplied with pipe water. Drinking water not boiled, was obtained from a stream behind the house. This stream coming through Old Ooty is fouled by sewages from Connemara Cottage, Stonehouse offices, and peons' lines and three large latrines on the hill side bank of stream and several private houses with stabling. Near the house it receives the water from four bath rooms used by the clerks and the Meyer family and also sullage water from the adjoining house (Mrs. Kenny). All the rubbish is thrown down the bank of the stream and a dirty latrine is built on its edge, above the point where water is taken from. I was shown an old compressed charcoal Chevins filter not used now but having been in use prior to the outbreak of fever, known to have been in constant use for 5 years or more and never cleaned, but considered to be capable to purify dirty water. In the adjoining house Mrs. Kenny lives with her family. She has had no sickness. She obtains her water supply from a different source (Mr. Donobaque's well).

Source of infection by water-supply.

In the cases of the Lissenburg and Meyer's families, it is not to be wondered at that disease attacked them and the fact of any one showing such gross carelessness gives one a tendency to say it served them right; the blame is their own, whereas the station and municipality are undeservedly censured.

35. There yet remain the two cases which occurred among the officers of the 4th Pioneers. The milk-supply of the mess was obtained from Kandal and was not boiled. These two young men were great milk drinkers and the milk was never boiled. They never drank water. Kandal is one of the centres where the mortality from fever was very high, and it is natural to suppose that the milk-supply was the source of their infection.

36. The remaining cases number about 6, and are all isolated cases and I could not trace them; I have therefore no remarks to make on them. It has to be borne in mind that there is not a year but that there are from 6 to 8 cases of typhoid at Ootacamund during the season. It must also be remembered that typhoid fever in its early stages is most insidious and deceptive in its approach, and a person quite unknowingly may move about and be the innocent means of causing wide-spread dissemination of the disease before the true nature of his or her illness is recognised.

Order—No. 1571 M., dated 7th September 1898.

Communicated to the Municipal Council of Ootacamund with the request that it will report what steps it proposes to take to carry out the recommendations of the Sanitary Commissioner.

(True Extract.)

H. TREMENHEERE,
Secretary to Government.

To the Chairman, Municipal Council, Ootacamund.
" Collector of the Nilgiris.
" Sanitary Commissioner.

Exd. C. M. Thumbuswamy.

Please see query on page 8. Proof 27/9/98

Please see reply below the query ipa 27/9/98

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See my correction - have revised

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ENCLOSURE.

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(2) Lowering of the water level of the lake.
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Few of the houses have any sub-soil drainage; the floors, being earthern with no ventilating air space or damp-proof flooring, permit of the entrance of ground air when the rooms become heated. This usually happens at night when the occupants are crowded together in close rooms for the sake of warmth during the hours of sleep and is a most potent factor in predisposing the person to disease. The places mentioned above where overcrowding exists should be opened up by the removal of some of the wretched structures called houses to allow of the perflation of air and light and so do away with the existing foul-smelling, badly-ventilated lanes and narrow alleys which cannot but be poisonous to the unfortunates living in them. This can be effected under Municipal Act, section 187. The council have the power to enforce the construction of proper buildings, &c., and they are not exercising that power as they ought

to. Houses are being erected which do not comply with the requirements of section 180, the fault therefore lying with the council for permitting them to be erected, such as, a number of houses in Mettucherry, Syed Hussain's new house, Charcoal street, Beef Butcher street Nos. 31, 32, 33 and a house below these, Usman Sahib.

10. *Water-supply.*—The northern side of the lake where all the bazaars are situated is supplied with water by pipe from the Marlimund reservoir. I noticed in the bazaar that several water standards were erected near the open surface drains and public latrines. Some of these drains being choked were full of stinking sewage. During March and April the water-supply from Marlimund was intermittent which must necessarily have allowed absorption of foul gases from the open drains into the supply water pipes, the water standards being often near the drains. This should be seen to and the standards moved from the proximity of drains and latrines. Some localities, Kodapamund, &c., are not supplied with pipe water, but depend on streams or shallow surface wells. Owing to the want of drainage and the hilly nature of the station, the overcrowded collections of native houses where they exist, have so fouled their surroundings that in my opinion all the streams are polluted and very few of the wells are free from filth contamination through soakage.

11. The purity of the Ootacamund water-supply is now under the consideration of Government. Specimens of water from several frequented sources of supply have been sent for bacteriological examination, the result of which will show whether contamination of a dangerous nature exists. The supply from the reservoirs of Marlimund and Dodabetta have been frequently reported on.

12. Marlimund is an unsuitable impounding basin on account of the presence of private cultivation and human habitations within its catchment area, the existence of considerable peaty matter in its bed and its unprotected state permitting of free trespass. These defects can be remedied doubtless at great expense. Filter beds should be provided for this reservoir.

13. *Dodabetta* is a better source of water-supply. The jungle in its catchment area should be thinned and private property bought up. Filter beds should be provided.

14. *Wells* are of the nature known as shallow surface wells and as the houses are built on the steep slopes of the hill sides, soakage from the houses to those below is much facilitated. In the majority of cases, the wells are unprotected and water is raised by a rope and bucket. The position of these wells in a number of cases I inspected is most dangerous from their proximity to houses and latrines. In the bazaars, the conditions are still worse, soakage from houses and drains occurring everywhere. Under section 228, the council has the power to deal with any well that is considered dangerous. Numbers of such wells exist in the bazaars which in my opinion should be filled up. Under sections 216, 224 the council has the power to prevent the fouling of houses and their surroundings which ultimately contaminate the water in these wells. Under section 180, the council has the power to enforce construction of properly built wells.

15. *Dhobies* have a most abominable practice of washing soiled linen in the foul streams at Kodapamund, Vannarpett and in the natural drains carrying off the sewage from the Mettucherry and Kandal valleys. Under section 188, the council has the power to prohibit dhobies using the foul water of such places as Kandal, Mettucherry, &c., for the washing of linen. Properly constructed washing platforms supplied with tap water should be provided and their use enforced. Buildings for the storage of soiled and clean linen with laundry arrangements should also be provided and only such dhobies as are licensed should be permitted to wash soiled clothing.

16. *Milk-supply.*—The milk-supply of the station is obtained from—

(*a*) three dairies kept by Europeans;
(*b*) a number of cow-sheds kept by native owners chiefly located in Kandal, Kodapamund, Pudumund and Old Ooty.

17. *Dairies.*—They are not built nor are they maintained on strict sanitary principles. The supply of milk to the dairies is obtained partly from cattle kept by the dairy owner, but largely during the season from the native owner of cow-sheds.

The European residents obtain their milk chiefly from these dairies, the consumers being in a state of happy ignorance of the source and conditions under which the milk they drink is supplied to them, believing that it is the produce of the dairy.

18. *Cow-sheds* though licensed are constructed under no sanitary principles; they are invariably overcrowded, badly lighted, ventilated and drained or not at all, and are kept in an extremely filthy condition. No regulations for the inspection of the cattle housed in these sheds are enforced by the municipality. Native cow owners milk their cows on their premises, the milk being stored there in open chatties until time of distribution, then distributed in tin cans and bottles. This milk is taken to the particular dairy or house, any surplus milk left being conveyed to the bazaar and sold or made into butter. The milk is open to pollution in many ways:—

(*a*) dirty water used for cleaning the vessels or adulterating the milk,
(*b*) dirty, badly ventilated and drained sheds in which the cows are housed and milked,
(*c*) owners live under the same roof as the cattle,
(*d*) temporary storage of butter or milk in the dwelling room until disposed of,
(*e*) dirty unprotected vessels and means by which milk is conveyed to its destination.

All these are likely means of contamination, more especially if disease is present in the family of the cow-shed owner. For instance, fever has been very prevalent in Kandal which is a large milk-producing centre and how far this may be a cause for the unhealthiness of Ootacamund is difficult to prove. To remedy the notoriously insanitary conditions under which milk is drawn and sold to the general public, I would recommend that the Municipal Act, section 188, be revised and strengthened by the issue of a bye-law enforcing all cow-owners who offer the milk from their cows for sale, no matter how many head they possess, to be licensed and that their cow-sheds be built according to plans issued by the Sanitary Board or approved by the Municipal Council. That regulations be made for the inspection of cattle in cow-sheds, for prescribing and regulating the lighting, ventilating, cleansing, drainage and water-supply of cow-sheds and dairies.

19. *Bake-houses.*—In the bazaars there are several unlicensed bakeries. The following I inspected:—

Ram Pillai—Kandal bazaar.
Imam Khan—Bakehouse No. 34.
Syed Husain—41, Charcoal street.
Syed Karim—No. 9, Mosque street.

They were in a most insanitary state used as overcrowded dwelling houses, the rolling benches being used as sleeping cots. These men have been reported, fined by Magistrate, and treat the penalty with contempt by continuing to follow their calling.

Licensed Bake-houses. I inspected:—

Dais—Mettucherry. Very insanitary. Should be discontinued as a bakery.
Bastian—Commercial road.
Heath—Agraharam.

Their bake-houses could be greatly improved by a little more attention to cleanliness and drainage of the premises and its surroundings. The outturn of bread from these houses is large and a certain amount of control over their sanitary arrangements should be undertaken by the municipality by causing regular inspection by a competent inspector.

20. *Aerated water manufactories.*—Those kept by Europeans (Messrs. Spencer & Co., Oakes & Co., and Smith & Co.) are clean and in a good sanitary state. Charcoal filters are used (Spencer, spongy iron) and the water is not boiled: Pasteur or Berkfield filters are much to be preferred and are more reliable.

Those kept by natives (Mahomed Sahib & Co., Esuf Sait's lines, Commercial Road, and C. Ponnambalam Moodaliar, Agraharam) are dirty and the surroundings and building are dirty and unsuited for the location of machinery for the manufacture of ærated water; they should have their license withdrawn.

21. *Slaughter-houses.*—Beef and mutton slaughter-houses are both clean and without smell. Cattle pens should be provided for both; at present there is no provision made for cattle being kept prior to their slaughter. There is no place for the slaughter of pigs, which is a want that should be supplied.

22. I would strongly recommend that a bye-law be framed by the municipal council necessitating the regular inspection by a competent inspector under the order of the Civil Surgeon of all animals previous to their being slaughtered, of slaughter-houses, cow-sheds, dairies, bake-houses, ærated water manufactories, hotels, and chattrams (native lodging houses) that a set of rules be framed and enforced, setting forth the sanitary principles to be observed in their construction and maintenance and that the requirements be rigidly adhered to by the council.

23. *Excrement and Refuse Removal—Native Community.*—Night-soil is disposed of chiefly by means of the Pail system of conservancy from public latrines and in some instances from private latrines where they exist. No dry earth is used in any of the latrines, a large number of them being of an old pattern in an unclean and insanitary state. The majority of the houses have no latrines, the open surface drains, washing platforms in the backyards or the ground surface within a small enclosure serving the purpose. It is needless to say that this allows of a great deal of soakage. The municipality, by means of iron night-soil carts, collect and remove the excreta to the depot at Tittacul, 3 miles distant, where it is buried in shallow trenches. Excrement is also disposed of partly by the sewer system (*i.e.*, from two public latrines on the water system and by means of the open drains in the bazaar). House and street refuse is removed in municipal rubbish carts and buried or burnt at the Tittacul depot.

24. *European Community.*—Houses are mostly provided with latrine accommodation by the house-owner. The latrine is chiefly for the use of the servants connected with the house and as such is seldom or never inspected by the house-holder. Many of these latrines are badly built, unprovided with impermiable floors or drains permitting of soakage. The latrines are cleaned by contract with the municipality or privately by the tenant.

25. *Defects and Remedies—Public Latrines.*—The old pattern, of which there are a large number with broken irregular floors, cramped space, bad ventilation, should be replaced by more modern patterns. The use of dry earth is absolutely necessary; otherwise the latrines should be connected with the sewer and flushed with water.

There are some inhabited localities where public latrine accommodation is much wanted, *i.e.*, main bazaar, &c.

26. *Private Latrines.*—Their possession of a good type with proper drainage should be insisted on under section 207 by the council for both Native and European houses.

27. *Night-soil and Rubbish Depot.*—The disposal by burial in this locality is objectionable, the smell from decomposition being very offensive. This can easily be remedied by the use of a good incinerator by means of which both night-soil and rubbish can be destroyed. The incinerator need not be located at a distance from the town, but be placed as near to its work as possible. With modern incinerators there is absolutely no smell.

28. *Conservancy Staff.*—There are 65 miles of roads and streets within municipal limits. The number of toties and sweepers is very inadequate and should be increased. Without a sufficiency of this staff, it is impossible to suppose that the municipality can be maintained in a sanitary condition. As an instance of the amount of work the municipality expect of their conservancy staff, the following is a case which came under my notice:—

One man has to keep the whole of Kodapamund clean, he is sweeper and toti combined, to which is added the municipal private scavenging of two hack stables and two bungalows. How he can be expected to accomplish this amount of work is a mystery to me.

29. *Nuisances.*—The provisions of the Municipal Act and bye-laws are not enforced. These laws are overlooked or glossed over by small fines and warnings, a sort of nominal punishment, the law being administered by a Deputy Tahsildar. As long as this state of things is permitted, improvement cannot be expected. I would recommend that all offences against municipal law be dealt with by a European Magistrate.

30. In the preceding remarks I have confined myself entirely to the cause of unhealthiness amongst the native population for the reason that in my opinion the unhealthiness amongst Europeans is in a great measure dependent on the health of the native community, through the necessities of labour and food supplies.

31. The health of the European population during the earlier months of 1898 has not as a whole been much affected, but unfortunately during this time several prominent members of society died under circumstances in no way connected with the health condition of the station. Fever appeared in three houses in a particularly marked way affecting all the people living in the house, and thus with the aid of the newspapers a considerable amount of uneasiness prevailed. Also a few sporadic single cases of enteric occurred on both sides of the lake in houses at long distances apart, one case in a whole household being sick. In a few of these cases I shall endeavour to trace the cause of sickness.

32. *Primrose Lodge.—Sisters of the Church School.*—Dates of commencement of fever in those taken ill in this house—

Case 1 arrived from Bangalore on January 30th, but did not return to school till February 3rd; took ill February 4th; went to hospital February 10th; left hospital April 20th; returned to school May 4th; school opened February 7th.

Case 2 began May 3rd.
" 3 " " 5th.
" 4 " " 5th.
" 5 " " 5th.
" 6 " " 8th.
" 7 " " 14th.
" 8 " " 14th.
" 9 " " 14th; this case left for Coonoor morning of the 14th.
" 10 " " 15th.

The incubation period of typhoid is usually from 12–14 days, but may be from two or three days to three weeks. The first case evidently contracted the disease prior to her arrival at Ootacamund. Her fever for the first few days was not recognized as typhoid and the dejecta were not disinfected, but are believed to have been taken away by the night-soil cart. The remaining nine cases all occurred within 10 days of each other, commencing from the 3rd May. There are ten inhabitants in the house, nine of whom have fallen victims to the disease. About the time of the outbreak, end of April, the following servants in the house were sick; nature of fever and dates of attack I am unable to give:—

Butler, six days, probably not fever.
Sweeper woman, fever, five weeks away from work.
Kitchen boy, one week with fever and died.
Maty, sick, probably fever.

The kitchen boy only a week away and dying from fever, leads one to believe that he had attended to his duty while suffering from fever.

Water-supply by pipe from Marlimund used only for domestic purposes. The supply was intermittent during April and May and water was stored in tubs near the tap in the compound. In the lower part of the compound about 50 feet below the house are some pools of water which during April were used in the manufacture of bricks. These pools are holes dug in marshy ground filled by soakage from the hill-side on which are situated the Convent School and Primrose Lodge with a number of servants' out-houses. It is said that in April when the pools gave a scanty supply of

water the coolies came to the house tap for water, and although there is no direct evidence, it is quite possible that they may have dipped their dirty vessels into the tubs used by the house for storing water. It is my belief that the infection was transmitted by the servants who were themselves sick or by the stored tap water.

Drinking Water.—The Lady Superior reports that it is always brought from the club two bucketfuls daily. The water is always boiled, passed through a chatty filter and finally through a block carbon water Caraffe filter. The distance from the club and the fact that one or two steep hills have to be climbed leads one to suppose that the nearest water available would be taken. Boiling first and then filtering the water is not conducive to its purity and makes the statement made to me by two of the sufferers very likely, that the drinking water was sometimes very dirty with things floating in it, at other times it was clean.

Milk-supply—Is obtained from cows fed and housed on the premises and milked in the presence of a European. The milk is always boiled by one of the sisters.

33. *Mrs. Lissenburg residing on the Coonoor Road.*—This family returned from Bangalore on the 17th February. On the 4th March the first case of fever occurred and within 14 days the whole family of six were attacked, ages ranging from 3 years to 17 years. The Civil Surgeon of Ooty can certify that two of these cases were typhoid and the supposition is that they were all of this nature.

This house is not supplied with pipe water. They get their drinking water from an open channel which, starting from a shola on Dodabetta, passes through several compounds and is open to all kinds of pollution. They use no filter and the water is never boiled. Their milk-supply is got from Old Ooty and is always boiled.

The house above the Lissenburg's occupied by Mrs. Marshall about 30 yards distant is not supplied with pipe water and obtains water from the same open channel. Mrs. Marshall was in the habit of visiting and inquiring after the health of the Lissenburg family. She got fever and died on the 9th June.

The source of infection in these cases is plainly from polluted water taken from the open channel near the house.

34. *Mr. Meyers, Military Works Department, Grantby Lodge.*—The whole of this family, both parents and two children, became sick with fever. Their house is not supplied with pipe water. Drinking water not boiled, was obtained from a stream behind the house. This stream coming through Old Ooty is fouled by sewages from Connemara Cottage, Stonehouse offices, and peons' lines and three large latrines on the hill side bank of stream and several private houses with stabling. Near the house it receives the water from four bath rooms used by the clerks and the Meyer family and also sullage water from the adjoining house (Mrs. Kenny). All the rubbish is thrown down the bank of the stream and a dirty latrine is built on its edge, above the point where water is taken from. I was shown an old compressed charcoal Chevins filter not used now but having been in use prior to the outbreak of fever, known to have been in constant use for 5 years or more and never cleaned but considered to be capable to purify dirty water. In the adjoining house Mrs. Kenny lives with her family. She has had no sickness. She obtains her water supply from a different source (Mr. Donobaque's well). Source of infection by water-supply.

In the cases of the Lissenburg and Meyer's families, it is not to be wondered at that disease attacked them and the fact of any one showing such gross carelessness gives one a tendency to say it served them right; the blame is their own, whereas the station and municipality are undeservedly censured.

35. There yet remain the two cases which occurred among the officers of the 4th Pioneers. The milk-supply of the mess was obtained from Kandal and was not boiled. These two young men were great milk drinkers and the milk was never boiled. They never drank water. Kandal is one of the centres where the mortality from fever was very high, and it is natural to suppose that the milk-supply was the source of their infection.

36. The remaining cases number about 6, and are all isolated cases, and I could not trace them. I have therefore no remarks to make on them. It has to be borne in mind that there is not a year but that there are from 6 to 8 cases of typhoid at Ootacamund during the season. It must also be remembered that typhoid fever in its early stages is most insidious and deceptive in its approach, and a person quite unknowingly may move about and be the innocent means of causing wide-spread dissemination of the disease before the true nature of his or her illness is recognised.

Order—No. 1571 M., dated 7th September 1898.

Communicated to the Municipal Council of Ootacamund with the request that it will report what steps it proposes to take to carry out the recommendations of the Sanitary Commissioner.

(True Extract.)

for *Secretary to Government.*

To the Chairman, Municipal Council, Ootacamund.
" Collector of the Nilgiris.
" Sanitary Commissioner.

Exd C. M. Thumbuswamy.

Government {1898} of Madras.

LOCAL AND MUNICIPAL.

Proof for approval

Recd. } 1898. Enclosures
Regd. } Spare copies

G.O., No. 1571 M., 7th September 1898.

SEPTEMBER.

Sanitation.

Communicating to the Municipal Council of Ootacamund the report of the Sanitary Commissioner on the unhealthiness of Ootacamund, and requesting it to report what steps it proposes to take to carry out the recommendation of the Sanitary Commissioner.

GOVERNMENT OF MADRAS.

LOCAL AND MUNICIPAL DEPARTMENT.

READ—the following paper:—

From Surgeon-Major H. THOMSON, M.B., D.P.H., Acting Sanitary Commissioner for Madras, to the Secretary to Government, Local and Municipal Department, dated Fort St. George, 22nd August 1898, No. 1831-S.

I have the honour to forward herewith my report upon the unhealthiness of Ootacamund.

ENCLOSURE.

Report upon the unhealthiness of Ootacamund.

On receipt of a wire from Government, dated 17th June 1898, directing me to proceed to Ootacamund and to advise on the sanitary condition of that station, I left Madras on the evening of the 19th for this purpose. On the following afternoon I arrived at Ootacamund. I met the chief municipal and the several medical officers in the station, and from information received from them regarding the prevalence of enteric fever (a list of fever cases treated by each medical officer having been drawn up for me), the situation of the infected houses and sources of water-supply, &c., I was greatly assisted in forming a general idea of the several causes at work in producing the unhealthiness of the station.

2. To give an accurate answer to the question "What is the cause of the present unhealthiness in the station of Ootacamund?" is impossible without the aid of a bacteriological laboratory, where examinations of water, milk and air could be made. It is only possible for me to put together the data which were likely to have caused or assisted in causing the outbreak of fever in some places in Ootacamund.

3. That fever prevails in a high degree in some of the native bazaars, is known by the municipal mortality returns, but I could get no definite information regarding the amount and nature of sickness affecting the population of the bazaars. The medical men have had no "calls" to treat cases in the bazaars and know very little of the actual state of the health of the people. A death is reported as from fever or any other disease to the sanitary inspector, who reports to the municipal registrar who registers it. The death may have been from any disease; the word fever is so vague, all acute diseases being accompanied by a certain amount of fever. The person becomes ill and either recovers or dies, when his death is reported, no medical aid having been asked for.

4. Main Bazaar, Mettucherry and Kandal are the localities shown in the municipal mortality returns as having the greatest increase in the number of deaths, but generally over the whole bazaars (native quarters) there is an increase in the death-rate under the heading "fever" during the months of February, March, April and May 1898, falling slightly in June. The cause for this rise in the mortality during the months February to June 1898 is, I believe, the insanitary conditions amid which the people live. The effect of these conditions which previously lay dormant was brought into action by the following circumstances:—

(1) Scarcity of drinking-water supply due to drought.
(2) Lowering of the water level of the lake.
(3) Excavation of the sewage silt from the lake in close proximity to the native quarters most affected.
(4) Fly pest—famous carriers of disease—which prevailed during these months.

5. *Drainage.*—The drainage of the Main Bazaar is most objectionable in that it is only a surface drainage, open to the air, disconnected with the houses—a receptacle for material which it was never intended for. Bad as this system is, it is rendered still worse by a vertical iron grating intercepting between the drains and the main sewer at the lower levels, the grating constantly choking, and preventing the onward flow of the drain contents which back up and overflow, a foul stinking mess. The thorough drainage with house connection of the bazaars, I understand, is to be carried out soon. There is therefore no need to comment on it. Only it will take some time and the change in position from vertical to horizontal of the iron gratings can easily and quickly be effected with, I think, improvements in the flow of the drain contents.

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7. Kandal bazaar is partially drained by open surface drain as in the Main Bazaar, which discharge into the Sigur stream. Other localities such as Mettucherry, houses near Charing Cross market, and lower parts of Agraharam, Kodapamund, Old Ooty, Vanarpett, have absolutely no drainage system, the sewage from these places finding its way naturally into the Old Ooty stream which discharges into the lake near Erin cottage. This is a mistake as it pollutes the lake. The sewage from these places should be made to enter the main sewer, and this can only be done by a drainage system for the whole town. Mettucherry, an overcrowded, unhealthy locality, should certainly be at once drained.

8. A sewage farm should be opened on the ground below the old Mill to receive the outflow of the main sewer and the sewage of Kandal. This would prevent the fouling of the Sigur stream and absorb gases arising from decomposing sewage which poisons the air about this place and may possibly be a cause for the unhealthiness prevailing in Kandal, as it is a large milk-supplying centre and milk absorbs gases with great ease and is a capital growing medium for all forms of germs of disease.

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to. Houses are being erected which do not comply with the requirements of section 180, the fault therefore lying with the council for permitting them to be erected, such as a number of houses in Mettucherry, Syed Hussain's new house, Charcoal street, Beef Butcher street Nos. 31, 32, 33 and a house below these, Usman Sahib.

10. *Water-supply.*—The northern side of the lake where all the bazaars are situated is supplied with water by pipe from the Marlimund reservoir. I noticed in the bazaar that several water standards were erected near the open surface drains and public latrines. Some of these drains being choked were full of stinking sewage. During March and April the water-supply from Marlimund was intermittent which must necessarily have allowed absorption of foul gases from the open drains into the supply water pipes, the water standards being often near the drains. This should be seen to and the standards moved from the proximity of drains and latrines. Some localities, Kodapamund, &c., are not supplied with pipe water, but depend on streams or shallow surface wells. Owing to the want of drainage and the hilly nature of the station, the overcrowded collections of native houses where they exist, have so fouled their surroundings that in my opinion all the streams are polluted and very few of the wells are free from filth contamination through soakage.

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12. Marlimund is an unsuitable impounding basin on account of the presence of private cultivation and human habitations within its catchment area, the existence of considerable peaty matter in its bed and its unprotected state, permitting of free trespass. These defects can be remedied doubtless at great expense. Filter beds should be provided for this reservoir.

13. *Dodabetta* is a better source of water-supply. The jungle in its catchment area should be thinned and private property bought up. Filter beds should be provided.

14 *Wells* are of the nature known as shallow surface wells and as the houses are built on the steep slopes of the hill sides, soakage from the houses to those below is much facilitated. In the majority of cases, the wells are unprotected and water is raised by a rope and bucket. The position of these wells in a number of cases I inspected is most dangerous from their proximity to houses and latrines. In the bazaars, the conditions are still worse, soakage from houses and drains occurring everywhere. Under section 228, the council has the power to deal with any well that is considered dangerous. Numbers of such wells exist in the bazaars which in my opinion should be filled up. Under sections 216, 224 the council has the power to prevent the fouling of houses and their surroundings which ultimately contaminate the water in these wells. Under section 180, the council has the power to enforce construction of properly built wells.

15 *Dhobies* have a most abominable practice of washing soiled linen in the foul streams at Kodapamund, Vannarpett and in the natural drains carrying off the sewage from the Mettucherry and Kandal valleys. Under section 188, the council has the power to prohibit dhobies using the foul water of such places as Kandal, Mettucherry, &c., for the washing of linen. Properly constructed washing platforms supplied with tap water should be provided and their use enforced. Buildings for the storage of soiled and clean linen with laundry arrangements should also be provided and only such dhobies as are licensed should be permitted to wash soiled clothing.

16 *Milk-supply.*—The milk-supply of the station is obtained from—

(*a*) three dairies kept by Europeans;
(*b*) a number of cow-sheds kept by native owners chiefly located in Kandal, Kodapamund, Pudumund and Old Ooty.

17 *Dairies.*—They are not built nor are they maintained on strict sanitary principles. The supply of milk to the dairies is obtained partly from cattle kept by the dairy owner, but largely during the season from the native owner of cow-sheds.

The European residents obtain their milk chiefly from these dairies, the consumers being in a state of happy ignorance of the source and conditions under which the milk they drink is supplied to them, believing that it is the produce of the dairy.

18 *Cow-sheds* though licensed are constructed under no sanitary principles; they are invariably overcrowded, badly lighted, ventilated and drained or not at all, and are kept in an extremely filthy condition. No regulations for the inspection of the cattle housed in these sheds are enforced by the municipality. Native cow owners milk their cows on their premises, the milk being stored there in open chatties until time of distribution, then distributed in tin cans and bottles. This milk is taken to the particular dairy or house, any surplus milk left being conveyed to the bazaar and sold or made into butter. The milk is open to pollution in many ways:—

(*a*) dirty water used for cleaning the vessels or adulterating the milk,
(*b*) dirty, badly ventilated and drained sheds in which the cows are housed and milked,
(*c*) owners live under the same roof as the cattle,
(*d*) temporary storage of butter or milk in the dwelling room until disposed of,
(*e*) dirty unprotected vessels and means by which milk is conveyed to its destination.

All these are likely means of contamination, more especially if disease is present in the family of the cow-shed owner. For instance, fever has been very prevalent in Kandal which is a large milk-producing centre and how far this may be a cause for the unhealthiness of Ootacamund is difficult to prove. To remedy the notoriously insanitary conditions under which milk is drawn and sold to the general public, I would recommend that the Municipal Act, section 188, be revised and strengthened by the issue of a bye-law enforcing all cow-owners who offer the milk from their cows for sale, no matter how many head they possess, to be licensed and that their cow-sheds be built according to plans issued by the Sanitary Board or approved by the Municipal Council. That regulations be made for the inspection of cattle in cow-sheds, for prescribing and regulating the lighting, ventilating, cleansing, drainage and water-supply of cow-sheds and dairies.

19 18. *Bake-houses.*—In the bazaars there are several unlicensed bakeries. The following I inspected:—

Ram Pillai—Kandal bazaar.
Imam Khan—Bakehouse No. 34.
Syed Husain—41, Charcoal street.
Syed Karim—No. 9, Mosque street.

They were in a most insanitary state used as overcrowded dwelling houses, the rolling benches being used as sleeping cots. These men have been reported, fined by Magistrate, and treat the penalty with contempt by continuing to follow their calling.

20 *Licensed Bake-houses I inspected:*—

Dais—Mettucherry. Very insanitary. Should be discontinued as a bakery.
Bastian—Commercial road.
Heath—Agraharam.

Their bake-houses could be greatly improved by a little more attention to cleanliness and drainage of the premises and its surroundings. The outturn of bread from these houses is large and a certain amount of control over their sanitary arrangements should be undertaken by the municipality by causing regular inspection by a competent inspector.

21 19. *Aerated water manufactories.*—Those kept by Europeans (Messrs. Spencer & Co., Oakes & Co., and Smith & Co.) are clean and in a good sanitary state. Charcoal filters are used (Spencer, spongy iron) and the water is not boiled: Pasteur or Berkfield filters are much to be preferred and are more reliable.

Those kept by natives (Mahomed Sahib & Co., Esuf Sait's lines, Commercial Road, and C. Ponnambalam Moodaliar, Agraharam) are dirty and the surroundings and building are dirty and unsuited for the location of machinery for the manufacture of ærated water; they should have their license withdrawn.

20. *Slaughter-houses.*—Beef and mutton slaughter-houses are both clean and without smell. Cattle pens should be provided for both; at present there is no provision made for cattle being kept prior to their slaughter. There is no place for the slaughter of pigs, which is a want that should be supplied.

21. I would strongly recommend that a bye-law be framed by the municipal council necessitating the regular inspection by a competent inspector under the order of the Civil Surgeon of all animals previous to their being slaughtered, of slaughter-houses, cow-sheds, dairies, bake-houses, ærated water manufactories, hotels, and chattrams (native lodging houses) that a set of rules be framed and enforced, setting forth the sanitary principles to be observed in their construction and maintenance and that the requirements be rigidly adhered to by the council.

22. *Excrement and Refuse Removal—Native Community.*—Night-soil is disposed of chiefly by means of the Pail system of conservancy from public latrines and in some instances from private latrines where they exist. No dry earth is used in any of the latrines, a large number of them being of an old pattern in an unclean and insanitary state. The majority of the houses have no latrines, the open surface drains, washing platforms in the backyards or the ground surface within a small enclosure serving the purpose. It is needless to say that this allows of a great deal of soakage. The municipality, by means of iron night-soil carts, collect and remove the excreta to the depot at Tittacul, 3 miles distant, where it is buried in shallow trenches. Excrement is also disposed of partly by the sewer system (*i.e.*, from two public latrines on the water system and by means of the open drains in the bazaar). House and street refuse is removed in municipal rubbish carts and buried or burnt at the Tittacul depot.

23. *European Community.*—Houses are mostly provided with latrine accommodation by the house-owner. The latrine is chiefly for the use of the servants connected with the house and as such is seldom or never inspected by the house-holder. Many of these latrines are badly built, unprovided with impermiable floors or drains permitting of soakage. The latrines are cleaned by contract with the municipality or privately by the tenant.

24. *Defects and Remedies—Public Latrines.*—The old pattern, of which there are a large number with broken irregular floors, cramped space, bad ventilation, should be replaced by more modern patterns. The use of dry earth is absolutely necessary; otherwise the latrines should be connected with the sewer and flushed with water.

There are some inhabited localities where more public latrine accommodation is much wanted, *i.e.*, main bazaar, &c.

25. *Private Latrines.*—Their possession of a good type with proper drainage should be insisted on under section 207 by the council for both Native and European houses.

26. *Night-soil and Rubbish Depot.*—The disposal by burial in this locality is objectionable, the smell from decomposition being very offensive. This can easily be remedied by the use of a good incinerator by means of which both night-soil and rubbish can be destroyed. The incinerator need not be located at a distance from the town, but be placed as near to its work as possible. With modern incinerators there is absolutely no smell.

27. *Conservancy Staff.*—There are 65 miles of roads and streets within municipal limits. The number of toties and sweepers is very inadequate and should be increased. Without a sufficiency of this staff, it is impossible to suppose that the municipality can be maintained in a sanitary condition. As an instance of the amount of work the municipality expect of their conservancy staff, the following is a case which came under my notice:—

One man has to keep the whole of Kodapamund clean, he is sweeper and toti combined, to which is added the municipal private scavenging of two hack stables and two bungalows. How he can be expected to accomplish this amount of work is a mystery to me.

28. *Nuisances.*—The provisions of the Municipal Act and bye-laws are not enforced. These laws are overlooked or glossed over by small fines and warnings, a sort of nominal punishment, the law being administered by a Deputy Tahsildar. As long as this state of things is permitted, improvement cannot be expected. I would recommend that all offences against municipal law be dealt with by a European Magistrate.

29. In the preceding remarks I have confined myself entirely to the cause of unhealthiness amongst the native population for the reason that in my opinion the unhealthiness amongst Europeans is in a great measure dependent on the health of the native community, through the necessities of labour and food supplies.

30. The health of the European population during the earlier months of 1898 has not as a whole been much affected, but unfortunately during this time several prominent members of society died under circumstances in no way connected with the health condition of the station. Fever appeared in three houses in a particularly marked way affecting all the people living in the house, and thus with the aid of the newspapers a considerable amount of uneasiness prevailed. Also a few sporadic single cases of enteric occurred on both sides of the lake in houses at long distances apart, one case in a whole household being sick. In a few of these cases I shall endeavour to trace the cause of sickness.

31. *Primrose Lodge.—Sisters of the Church School.*—Dates of commencement of fever in those taken ill in this house—

Case 1 arrived from Bangalore on January 30th, but did not return to school till February 3rd; took ill February 4th; went to hospital February 10th; left hospital April 20th; returned to school May 4th; school opened February 7th.

Case 2 began May 3rd.
" 3 " " 5th.
" 4 " " 5th.
" 5 " " 5th.
" 6 " " 8th.
" 7 " " 14th.
" 8 " " 14th.
" 9 " " 14th; this case left for Coonoor morning of the 14th.
" 10 " " 15th.

The incubation period of typhoid is usually from 12–14 days, but may be from two or three days to three weeks. The first case evidently contracted the disease prior to her arrival at Ootacamund. Her fever for the first few days was not recognized as typhoid and the dejecta were not disinfected, but are believed to have been taken away by the night-soil cart. The remaining nine cases all occurred within 10 days of each other, commencing from the 3rd May. There are ten inhabitants in the house, nine of whom have fallen victims to the disease. About the time of the outbreak, end of April, the following servants in the house were sick; nature of fever and dates of attack I am unable to give:—

Butler, six days, probably not fever.
Sweeper woman, fever, five weeks away from work.
Kitchen boy, one week with fever and died.
Maty, sick, probably fever.

The kitchen boy only a week away and dying from fever, leads one to believe that he had attended to his duty while suffering from fever.

Water-supply by pipe from Marlimund used only for domestic purposes. The supply was intermittent during April and May and water was stored in tubs near the tap in the compound. In the lower part of the compound about 50 feet below the house are some pools of water which during April were used in the manufacture of bricks. These pools are holes dug in marshy ground filled by soakage from the hill-side on which are situated the Convent School and Primrose Lodge with a number of servants' out-houses. It is said that in April when the pools gave a scanty supply of

water the coolies came to the house tap for water, and although there is no direct evidence, it is quite possible that they may have dipped their dirty vessels into the tubs used by the house for storing water. It is my belief that the infection was transmitted by the servants who were themselves sick or by the stored tap water.

Drinking Water.—The Lady Superior reports that it is always brought from the club two bucketfuls daily. The water is always boiled, passed through a chatty filter and finally through a block carbon water Caraffe filter. The distance from the club and the fact that one or two steep hills have to be climbed leads one to suppose that the nearest water available would be taken. Boiling first and then filtering the water is not conducive to its purity and makes the statement made to me by two of the sufferers very likely, that the drinking water was sometimes very dirty with things floating in it, at other times it was clean.

Milk-supply—Is obtained from cows fed and housed on the premises and milked in the presence of a European. The milk is always boiled by one of the sisters.

31. *Mrs. Lissenburg residing on the Coonoor Road.*—This family returned from Bangalore on the 17th February. On the 4th March the first case of fever occurred and within 14 days the whole family of six were attacked, ages ranging from 3 years to 17 years. The Civil Surgeon of Ooty can certify that two of these cases were typhoid and the supposition is that they were all of this nature.

This house is not supplied with pipe water. They get their drinking water from an open channel which starting from a shola on Dodabetta passes through several compounds and is open to all kinds of pollution. They use no filter and the water is never boiled. Their milk-supply is got from Old Ooty and is always boiled.

The house above the Lissenburg's occupied by Mrs. Marshall about 30 yards distant is not supplied with pipe water and obtains water from the same open channel. Mrs. Marshall was in the habit of visiting and inquiring after the health of the Lissenburg family. She got fever and died on the 9th June.

The source of infection in these cases is plainly from polluted water taken from the open channel near the house.

32. *Mr. Meyers, Military Works Department, Grant by Lodge.*—The whole of this family, both parents and two children, became sick with fever. Their house is not supplied with pipe water. Drinking water not boiled, was obtained from a stream behind the house. This stream coming through Old Ooty is fouled by sewages from Connemara Cottage, Stonehouse offices, and peons' lines and three large latrines on the hill side bank of stream and several private houses with stabling. Near the house it receives the water from four bath rooms used by the clerks and the Meyer family and also sullage water from the adjoining house (Mrs. Kenny). All the rubbish is thrown down the bank of the stream and a dirty latrine is built on its edge, above the point where water is taken from. I was shown an old compressed charcoal Chevins filter not used now but having been in use prior to the outbreak of fever, known to have been in constant use for 5 years or more and never cleaned but considered to be capable to purify dirty water. In the adjoining house Mrs. Kenny lives with her family. She has had no sickness. She obtains her water supply from a different source (Mr. Donobaque's well).

Source of infection by water-supply—In the cases of the Lissenburg and Meyer's families, it is not to be wondered at that disease attacked them and the fact of any one showing such gross carelessness gives one a tendency to say it served them right; the blame is their own; whereas the station and municipality are undeservedly censured. There yet remain the two cases which occurred among the officers of the 4th Pioneers,

The milk-supply of the mess was obtained from Kandal and was not boiled. These two young men were great milk drinkers and the milk was never boiled. They never drank water. Kandal is one of the centres where the mortality from fever was very high, and it is natural to suppose that the milk-supply was the source of their infection.

33. The remaining cases, number about 6, and are all isolated cases, and I could not trace them. I have therefore no remarks to make on them. It has to be borne in mind that there is not a year but that there are from 6 to 8 cases of typhoid at Ootacamund during the season. It must also be remembered that typhoid fever in its early stages is most insidious and deceptive in its approach, and a person quite unknowingly may move about and be the innocent means of causing wide-spread dissemination of the disease before the true nature of his or her illness is recognised.

Order—No. 1571 M., dated 7th September 1898.

Communicated to the Municipal Council of Ootacamund with the request that it will report what steps it proposes to take to carry out the recommendations of the Sanitary Commissioner.

(True Extract.)

for *Secretary to Government.*

To the Chairman, Municipal Council, Ootacamund.
" Collector of the Nilgiris.
" Sanitary Commissioner.

Exd C. M. Thumbuswamy.

Local & Munl. (1898) Department.

CURRENT No. 2743 M

P.S. H.M. HA

Order No. 1571 Mun
7.9.98 31/8/98

From

The Ag:Sanitary Commissioner for Madras.

No. 1831/S

Communicated to the Municipal Council of Ootacamund with the request that it will report what steps it proposes to take to carry out the recommendations of the Sanitary Commissioner

Dated 22nd August 1898.

Received 23 AUG 1898

Registered

Enclosures

Spare copies.

H.T.
30 8 98.

V.B
25/8/98

H.M. Nothing particularly new in this report. With a first class executive, lots of money & a Municipal or Board, most many of these defects could be remedied. We shall soon have the third; but the first, in all its numerous branches, is very expensive. H.T.

To
The Chairman, M.C. Ootacamund.
" Collector of the Nilgiris.
" Sanitary Commissioner

SUBJECT.

Forwarding his report upon the Unhealthiness of Ootacamund.

Dis'd 29/9/98

Remember Report
[illegible] & M.C.

24/8

BACK PAPERS.

G.O.	No.	Department.	Date.
GO	1394	Jud	10-8-98
"	1376	Jud	4-8-98
"	1315	Jud	21-7-98
"	1276	Jud	14-7-98
"	1212	Jud	8-7-98
"	1117	"	23-6-98
"	752	Jud	13-4-98
"	1179	Jud	15-6-98
"	8784	Jud	18-9-97

FURTHER PAPERS.

G.O.	No.	Department.	Date.
"	254	Jud	20-2-97
"	2021	L	23-11-96
"	648	L	23-5-94

In Cir. 22261 of 1898 (English).

REPORT UPON THE UNHEALTHINESS OF OOTACAMUND.

On receipt of a wire from Government dated 17th June 1898, directing me to proceed to Ootacamund and to advise on the sanitary condition of that station, I left Madras on the evening of the 19th for this purpose. On the following afternoon, I arrived at Ootacamund. I met the Chief Municipal and the several Medical Officers in the station, and from information received from them regarding the prevalence of Enteric fever (a list of fever cases treated by each Medical Officer having been drawn up for me), the situation of the infected houses and sources of water supply, etc, I was greatly assisted in forming a general idea of the several causes at work in producing the unhealthiness of the station.

2. To give an accurate answer to the question "what is the cause of the present unhealthiness in the station of Ootacamund ?" is impossible without the aid of a Bacteriological Laboratory, where examinations of water, milk and air could be made. It is only possible for me to put together the data which were likely to have caused or assisted in causing the outbreak of fever in some places in Ootacamund.

3. That fever prevails in a high degree in some of the Native Bazaars, is known by the Municipal mortality returns, but I could get no definite information regarding the amount and nature of sickness affecting the population of the Bazaars. The Medical men have had no "calls" to treat cases in the Bazaars and know very little of the actual state of the health of the people. A death is reported as from fever or any other disease to the Sanitary Inspector, who reports to the Municipal Registrar who registers it. The death may have been from any disease; the word fever is so vague, all acute diseases being accompanied by a certain amount of fever. The person becomes ill and either recovers or dies, when his death is reported, no medical aid having been asked for.

4. Main Bazaar, Mettucherry and Kandal are the localities shown in the Municipal mortality returns as having the greatest increase in the number of deaths but generally over

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the whole Bazaars (Native Quarters) there is an increse in the death rate under the heading "fever" during the months of February March, April, and May 1898 falling slightly in June. The cause for this rise in the mortality during the months February to June 1898 is I believe the insanitary conditions amid which the people live. The effect of these conditions which previously lay dormant was brought into action by the following circumstances:-

(1). Scarcity of drinking water supply due to drought.

(2). Lowering of the water level of the lake.

(3). Excavation of the sewage silt from the lake in close proximity to the Native Quarters most affected.

(4). Fly pest - famous carriers of disease, which prevailed during these months.

5. Drainage.

The drainage of the Main Bazaar is most Objectionable in that it is only a surface drainage, open to the air, disconnected with the houses - a receptacle for material which it was never intended for. Bad as this system is, it is rendered still worse by a vertical iron grating intercepting between the drains and the main sewer at the lower levels, the grating constantly choking and preventing the onwardflow of the drain contents which back up and overflow - a foul stinking mess. The thorough drainage with house connection of the Bazaars, I understand, is to be carried out soon. There is therefore no need to comment on it. Only it will take some time and the change in position from vertical to horizontal of the iron gratings can easily and quickly be effected with, I think, improvements in the flow of the drain contents.

6 Ventilation of the Main Sewer.

Several of the manholes are only closed by an open grating which is supposed to be all that is necessary for the ventilation of the sewer. This is quite right, but it is conducive to discomfort to passers-by and to dishealth to those who live in their neighbourhood. Several of these manholes are situated near and alongside the Lower Bazaar Road. The sewer should be ventilated by means of a pipe at least 12 feet in height carrying the foul gases above the level of the neighbouring houses and the manholes should be made air tight.

7 Kandal Bazaar is partially drained by open surface drains as in the Main Bazaar, which discharge into the Segar stream. Other localities such as Mettucherry Houses near Charing Cross market and lower parts of Agraharam, Kodapanund, Old Ooty, Vannarapett have absolutely no drainage system, the sewage from these places finding its way naturally into the Old Ooty stream which discharges into the lake near Erin Cottage. This is a mistake as it pollutes the lake. The sewage from these places should be made to enter the main sewer, and this can only be done by a drainage system for the whole town. Mettucherry, an overcrowded unhealthy locality, should certainly be at once drained.

8 A sewage farm should be opened on the ground below the Old Mill to receive the outflow of the Main Sewer and the sewage of Kandal. This would prevent the fouling of the Segar Stream and absorb gases arising from decomposing sewage which poisons the air about this place and may possibly be a cause for the unhealthiness prevailing in Kandal as it is a large milk supplying centre and milk absorbs gases with great ease and is a capital growing medium for all forms of germs of disease.

9 6. Dwelling Houses.

These generally are badly constructed, ventilated and drained, in some localities in Main Bazaar greatly overcrowded and should be removed.

(a). Karupanna Pillai street - lane running behind house 3,4,5, and 6 Subaraya street and NO.35 backyard of Aboo Sait street.

(b). Another confined lane which should be opened up.

10 Frontage

Karupanna Pillai street NO.5 to 13 and Aboo Sait street NO.16 to 27 back of NO.8,9, and 10 Karupanna Pillai street, very bad.

Few of the houses have any subsoil drainage, the floors being earthern with no ventilating air space or damp-proof flooring permit of the entrance of ground air when the rooms become heated. This usually happens at night when the occupants are crowded together in close rooms for the sake of warmth during the hours of sleep and is a most potent factor in predisposing

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the person to disease. The places mentioned above where over-crowding exists should be opened up by the removal of some of the wretched structures called houses to allow for the perflation of air and light and so do away with the existing foul smelling badly ventilated lanes and narrow alleys which cannot but be poisonous to the unfortunates living in them. This can be effected under Municipal Act Section 187. The Council have the power to enforce the construction of proper buildings etc and they are not exercising that power as they ought to. Houses are being erected which do not comply with the requirements of the Section 180, the fault therefore lying with the Council for permitting them to be erected, such as, a Number of houses in Mettucherry Syed Hussain New House Charcoal street. Beef Butcher street NO.31,32,33 and a house below these Usman Sahib.

7. Water-Supply.

The northern side of the lake where all the Bazaars are situated is supplied with water by pipe from the Marlimund Reservoir. I noticed in the Bazaar that several water standards were erected near the open surface drains and public latrines. Some of these drains being choked were full of stinking sewage. During March and April the water supply from Marlimund was intermittent which must necessarily have allowed absorption of foul gases from the open drains into the supply water pipes, the water standards being often near the drains. This should be seen to and the standards moved from the proximity of drains and latrines. Some localities Kodapamund etc are not supplied with pipe water but depend on streams or shallow surface wells. Owing to the want of drainage and the hilly nature of the station, the overcrowded collections of Native houses where they exist, have so fouled their surroundings that in my opinion all the streams are polluted and very few of the wells are free from filth contamination through soakage.

The purity of the Ootacamund water supply is now under the consideration of Government. Specimens of water from several frequented sources of supply have been sent for Bacteriological Examination, the result of which will show whether contamination of a dangerous nature exists. The supply from the Reservoirs of Marlimund and Dodabetta have been frquently reported on.

Kan[illegible] is an unsuitable impounding basin on account of the presence of private cultivation and human habitations within its catchment area. The existence of considerable peaty matter in its bed and its unprotected state permitting of free trespass. These defects can be remedied doubtless at great expense. Filter beds should be provided for this Reservoir.

Dodabetta is a better source of water supply. The jungle in its catchment area should be thinned and private property brought up. Filter beds should be provided.

Wells are of the nature known as shallow surface wells and as the houses are built on the steep slopes of the hillsides, soakage from the houses to those below is much facilitated. In the majority of cases the wells are unprotected and water is raised by a rope and bucket. The position of these wells in a number of cases I inspected is most dangerous from their proximity to houses and latrines. In the Bazaars the conditions are still worse, soakage from houses and drains occurring everywhere. Under section 228 the Council has the power to deal with any well that is considered dangerous. Numbers of such wells exist in the Bazaars which in my opinion should be filled up. Under sections 216 and 224 the Council has the power to prevent the fouling of houses and their surroundings which ultimately contaminate the water in these wells. Under section 180 the Council has the power to enforce construction of properly built wells.

Dhobies have a most abominable practice of washing soiled linen in the foul streams at Kodapamund, Vannarpett and in the natural drains carrying off the sewage from the Mettucherry and Kandal Valleys. Under section 188 the Council has the power to prohibit Dhobies using the foul water of such places as Kandal, Mettucherry etc for the washing of linen. Properly constructed washing platforms supplied with tap water should be provided and their use enforced. Buildings for the storage of soiled and clean linen with laundry arrangements should also be provided and only such dhobies as are licensed should be permitted to wash soiled clothing.

8. Milk Supply.

The milk supply of the station is obtained from:-

(a). Three dairies kept by Europeans
(b). A number of cowsheds kept by Native owners chiefly located in

in Kandal, Kodapamund, Pudumund and Old Oooty.

9. Dairies. They are not built nor are they maintained on strict sanitary principles. The supply of milk to the dairies is obtained partly from cattle kept by the dairy owner, but largely during the season from the Native Owner of cowsheds. The European residents obtain their milk chiefly from these dairies, the consumers being in a state of happy ignorance of the source and conditions under which the milk they drink is supplied to them, believing that it is the produce of the dairy.

10. Cowsheds though licensed are constructed under no sanitary principles; they are invariably overcrowded, badly lighted, ventilated and drained or not at all-and are kept in an extremely filthy condition. No regulations for the inspection of the cattle housed in these sheds are enforced by the Municipality. Native cow owners milk their cows on their premises, the milk being stored there in open chatties until time of distribution, then distributed in tin cans and bottles. This milk is taken to the particular dairy or house, any surplus milk left being conveyed to the bazaar and sold or made into butter. The milk is open to pollution in many ways:-

(a) Dirty water used for cleaning the vessels or adulterating the milk,

(b) Dirty badly ventilated and drained sheds in which the cows are housed and milked,

(c) Owners live under the same roof as the cattle,

(d) Temporary storage of butter or milk in the dwelling room until disposed of,

(e) Dirty unprotected vessels and means by which milk is conveyed to its destination,

All these are likely means of contamination, more especially if disease is present in the family of the cowshed owner. For instance, fever has been very prevalent in Kandal which is a large milk producing centre and how far this may be a cause for the unhealthiness of Ootacamund is difficult to prove. To remedy the notoriously insanitary conditions under which milk is drawn and sold to the General Public, I would recommend that the Municipal Act, Section 188 be revised and Kandal is an strengthened by the issue of a Byelaw enforcing all cowowners who offer the milk from their cows for sale, no matter how many head they possess, to be licensed and that their cow sheds be built according to plans issued by the Sanitary Board or approved by the Municipal Council. That Regulations be made for the inspection of cattle in cowsheds, for prescribing and regulating the lighting, ventilating, cleansing, drainage and water-supply of cowsheds and dairies.

11. Bakehouses. In the bazaars there are several unlicensed Bakeries. The following were inspected:-

Ram Pillai--Kandal bazaar.

Imam Khan--Bakehouse No.34.

Syed Hussain--41, Charcoal street.

Syed Karim--No.9, Mosque street.

They were in a most insanitary state used as overcrowded dwelling houses, the rolling benches being used as sleeping cots. These men have been reported, fined by Magistrate, and treat the penalty with contempt by continuing to folllow their calling.

Licensed Bake houses inspected:-

Dais--Mettucherry. Very insanitary. Should be discontinued as a bakery.

Bastian--Commercial Road.

Heath-Agraham.

Their bakehouses could be greatly improved by a little more attention to cleanliness and drainage of the premises and its surroundings. The outturn of bread from these houses is large and a certain amount of control over their sanitary arrangements should be undertaken by the Municipality by causing regular inspection by a competent Inspector.

12. Aerated water manufactories:-

Those kept by Europeans

Messers Spencer & Co.,

,, Oakes & Co.,

,, Smith & Co.,

are clean and in a good sanitary state. Charcoal filters are used (Spencer Spongy Iron) and the water is not boiled: Pasteur or Berkfield filters are much to be preferred

preferred and are more reliable.

Those kept by Natives.

Mahomed Sahib & Co, Esuf Saits lines, Commercial Road.

C. Ponnambalam Moodaliar, Agraharam,

are dirty and the surroundings and building are dirty and unsuited for the location of machinery for the manufacture of aerated water; they should have their license withdrawn.

13. Slaughter houses.

Beef and Mutton slaughter houses are both clean and without smell. Cattle pens should be provided for both, at present there is no provision made for cattle being kept prior to their slaughter. There is no place for the slaughter of Pigs which is a want that should be supplied.

I would strongly recommend that a Byelaw be framed by the Municipal Council necessitating the regular inspection by a competent Inspector under the order of the Civil Surgeon of all animals previous to their being slaughtered, Of slaughter houses, cowsheds, dairies, bake-houses, aerated water manufactories, hotels & chuttrams (native lodging houses) that a set of rules be framed and enforced, setting forth the sanitary principles to be observed in their construction and maintenance and that the requirements be rigidly adheredto by the Council.

14. Excrement and Refuse removal.

Native Community.

Night soil is disposed of chiefly by means of the Pail system of conservancy from public latrines and in some instances from private latrines where they exist. No dry earth is used in any of the latrines, a large number of them being of an old pattern in an unclean and insanitary state. The majority of the houses have no latrines, the open surface drains, washing platforms in the backyards or the ground surface within a small enclosure serving the purpose. It is need-less to say that this allows of a great deal of soakage. The Municipality by means of iron night soil carts collect and remove the excreta to the depot at Tittacul, 3 miles distant, where it is buried in shallow trenches. Excrement is also disposed of partly by the sewer system (i.e. from two public latrines on the water system and by means of the open drains in the bazaar). House and street refuse is removed in Municipal rubbish carts and buried or burnt at the Tittacul Depot.

European Community.

Houses are mostly provided with latrine accommodation by the house owner. The latrine is chiefly for the use of the servants connected with the house and as such is seldom or never inspected by the house-holder. Many of these latrines are badly built, unprovided with impermiable floors or drains permitting of soakage. The latrines are cleaned by contract with the Municipality or privately by the tenant.

15. Defects and Remedies.

Public latrines. The old pattern, of which there are a large number with broken irregular floors, cramped space, bad ventilation, should be replaced by more modern pattern. The use of dry earth is absolutely necessary, otherwise the latrines should be connected with the sewer and flushed with water.

There are some inhabited localities where Public Latrine accommodation is much wanted i.e. Main Bazaar etc.

Private latrines. Their possession of a good type with proper drainage should be insisted on under section 207 by the Council for both Native and European houses.

Night soil & rubbish depot.

The disposal by burial in this locality is objectionable, the smell from decomposition being very offensive. This can easily be remedied by the use of a good Incinerator by means of which both night soil and rubbish can be destroyed. The incinerator need not be located at a distance from the town, but be placed as near to its work as possible. With modern incinerators there is absolutely no smell.

Conservancy Staff.

There are 65 miles of roads and streets within Municipal limits. The number of coolies and sweepers is very inadequate and should be increased. Without a sufficiency of this staff, it is impossible to suppose that the Municipality can be maintained in a sanitary condition

dition. As an instance of the amount of work the Municipality expect of their conservancy staff, the following is a case which came under my notice:-

one man has to keep the whole of Kodapamund clean, he is sweeper and totie combined, to which is added the Municipal private scavenging of two Hack Stables and two Bungalows. How he can be expected to accomplish this amount of work is a mystery to me.

Nuisances.

The provisions of the Municipal Act and Byelaws are not enforced. These laws are overlooked or glossed over by small fines and warnings, a sort of nominal punishment, the law being administered by a Deputy Tahsildar. As long as this state of things is permitted, improvement cannot be expected. I would recommend that all offences against Municipal law be dealt with by a European Magistrate.

16. In the preceeding remarks, I have confined myself entirely to the cause of unhealthiness amongst the Native population for the reason that in my opinion the unhealthiness amongst Europeans is in a great measure dependant on the health of the Native community, through the necessities of labour and food supplies.

The health of the European population during the earlier months of 1898 has not, as a whole, been much affected, but unfortunately during this time several prominent members of Society died under circumstances in no way connected with the health condition of the station. Fever appeared in three houses in a particularly marked way affecting all the people living in the house and thus with the aid of news papers a considerable amount of uneasiness prevailed. Also a few sporadic single cases occurred on both sides of the lake in houses at long distances apart, one case in a whole household being sick. In a few of these cases I shall endeavour to trace the cause of sickness.

Primrose Lodge. Sisters of the Church School.

Dates of commencement of fever in those taken ill in this house.

One case. Arrived from Bangalore on January 30", but did not return to school till February 3"

Took ill February 4"

Went to hospital February 10"

Left hospital April 20"

Returned to school May 4"

School opened, February 7"

Case (2) Began May 3"

(3) " May 5"

(4) " May 5"

(5) " May 5"

(6) " May 8"

(7) " May 14"

(8) " May 14"

(9) " May 14"

This case left for Coonoor morning of the 14th.

(10) Began May 15"

The incubation period of Typhoid is usually from 12-14 days, but may be from two or three days to three weeks. The first case evidently contracted the disease prior to her arrival at Ootacamund. Her fever for the first few days was not recognized as typhoid and the dejecta were not disinfected but are believed to have been taken away by the night soil cart. The remaining nine cases all occurred within 10 days of each other, commencing from the 3rd May. There are 10 inhabitants in the house, 9 of whom have fallen victims to the disease. About the time of the outbreak, end of April, the following servants in the house were sick; nature of fever and dates of attack I am unable to give:-

Butler Six days, probably not fever

Sweeper woman Fever five weeks away from work.

Kitchen boy one week with fever and died

Matey Sick, probably fever.

The kitchen boy only a week away and dying from fever leads one to believe that he had attended to his duty while suffering from fever.

Water supply by pipe from Marlimund used only for domestic purposes. The supply was intermittent during April and May and w was stored in tubs near the tap in the Compound. In the lower part of the Compound about 50 feet below the house are some pools of water which during April were used in the manufacture of bricks. These pools are holes, dug in marshy ground filled by soakage from the hillside on which are situated the Convent School and Primrose Lodge with a number of servants' out-houses. It is said that in April when the pools gave a scanty supply of water the Coolies

came

came to the house tap for water and although there is no direct evidence it is quite possible that they may have dipped their dirty vessels into the tubs used by the house for storing water. It is my belief that the infection was transmitted by the servants who were themselves sick or by the stored tap water.

Drinking water.

The Lady Superior reports that it is always brought from the Club, two bucketfuls daily. The water is always boiled, passed through a chatty filter and finally through a block carbon water Caraffe filter. The distance from the club and the fact that one or two sheep hills have to be climbed leads one to suppose that the nearest water available would be taken . Boiling first and then filtering the water is not conducive to its purity and makes the statement made to me by two of the sufferes very likely, that the drinking water was sometimes very dirty with things floating in it, at other times it was clean.

Milk-supply. Is obtained fromcows fed and housed on the premises and milked in the presence of a European. The milk is always boiled by one of the sisters.

Mrs. Lissenburg residing on the Coonoor Road. This family returned from Bangalore on the 17th February. On the 4th March the first case of fever occurred and within 14 days the whole family of six were attacked, ages ranging from 3 years to 17 years. The Civil Surgeon of Ooty can certify that two of these cases were typhoid and the supposition is that they were all of this nature.

This house is not supplied with pipe water. They get their drinking water from an open channel starting from a Shola on Dodabetta, passes through several compounds and is open to all kinds of pollution. They use no filter and the water is never boiled. Their milk supply is got from old Ooty and is always boiled.

The house above the Lissenburgs' occupied by Mrs Marshall about 30 yards distant, is not supplied with pipe water and obtains water from the same open channel. Mrs. Marshall was in the habit of visiting and enquiring after the health of the Lissenburg family. She got fever and died on the 9th June.

The source of infection in these cases is plainly from polluted water taken from the open channel near the house.

Mr. Myers, Military works Department, Grantby Lodge. The whole of this family, both parents and two children became sick with fever. Their house is not supplied with pipe water. Drinking water not boiled, was obtained from a stream behind the house. This stream coming through Old Oooty is fouled by sewages from Connemara cottage, Stonehouse offices, and peons' lines & three large latrines on the hill side bank of stream and several private houses with stabling. Near the house it receives the water from four bath rooms used by the Clerks and the Meyer family and also sullage water from the adjoining house (Mrs: Kenny). All the rubbish is thrown down the bank of the stream and a dirty latrine is built on its edge, above the point where water is taken from. I was shown an old compressed Charcoal Chevins filter not used now but having been in use prior to the outbreak of fever, known to have been in constant use for five years or more and never cleaned but considered to be capable to purify dirty water. In the adjoining house Mrs: Kenny lives with her family. She has had no sickness. She obtains her water supply from a different source (Mr: Donobaques well).

Source of infection by water supply.

In the cases of the Lissenburg and Meyers' families it is not to be wondered at that disease attacked them and the fact of any one showing such gross carelessness gives one a tendency to say it served them right, the blame is their own; Whereas the station and Municipality are undeservedly censured. There yet remains the two cases which occurred among the Officers of the IV"Pioneers.

The milk supply of the Mess was obtained from Kandal and was not boiled. These two young men were great milk drinkers and the milk was never boiled. They never drank water. Kandal is one of the centres where the mortality from fever was very high and it is natural to suppose that the milk supply was the source of their infection.

The remaining cases, number about 6, and are all isolated cases and I could not trace them. Ihave therefore no remarks to make on them. It has to be borne in mind that there is not a year but that there are from 6 to 8 cases of Typhoid at Ootacamund during the season. It must also be remembered that Typhoid fever in its early stages is most insidious a...

ceptive

ceptive in its approach and a person quite unknowingly may move about and be the innocent means of causing widespread dissemination of the disease before the true nature of his or her illness is recognized.

H. Thomson.
M.B., D.P.H.,
Surgeon-Major,
Acting Sanitary Commissioner for Madras.

Fort Saint George,
22nd August 1898.

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2743/m/98

Office of Sanitary Commissioner,
Fort Saint George, 22nd August 1898.

NO. 1831/S

From

Surgeon-Major H. Thomson, M.B., D.P.H.,
Acting Sanitary Commissioner for Madras,

TO

LOCAL & MUNICIPAL DEPT.
CURRENT No. 2743 m

The Secretary to Government,
Local and Municipal Department.

Sir,

I have the honour to forward herewith my report upon the Unhealthiness of Ootacamund.

I have the honour to be,
Sir,
Your Most Obedient Servant,
H. Thomson
Surgeon-Major,
Acting Sanitary Commissioner for Madras.

to [illegible] 7-9-95

signature. 28-9-95

print. 29-9-95

Number of copies required: Order complete — Letter only. 40 / Order complete with Letter. 10

No. DATED

2743-M—A

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