

Water and its effect on public health : lecture delivered at Pacheappa's Hall, on 1st April 1882 / by M.C. Furnell.

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Publication/Creation

Madras : Printed at the Lawrence Asylum Press, by W.H. Moore, 1882.

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NATIONAL INDIAN ASSOCIATION
MADRAS BRANCH.

—
LECTURE DELIVERED

AT

PACHEAPPA'S HALL,

ON

1ST APRIL 1882

BY

DR. M. C. FURNELL, F. R. C. S.,

ON

WATER AND ITS EFFECT ON PUBLIC HEALTH.

—

MADRAS :

PRINTED AT THE LAWRENCE ASYLUM PRESS, BY W. H. MOORE.

1882.

July 7



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INDIAN ASSOCIATION
MADRAS BRANCH

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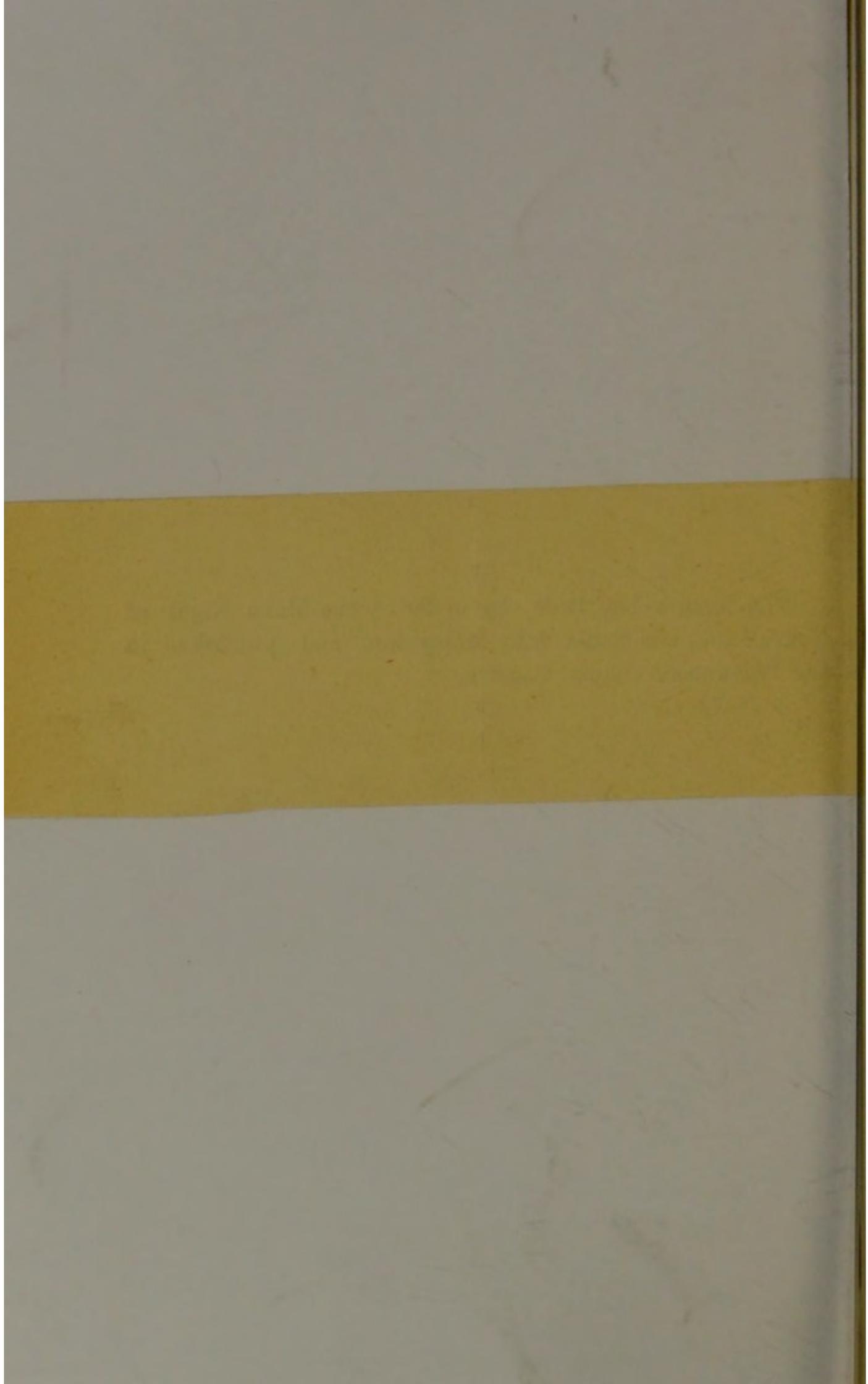
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This lecture has been, by order of the Maha Rajah of Travancore, translated into Malayalum and published in the Travancore Official Gazette.



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London

MR. CHAIRMAN, LADIES AND GENTLEMEN,—I propose this evening to offer a few plain practical remarks on drinking water and its connection with the public health.

The essential elements for man's existence in this world are air, earth, fire and water. These are what the ancients called *the* elements, and though modern science has demonstrated they are not elementary but compound bodies, in common parlance we still call them the elements. Without air a human being cannot long exist; deprived of air for about two minutes, and the strongest man amongst us simply dies. In this country we do not, except in cases of malaria, suffer so much as in many European countries from the effects of bad air. The warmth of the climate enables us to keep our doors and windows open, and thus enjoy the full benefits of fresh air; and this really is no small advantage.

Earth has been graphically called mother earth. Without earth, as far as we are aware, existence is impossible; a fertile tract of country means generally plenty, ease and civilization; sterile regions hardship and comparative want, and often barbarism. Fire has been called a good servant and a bad master; it, too, is very essential to man's welfare. To-day my theme is water, which, in this country, next to air and earth, is, perhaps, the most important of the elements which contribute to man's comfort.

Water looks to the ordinary observer a perfectly homogeneous body, but, as you are all doubtless aware, it is in reality a compound body, composed of two gases, oxygen and hydrogen. Very simple experiments will demonstrate this analytically and synthetically; but it is not my intention, as it is not my business, to take up the short time at my disposal this evening by dwelling on its chemical properties. I wish to speak to you of water in its sanitary aspect.

Population and Epidemics.

This immense continent of India is subject to some terrible epidemics, such as cholera, fever, small-pox, &c. The most constant death-producer is fever. In all India there died during 1879 five millions of people, of whom fever killed $3\frac{1}{2}$ millions, cholera killed off 265,000. In some years it is much worse than this. In our own Presidency during 1879, something more than half a million of people died, and of these 285,477 died of fever, 13,296 of cholera. A good deal of this mortality is preventible, and the use of impure water is, I feel persuaded, answerable for much of it.

Government and the Sanitation of the Country.

The Government of this country has, of late years, concerned itself much in the sanitary welfare of the people committed to its charge, and it has fallen to my lot, in the course of my service in this country, to reach the office of Sanitary Commissioner. One of my duties is to travel about and spy out, as it were, and report to Government the blots I discover in sanitary matters, and to suggest, as far as lies in my power, remedies for these defects. One thing has been very much impressed on my mind in my journeys, and it is this, that we may lay to the use of impure water a good deal of the sickness, the cholera, bowel-complaints and fever which yearly decimate our people; and I think I cannot better serve the Government, whose servant I am, and the people whom the Government so heartily desire to serve, than putting before an intelligent audience of Madras such as I see before me this evening,—with the hopes it may thus reach other intelligent centres—a few plain statements on this matter.

The People of India and Water.

Water is a matter the people of India, of all people, should take an interest in, for in this, as in many others, they were the first sanitarians. As I had occasion to point out in my speech at Convocation in 1879, the people of this country

were the first physicians. When the people of England were rude savages running about naked, or nearly so, having few or none of the civilized arts of life, the ancient people of this country were far advanced in the profession and practice of medicine, and coeval with that time had laid down rules regulating the use and conservancy of water. I find numberless laws and regulations laid down by your ancient lawgivers on this point. To quote a few :—

I. In the Yajurveda, the part called Arana contains the following commandments : “ Do not spit out with retching in the water. Do not pass urine or discharge excreta in the water. Do not drop blood into water. Do not throw any hair, or nails, or bones, or ashes, nor dip dirty clothes into water. For to do so is to abuse a precious gift of the Gods and disgrace them.”

II. Then, passing on to the Smritees, or the rules laid down by the lawgivers, regarding the use and abuse of water, the following are universally quoted authorities.

Yagnya Valkya prohibits the drinking of eight kinds of water ; (1) water kept boiled by a stranger, (2) foaming water (he would object to our soda water) (3) heavy dirty water, (4) water giving off offensive smells, (5) water rising in bubbles, (6) hot water, (7) muddy water, (8) salt water.

The sage Shatatapa prohibits bathing in a tank or pond defiled by the following persons by washing or bathing : Those suffering from sore-eyes or itch on the head or ear, those subject to epileptic attacks, or ulceration in the head running off through the nostril, or to consumption, or those affected by leprosy, or small-pox, or diarrhoea, cholera or other contagious diseases.

III. In the second book of Ramayana, the great epic poem of the Hindus, Prince Barata, calls down upon himself

a curse if he were guilty of something charged against him by saying,

His sin, who deadly poison throws
To spoil the water as it flows
Lay on the wretch its burden dread
Who gave consent when Rama fled.

The sin of spoiling drinking water was evidently considered by Prince Barata as one of the greatest possible gravity, as rendering the man who did it fit only for the infernal regions.

IV. In Uddhava Gita of the 11th book of the Bhagavata Purana, or Krishna's legend, the pious old Uddhava is advised by Krishna to drink no other water but that filtered or strained through a clean cloth. (Krishna evidently knew nothing of the modern improved charcoal filters).

V. Again, the sage Yagnya Valkya prohibits the use of water that remains after washing one's feet or hands and the private parts of the human body, or the remnant of what another person drinks, or the water near the Dhoby's place for washing clothes, or where chandalas, or butchers, chucklers, and other outcastes wash themselves, or where women after menses or child-birth, or people under pollution bathe.

Economies and private morals.

The great Lawgiver Menu in Chapter IV of Manava Dharma Sastra says :—

Let him not cast into the water either urine or ordure, nor saliva, nor cloth, nor any other thing soiled with impurity, nor blood, nor any other kind of poison.

N. B.—All these authorities are taken from the chapter headed Charukanda, or the use of water, in the book of the Hindu law by Vaidyanadha, held, I am told, in high esteem by the Hindu community of Southern India. I am indebted for this information to my friend Mr. Krishnama Charyar.

The Laws how kept.

As it often occurs, the letter of the law is still observed, but the spirit in which it was conceived is lost sight of.

All these regulations had for their object to keep the water for domestic use perfectly clean and free from impurities, and the lower classes were forbidden to use the water of the higher classes because it was supposed that inasmuch as their manners and customs were less guided by cleanliness and purity, they would defile the water they came in contact with. And yet I would ask you, in all fairness, can the customs of any be more repugnant to clearliness and common-sense than what obtains now in most parts of Southern, and I may say all India, at the tanks and wells of the higher castes of your countrymen? Let me tell you a few things I have seen in my travels. I have watched at many tanks during my journeys to and fro, and here are a few examples of what I have seen.

At Hosur, in the Salem District, I saw a small but very well preserved tank at the foot of the sacred Hill on which the temple is placed; in it men and women were bathing and washing their clothes. I counted at one time twelve people so engaged, and I watched one woman who had brought down with her a bundle which she deliberately washed, and then her body, clothes and herself, and then, filling a brass chatty, went home. I watched many people wash themselves, their clothes, spit into the tank, &c., and the women take home chatties full of this water. I took with me two bottles of this water, which I examined; it was of a pale green color, smelt sickly and offensively, and was full of animalculæ which were visible to the naked eye. It was not necessary to have a microscope to discover them. Whilst I was still engaged in examining this water at the Bungalow, a most respectable native official called upon me, who gave me, I remember, a deal of information on other matters. I then spoke to him about this water, and asked him if it was used for drinking by the inhabitants. "Oh yes," he said "it is a very favourite water, it is so soft." This was soon after I had been appointed Sainitary Commissioner. Since then I have watched at a great number

of tanks, and seen the same thing, and, when asking questions have been answered in much the same manner. Sometimes, I hear, the water so washed in and used is not drunk, but that special tanks are set aside for washing, and others for drinking. This is the case, for instance, at Chidambaram, and all I can say is these people are acting not only in consonance with what Western science points out to be necessary to health, but in accordance to the ordinances and rules laid down in ages gone by by their wise forefathers. When the cholera was making its way down from the North-West to our Presidency at the end of the last and commencement of this year, I was asked by an energetic Collector to send him a few simple rules on sanitation of villages that he might publish them in his district Gazette. Subsequently hearing from him that the rules I had sent answered the purpose, and were sufficiently simple and intelligible to the people, I took it upon myself to send a copy of them to all Presidents of Municipalities and Local Fund Boards. Lately I found myself inspecting a Municipality in the north a long way from Madras, and the Manager showed me amongst the proceedings of the Commissioners of that Municipality a resolution calling attention to my circular and resolving that two important tanks, which I will call Tanks A and B, should be strictly set aside for drinking purposes, and a police man set over each to prevent people washing their bodies and clothes therein. I confess I felt very pleased and proud when I read this; I felt we were getting on. Next morning I was going round the town when the Manager pointed out in the distance a bank which he said was the bund of tank A, one of the tanks in which washing of clothes and bodies was *strictly* prohibited. "Oh," I said "let us go on and look at it." We went. The Doctor of the Station, as well as the Manager of the Municipality, was with me. We were soon there, and it was certainly a magnificent tank, twice as large as our Mylapore tank here. There were crowds of people at all

four sides, and all or nearly all busily engaged washing their clothes, and those that were not doing that were bathing their bodies!! The expression on the face of my friend, the Manager, when he saw all this was slightly ludicrous! Just where we had reached the tank was an old man washing a not very clean cloth, and, when he had done, he washed himself and spat repeatedly in the water. He then went away, and within a minute, a woman came there, stood almost in the identical spot the old man had stood a minute before, and filled two bright brass chatties with the water and took them home for drinking and cooking. She must, of necessity, have taken home some of the filth from the old man's clothes and a portion of his spittle to drink and cook with! What a repulsive idea! Now, what we had just seen passing under our eyes was taking place at various times of the day all round the tank, and not only all round this tank, but around the hundreds and thousands of tanks which lie scattered over this fair continent of India. And this being the case, can we wonder for a moment at the rapidity with which an epidemic of small-pox or cholera, or fever spreads through a community when once it makes its appearance in their midst? And yet how simple the remedy.

The people of India are very amenable to any order on such things, and if the wise resolution of the Municipality I speak of, or better still, the wise rules of your ancient lawgivers had been carried out, such filthy and repulsive proceedings could be easily avoided. For putting apart the question of epidemics, it must, I think, be admitted by all that drinking water in which another person has just washed his or her dirty clothes is not a pleasant notion! It is repugnant to all sense of decency, and directly counter to the order of your lawgivers and sages; and one must remember moreover, that merely passing such orders on paper is of no avail; some one must see them carried out, or otherwise presently arises the sceptic and says, "In spite of the

order to keep people from washing and bathing we still have sickness." For instance, the people of the Town in which tank A is situated might say so, but look how the order was there obeyed. When these orders are obeyed, as I shall show you presently, sickness stops.

Cholera and other Diseases Spread by Water.

You will perhaps ask me to advance some proof of the statement I make that cholera and other epidemic diseases are spread by water. In the first place I must premise I do not by any means maintain water is the *only* means by which cholera is spread or originated. I have my own views about its origin, but this is not the place to broach those views; and I believe the air, clothes, food, specially drink of all sorts, besides water, may and does spread it, but I also believe that water is the chief means by which it is spread, especially in India, and that it is on account of the *peculiar treatment* water obtains in this country that we are subject to such frequently recurring and such terrible epidemics of this dread scourge. My proofs are so many, at least what seem to me to be proofs, that I scarcely know where to pick and choose.

One of the first persons to draw attention to the connection between cholera and water was Dr. Snow, of London, and his well known Broad Street case has always been quoted in point. Here in 1854 the people of a well-to-do and otherwise healthy district suffered immensely from cholera. This led to a minute inquiry into the surrounding circumstances, and it was discovered that a child who had been ill with cholera, died at No. 40, Broad Street, and that its excreta had been emptied into a cess-pool situated only three feet from the well of the public pump in Broad Street, from which most of the surrounding people took their water. It was further discovered that the bricks of the cess-pool were loose and allowed its contents to drain into the pump well. In one day 140 to 150 people were attacked, and it

was discovered on investigation that nearly all the persons who had the malady during the first few days of the outbreak drank of the water from the pump. When the pump was closed to public use the epidemic subsided, but the most curious case connected with it is this: there occurred at West End, Hampstead, many miles away from Broad Street, a single case of cholera which proved fatal in the person of a woman aged 59 years, widow of a percussion cap maker. Now, this woman had formerly lived in Broad Street, but had not been there for many months. *But mark this*, a cart went from Broad Street to West End every day taking out amongst other things a large bottle of water filled from the pump in Broad Street, because the lady in question liked this water, she had drunk it all her life, and preferred it to all others! A niece who was on a visit to this lady also drank this water. She returned to her residence in a high and healthy part of Islington, was attacked with cholera and died. There was no cholera at the time either at the West End or in the neighbourhood.

You will see on the wall there a diagram, which tells a most interesting story, at least to me; and the story is told, not by a member of my profession, but an intelligent Roman Catholic clergyman, and thus the story becomes doubly interesting, for I am old enough to remember the time when these visitations were looked upon even in Europe, as direct inflictions of an offended Deity on mankind for their sins, and it was considered by the clergy presumptuous in man to use his intellect in looking about for some physical cause to account for these epidemics, and if possible remove it. It was Lord Palmerston, I believe, who so shocked a deputation that waited upon him, asking him as Prime Minister to order a day of humiliation and prayer against an epidemic of cholera that was then raging, by saying, "Well gentlemen, let us first clean our drains and look to our water-supply, and if that won't do it, we will go to prayers." I have no doubt, in fact I know, there

are many people in this country who teach like our people taught, that these scourges are direct visitations of some offended deity. In fact, there is a name for her: She is called by the Tamil people Mariyama or Mariyatha, by the Telugu people Ummavaroo, and I am not bigoted enough on my side of the question to wish to hurt these peoples' feelings by saying that I am necessarily correct, and that they are necessarily wrong, but I claim this for our point of view—if we,—by we I mean modern sanitarians—are wrong, at any rate our views do no harm. It cannot possibly hurt a community to drink clean water as against dirty water, and I do not think any god or goddess would be offended at our doing so; whereas if the other side are wrong, they are perpetuating a frightful state of things, in forbidding people to use their intellects and reasoning powers to look about for the cause of these epidemics, and, if possible, remove it. Now this diagram, if we read it aright, tells a most instructive tale. It represents the village of Vadakencolam in the Tinnevely country, which was attacked by cholera in December 1877 and suffered immensely. It was observed, however, that the cholera confined itself to the higher castes of the community, and the lower castes who lived close by escaped. Here, of course, according to one theory, it was that the deity was offended with the higher class, the Brahmins, but pleased, or at any rate not offended with the Pariah or low class people who escaped. I think the theory of the Rev. Mr. Delpech much more plausible. He learnt and has here explained how the high class people all used certain wells from which, of course, the lower classes were excluded, and he has, moreover, pointed out how these high class wells were most faulty in construction, allowing water, &c., used in ablution of the person and clothes to trickle back again into the well, and this is a fault which I constantly see in my journeys. Wells which have originally been thoroughly well built have in course of time been allowed to get into such disrepair, that

leakage back into them of soiled water is permitted. Such a well, for instance, exists in Coimbatore. The well known as Ananta Iyer's well is a large fine well built in the middle of the town by some good Sudra and used by Brahmins in the morning and Sudras in the afternoon. It must have cost a deal of money to construct, and is really a splendid well, giving an abundance of clear, sparkling, cool water even in the hottest weather, but now owing to neglect it is defiled every day. The flags round about it have become loose, and the water in which the people frequenting it have washed their bodies, and often their clothes, instead of running right away as originally intended by the construction, trickles back into the well and is drawn up in chatties and taken home and drunk. To my mind, there is something singularly repulsive, putting aside all idea of epidemics, in the notion of drinking water, in a portion of which your neighbour has just been washing his clothes and even body.

Just imagine how easily a community can thus be poisoned. Arrives some traveller or pilgrim from another town, say suffering from incipient cholera, the premonitory diarrhœa. He goes to a well or tank such as I have described, and he washes his body and soiled cloths. A goodly portion of this water trickles back into the well, or if it is a tank, all of it is thus returned. He has barely left when some woman comes, as I saw at Tank A, who fills her chatty with water thus contaminated, and takes it home to her family. Need we be astonished that we have presently a sharp outbreak of cholera in a household where previously all was well. In fact, if the pilgrim had poured so much strychnine or arsenic into the water, he could not more effectually have poisoned his innocent neighbours than he has; the only excuse that can be pleaded for him is his ignorance: he did it unknowingly, unintentionally. In law, I believe, this plea does not hold good. If I do an act which, however innocently it may be done on my side, is done without proper regard for possible consequences,

and injures or kills my neighbours, the law punishes me. If a man from outside were to fire a gun into this room and kill a man, I take it his plea that he did not know any one was in here listening to my lecture, would not exculpate him. It would be said it was his duty to find out, to take reasonable precautions, &c. He would wound, perhaps kill one man, and he would be punished accordingly. The passenger or pilgrim I describe kills perhaps some hundreds, indirectly it may be thousands, and yet no notice is taken of his acts, he escapes scot free. And yet it is clearly punishable by law. The Penal Code provides the remedy if only communities would put it in force. Chapter XIV, para. 277, says: "Whoever voluntarily corrupts or fouls the water of any public spring or reservoir, so as to render it less fit for the purpose for which it is ordinarily used, shall be punished with imprisonment of either description for a term which may extend to three months or with fine which may extend to five hundred rupees or with both." As in the case of the old man washing his clothes and his body in the tank I called tank A, what was to prevent, say the cloth he had just washed having come off the body of a person who had died of cholera? If certain tanks were strictly set aside for drinking purposes, it would soon be recognized as a custom or mamool by all the people of the country, and the possibility of such a misadventure would be reduced to a minimum.

But whilst cholera is a very frightful disease from the rapidity with which it destroys its victims, and the horrible suffering which attends its attack, it is not the most constant or the greatest destroyer of human life in this country. Fever is far and away the most important enemy, and I firmly believe, although this is more difficult to prove, that to impure water we owe most of this. The natives themselves in many parts of India are firmly convinced that certain waters give fever. But there are many other complaints which kill off large numbers. Thus bowel-complaints during

1879 killed off 250,000. I take 1879, because it was a favourable, at least a good average year. Now these bowel-complaints are a great source of weakness and suffering to the people of this country, and it requires one to have been, as I have, many years in charge of dispensaries and large hospitals to know how many people suffer therefrom. It is quite appalling how many of the poorer classes of this country suffer excruciating torments from the presence of worms in the intestines, and often when you read of a poor woman, and for that matter of a woman in the well-to-do classes, committing suicide by flinging herself down a well, unable any longer, as she will have told her friends, to stand the pain and torment caused by the demons inside her. The poor creature has been suffering from worms in the intestines, Lumbrici as we Doctors learnedly call them, and these come from cooking with and drinking the impure water of tanks.

Dr. Parkes who is accepted, and very properly so, by our profession as the greatest authority in Hygiene, sums up the department of his manual which treats of water with the following practical conclusions.

i. An epidemic of diarrhœa in a community is almost always owing either to impure air, impure water or bad food. If it affects a number of persons suddenly, it is probably owing to one of the two last causes, and if it extends over many families almost certainly to water. But as the cause of impurity may be transient, it is not always easy to find experimental proof.

ii. Diarrhœa or dysentery constantly affecting a community or returning periodically at certain times of the year is far more likely to be produced by bad water than by any other cause.

iii. A very sudden and localised outbreak of either typhoid fever or cholera is almost certainly owing to the introduction of the poison by water.

iv. The same fact holds good in cases of malarious fever, especially if the cases are very grave, a possible introduction by water should be carefully enquired into.

v. The introduction of the ova of certain entozoa by means of water is proved in some cases and is probable in others.

vi. Although it is not at present possible to assign to every impurity in water its exact share in the production of disease, or to prove the precise influence on the public health of water which is not extremely impure, it appears certain that the health of a community always improves when abundant and pure water is given, and apart from this actual evidence, we are entitled to conclude from other considerations that abundant and good water is a primary sanitary necessity. Dr. Macmura, in his admirable treatise on cholera, goes a step further and says: "This I maintain is one grand means of self-preservation when once cholera has appeared amongst us. If we can only establish the principle that nothing but freshly and properly filtered water shall be consumed by the inhabitants of a town, barrack or house, not only when at home, but at work—at all times, in fact, when cholera is abroad—we may, I believe, discard all and every other means of preservation."

I think, gentlemen, I have said enough to awaken within you, I hope, some interest in this matter. The remedy is simple and lies in your own hands. Government can do much in advising and controlling sanitary matters, appointing Municipal Boards, Sanitary Commissioners, Medical officers, who will, I hope, soon be each a sanitary officer, also of his own immediate circle, but it cannot carry out the details of its well-conceived legislative regulations without cordial assistance by the people themselves. As in the case of Tank A, mere paper orders will do nothing. Sanitation, real sanitation, must be carried out by the people themselves, and this water question, although most import-

ant, is really not a difficult one. There is no chemistry or mystery or any sort of ology about it, and what is most important, no appreciable expense or outlay of public money. It is as simple as Columbus' egg trick, *directly you know it*. It is a mere common-sense plain matter, known well to yourselves ages ago, but unaccountably and most unfortunately lost sight of. What can possibly be more easy to pass, aye, and to carry out a resolution, that in all Municipalities, villages, and communities certain tanks and wells shall be set aside *strictly* for drinking only. That bodies, clothes, animals, &c., shall not be washed there but in other certain tanks. Look at the effect of this in our own town, Madras. Years ago when cholera visited Southern India, Madras was one of its favourite halting places. It numbered here its victims by thousands. This year, although it was the second place in point of time visited, it found its old quarters not so congenial, and passed on to other places. It came again and again—the traffic with Madras from surrounding towns is, of course, so great,—but it never took firm root; and the reason I take it is this, the people, at least the mass of the people, now do not drink ordinary tank water, but use Red Hills water, and this is so laid on that although I see men washing themselves often at the taps, the water cannot run back again and contaminate the rest.

The table you see before you showing how cholera was distributed in Madras is very interesting: you will see the parts in red ink are the parts which have Red Hills water laid on, these suffered very slightly; the parts written in black ink have no Red Hills water, laid on, and it was there the cholera did most mischief. It is beyond the people's power to contaminate it,—they would, if they could;—and it is this universal use of Red Hills water (where it is to be had) which makes me hopeful of the spread of sanitation even in this country. Sometimes I hear it said, "Oh it is no use trying to improve these people. They have certain

habits and customs, and, say what you like, you won't get them to change them." That is all nonsense! Exactly the same opposition arose at first in England against sanitation and in many things still exists. The water-supply of London and other large towns until quite lately was most disgraceful, and even now is nothing to boast of. In fact, in London it is in many parts still very bad, and strong as is public opinion in the capital of our Empire, it has not as yet been able to overcome the passive resistance of powerful water companies who hold the monopoly of supplying its citizens with indifferent drinking water. Well, but I remember when this laying on water from the Red Hills was first mooted and carried into effect, it used to be said, "It is of no use, they won't use it when you have laid it on." I remember Lord Napier, the then Governor, on whose staff I had the honor of serving, being in considerable fear of this. He took a vivid interest in this question, as he did in all things which concerned the welfare of the people of this country, and, if you remember, stayed here on his way home from Calcutta as Viceroy on purpose to open the water works. "Well" he remarked the day after the ceremony, "Now we have given them good water, will they use it? I hope they will, but, from all I hear I am afraid they will not." On the contrary, all these fears have been dissipated. One has only to watch one of these water stands in a busy thoroughfare to see how thoroughly it is appreciated and used by the people of all classes. If there were twice as many stands, they would be in request; and, as I said before, I believe it is owing to the improved quality of the water provided for the people and the impossibility of their contaminating it, Madras has escaped so well the last epidemic. *For if being dirty was the only necessity of having cholera, Madras ought to have suffered handsomely.* Guntur is another most encouraging instance. Many years ago it was a sort of head-centre, as the Fenians would call it, of cholera. (Bengal is always the Head Quarters.) The

disease was nearly always there, and if you read in the Sanitary Commissioner's Annual Report for 1879 the account given by the Rev. Mr. Unangst of what went on in the town, one need not wonder at it. Presently there came to the town Dr. Biggwither who was made Vice-President of the Municipality. He set to work to clean this Augean stable. Of course, he was strongly opposed, misrepresented and maligned. It seems there is some chronic inevitable law of nature that men in all countries and climes should wish to stone their prophets. He persevered, however; he laid down rules as regards cleaning the roads, lanes, drains and houses, clearing away prickly pear, above all he was very particular in guarding the water-supply. I will read what he says in this point; before he came: "No attention was paid to keep the water in the tanks, reservoirs, and wells clean. When I came here in December 1870 I was astonished to see the natives polluting the water-supply everywhere, but particularly in the reservoirs." "Here were found people washing their *mouths* of a morning, spitting the foul-water out of them into the reservoir, washing their soiled clothes, bathing their persons and doing other dirty acts which the authorities ought not to have allowed. The tank banks in the wet, and the beds in the dry weather were converted into privies by people of all classes. The intelligent Brahmin, the ignorant Pariah, the Government official, and the poor cooly were all found defecating on the banks, and the beds of the tanks which supplied their reservoirs with drinking water. Most of the wells of the town had no parapet walls, and as the Natives, especially Komatee and Brahmin women resorted to them for bathing and washing their soiled linen, all the impurities contained in their persons and in their foul clothing were carried back into the well with the spilled water. During the prevalence of cholera cloths stained with cholera discharges were no doubt washed here, and the water thus poisoned was drunk by thousands. At present the reservoirs and tanks are watched by men appointed by the Municipality

to see that no pollution of the kind enumerated is made by the people who resort to them for water, &c.

What Surgeon Biggwither so well commenced, Dr. Tyrrell, his successor, maintained and extended ; and now what is the result of all these sensible efforts? Guntur has been free from cholera since 1868!—a place, mind you, that always suffered when cholera found its way into our Presidency—one of its most congenial haunts. Now, if the cholera were a goddess, as many of your countrymen believe, don't you think she would have settled with these Doctors long ago, for thus interfering with her right and prerogatives? She must be a very poor goddess indeed to be beaten by a Doctor! At any rate, if she does allow herself to be thus beaten, let us go over to the side of the Doctors, or rather to the goddess of cleanliness—that is the goddess I should like to see started. Let us keep our houses, drains and surroundings clean; *above all, let us keep our water-supply uncontaminated and unpolluted, and as far as in us lies from the possibility of being polluted*, and then having like brave men done all that prudence and common-sense dictates, we can calmly sit down and await the attack of the enemy saying in the words of the old play, "'Tis not in mortals to command success, but well do more Sempronius, we'll deserve it."

*Deaths from Cholera in the Villages of the town
of Madras.*

NAME OF VILLAGES.

Not supplied with Red Hill Water.	Tondiarpettah	48
	Washermanpettah	57
	Royapuram	88
	Cashmode	54
	Gunpowder Mills	1
	Peramboor	4
	Veysurpaudy	2
	Alwarpettah	0
	Chetput	0
	Nungumbakam	2
	Kistnampettah	2
	Saint Thome	23
Supplied with Red Hill Water.	John Pereira's Garden	0
	Pedoo Naick's Pettah	25
	Mootheal Pettah	52
	Uttapaliam	0
	Fort Saint George (Seven wells)	0
	Big Parcherry	0
	Choolay	1
	Purseivalkam	6
	Pareamettoo	1
	New Town	5
	Vepery	2
	Poodoopettah	0
	Egmore	2
	Comaleeswarapuram	2
	Royapettah	7
	Meersaib's Pettah	3
	Kilpaukam	0
	Mackay's Garden	1
	Poodoopakam	6
	Chintadripettah	9
	Narasingapuram	1
	Triplicane	30
	Theroovateesvarenpettah	9
Teynampettah	0	

*Return showing the deaths from Cholera in the town
of Madras from 1855 to 1881.*

Years	Deaths from Cholera.	Remarks.
1855	1956	
1856	805	
1857	1378	
1858	1965	
1859	1082	
1860	2580	
1861	2776	
1862	3635	
1863	1684	
1864	574	
1865	944	
1866	2984	
1867	614	
1868	13	
1869	568	
1870	861	
1871	493	
1872	5	
1873	6	
1874	0	
1875	879	} Famine years.
1876	2035	
1877	6246	
1878	64	
1879	34	
1880	2	
1881	123	Latter part of the year from Oct. to Dec. 1881.