

**THE PROBLEM OF THE
SEWERAGE OF
SAN FRANCISCO: A
POLYCLINIC LECTURE**

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OF THE
Sewerage of San Francisco.



A POLYCLINIC LECTURE.



BY

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LECTURE.

Mr. Mayor, Ladies and Gentlemen:

I shall offer no apology on behalf of the Polyclinic for this attempt to discuss in public the problem of the sewerage of San Francisco.

For myself, however, I crave your kind indulgence. I am not an engineer, nor shall I attempt to meddle with engineering questions. I shall speak rather as a sanitarian not altogether unfamiliar with the nature and action of defective sewers, but above all I desire to speak as a citizen of ordinary sense.

The problem before us is one of the deepest public interest. It affects the health, lives, prosperity and welfare of all classes and all ages. It is a problem which cannot be left entirely and exclusively in the hands of engineers, Supervisors, Commissioners, Boards of Works, or even Boards of Health. The citizens of San Francisco have suffered so keenly in the past from ignorant, wasteful and even injurious expenditures, to say nothing of the malfeasance of public officials and the rascality of contractors, that we may reasonably hope that no large expenditure will be incurred, even in the promotion of the public health, until the proposals and plans of operation shall have received the approval of the majority of the taxpayers; and that approval must be founded on the satisfaction of their intelligence and common sense.

I shall therefore do my best to show that the problem of the sewerage is not beyond the comprehension of an intelligent community; and it is the desire of the Polyclinic staff to assist in educating the public in all matters relating to the public health, and their hope is to create an irresistible current of public opinion in order that what is wisest and best may be speedily adopted and effectually carried out.

As a preliminary it is desirable to satisfy you that there is a problem to discuss. We have amongst us silurians who are satisfied with the existing state of things. On the authority of every annual health report they proclaim the city to be the healthiest on earth, and if we are indeed so healthy, why not be satisfied? What harm is there in a few foul sewers if we

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enjoy good health in spite of them? After congratulating the citizens on their low death rate, the present officer of health calls attention to the high death rate of the Chinese, and states that the death rate of our public institutions is also exceedingly heavy. "If," says he, "we deduct the excessive death rate of our Chinese and public institutions, we should exhibit our city as one of the most healthy on the globe, notwithstanding the deplorable condition of our sewers."

Now I do not hesitate to say that the Chinese death rate is a manufactured article. The Chinese play no part in it; their number, the only basis for a calculation, is unknown. The same number of deaths which three years ago gave a death rate of 16.6 per thousand, this year gave 35.1 per thousand, and there are no special reasons for the difference.

And with regard to the deaths in public institutions there is no excess. In London the proportion is about the same. The fact is that the impecunious invalids, and for that matter the rich as well, turn their faces to the larger cities in search of the best professional advice and treatment. And assuredly there are no special attractions provided by the munificence of the dollar limit. Our so-called hospital is little better than a barn. The furniture and fittings are inferior to those of an English pauper workhouse. The patients are attended by rough and tyrannical nurses, who exercise more power than the doctors. There is no staff of dressers. The students who are there to learn the practice of their profession are mere lookers on and are not permitted either to dress a wound or bandage a broken limb. Patients are sent in for special scientific treatment, and come out disgusted, not having properly received it. The food would fail to satisfy a healthy laborer, much less the sick and delicate. Medical comforts are "*rara aves in gurgite vasto*." The prime business of the superintendent is to keep the expenditure within the low appropriation, and the total cost of medicines, attendance and food is only thirteen cents a day for each patient. The managers are the creatures of politics. They do not appoint the staff of physicians and surgeons, and have no control over them, and the latter have no voice whatever in the management. And according to my experience, which is by no means small, the invalid must be destitute indeed who braves these horrors.

Oh! for some philanthropist who would transfer the treatment of the sick poor of San Francisco from the murky realms of politics to the glorious republic of voluntary charity, and who, like Vanderbilt in New York, would provide for the Polyclinic here a hospital worthy of the name and of our city. The staff of the Polyclinic will require no pay; and, supported by the generosity which has already accomplished so marvelous a result, we will guarantee that every patient shall receive the attendance, treatment and comforts which his case demands.

And now as to the death rate. The Registrar-General of England states that "*The rates in one country or in one city cannot be safely compared with the rates of another without correction for sex and age distribution.*" What does he mean? First as to sex. Here is the sex mortality of four large cities, and you see how different they are.

MORTALITY OF SEXES.

	Males.	Females.	Males.	Females.
Philadelphia	11,140	10,590	+ 550	
Boston	4,983	4,854	+ 129	
Baltimore	1,947	1,972		+ 25
San Francisco	4,205	2,695	+ 1,513	

The census returns for 1890 have not yet been published; but in 1880 there were in San Francisco 31,257 more males than females; and the whole of this disparity was of persons over twenty years of age. We shall presently observe the effect of this upon the death rate.

But the age distribution is still more remarkable. I present you with this table comparing the age distribution in England, Massachusetts and San Francisco:

AGES OF THE POPULATION PER CENT IN ENGLAND, MASSACHUSETTS AND SAN FRANCISCO.

	England.	Massachusetts.	San Francisco.
Under 20 years	59	39	39
" 25 "	10	9	10
" 45 "	21	30	38
" 65 "	6	16	10
Over 65 "	4	6	3
	100	100	100

Here you will see that San Francisco has twenty per cent fewer persons than England under twenty years of age. Moreover, that the disparity between England and Massachusetts is the same. This difference is explained by the difference in the birth rate. In London, for example, there are annually thirty-four births (not counting still-births) to one thousand living. But in Massachusetts and America generally there are only twenty-five. We have no reliable statistics for San Francisco.

Now young infants are extremely sensitive to their sanitary surroundings. It is the most deadly year of life. About two hundred out of every one thousand die before they reach one year of age; probably more in San Francisco. The number of deaths therefore increases with the birth rate. In London twenty-three per cent of the total mortality is under one year, but as the births are less numerous here they form only nineteen per cent of the total. If San Francisco had the same number of births to every thousand living as London, there would be at least 250 more deaths annually, augmenting the death rate nearly one per thousand.

But in the next place we have in San Francisco twenty per cent more of persons between twenty-five and forty-five years of age, and two thirds of them are males, no doubt for the most part immigrants. This period of life is subject to a low death rate. In the absence of census returns, we may estimate the number of persons living at this age in San Francisco at about 130,000; and, as we find by the last report that the mortality was 1,471, the annual death rate of this class is therefore eleven per thousand. This may appear low, but in a perfectly healthy community it would be much less.

The annual death rate of the British army in England, the men being all of these ages, is only six per thousand, and in the sailors of the British navy it is only four per thousand. We may by this comparison safely affirm that the excessive death rate is due to preventable causes, and that, if the sanitary conditions of the citizens of San Francisco were as good as those of the British army and navy, we should annually save nearly seven hundred lives, all in the very prime of life.

There is yet another class in which, if exact data were available, we might find an unnecessary loss of life. We have

in San Francisco 86,000 children of school age,—five to seventeen,—for whom the death rate ought to be extremely low. Let me tell you how low it can be made. Some forty years ago the pauper children of London were removed to large public schools. They were taken from the lowest class ; they were of feeble constitutions, the subjects of rickets, ophthalmia, scald-head and struma. They had been badly housed, badly fed and badly clothed. They were taken from the gutters. It was thought well that the death rate was as low as fourteen in the thousand annually. But the prevalence of preventable disease led to the improvement of the drainage, and down went the death rate to eight per thousand. Soon after this the ventilation was improved, and every child given a separate bed. Then the death rate was further reduced to six per thousand. Later on more attention was paid to personal hygiene ; cleanliness was promoted, the dietary improved, and physical training introduced. Again the death rate was reduced to four per thousand, and last year such was the improved condition of the children, that the death rate was only three per thousand. Meantime the aspect of the children has completely changed. They are no longer recognizable as paupers. Formerly pale and weak, they have become ruddy and strong. Formerly stupid and lazy, they are now bright and intelligent. Now San Francisco may fairly boast of having the finest and brightest children on earth, and it would be a sad reflection if their death rate should be higher than that of those paupers. There are no data for comparison, but three per cent would give only 258 deaths for all the school children of San Francisco.

But sanitarians are accustomed to look less to the general rate of mortality as a test of the condition of the sewerage, than to the prevalence of certain diseases which prevail excessively when the sewerage is defective and are invariably reduced by its improvement. I have selected diphtheria and typhoid fever as typical examples, in order to compare their mortality with that of other cities. But it is desirable to observe that sanitarians believe that it is just as possible to prevent these diseases altogether as it is to prevent small-pox by vaccination. If then I compare the death rate of San Francisco with that of London or Boston, it is not for the purpose

of holding up the reputation of those cities as examples of good sewerage, for neither of them are so, but for showing how dark the sanitary picture in San Francisco is, and what great opportunities there are for its improvement.

ENGLISH AND AMERICAN DEATH RATES.—1891.

City.	Population.	Death rate.	Diphtheria, per 100,000 living.	Typhoid fever, per 100,000 living.
London	4,221,452	23.3	32.0	14.0
Brighton	115,606	18.2	10.0	10.0
Norwich	101,361	19.3	27.0	20.0
Liverpool	517,116	27.0	12.0	25.0
Hull	200,934	21.0	7.0	22.0
Boston	448,477	22.5	100.0	32.0
Cincinnati	325,000	19.8	124.0	63.0
Philadelphia	1,046,964	20.7	50.0	54.0
San Francisco	330,000	20.0	100.0	40.0
Alameda	12,000	12.0	.75	0
San Diego	16,000	11.3	.00	.75

Diphtheria is not as closely associated with defective sewers as typhoid fever. It is propagated largely by personal intercourse. But its germ is extremely persistent. It lies dormant for a long time in dirty linen, dirty walls and floors, filthy subsoil, and in sewer filth. The germ is propagated on the surface of filth and the damp walls of sewers. In San Francisco last year there were 318 deaths, whilst in all London there were but 568. In London the rate is thirty-two per 100,000 living, and in San Francisco one hundred per 100,000 living, or more than three times as many in proportion. In many parts of London there was absolutely no diphtheria. If the mortality in San Francisco had been at the London rate, there would have been ninety-six deaths, and we should have saved 222 lives. For every death there were at least five recoveries, so that we have had over 1,200 cases. At only \$100 each for nursing, doctors and undertakers, we have lost \$120,000 last year by the excessive prevalence of this one disease.

No fact in sanitary science is better established than the close connection between defective sewers and typhoid fever. Mainly by sewerage improvement the English death rate from typhoid fever has been reduced since 1869 from thirty-nine to seventeen in 100,000. Last year we had 129 deaths, or forty in 100,000 living. In London last autumn the whole medical