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PUBLIC HEALTH

OF THE

CITY OF NEW YORK:

REMARKS OF Rev. F. C. EWER,

BEFORE THE

SANITARY ASSOCIATION, NOVEMBER 21, 1861.

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With Appendix.

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REMARKS OF THE REV. F. C. EWER.

Mr. President, and Gentlemen and Ladies:

I feel that I have stepped into a place here, and am to occupy time, which some other should fill. For the cause of urban Sanitary Reform did not attract my attention until a few days ago; and, in the mean time, it has opened out before me in such broad proportions, that I at once marvel at the apathy of the community in the matter, and wonder at my own presumption in consenting to speak to the subject thus early. Suffering, however, from an incautious moment of yielding to solicitation, and moved by the fact that it is every man's duty to put his shoulder to the ball of moral reform, which gained its impetus from the slope of Calvary, and which is to-day gathering up and cleaning from its pathway the rubbish of the world's degradation, I have thrown together, this afternoon, a few notes, rather on the general subject before us, than that to which I am assigned in the circular of the Committee.

I must premise by saying, that I have nothing to present which will be new to the gentlemen of the Association. I am too fresh in their ranks to attempt to instruct them, even were I otherwise qualified. I assume the lower position, which lies between them and the public; and, if I shall succeed in uniting with myself one new convert to their cause, I shall feel that my efforts are, at least, not lost.

There seems to be a call from God, summoning some

body of men to arouse this community to the performance of a duty, to which it is not awake. It is every year becoming the more solemn duty of our people to require of their legislators that they give heed to the calls of indigent suffering among us. It will not do to throw the entire blame, for the want of proper Sanitary laws, upon the Legislature. It is the Legislature, indeed, that make the laws, but it is the community that make the Legislature. And if, year after year, the body of men that sit in Albany are deaf to the wails of the suffering and the dying among us, the responsibility of their neglect lies back upon us. There is where the fault is. It is useless to say that we, as a people, are beridden by politicians, who look more to salaries for their friends than to our interests, should the two clash. For I venture to say, there is not a city in this land —no, not in the world—in which the moral and the right-thinking are not in an overwhelming majority. I do not say a bare majority, gentlemen, but in an overwhelming majority. The city of San Francisco for years saw its substance eaten out by bad politicians. Election would follow election, and still with the same result; until it seemed that any large city like that must be inevitably given over to corrupt legislation. But on the organization of the Know-Nothing party—to which scores of Democrats flew, not because they liked its distinctive tenet, but because they saw in the body a rising power for reform—and, subsequently, on the organization of the Vigilance Committee, and the consequent devotion of the citizens at large to public affairs, which before, in the greed for gain, they had criminally neglected, San Francisco was astonished at the stupendous power which she discovered her right-thinking citizens could wield at the ballot-box—if they only would.

You may think, too, in New York, that perhaps by unusual and long-sustained exertion you might manage to secure a bare majority at the polls, for order and morality, and attention to the health of the miserably poor. But in one respect this is a mistake. Gentlemen, there is a great monster for good on this Island; but it is asleep. It is criminally asleep; and, while it sleeps, the devil sows tares. That monster once but thoroughly aroused, even New York would be astonished at the overwhelming majority for right which it is in her power to roll up everywhere at the polls. Now, I say, it is the duty of some body of men to awake this monster, and set it to work. Let a voice go up from this city which no politician will dare disobey. It can be done, and it should be done. All honor, then, to the noble body of men who have commenced this work. They should have our prayers, and, what is better, they should have our hearty coöperation, for "to labor is to pray." But I have lingered somewhat too long on this point.

Every one, Mr. President, is aware, in a general way, that in all large cities, and of course in New York, there are dark spots here and there, where humanity clusters in a festering mass; where men go down into the baptismal waters of filth, and rise in ignorance, disease, and loathsome crime. They are the burying grounds of morality; they are the charnel houses into which all that is noble in man descends, forever, to death. There is a resurrection from beneath the marble monument, but these graves never give up their dead. In them lie, forever, murdered virtues; and there hopes sleep, never to awake.

But when we have thus said all, we have not said every

thing; and permit me to awaken the attention of those who have only this general knowledge which all possess, by something a little more special—by a few facts.

I cannot take you, as it were, by the hand, and lead you into certain of those living graves, known as tenant houses; for the details to be described are such as cannot be brought before this audience—such as should not be even spoken of. But will it be believed, that there are houses in this city, by the hundreds, through which, after they are once built, it is impossible ever afterwards to pass a current of pure air? Will it be believed that in cellars, six feet below the ground, there are twenty-seven thousand people in this city who make their abode, cook, eat, sleep, hive together in all the multitude, without the neatness, of the ant; that there are many single blocks containing nearly twice the number of families residing on the whole Fifth avenue; single blocks that contain as many families as would inhabit a continuous row of dwellings, similar to those on the Fifth avenue, three or four miles in length; that there are multitudes of blocks, any ten of which contain, to-night, a larger population than the whole of the city of Hartford, or the city of Utica, though they each cover an area of several square miles?

Nor are these vile dark spots confined to one locality. They are not alone at the rear of the City Hall. You cannot go to the Williamsburgh ferry, at Grand street, without passing almost within a stone's throw of them. You cannot enter Trinity Church without coming into dangerous proximity with some of these houses of slow murder. You cannot pass down town, by the Sixth avenue railroad, without almost crossing their pestiferous

shadow. In Laurens street there is a cluster of buildings, eight on each side, facing each other, which is appropriately called Rotten row. Go there, as I did yesterday, if you wish a practical, scathing criticism on our Statute Book. Poverty, filth, crime and disease, are concentrated there in one vast urban ulcer. We are told that, in a space only one hundred and eighty feet long, by fifty feet deep on each side, there are huddled together one thousand two hundred and fifty persons. In one room, says a visitor, six people are living, with hens scratching about on the bed. In some of these tenant houses of our city, the ceilings are so low as not to allow persons to stand erect, and there is one house mentioned, which the rapacious landlord has had constructed to hold one hundred and twenty-six families.

Now, why has this state of things grown up? It is partly because of the princely rents that come out of it. Some of the worst class of these houses rent for their entire value every year. The little miserable block I spoke of above yields $7,680 a year. A little two-story rear building is mentioned, containing ten apartments only, and fourteen families, which yields $2,000 a year, or thirty per cent. on its assessed value. Rooms in such houses rent for perhaps an average of eight dollars a month each. Now, here are families, by the hundreds, living each in one room, and paying for it nearly a hundred dollars a year, because they think it is cheap; paying this, too, for no comforts—nay, absolutely renting, with their miserable shelter, an atmosphere charged with vigorous seeds of disease and death. Can we wonder that, in the last fifty years, the ratio of deaths arising from "diseases from domiciliary causes, *over which we have control*, has increased, in many

instances, one hundred per cent.; in Cholera Infantum, two hundred and fifty per cent.; and in Diarrhœa, one thousand per cent.—while in the same time there is no variation in the ratio of mortality from diseases not due to such external circumstances?"

But is it alone at the door of avariciousness that this state of things is to be laid? Is it not to be laid at the door of this community at large, which goes on obliviously allowing such a state of things to exist, and which does not demand of its legislators correction of the evils by the wholesome restraint of law?

But before I go on, Mr. President, let me in a word or two allude to the consequences of this enmassing of human beings—of this emptying of men, women and children into an almost inevitable condition of filth. In these dens men and women come at last to breathe over and over again their foul breaths; and those in the upper stories the rising breaths, in addition, of such as hive below them. Nor is this all the poison that fills the air of some of these houses. The fetid animal exhalations from the persons of hundreds of the inmates mingle their bane; the deathly gases from lights and stoves, the fumes of miserable food, the reeking odors of decomposing offal (in Rag-Pickers' row, the nameless and innumerable stenches from thousands of old gathered street rags), the effluvia from pallets of disease, and sometimes from the corpse itself, unite to give those human beings an atmosphere of death to breathe. Every inhalation is a poison. Each sends but corruption down the arteries and into every fibre of the system.

In many of these dens, too, men and women are cut off,

to a great extent, from the invigorating influence of a full supply of light. And there, wallowing in filth, moving about in dimness, if not in a darkness, dispelled but by the glimmer of a lamp, and breathing poison, what can result but a sinking of the vigor of the human system? Now, "the body is the basis of the soul." We do not enough realize how much, upon the changing conditions of the one, depends the condition of the other. What must result, then, to the mind, the morals, the soul? What but death? And the process is certain, for we are told that pure air, the clear light of heaven, and water, are "unequaled in their stimulating and vitalizing power." I am not here as an excuser in any way for inebriation. But I think we must admit that, in the sliding scales of man's will and propensities, there are passions and desires within us which can be so roused as to be next to invincible. And if you make a man a brute, you must not wonder if afterwards he acts the part of a brute.

For when the human system, deprived of its powerful natural stimulants, air, light and water, begins to sink, what is the consequence? The inevitable consequence is a growing craving for some artificial stimulant, to keep up its drooping vigor. God made man for air and light, but man makes his fellow a brute. And besides, the more the system droops, the more does it become a prey to cheerlessness and depression of spirits and melancholy; and these drive it with more unerring force to the intoxicating cup for relief. And so, there they stand, the twin fiends, melancholy and ardent drink, first to chain the man down to a sloth and neglect of person and mind and family, from which at last he has no desire to rise, and then to let loose all the other passions, to run their riot. And so, from the

absence of proper light and pure air, the man or woman goes down and down in the scale of humanity. Ambition is sapped and falls. One after another, the virtues, those adornments of man, which almost alone raise him above the brute, and which alone raise him above the demons—one after another the virtues wither and die forever; one after another the hopes are buried, never to be raised; and at last the miserable wrecks, which once were men, sink themselves, through putrid disease, to a death—for which, in great measure, this community is responsible.

Behold how God pours around the earth his invigorating air; without measure—everywhere—everywhere—in the lowliest valley, and on the tops of the mountains; behold how with His winds He forces it down the streets of cities, whirling it into nooks and crannies, determined, as it were, to distribute it to his creatures. But we, by our negligence at the ballot-box, when we elect our legislators, allow certain rapacious landlords to shut it from those spots where hundreds of our fellow-men pass the greater part of their lives. Behold, too, how He pours His stimulating light upon the globe, rolling the earth round and round in it, bathing it forever and forever, that the living rays may prick man, and beast, and plant, into a vigorous action. But we allow our legislators to laugh to scorn the wants of those beings who live in an evening all the day long.

I have spoken of light and air—shall I stop to picture to you all that follows, too, in the train of uncleanliness, in which, almost unavoidably, many of these houses are steeped; shall I show how, even with light and air, disease inevitably follows such filth; and how, with "failing

health, there steal in want and neglect of children ;" and how, then, the whole brood of crimes revel and play ? It is wonderful that man should construct, and that men should permit in their midst, prolific manufactories of criminals, to stand at perpetual war with order and morals. Memory ! What is there for a child, reared in these spots, to look back upon and remember ? We permit the past of thousands to be darkened to a midnight. We strip homes of their glory—the family circle of its sacredness ; and then for the manhood of our victims we build granite prisons ! Why, from neglect of law, there seems to be abroad in this city a licensed system to tear down self-respect, and brutalize thousands in body and soul.

I hinted just now of the deaths that these vile spots are giving to our lists of mortality. What, indeed, first directed my attention to this whole subject was a statement, in private conversation, by a member of the Sanitary Association, that by a proper system of laws eight thousand lives might annually be saved in this city. The last year, which was unusually healthy, some six thousand lives, it seems, were needlessly sacrificed.

Now, Mr. President, however, with the moralist, we may discuss the question as to whether or not the State has a conscience, one thing is certain : the State possesses a moral character, and has moral and many other duties identical with those of the individual—the duty of humanity, the duty of purity and order, the duty of intellectual progress. The State recognizes the duty of paying debts, of keeping treaties, of preventing cruelties, of prohibiting indecent acts, of assisting the progress of science and intellectual culture ; and if it is her duty to educate all her people, by

what intellectual alchemy can we make it not equally her duty to take such measures as shall tend to unfold and expand the moral sentiments?

But how shall this be done? It is true that these poor creatures, ignorant of the laws of health, ignorant of the accumulative causes of their degradation, ignorant of the fact that uncleanness and immorality act and react upon each other as mutual cause and effect, have no desire to raise themselves into better physical or moral condition. But it is useless to say they cannot indirectly be made to rise by others—that their wills to rise cannot be developed. And it is a fatal self-deception for those others to fold their hands, and say, "There will be such people in the world."

Now, good habits, if they do not create, are at least a fertile soil for the moral sentiments. Man is naturally not a deteriorating, but an aspiring creature. The seeds of virtue and uprightness within him, which God planted, will spontaneously sprout and grow, if you but remove obstructions from around and above them; if you but give them a fair opportunity. I think I may go so far as to say, then, that the moral sentiments are unfolded by good habits. And such habits, if not voluntarily entered upon by these poor people, should be created by law. Let these tenant houses, in their present condition, be prohibited by law; and let the people so vote that they shall be abolished by law. Let it be rendered by law impossible for one thousand two hundred and fifty people to live together in one block—let it be rendered impossible by law for one hundred and twenty-six families to crowd into one house. If the miserably poor do not know what they

should have, give them, by law, space and light and air and water, nature's stimulants, and you then not only dispense with the violent necessity for liquor, which the brutal passions of man, roused by the depression of the human system, must and will have, and you not only clear away much of the crime which follows the intoxicating cup, but, above all, you create habits of at least a moderate degree of cleanliness, habits of ventilation and the like, and so you unfold gradually their moral sentiments. You open a door which is now absolutely closed to the moralist and religionist proper.

Besides, not only are the moral sentiments developed under good habits, but a consciousness of one's rights is the spring whence flow sentiments of a larger and deeper import—sentiments of morality and duty. Deprive a man of his rights, and you sap his manhood; you make him a coward. Give him his rights, and a consciousness of his rights, and you make him bold and vigorous, and full of energetic growth in all directions. Now, every man has a right, whether he knows it or not, to an unstinted supply of the light of the sun, and a plentiful supply of the air of Heaven. And if we have no right to enslave men capable of being free, we have no right to degrade men in any way, or by any means, direct or indirect. Whatever may be the question, as to whether or not an inferior race should be the servants of a superior, here in the city we are, by our inertness, plunging thousands of *our own race* into a worse than slavery. Verily, we need another phalanx of philanthropists to arise among us.

Give these sufferers, then, their rights. Let them learn their rights by habit; and let habit be forced upon them

by law; and, between habit and a consciousness of rights, we shall restore to them—at least in some measure—the home, with its lambent halos; we shall give back the sacred seclusion which belongs to the family circle; we shall give to their children a past on which memory can linger with somewhat of fondness, and a future over which hope can play. We shall open a possibility for developing morality, which then will react beneficially upon their mode of life.

Now, Mr. President, in conclusion, the State, I say, has a moral character; and the performance of its moral duties devolves in the last event upon the community at large. What, then, shall the community of this State say to the record against them, which this closing year is making, viz., six thousand lives needlessly, recklessly slaughtered by the State of New York? Six thousand lives! that might have adorned the earth with labor; that might have rendered happy thousands of homes; that might have added to the material wealth and welfare of the nation; that might have aided in restoring to it order and peace; some of which, under proper culture of the State, might have opened secrets from the arcana of art or science, and have endowed with them time and eternity! Six thousand lives—slaughtered by the State of New York!

THE PUBLIC HEALTH.

THE present condition of our city, its alarmingly high death rate, the rapid increase and overcrowding of the population, the increasing prevalence of diseases that indicate widely-acting causes of insalubrity; and, lastly, the absence of a rational Sanitary Code, and the imperfect execution of the existing laws relating to the Public Health, combine to demonstrate the necessity of such an Association.

The following tables exhibit in a striking manner the excessive mortality and the high death-rate in New York.

The population of New York, by last census (1855), was	629,810
The population of London, by last census (1855), was	2,362,236
—nearly four times as great.	
The mortality of New York in 1857 was	23,196
If the mortality of London bore the same ratio to that of New York, as does its population, it would have been (in 1857)	92,784
But it was only	56,786
A saving of lives over the New York rate of	35,998

The ratio of deaths to the population in the cities mentioned below, was, in the years

	New York.	Baltimore.	Philadelphia.	Boston.
1835..one in....	40·87	42·75	.....	43
1840....".....	39·74	50·12	.....	.....
1845....".....	37·55	41·81	.....	.....
1850....".....	33·52	36·19	46·10	37·84
1852....".....	.....	.....	40·45	.....
1853....".....	.....	.....	43·61	.....
1854....".....	22·5	.....	38·10	.....
1855....".....	27·33	.....	47·81	39·88
1856....".....	28 67	.....	44·5	.....
1857....".....	27·15	.....	.....	40·5

Were the rate of mortality in the city of New York no greater than the death-rate in London, Philadelphia, or Boston, there would be an annual saving of six or seven thousand human lives. But the needless sacrifice of life in our city gives but an inadequate idea of the actual losses caused by preventable sickness and death. It has been reliably estimated that the pecuniary burdens occasioned by preventable disease and the needless sacrifice of human lives in the city of New York, amount to more than *thirteen millions of dollars, annually.*

EXTRACT FROM THE REPORT OF THE SELECT COMMITTEE OF THE SENATE, APPOINTED TO INVESTIGATE THE HEALTH DEPARTMENT OF THE CITY OF NEW YORK.

"From the report of the 'New York Society for Improving the Condition of the Poor,' for the year 1857, the committee extract the following passage, for the purpose of preserving an interesting table which illustrates, in an international aspect, the subject under discussion. It presents the question which so deeply affects the welfare and the reputation of the city of New York, in a point of view that ought to fix the attention of every intelligent citizen. While as a nation we rank first, in regard to health, among nine of the great nations of the earth, yet as a city, our vaunted metropolis stands last, in this respect, among eight of the populous cities of the world.

"'The people of the United States are, probably the healthiest in the world. The annual deaths are one and one-half per cent. of the population, whilst the ratio of deaths in this city is about the average of most European cities. The following tabular exhibit of the annual mortality in some of the principal countries and cities of Europe, will illustrate and confirm the statement.

'The mortality of London is 25 in 1,000.
" Berlin is 25 in 1,000.
" Turin is 26 in 1,000.
" Paris is 28 in 1,000.
" Genoa is 31 in 1,000.
" Lyons is 33 in 1,000.
" Hamburg is 36 in 1,000.
" New York is 38 in 1,000.

'The mortality of different countries is:

'In the United States 15 in 1,000.
In England 23 in 1,000.
In Denmark 23 in 1,000.
In France 23.5 in 1,000.
In Holland 24 in 1,000.
In Sweden 24 in 1,000.
In Prussia 28 in 1,000.
In Austria 31 in 1,000.
In Russia 36 in 1,000.

"'If, therefore, the ratio of mortality is any criterion of the condition of the laboring classes, which constitute a large proportion of the population, then our tables of mortality show that there are few cities where the improvement of the physical state of the inhabitants is more needed than in our own. We have no statistics of wretchedness, such as have been officially gathered up in some European cities; yet it is not the less certain that New York suffers as much, if not more, from a disregard of sanitary economy, and what may be termed the science of common life, than probably most European cities.'"

DOMICILIARY ACCOMMODATIONS

IN THE

CITY OF NEW YORK.

At a regular meeting of the Sanitary Association, held on the second day of June, 1859, Mr. Halliday submitted a Report from the Select Committee on Domiciliary Accommodations, of which the following are extracts:

DOMICILIARY ACCOMMODATIONS OF THE CITY.

Three years since, the whole number of buildings, of all descriptions, in this city, was some fifty-three thousand; this includes, of course, buildings occupied exclusively as stores, and all public buildings, churches, etc. Some of the lower wards are nearly occupied by stores. The city is divided into twenty-two wards. In 1856, nineteen of these wards contained a population of 535,027 inhabitants—divided into 112,833 families, averaging a little less than five souls in each family. For the accommodation of these 112,833 families, residing in nineteen wards, there were 36,088 dwellings, averaging about three families to each dwelling. There are but 12,717 of those families occupying an entire house; 7,148 of these dwellings contain two families; 4,600 contain each three families. Thus, while 24,465 of these dwellings shelter but 36,213 families, the remaining 13,623 houses have to cover 76,620 families, averaging nearly six families to each house—showing that about three-fourths of the whole population of New York live, averaging but a fraction less than six families in a house, while only about one family in ten occupy a whole house. The following table will show how the families are apportioned to these dwellings:

			NO. HOUSES.				NO. HOUSES.
Containing	1	family	12,717	Containing	23	families	5
"	2	families	7,147	"	25	"	9
"	3	"	4,600	"	26	"	26
"	4	"	3,256	"	27	"	1
"	5	"	2,055	"	28	"	1
"	6	"	1,060	"	29	"	1
"	7	"	1,487	"	30	"	4
"	8	"	1,444	"	32	"	2
"	9	"	355	"	34	"	1
"	10	"	556	"	35	"	2
"	11	"	175	"	36	"	3
"	12	"	277	"	37	"	1
"	13	"	300	"	38	"	1
"	14	"	169	"	40	"	1
"	15	"	90	"	42	"	1
"	16	"	289	"	43	"	1
"	17	"	58	"	45	"	2
"	18	"	63	"	48	"	1
"	19	"	19	"	50	"	1
"	20	"	160	"	54	"	1
"	21	"	9	"	56	"	1
"	22	"	28	"	57	"	1
"	23	"	5	"	87	"	1
"	24	"	58	"	94	"	1

There are many single blocks of dwellings, containing nearly twice the number of families residing on the whole of Fifth avenue; or than a continuous row of dwellings, similar to those on the Fifth avenue, three or four miles in length. There is a multitude of these squares, any ten of which contain a larger population than the whole of the city of Hartford, which covers an area of several miles. In 1850, the entire population of this city was 515,394; number of families, 93,608; whole number of dwellings, 37,677.

Philadelphia, in 1850, contained a population of 408,752, divided into 72,392 families. To accommodate these families, there were 61,278 dwellings. With a population,

107,000 smaller than New York, Philadelphia had 23,601 more dwellings.

Baltimore, in 1850, with a population of 210,646 in 94,925 families, had 30,065 dwellings.

Boston, in 1850, had a population of 146,881. Chelsea, a suburb of Boston, had a population of 7,236. Boston and Chelsea, included, had 25,415 families, and 16,567 dwellings.

The extreme value of land in New York, makes tenement houses a necessity. They have sprung up within a few years, and have now become so numerous, and the amount of capital invested in them is so enormous, and the interest paid to the owners in the shape of rent is so great, that it may be almost an impossibility to accomplish any reform. In one case, where the establishment is arranged for the accommodation of one hundered and twenty-six families, the rates charged, if the tenements were all occupied, would not be less than twenty-five or thirty per cent. on the first cost—so that some five years would suffice to pay principal and interest. This building stands on a plot of ground perhaps 50×250 feet. There is an alley in each side, running the whole depth and some eight feet in width. Our tenement buildings are almost invariably so constructed as to make even tolerable ventilation entirely out of the question. A current of fresh air can never be passed through them after they are finished. Each tenement very generally consists of a room and bedroom. The buildings three to six stories high, with two or more families on each floor or story. In this one room the family sit, do all their work, cook, wash and eat. Disgusting as some of these details are, the influence both on

the health and morals of the people cannot be properly estimated in the absence of these details. I am no longer surprised at developments of wickedness in our midst, when I see how the masses live. The large tenement house alluded to above, is occupied principally by foreigners, but not of the lowest class; most of them, with different surroundings, would make themselves appear respectable; but look at a single fact, in connection with the accommodations offered to these families, where they pay thirty-five per cent. on the money which their tenement costs. The alley-ways, at the sides of these houses, are excavated to the depth of the cellars of the house—say nine feet—an arch thrown over, and covered with flagstones. Directly through the whole length of this excavation or vault, is an open drain connecting with the street sewer, the water always standing with but very little current. Along one side, the whole length of this vault, are arranged the water closets used in common by this horde of families. They should be called stalls rather than closets, for there is not a door connected with this whole establishment; there is an opening from each division of the cellar into this vault—the vault being lighted by openings a few feet apart, covered with iron grating such as, or similar to, those upon sidewalks. The filth and odor of this place are awful. And yet these are the only accommodations offered to hundreds of women and children, amid filth such as no decent farmer would drive his swine into, and where there is little more retiracy than upon a public common. Where there are such beastly arrangements as these, how can they develop other than a beastly morality? Nor need it be a wonder that more people die in New York, than in almost any other city on the face of

the globe. Our tenements for the masses are so constructed as to shut out the light, and make ventilation an impossibility, while the surroundings without are made to combine the very elements of death. They have but two windows for light and air, and only one to each room; these look out against a solid brick wall, eight feet from them, and upon this alley-way the odors arising from the horrid vault beneath mingle with every inhalation these poor creatures make. Nearly all of our tenement houses are open to these very strictures—not, I will admit, to so great an extent,—yet the state of things is such as to make death a certainty to most of the poor babes whose lungs inhale their atmosphere. No one will wonder who goes through these houses,—only as he shall wonder that all, old and young, do not die. If this city were not more favorably located for health than almost any other city on earth, almost noboby would live here. Let the same state of things exist in New Orleans, and it would be decimated at once—and so would London. But terrible as the physical aspect is, the moral side of the picture is utterly appalling. What will be the moral condition of New York thirty years hence? is a question that ought to be pondered soon, if we would not be engulfed. I was in the city during the whole period of the first cholera. With a population of two hundred and twenty thousand, the deaths ran up from about six thousand the year previous, to more than ten thousand six hundred, notwithstanding that more than one-half of the population left the city during the prevalence of the epidemic. Then the disease selected as spots where it would run riot, where there were the most crowded neighborhoods. The block in Laurens street, between Broome and Grand, was most ter-

ribly scourged. I very well remember entering one of the houses the morning the sixteenth corpse was carried out; and notwithstanding the terrible mortality there, it would bear no comparison to the present dense crowded state of our tenant houses. In 1832, there was only here and there a place which seemed so particularly to invite the disease. Now, these plague-inviting neighborhoods are everywhere. Then, the mass of the people of New York could leave for more healthy localities. Now, if cholera or yellow fever gain a foot-hold, they must stay and die, as they could not, on account of poverty, leave. Let the cholera return here with the same virulence as at its first visit, and what could prevent the death of hundreds of thousands of people in ten weeks, which was about the time it prevailed then? Scenes I then witnessed by day and by night, can hardly ever fade from my memory; but I candidly believe that, from the altered condition of our people in regard to their domiciliary accommodations, and from their deeper poverty being compelled to stop here, the mortality would be most horribly increased.*

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* The facts contained in this valuable Report of Mr. HALLIDAY are contained in a volume since published by that gentleman, under the title of "*Lost and Found.*"

TOPOGRAPHY AND HYDROLOGY

OF

NEW YORK.

BY EGBERT L. VIELE, Esq.

A special meeting of the Sanitary Association was held in the University Medical College, Fourteenth street, on Thursday evening, June 13, 1859.

On motion of Gen. WETMORE, the usual order of business was set aside, to listen to a paper by Mr. EGBERT L. VIELE, upon "The Topography and Hydrology of the Island of New York, in their connection with the Sanitary Condition of the City," being a report upon this subject made at the request of the Society. The subject was illustrated by a map, hanging against the wall, behind the reader.

Mr. Viele began by saying that of the total number of deaths which take place annually over the whole surface of the globe, nearly one-half are caused by fever in its different forms. To this may be added the number who perish by diseases which originate under circumstances similar to those which produce fever.

It is a well-established fact that the principal cause of fever is a humid miasmatic state of the atmosphere, produced by the presence of an excess of moisture in the ground, from which poisonous exhalations constantly arise,

vitiating the purer air, and carrying into the system of those who inhale it a virus which, if not sufficiently intense to produce fever, has such a disturbing effect upon the functions of some organ, or set of organs, as to weaken the general system, and act as a powerful predisposing cause of some of the most common and fatal maladies to which the human body is subject. It follows, as a matter of course, that the first efforts to improve the salubrity of any place whatever, should be directed toward preventing the aggregation of water in particular localities, and to remove such as has been allowed to collect.

In order to illustrate more clearly this subject of drainage, let us examine it in connection with a district of country where the surface is in a perfectly natural condition, unaltered or unaffected by any artificial improvements—diversified by hills and valleys, the elevations and depressions forming the water sheds and water courses by which the ground is partially relieved of the excess of rain which falls upon it. The evaporation which is constantly going on, under the influence of solar heat upon the waters of the ocean, and of the land, carries into the atmosphere large quantities of water, which, through changes of temperature, becomes condensed—and descends again upon the earth. But a small portion of that which is annually discharged from the clouds is necessary to vegetation, or is absorbed by the ground. A portion of it passes off on the surface into the rivulets and rivers, and thence to the ocean. Another portion descends through the soil by the force of gravity, until it meets with an impermeable substratum; flowing along this stratum, it either accumulates in hollow basins, or diffuses itself through extensive tracts of subsoil, finding vent in the shape of springs; or by spreading itself

over a large mass of soil, it saturates it as a sponge, rendering it unfit for cultivation, creating marshes and swamps, whence arise the malaria so destructive to health. These are visible effects; but there is another condition by means of which this surplus water is rendered injurious to vegetation and to health:—As soon as a portion of water is beneath the surface, it is acted upon by capillary attraction, in addition to the force of gravity, the tendency of which is to hold it in suspension, whereby the soil becomes soured and chilled by the evaporation, which carries the water off in the shape of mist, so that even in those sections of country where there is no evidence of marshes or swamps, the nature of the soil may be such as to render it extremely unhealthy.

THE CITY OF NEW YORK.

Probably there is no spot in the world so well adapted by nature for the purpose of a commercial entrepot as the Island on which this city is built. Lying upon the unturned edge of a vast primitive formation, whose upheaval has given it a well-defined water-shed, combined with every variety of surface; containing twenty-two superficial square miles, every foot of which is adapted to building purposes; its shores crested by noble rivers, rolling into the ocean, pregnant with creative energy; projecting into a bay which contains 24 square miles of water surface, and connects with an outer roadstead of 100 square miles in extent, and, to crown all, blessed by a climate of unsurpassed salubrity.

Every year adds its millions of increase to the business of our merchants. New palaces of trade and industry are rising up on every hand, and so it will go on; capital will

continue to seek here an investment, and labor its reward, and a few years will find here a city rivaling in population, opulence and splendor any city of ancient or modern times. If there are those who doubt it, let them look back at the progress of the city for the last thirty years. In 1826 the number of inhabitants was 150,000, and the estimated value of taxable property 100,000,000 dollars. In 1856 the number of inhabitants was 700,000, and the value of taxable property was 500,000,000 of dollars. At this rate of increase, in 30 years the number of inhabitants will exceed two millions, and the value of property exceed three billions of dollars.

ERRORS OF THE PAST.

Let us examine the map, and see wherein the errors of the past consist, and where our responsibility rests in this matter.

In the first place, within the corporate limits of the city, more than seven hundred acres have been filled in where the tide once flowed, and the material of this filling has generally been the worst description of earth for such a purpose. The fearful ravages of epidemics in these portions of the city are sufficient evidence of their insalubrity.

Commencing at the Battery, and following the original topography, we find that, previous to the year 1695, an inlet, and subsequently a canal, ran through what is now Broad street, as far as Exchange place, with a branch running toward the west through Beaver street, afterwards known as the Old Ditch. The main canal was crossed by two principal bridges, one at where is now Bridge street, and the other at Stone street, while at Beaver street there

were two smaller bridges, for foot passengers. The Long Island ferry house stood at the corner of New street and Exchange place, the ferry boat passing through the canal.

A little further north a stream ran through what is now Maiden lane. Next above, where is now Ferry street, was Beekman's Park, a large tract of wet land, from which a stream ran into the East River. Next was the Collect Pond, a large body of fresh water, said to have been seventy feet in depth, located in the basin, the site of which is now occupied by the Tombs. On this small lake, Fitch launched his first steamboat. A stream called the Wreck Brook ran from the Collect to the East River, through a low meadow; it emptied into the river at the foot of what is now Roosevelt street. There was formerly a bridge across this on the old road, which is now Chatham street. The main outlet of the Collect was by a stream, running to the North River, through the Lispenard Swamp, which covered a very large surface, extending from Duane street on the south, to Spring street. A large stone bridge crossed this stream at Canal street. In the year 1796 a project was submitted by two engineers to the city authorities, for making a dock or basin of the Collect, as a safe harbor for shipping, and to drain and carry off the water from that quarter by means of a ship canal. This shows what an extensive affair this body of water was. So far back as 1805, a committee, appointed to examine into the condition of the Collect Pond, reported that it was filled with the bodies of dead animals, and was dangerous to the public health.

It has now disappeared from view, but is more or less present in the soil—as is evidenced by the miasma which

has proved so fatal to many poor wretches, who have been arrested in a night's debauch, and thrown into the stone cells of the Tombs, never to awake from their drunken sleep.

The next stream above the Collect, on the North River side, was called the Minnetta Water; originating in the neighborhood of University place and 16th street, it emptied into the Hudson near the foot of Hamersley street, passing through what is now Washington square, and creating a deal of swampy soil in its course. Where it crossed the old road near Eighth street, there was a bridge, and the stream was 12 feet wide at this point. It is now lost to sight, but very dear to the memory of some people, for it has cost a great many doctors' bills. The physicians can trace the course of this stream by their practice in intermittent fevers. On the opposite side of the city were the Stuyvesant swamps, a very extensive area of low alluvial land, receiving the waters of numerous small streams. Tompkins square lies in this region. The easterly side of the city is swampy all the way up from here to Kip's Bay.

A considerable stream, creating a great deal of swampy land, received the drainage of Murray Hill and vicinity, passing through what is now Madison square and Gramercy Park; so we see that there are five public squares located entirely, or in part, in swamps, viz.: St. John's, Washington, Tompkins, Madison, and Gramercy. On the westerly side again we find a stream emptying into the Hudson at 32d street and 11th avenue, coming all the way from the 6th avenue, and pursuing a very tortuous course, and creating an abundance of swampy soil. An-

other at 42d street of nearly the same character and extent.

In the more elevated portions of the island, as the topography becomes more intricate with higher hills and more extensive valleys, the water courses increase in magnitude. The progress of street grading has obstructed these streams, forming in all directions large deposits of stagnant water, engendering a corresponding amount of fever and ague, from which a large portion of the population of that section of the city are at the present time suffering. In the neighborhood of Broadway, Eighth avenue and 62d street, was, until recently, a stagnant pond emitting the most noxious odors; it is now partially obscured by a covering of earth thrown in to bring the lots into the market. The earth, however, is as full of water as a sponge.

A stream, originating in this pond, runs in a north-westerly direction, then turns and crosses the Central Park diagonally to the corner of 59th street and 5th avenue; here a miserably constructed culvert partly obstructs and dams back the water; crossing 59th street, it passes under the 5th avenue, near 58th street; then again crossing 59th street, between 4th and 5th avenues, it passes under the 4th avenue, between 58th and 59th streets; then crossing 58th, 57th, 56th and 55th streets, between 3d and 4th avenues, it runs into a sewer at the junction of 3d avenue and 54th street. A branch of this stream passes under the Arsenal through a well-constructed conduit, and under the 5th avenue and 64th street, where it debouches to the surface, and crossing 63d, 62d, 61st, and 60th streets, joins the main stream at the junction of 4th avenue and 59th street.

Another large stream rises between 8th and 9th avenues, and running easterly crosses the Central Park at 74th street, passes under the 5th avenue at 74th street, then crossing 4th avenue and 3d avenue, between 74th and 73d streets, crossing and recrossing 75th street, between 2d and 3d avenues; crossing 2d avenue, and then 74th street, near 1st avenue, crossing and recrossing 74th street, between avenue A and 1st avenue, crossing avenue A between 74th and 75th streets, and avenue B between the same streets, it empties itself into the East River. This stream is more than three miles long. The various turnings are caused by ledges of rocks. A large body of water passes through it, which, at one time, turned a mill, and the ground throughout its whole course is swampy. It is scarcely necessary for me to go on describing the courses of all the original streams. Those I have described contained almost as much water as has been collected from various sources on Long Island for the Brooklyn Water Works, which have just been completed.

I know that it is generally supposed, that when the city is entirely built upon, all that water will disappear, but such is not the case.

The very material which is thrown in to cover it up will form a nucleus for its increase, not only retaining a larger amount of moisture, but will have added to it the drainings through the animal and vegetable refuse which accumulates in all large cities. The fatal consequences which we have already felt are trifling compared to the suffering that will follow the entire occupation of the island. The older cities of Europe give us sufficient evidence of this. They pursued the same course which we are following, and

what has been the result? Take, for instance, the city of Glasgow; for five years ending 1840, 55,949 persons were attacked with fever—every fifth person in the city; out of these, 4,778 died. We know not at what moment, under a combination of unfavorable circumstances, a pestilence may break out among us; everything is ripe for it, and so sure as it begins, so sure will it follow the water lines which I have pointed out; it has done it before, and will do it again. It is a remarkable fact, that the cholera broke out in 1832, in London, in the very spot where the plague first appeared in 1551 and 1605. In Hamburg, subsequent to the cholera of 1832, the district which suffered the most was thoroughly drained, and, when the disease reappeared in 1848, that district was almost exempt.

There is now no doubt that the ravages of the plague in Europe in 1603, 1625, 1636, and 1665, were due to precisely the same causes which foster the diseases to which we have referred. Of this disease, there died in—

Florence, - - - - -	60,000
Venice, - - - - -	100,000
Marseilles (in one month), - -	16,000
Vienna, - - - - -	70,000
Paris, - - - - - -	50,000
St. Denis, - - - - -	14,000
Avignon, - - - - -	60,000
Strasburg, - - - - -	16,000
Lubech, - - - - -	9,000
Basle, - - - - - -	14,000
Erfurt, - - - - - -	16,000
London, - - - - -	100,000

How soon shall we be prepared to enter this list? I

venture the prediction that when we do go in, in the true spirit of Yankee progress, we will outdo the rest of the world!—in this as well as everything else. But let us hope, ere that time comes, that we shall have done some credit to the higher intelligence and broader philanthropy which characterize the age in which we live, and shall have adopted those measures which are so clear and so imperatively necessary, if we would avoid the want, and woe, and wretchedness which form so many black phases in the history of the cities of Europe. In this money-making, money-wasting generation, let us not be deaf to the lessons of the past. And, while we are erecting our marble palaces of trade, rearing our domestic altars in gilded and frescoed halls, and seeking heaven with the spires of our Gothic temples of religion, let us not forget that more than all this splendor surrounded the thrones of the Cæsars, and yet Rome fell under the combined influences of a lawless democracy and the malaria of the Pontine marshes. God grant that the same unholy alliance may not be formed for our destruction.

At the close of the reading, a vote of thanks was given to Mr. Viele for his valuable paper, and a copy requested for the archives of the Society.