

THE  
PEST AT OUR GATES

BY  
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## Committee on Pollution of State Waters

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**O**UR Committee on Pollution of State Waters, in the Report by Dr. Daniel D. Jackson, entitled **Pollution of New York Harbor as a Menace to Health by the Dissemination of Intestinal Diseases Through the Agency of the "Common House Fly,"** published by the Association, directed attention to the effect upon the public health, particularly in the matter of intestinal diseases, due to the accumulation of human excreta and similar substances upon the City's waterfront. In the article "**Typhoid Fever—The Story of the Fly That Doesn't Wipe Its Feet.**"—Dr. Woods Hutchinson, the author, shows that polluted streams, poisoned oysters fattened in such waters, and the common house fly cause and spread Typhoid.

In the pursuit of its campaign of education and advocacy of the adoption of modern sanitary methods for the disposal of sewage, the Committee on Pollution of State Waters reprints the following Article: "**The Pest At Our Gates,**" by Poultney Bigelow, M. A., F. R. G. S., which is a strong indictment of the practice of polluting the principal rivers and harbors throughout the United States. The article gives statistics as to the conditions existing in the different sections of the country and the loss, in health and in money, resulting from Typhoid.

Mr. Bigelow holds that modern science through its improved methods of sewage disposal has advanced far enough to make the pollution of streams entirely unnecessary.



# THE PEST AT OUR GATES

BY POULTNEY BIGELOW, M.A., F.R.G.S.

*Author of "The German Emperor and His Neighbors," "White Man's Africa," etc.*

*EDITORIAL NOTE.*—Typhoid demands a human sacrifice of forty-five thousand lives a year in this country alone. Of those stricken thousands many have been near and dear to readers of this article. Annually half a million Americans are attacked by this criminal, because entirely preventable, pest. Three fifths of them are wage earners. At \$1.50 a day this means an annual loss of \$18,000,000 in time during sickness.

*Why and where does this ravaging pestilence breed? Our greatest harbors and stateliest rivers to-day are filth-ridden beds of pollution. Forty-five million persons are directly exposed. It amounts to a national scandal.*

*Mr. Bigelow, in an impartial, painstaking investigation, has found conditions even worse in rural America than in the cities. But there is disgrace enough for all. His report is at once a warning and an indictment that applies to every section and city of the land.*

OUR medical scientists are piling up tome upon tome explaining the nature of many newly invented diseases; the colleges are turning out a stream of diplomated disciples of Æsculapius all professing a knowledge of healing drugs; every state and county supports a staff of officials nominally for the benefit of public health—we are choking with vital statistics and dying for lack of common sense.

The word *pest* I use because it covers roughly the several forms of epidemic which spring from dirty habits, from overcrowding, from municipal neglect—in short, from human, and therefore preventable, causes.

For instance, the Commissioner of Health in Albany (Dr. Eugene Porter) in his report for 1907 tells us that in New York state alone, 2,000 people die annually from typhoid out of 20,000 who are attacked by this filth disease. "Allowing," he says, "each life to be worth \$3,000, a low estimate—as the young and vigorous are most often victims—and estimating that 15,000 of the 20,000 cases were men and were kept from labor 40 days, and putting the value of a day's work at \$1.50, the total pecuniary loss to the state amounts to \$7,000,000."

Let us look at ourselves as we really are. Let us stop bragging of our wonderful progress! for in matters of public sanitation we are a whole generation behind Germany and England. Japan is many centuries more civilized than we, and yet we send to her cleanly people dozens of meddlesome missionaries who are sadly needed at home if only to teach us the rudiments of public health; or if missionaries must go abroad then, in the name of decency, let them invade Russia, where priests still fight disease with bell and book rather than with soap and scrubbing brush.

The wonder of our modern age is that with a host of doctors in every city, epidemics burst forth under their very noses and we search in vain for record of medical foresight in preventing these costly calamities.

The larger our rivers, the greater the sewers we make of them, spreading the pest from one town to another. Our lakes and our harbors we make cesspools. The result? Let us inquire into the penalty we pay—starting with New York, digressing into New England, sweeping westward to the great Mississippi valley and the Far West, and returning to the southland, observing how the various parts of the country compare in this signing of wholesale death warrants.

Only a few weeks ago my neighboring city of Kingston-on-the-Hudson burst forth with a first-class epidemic—a filth disease. This time it was smallpox. This epidemic cost the city thousands of dollars in medical fees, to say nothing of the loss through panic among those who ordinarily went there for shopping. Even little

Malden-on-Hudson felt the scare to such an extent that one of our school teachers had to be released for two weeks because, forsooth, her home was in Kingston.

#### THE HUDSON A PEST STREAM

Am I an alarmist? Nothing is further from my mind. Glance through the papers for the past few months. Let me run over a few items which I have culled at random.

Peekskill on the Hudson had a typhoid epidemic reported in the *New York Times* of February, 1908—cause, tainted water supply.

On February 12th of this year the New York State Department of Public Works protested that the Erie Canal had become a sewer and source of typhoid from the habit of using it as dumping ground for local garbage. The Erie Canal is 363 miles long.

The *Oswego Times* of November 20, 1907, quotes Professor Ogden of Cornell University as saying before the Oswego County Medical Society that typhoid from the tainted water was abnormally prevalent. He demonstrated this by noting that in 1895 the typhoid death rate was only 20 per 100,000, but immediately afterwards the sewage of the city of Fulton was turned into the Oswego River and the death rate from typhoid then rose rapidly until in 1905 it was 90 in the 100,000.

Here is the water drunk by Oswego, described by the official lock-tender (*Oswego Times*, March 9, 1908): "Rotten fish, snakes, dead dogs, cats, hens, rats, et cetera, are seen nearly every day. Mornings the lock is half full of filth!"

Catskill, on the Hudson, only twelve miles from where I am writing, is in chronic state of typhoid. On March 1, 1908, the *New York Herald* reported "20 deaths within the last three days!" And yet this is a noted health resort. The sewage of this little town of only 5,000 people passes into the Catskill Creek, and here it mingles with the water which is drawn for drinking purposes from the already tainted Hudson. On this subject Dr. Pease, of the New York State Hygienic Laboratory, explained to

me in April of this year, that the pipe which draws Hudson River water for drinking purposes at Catskill ends a little above the Catskill Creek. The creek water containing the town sewage is supposed to pass off down stream, but those who built this sewer apparently ignored the fact that the Hudson is a tidal fjord and not a river like the Ohio or Mississippi. Consequently the sewage from the creek declines to move on, but oscillates up and down across the intake of the alleged clean water pipe.

Catskill is one of many Hudson River towns which are becoming centers of pest for the community. With it must be bracketed Hudson, Albany, Troy, Poughkeepsie, Newburgh, Kingston, every town on the river which either sewers into the river, drinks river water, or water from tainted streams; and Professor Mason, the eminent water expert of the Troy Polytechnic Institute, in a lecture given December 4, 1907, said that the water supply of Niagara Falls City was merely the sewage of Buffalo diluted to some extent. The State Board of Health, referring to Buffalo, stated that it had a higher death rate from typhoid than any other city of the state, 135 per 100,000, whereas the average is 20, and whereas in parts of Europe it is as low as 4 per 100,000!

#### THE INDICTMENT OF A NATION

But New York is not the only nor the worst offender. If it were there would be no use citing it. It is not the unusual that proves anything; it is the usual, and New York City and State are perhaps better than the usual run of things in America. That is a terrible indictment of a nation, but let us see whether it is not justified.

Some years ago in New England the United States Geological Survey reported that the Blackstone River was the most polluted river in New England; "its name has become synonymous with filth." Even the headwaters were filthy from the start and it was filthy to its mouth. Worcester, Massachusetts, suffered for that. The Merrimac and its tributaries was polluted by many



towns, bearing disease as gifts to Manchester, Lowell, and Lawrence. The Charles was not above reproach and Boston and Cambridge suffered accordingly.

The Connecticut and the Housatonic had unsavory reputations, but the first prize went to the Park River, a small stream draining a part of Hartford and all of New Britain. At times during the summer this was found by the Connecticut State Board of Health to be four fifths sewage! Fortunately New England has begun to change all this, but the work is still far from complete.

As you go on down the coast there is no river that can shake at the Hudson the better-than-thou finger of scorn. Everyone knows that the Passaic River, into which the New Jersey city of that name and Paterson pour their sewage in huge quantities, can be smelled at Newark blocks away from its banks. The Hackensack is little better.

If you will look at a map and a gazetteer you will find that the lordly Delaware above Trenton has thirty-seven cities with populations of from 1,000 to 35,000. They each send sewage into the river, after drinking the sewage that comes to them, but all—245 miles of them—pass it down to Trenton which drinks of it. One city, the largest, is only sixty-five miles above Trenton. And practically all that has been printed on this menacing condition is contained in a short report by Allen Hazen which shows beyond all controversy that the water is frightfully dangerous to drink. Trenton is to-day still "considering" the question. The *New York Herald* of December 12, 1907, published the epidemic of typhoid at Trenton. There were 95 cases in December. The whole valley of the Delaware was also attacked, and from the same cause. Each town was pouring its sewage into the same stream for the next town to drink.

Philadelphia boasts of two of the dirtiest rivers in the United States—the Delaware and the Schuylkill. The Delaware reaches the city with all those tokens of brotherly love given by the cities

higher up, including Trenton. As for the Schuylkill it is even worse, except that it is smaller.

#### THE PLACID, PERILOUS POTOMAC

Communities aggregating 45,000 population pollute the Potomac within 176 miles of where the national capital gets its drinking water. The experience of Washington has been unique. Aroused by an epidemic bequeathed to it by the victims up the river, the city built a huge filtration plant. Typhoid dropped, but only to rise again. Washington learned that it must guard milk, oysters, ice, and flies, as well as water. But before the campaign began the city stood third on the bad list.

Coming back to Pennsylvania, Dr. Jonathan M. Wainwright, the head of the Moses Taylor Hospital at Scranton, addressed the New York Academy of Medicine on March 7, 1908, and strongly advocated municipal ownership of water supplies. He stated that the Monongahela and Alleghany rivers were now thoroughly tainted sources of water supply, and yet they were in use and producing typhoid epidemics at many points. In December of 1906 and in January and February of 1907 there were 1,150 cases of typhoid in Scranton—that is to say, one out of every 100 had this filth disease.

#### MILLIONS SPENT FIGHTING THE SCOURGE

In Pittsburg the epidemic of typhoid reported in the papers for December 29, 1907, was so great that it seriously affected the labor market, and Dr. Dixon, the Pennsylvania State Superintendent of Health, was quoted in the papers of February 12, 1908, as saying that typhoid alone cost that one state thirteen million dollars in one year alone.

Pittsburg gets its drinking water from two rivers that converge on it—the Alleghany and the Monongahela. Into the Alleghany 53 cities of 1,000 to 25,000 population pour sewage for 283 miles. Oil City sewage reaches Pittsburg in fifteen hours. On the Monongahela 33 cities including McKeesport, Homestead, and Braddock, pour sewage into the river. Pittsburg

then drinks it—with the result that the *Dispatch* recently estimated that the cost of typhoid and its treatment in three years in Pittsburg was \$3,335,000. The city has been awakened to this preventable loss and now is putting in filters which will be in operation for the whole city by next fall. But the sewage will come down yet, even if purified from the drinking water.

On the Ohio River, popularly known as a thousand miles of typhoid, Cincinnati is better off than Pittsburg because in time rivers purify themselves to a certain extent. The trouble is that Nature is not given this chance. The rate is high in Cincinnati because the water has been known to be so dirty that some under-water plants couldn't grow in it for lack of light!

The heritage of Pittsburg and Cincinnati is that of Louisville—such an inheritance as puts it fourth on the list. Some four and a half million people send sewage to Louisville. Frankfort, on the Kentucky River that empties into the Ohio just above Louisville is only a few miles from the latter city. There are other cities, also, on both sides of the Ohio. And so it goes.

Next comes the Illinois River emptying into the Ohio, and if we hark back on this we come to the Desplaines, then to the Chicago Drainage Canal, and then to 2,000,000 people pouring sewage into it. Down it goes, "purified" by being mixed with water from Lake Michigan pumped in for the purpose. That lake water, too, may be polluted. At any rate it performs the valuable service of hastening an otherwise slow stream on its way of destruction. At last the Ohio swings into the Mississippi itself. The main river has brought down the pollution of Minneapolis and St. Paul, and a score of other large cities. The Missouri has brought down the sewage of a million and a half other people. Altogether some ten million people have combined their sewage at this one point. Then St. Louis drinks it—St. Louis whose death rate due to typhoid, from a fair average during the five years before the drainage canal was opened, rose seventy-three per cent. during the five years afterward. The

canal was opened in 1900. In 1906 the Supreme Court dismissed St. Louis's case against it.

On down the river it goes, St. Louis doing as it has been done by and giving its patrimony of filth to the cities below—Memphis ranking fourteenth and New Orleans fifth. Saved, so far as good luck rather than good management is concerned, by the self-purification of the river—that ancient, overrated sanitary doctrine—these cities go calmly on with the pest at their gates unchecked.

Or suppose we take the lake cities, such as we have taken in Buffalo. Cleveland pours its sewage into Lake Erie and then goes out a few miles farther and brings back water to drink. Recently it had to go out even farther, as Chicago has had to do in Lake Michigan.

As a general proposition it may be laid down that the Far Western rivers are not quite so badly polluted as the Eastern. Yet in the larger cities this is not true and typhoid rages in spite of the newness of the country. Thus Los Angeles ranked eleventh on the bad list, San Francisco eighteenth and Denver tenth—the latter city having to-day learned the need of filtration.

#### THE TYPHOID-RIDDEN SOUTH

The South is especially scourged with typhoid. Memphis, New Orleans, Washington, and Baltimore all rank high in the list. Charleston has the exceptionally high rate, according to a census report covering five years, 84 in every 100,000; Atlanta has 69, and Mobile 68. The palm goes to Lynchburg, Va., with 99 and Petersburg is next with 92. Wheeling, W. Va., has a rate of 82. Other American cities with more than double the normal typhoid death rate are Jacksonville, Raleigh, Richmond, San Antonio, Savannah, and Wilmington.

#### PERILS THAT LURK IN ICE

But the peril of drinking-water is not the only cause of this great filth disease. There are other almost as great factors. Take the matter of ice, for instance. On February 4, 1908,

Health Officer Sharkey is reported in the Albany, New York, *Times-Union* as stating that the number of typhoid cases in Rensselaer, near Albany, was unprecedented—and no wonder, for Albany and Troy both gather ice that is frozen sewage.

The typhoid pest approaches under any disguise which conceals filth—water, milk, house flies, and ice being to-day the most tangible. The pious people of the Middle Ages who burned at the stake and otherwise lynched men suspected of spreading pest germs differed but slightly from ourselves, for we fly from common sense to specious drugs and medical recipes for relief, shutting our eyes to the plain teachings of God in a world of natural wonders. We Americans are the only people on the face of the earth who persistently make ice an article of daily diet. So rooted is this pernicious habit that even our laborers at Panama are provided with it. The natives of hot countries need no ice. In the various British and Dutch colonies of the tropical Indies—even Borneo—I found no demand for ice, and certainly so far as relative physical health is concerned it is not we ice eaters who have ground for boasting.

The first thing noted by a foreigner to our shores is the bell-boy with his tinkling load, running from room to room distributing little cargoes of indigestion under the euphemistic name of ice pitcher. According to the U. S. Geological Survey report of 1902 (on Sewage Pollution) the Hudson River ice crop was then between four and five millions of tons, more than enough to provide one ton apiece for each New Yorker and plenty to spare.

This ice comes, practically all, from the neighborhood of sewers anywhere between Poughkeepsie and Troy. The report just quoted regards the Hudson River ice crop as worth between seven and eight millions of dollars, according to the harvest—an amount of money that indicates roughly the interest in this matter taken by the owners of ice houses who one day clamor against the sewers and the next assure the public that their particular ice is purity itself.

Time was, and medical men were not wanting to support this mad theory, when the public believed that freezing purified water. This comfort of the filthy has been, thank God! completely exploded by patient laboratory experiments. At the office of Mr. Edward Hatch, Jr., chairman of the New York Merchants' Association Committee on River Pollution, you may see a shelf full of massive jars, containing the product of ice blocks cut by our great ice companies from the besewaged waters near Catskill, Rondout, Hudson, and Albany, on the upper Hudson. These jars suggest aquariums so rich are they in deadly living organisms.

#### THE DEADLY HOUSE FLY

If you should plot out on a city map the location of the deaths from typhoid and intestinal diseases you would find that the great majority lie along the water fronts. Or if you should express it by means of a curve you would find that the greatest increase falls at the same time that the apparently harmless house fly is most prevalent. There is a world of meaning in these coincidences. Latterly at the laboratory of the Aquarium in New York, a series of experiments have been conducted by competent independent scientists whose conclusions are of the greatest importance to such as love New York and desire her to rank once more with civilized cities. Dr. Daniel D. Jackson conducted the experiments, assisted by a competent staff and backed by the aforesaid River Pollution Committee composed of J. Pierpont Morgan, Albert Vander Veer, John Y. Cuyler, and Edward Hatch, Jr., ably supported by C. H. Townsend, Director of the New York Aquarium. It is not much to say that this committee of unsalaried but public-spirited men have done more for the public good in their short term of activity than the successive legislatures at Albany since the building of the Erie Canal. This report demonstrates that New York is ringed round with typhoid—that this pest is carried by the feet of house flies on to the stalls in the water-side markets; that it enters the homes near the

water front and leaves its imprint in a disease which, if you survive it, means the loss of 40 days; and only one in ten does survive.

What to do? Shall we go out with nets and chase the house fly! Shall we imitate Colonel Gorgas at Panama and coop our people behind screens for fear of insect bites! The remedy is simple. Leave the flies alone—merely change their diet. Look to the source of their poison—clean up the water fronts. New York with its adjoining boroughs represents some 10,000,000 of people, all using this Hudson River as its *cloaca maxima*, or supreme sewer.

There is still another peril in this river pollution. Let me illustrate. One fine August day in 1896, it was but a few weeks after returning from a trip through South Africa, I started from the float of the New York Canoe Club at Bensonhurst, near Coney Island, and paddled up the Hudson—curious to study the metropolitan water-side at close range.

I paid heavily for my curiosity—the stench was heavy along the pier heads, and the waters of the bay and river were speckled with dead fish, to say nothing of slimy stuff which clung to the sides of my little boat. At starting I was in excellent health, but I reached the Ardsley Club, near Dobbs Ferry, so weak that I had to be helped ashore, and for six weeks I lay a victim of the fever that floated on the waters I had just traversed.

The Hudson is a stream once famous for its fisheries—noble sporting fish of all kinds, and oysters, world famous. My father tells me of shad so abundant near where I am writing that they were sold by the hundred at five cents apiece, where now the price is fifty—and mighty poor stuff at that.

#### THE FISH AND OYSTER MENACE

I talk to many fishermen hereabouts and their life is daily losing its charm. They spread clean nets which when hauled in are thick with slime and rubbish. The Government maintains costly fishery bureaus and admirably equipped hatcheries; mil-

lions of fish are annually started into life along our waterways, but they are mostly poisoned by the sewage from the big towns, the waste from factories, or the sawdust that chokes the Adirondack streams, to say nothing of the pulp mill sludge.

New York has a shell fish industry worth \$10,000,000 a year, and now our Government has been forced by popular outcry to warn the public against our home-grown oysters and clams. Dr. Ernest Lederle, former President of the New York Board of Health, was induced to undertake a scientific study of oysters gathered around Manhattan in December, 1907, and as a result it was demonstrated that fifty-five per cent. of those selected (oysters and clams in the New York market) were tainted

But, you say, what is to become of the sewage if we don't pour it into the rivers and harbors?

#### WHAT ARE WE GOING TO DO ABOUT IT?

Nature has generously answered this question by placing within easy reach of New York, for example, large tracts of sandy soil sadly in need of fertilizing, both in New Jersey and on Long Island. We need therefore but to gather our sewage in tanks at different points on the outskirts of the borough and thence pump it out upon farms arranged with a view to this irrigation and owned or controlled by the city. This is done elsewhere successfully.

Berlin had to face this problem of sewage disposal in 1871, when she suddenly became capital of an empire. She permits no dirt to go into the river that flows through her walls, but carefully gathers it at convenient points and pumps it out upon farms in the suburbs. And now, after nearly 30 years of trial, she is satisfied with the results.

When the Berlin plan of sewage disposal was first inaugurated there was much outcry from those who feared an epidemic, but now the people living in the neighborhood have assured themselves not only that no harm arises to the general health, but on



the contrary that the waters in the neighborhood are good to drink and the vegetables there raised are of choicest quality.

London was plagued with a dirty Thames up to within a very few years; and the problem seemed insurmountable; but by patiently studying the subject and eliminating politics, the sewage of London is now treated in a manner that permits it to be passed off at Barking without offensive odor or injury to the fish. In addition to this London and many other towns of England maintain farms where some, if not all, of the sewage is turned back to the soil where it belongs. But London has by no means the natural facilities enjoyed by New York, for hers is a relatively damp climate and there is but little sandy soil at convenient distance. The Thames is now clean below London Bridge, and as for the water up-stream it is maintained as a National Park, as should be the whole watershed of the Hudson.

Paris has also latterly been compelled by considerations of public health to rigidly watch all streams leading into the upper Seine and other sources of drinking-water; and as for her sewage she also has farmlands which she irrigates in this economical manner, and the eminent Colonel George E. Waring, the first who ever cleaned New York streets, drank of the water in the Paris irrigating ditches and pronounced it good.

In short, without wearying the reader with details, let us take to heart the broad and mortifying fact that New York stands alone of great civilized centers in the extent to which she permits her waters to be polluted. Our law to-day forbids New York from pouring raw sewage into the harbor, but that law is a dead letter. The law also forbids the so-called Great Trunk Sewer which to-day proposes to still further filthen our harbor by pouring out under Robin's Reef Light the accumulations all the way from Paterson through Newark and the Oranges! It makes the nose ache to think of it!

#### THE WAY OUT

Let our engineers then condemn for public purposes the sandy soil that they need around New York and proceed to lay

out sewage farms as the Germans have done at Berlin. Then, those of us now living will see miracles—will see the typhoid death rate decrease until we shall look back upon these pestiferous times as we at school looked back upon the Dark Ages and the great London plague. We shall find that the sewage farms will not only pay for themselves, but take from us the whole cost of cleaning the city into the bargain. Our water fronts will once more become as clean as the Spree about Berlin, the Thames at Windsor, or the Seine in the lovely suburbs of Paris. And finally, when the ships that are to gather together in honor of the discovery of the Hudson three hundred years ago, shall churn up the sewage and scatter disease among our guests as they pass through the Highlands, let us give them the joyful news that although in 1909 they must still hold their noses on our noblest river, their children will live to see a purified Hudson from the Canadian border to Coney Island—a blessing to millions of babes unborn and a tardy justice to a stream second to none in natural beauty and commercial value.