MISSOURI *v.* ILLINOIS AND THE SANITARY DISTRICT OF CHICAGO.

No. 4, Original. Argued January 2, 3, 4, 1906.—Decided February 19, 1906.

Missouri filed its bill in this court to enjoin Illinois and the Sanitary District of Chicago from discharging sewage through an artificial channel connecting Lake Michigan with the Desplaines River, a tributary of the Illinois, the latter of which empties into the Mississippi River above St. Louis, claiming that such sewage so polluted the water of the Mississippi as to render it unfit to drink and productive of typhoid fever and other diseases. Illinois denied the jurisdiction of this court, and the allegations of the bill, and alleged that if the conditions complained of at St. Louis existed they resulted from discharge of sewage into the Mississippi by cities of Missouri and from other causes for which Illinois was not responsible. A demurrer was overruled, with leave to answer, 180 U. S. 208; after answer and taking of proof including much expert testimony as to effect of sewage on water and health, *held*, that:

This court has jurisdiction and authority to deal with a question of this nature between two States, which, if it arose between two independent sovereignties, might lead to war.

In such a case, while this court cannot take the place of a legislature it must determine whether there is any principle of law, and if any what, on which the plaintiff State can recover.

Every matter which would be cognizable in equity if between private citizens in the same jurisdiction would not warrant this court in interfering if such matter arose between States; this court should only intervene to enjoin the action of one State at the instance of another when the case is of serious magnitude, clearly and fully proved; and in such a case only such principles should be applied as this court is prepared deliberately to maintain.

While a State may have relief in this court against another State to prevent it from discharging sewage through an artificial channel into, and thereby polluting the waters of, a river flowing through both States and on which the complainant State relies for water supply, if the alleged facts as to such pollution are not fully proved, and it also appears that such pollution might result from the discharge of sewage by cities of the complainant State into the same river the bill should be dismissed,—but in this case without prejudice.

The reasons on which prescription for a public nuisance is denied or granted to individuals against the sovereign power to which he is subject have no application to an independent state; but it would be contradicting a fundamental principle of human nature not to allow effect to the lapse of time. The fixing of a definite time, however, is usually for the legislature and not for the courts.

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The mere fact that the drainage canal, constructed by authority of Illinois and also under authority of an act of Congress, brought water from the Lake Michigan watershed into the watershed of the Mississippi does not, in the absence of proof of the deleterious effects of such water, render the canal an unlawful structure, the use whereof should be enjoined at the instance of another State in the Mississippi watershed.

THE facts, which involved the right of the defendants to discharge the sewage of Chicago through an artificial channel into the Desplaines River which empties into a tributary of the Mississippi River, are stated in the opinion of the court.

Mr. Herbert S. Hadley, Attorney General of the State of Missouri, *Mr. Sam B. Jeffries* and *Mr. Charles W. Bates,* with whom *Mr. W. F. Woerner* was on the brief, for the complainant:

The substantial purpose of the complaint is to subject the construction and operation of the drainage channel from the Chicago River at Chicago, southwestwardly to the Desplaines River at Lockport, a point immediately above Joliet, to the court's supervision, upon the charge that the method of construction and operation creates and constitutes a continuing nuisance, dangerous to the health of the people of Missouri; and which if not restrained, results in the daily transportation, by artificial means, and through an unnatural channel, of large quantities of undefecated sewage, and of accumulated deposits in the harbor of Chicago, and in the bed of the Illinois River, which poison the water supply of the inhabitants of Missouri and injuriously affect that portion of the Mississippi River which lies within complainant's jurisdiction.

No attack is made upon the canal or artificial channel as an unlawful structure, nor is any attempt made to prevent its use as a waterway. Complainant seeks relief against the pouring of undefecated and unpurified sewage and filth through it by the artificial arrangements into the Mississippi River to the detriment of complainant and its inhabitants.

For the original bill see 180 U. S. 208, where defendants' demurrer was overruled.

The population of Chicago is about 2,000,000 and by its addition to the Mississippi watershed the urban population sewering into that river has been increased by seventy-five per cent. Lake Michigan is the natural basin for the sewage of Chicago. The expert evidence in this case shows that more polluting and infectious material is now contained in the water than prior to the opening of the canal.

According to the science of bacteriology, it is practically impossible to discover in a contaminated water the disease producing organisms, so small are the organisms and so delicate the test to be made. It has, however, been observed, that where large quantities of *bacilli coli communis* have been found, it is a conclusive indication that the water is sewage polluted and, therefore, infected with disease producing organisms. The number of bacteria is important if the source of the polluting matter is known. However, bacteriologists when applying the science to the sanitary observations of water, disregard largely the number of bacteria and depend mostly upon the character of the pathogenic organisms found.

Typhoid bacilli, the most dangerous perhaps of any of the water-borne diseases, has never been discovered in the waters of a running stream, save as to two or three reported instances, and from the present conditions of the science, their discovery is not a practical proposition. So it may be said that from the standpoint of bacteriology and chemistry as applied to sanitary observations, there is no direct means of proving the absolute presence of pathogenic bacteria in water. A water supply may be chemically without fault and yet contain many living disease producing organisms.

The effect of the sewage of Chicago upon the waters of the Mississippi River at the mouth of the Illinois has been such as if a large and populous city had been established on January 17, 1900, upon the banks of the Mississippi River discharging its sewage into the waters of that river. The chemical analysis discloses that the water in the Illinois River at Grafton contains more infectious material, and material liable to

contain infection, than it did prior to the opening of the drainage canal. It also discloses that the waters of the Mississippi River above Grafton and the Missouri River are freer from contaminating and infectious matter than the waters of the Illinois. This, of course, is but a natural condition. The sewage of two millions of people could not have the effect of improving conditions at any point on the Illinois River.

As soon as the canal was opened the death rate from typhoid in St. Louis started upward and has continued on the increase ever since. Typhoid mortality per 100,000 population in St. Louis for the years 1900, 1901, 1902 and 1903 increased 77.7 per cent over the typhoid mortality per 100,000 population in 1896, 1897, 1898 and 1899. This enormous increase occurred with no change in the manner of treating the water. The increase has been gradual, both in winter and summer seasons, with no relaxation in the least except that the percentage of increase has been greater in the winter seasons than during the summer months. All parts of the city where the public water supply has been used have alike suffered. No local epidemic has occurred; in fact, nothing has been observed, after a very searching investigation, that can in any way be charged with the cause of the increase save the discharge of the sewage of Chicago into the canal in question and hastening its flow to St. Louis by means of the Illinois River.

The evidence discloses the germs of tetanus (lock jaw) and anthrax to have been discovered in the waters of the Illinois River since the opening of the canal at Chicago.

The enormous increase in deaths and cases of typhoid in St. Louis caused by the discharge of sewage from the city of Chicago into the Mississippi has been a source of financial loss to complainant. It has been truthfully said that "The average city of 100,000 population wastes perhaps half a million dollars, per year on the luxury of having it." Not only is it a long, tedious and grave illness, often leaving life-long disabilities in its wake, but it is also one of the most expensive of ailments.

Counting each death in the city of St. Louis caused by the

sewage from Chicago as having a value of $5,000, the loss to complainant is no small matter. While if we take into consideration the cost and expense of treating and nursing those cases wherein a recovery is had, together with the loss of labor while ill, the loss to the community reaches a total of many hundred thousand dollars per annum. This is the financial loss. The sorrows of death, pains of sickness and mental distress cannot, from the standpoint of humanity, be measured in dollars and cents.

The population residing upon the natural watershed of the Illinois River brands it as more heavily infected than that of either the Mississippi or the Missouri. Physical and atmospherical conditions also must not be overlooked.

The population upon the watershed of the Mississippi River has already burdened it with an immense sewage disposal which burden will become greater as population increases. Much trouble will soon arise in this connection, making it impossible to secure suitable water without very expensive treatment and improvement plants. The discharge of the sewage from Chicago into the drainage basin of the Mississippi has not only hastened that condition, but if not restrained, will compel St. Louis to spend many million dollars in the construction of a filter plant in order to force its typhoid mortality back to conditions similar to 1896, 1897, 1898 and 1899. The danger and damage to complainant, the menace to its welfare, the loss of its reputation as a city of comparatively low typhoid mortality and the impediment to its financial and industrial growth caused by the injury sustained and the constantly increasing embarrassing conditions manifestly convict defendants of the injuries complained of, and unquestionably warrant the decree prayed for in this case.

Much might be said of what may be expected in the future, as shown by the evidence in the case, if present conditions are permitted to become permanent. Ere long we may depend on Chicago having a population of more than 5,000,000. That city will then, so to speak, be brought nearer to St. Louis,

in so far as its contaminating effect upon the water supply is concerned. The volume of the water passing through the canal will be necessarily increased, thus hastening the flow down the river. It is not necessary, however, to look to future developments for grounds of relief, the existing conditions are amply sufficient.

The expert testimony of eminent scientists, chemists and bacteriologists shows that the principal water-borne diseases may be designated as cholera, typhoid, dysentery, anthrax and tetanus, and the result produced by *bacilli coli communis* when injected under the skin of a human being, or when lodged in the appendix producing appendicitis. Typhoid fever or *bacilli typhosis* is a common water-borne disease in this country. It is caused by crude sewage being discharged into the water supply. This fact is demonstrated by the effect of the establishment of filtration plants for the purpose of treating the water supplied for the cities of Hamburg, Germany; London, England, and Berlin, Germany, and a number of large cities in this country.

That typhoid, cholera, dysentery, anthrax and tetanus are water-borne diseases was conceded by all witnesses. In fact sanitary science has come to realize with absolute assurance that the diseases above mentioned as a general thing are caused by inferior water, or water which has been subjected to sewage pollution.

While it is practically impossible to discover or detect the physical presence of bacilli in running water, save or except as to *bacilli coli communis*, which are found in abundance in all streams in which sewage is emptied, all persons having knowledge of sanitary science, have settled beyond question that the diseases above mentioned are as a general proposition more readily communicated by means of inferior water supplied than in any other way.

In the examinations of the water of the Illinois River bacillus of tetanus and of anthrax was discovered in the water of that river. This in connection with *bacilli coli communis*,

which is very prevalent in the water of the Illinois, as shown by all the testimony in the case, constitutes practically the total results of the discoveries of the pathogenic bacillus in the waters of the rivers in question during this entire investigation.

A riparian population has the right to the use of a stream for drinking and other domestic uses in its natural state.

Where discharges of sewage render the water of a stream impure or infectious, the injured have a right to ask and obtain relief through the power of the courts.

Although those residing upon the stream have the right to cast their waste into the stream so long as it does not substantially interfere with the convenience, health and comfort or the business interests of those residing on the river below, yet, such right does not extend to those residing upon another watershed so as to permit such discharges or deposits by artificial means into the stream draining a different watershed.

When discharges have such effect as to render the conditions dangerous and unsanitary, the right to maintain such nuisance cannot become permanent by prescription.

The fact that others contribute to the injury constitutes no excuse or justification for the one charged to continue in the same.

The fact that riparian owners are allowed to discharge their waste and refuse into a stream so long as it does not create a substantial injury to those lower down, is merely a privilege even to the law of convenience and public policy. It is not a substantial vested right incapable of defeat.

While the privilege of depositing waste into a river by riparian owners so long as no damage or substantial injury is experienced by those living lower down may be recognized on grounds of public policy and the general law of convenience and necessity of the people, it does not necessarily license others than riparian owners to discharge waste into the stream and that, too, regardless of whether it be a substantial interference with those below the point of discharge or not.

Complainant has been materially and irreparably injured on account of the conduct of defendant in the operation of the artificial channel from Lake Michigan to the Desplaines River, and the discharge of the raw sewage into the channel and thence into the Mississippi River, defendants having no right in law to convey the sewage and infectious material of more than two millions of people from one watershed to people living upon another watershed.

Germs of infectious diseases are shown to pass from Chicago to St. Louis and greatly injure the water of the Mississippi at St. Louis, and at all points on the Missouri shore below the mouth of the Illinois River.

The waters of the Mississippi are shown to be more heavily burdened with disease organisms and injectious material since the opening of the canal, January 17, 1900, than prior to that time, such increased infection being due to the discharge of the sewage at Chicago into the canal.

The typhoid mortality at St. Louis, on account of defendants' action, has increased annually 77.7 per cent for the period of four years since the establishment of the nuisance as compared with the four years immediately prior thereto, such increase of typhoid mortality being due to said nuisance.

Valuing each life to the extent of the annual increase of at least 80 deaths per annum for the four years at $5,000, and the loss of labor, cost of treating and nursing the additional or increased cases amounting to 1,200 (deaths multiplied by 15), occurring annually, calculated on the basis of $10 per day for loss of labor, medical treatment and nursing, it will be observed that the damage of complainant is of no trivial amount.

From the standpoint of humanity and taking into consideration mental and physical suffering, permanent disabilities and all of the disagreeable elements entering into conditions and circumstances which produce death, and taking also into consideration the fact that no one community should attempt to relieve itself from sufferings of sickness and death at the expense of a neighboring community, the right and justice of this

litigation instituted, on behalf of complainant against defendant, is apparent.

The injury inflicted upon complainant is actual, substantial, continuous, immediate and irreparable.

In the presentation of the case upon the demurrer to the court, a full line of authorities was submitted upon complainant's right to institute this proceeding, entitling it to judgment if the facts set forth in the petition be established, and showing complainant's right to join both parties defendant in the action. The position assumed by complainant was upheld, both as to the jurisdictional question and its right to the relief sought. 180 U. S. 208.

The undisputed evidence shows that disease-producing organisms or pathogenic bacteria are discharged from the sewers of a city into the drainage basin and when carried away by the running stream remain in the stream throughout the life of the germ or organism, unless they be sooner introduced into some human system. In this way certain diseases are communicated from one individual to another. As the population of a city upon a watershed increases, the relative number of pathogenic bacteria discharged into the river upon which the city is situated increases, and thus the water of that river is being continually increased in contamination.

The inhabitants of a large and populous city have the right to use the water of the stream upon which the city is situated in its natural condition, free from infectious material deposited into it at points above. If the discharge of infectious sewage and filth in the stream renders the water dangerous and harmful to the people living below, such municipality or person creating the nuisance and causing the danger or damage may be enjoined from continuing the infectious discharges. 30 Am. & Eng. Ency. of Law, 2d ed., 378; *Indianapolis Waterworks Co.* v. *Strawboard Co.*, 57 Fed. Rep. 1000; *Trevett* v. *Prison Association*, 98 Virginia, 352; *Attorney General* v. *Birmingham*, 4 Kay & J. 528.

The right of a city to pour into a river surface drainage

does not include the right to mix with that drainage filthy and noxious substances in such quantities that the river cannot dilute them nor safely carry them off without injury to the property of others. The latter act is, in effect, an appropriation of the bed of the river as an open sewer to carry such substances to the property of the lower proprietor and is an invasion of his property rights. *Platt* v. *Waterbury*, 77 Am. St. Rep. 335; Wood on Nuisances, 3d ed., §§ 427, 579.

Where there are several contributing causes to the pollution and infection of a water course, one cannot escape liability for those living below and using the waters for domestic purposes, because of such pollution by themselves. Eliminating from the case the fact that Chicago is situated upon the natural watershed of Lake Michigan while complainant is situated upon the natural watershed of the Mississippi, and even though it be assumed that the same rights with reference to the disposal of its sewerage belong to Chicago as to any other city upon the natural watershed of the Illinois River, it cannot be claimed by the defendants that they have the right to pollute the waters of the Mississippi because there are other cities situated upon its watershed which contribute to the pollution after or before the water reaches the Mississippi at Grafton. *Crossley* v. *Lightowler*, L. R. 2 Ch. 478; *Tennessee Coal and Iron Co.* v. *Hamilton*, 100 Alabama, 252; *Watson* v. *New Milford* 77 Am. St. Rep. 345; 30 Am. and Eng. Ency. of Law, 383; *Hill* v. *Smith*, 32 California, 177; *Little Schuylkill Navigation Co.* v. *Richard*, 98 Am. Dec. 211; *Ferguson* v. *Firmenich Manufacturing Co.*, 77 Iowa, 579.

The fact that Peoria, Pekin, Havana, LaSalle, Beardstown and Joliet sewer into the Illinois River, does not constitute the right of defendants to likewise discharge the sewerage from the city of Chicago into the Illinois River. *Noland* v. *New Britain*, 69 Connecticut, 668; *Wheeler* v. *Fisher Oil Co.*, 9 Ohio Dec. 294; *Jackman* v. *Arlington Mills*, 137 Massachusetts, 277; *Morgan* v. *Danbury*, 67 Connecticut, 484; *Fahnestock* v. *Feldner*, 56 Atl. Rep. 785.

The right to continue a public nuisance cannot be acquired by prescription. The fact that the Illinois and Michigan Canal was constructed many years ago for the purpose of aiding navigation, and since 1871 has been used for the purpose of partially carrying off the discharges from the stock yards in the southern part of the city of Chicago, and the fact that this canal enters the Illinois River at Peru, does not constitute a right by prescription upon the part of defendants to construct the main drainage canal in question, and operate it in the manner as charged in the bill.

The construction of the artificial channel and the discharge of Lake Michigan through it has changed conditions entirely in comparison with those which existed prior thereto. So that the fact that a certain portion of the sewerage of Chicago was discharged through the Illinois and Michigan canal prior to January, 1900, does not bestow upon defendants the right either to continue therein or to construct a larger channel capable of producing, and which does produce, irreparable injury to complainant.

There can be no prescription for a public nuisance, and no length of enjoyment can legalize the continuance of a nuisance destructive to the health of the surrounding community. *Wright & Rice* v. *Moore*, 38 Alabama, 598; *Goldsmid* v. *Commissioners*, 1 Law. Rep. 167; *Mills* v. *Hall*, 9 Wend. 416; *Attorney General* v. *Copper Co.*, 152 Massachusetts, 452.

No length of time will legalize a nuisance. The reason of the rule to which these cases refer is, that criminality can gain no toleration in the law. The creation and maintenance of a public nuisance is punishable criminally; hence the element of criminality, which characterizes the act of creating it, should prevent the acquisition of a right to maintain it. *Commonwealth* v. *Upton*, 6 Gray, 473; *Morton* v. *Moore*, 15 Gray, 573; *New Salem* v. *Eagle Mill*, 138 Massachusetts, 8; *State* v. *Rankin*, 3 S. Car. 448; 1 Chitty on Criminal Law, 160; *Stoughton* v. *Baker*, 4 Massachusetts, 522.

Although water may be permitted to run along its natural

course and the flow in its natural course may be to some extent hastened, there is, however, no right in law to hasten the flow or impose an additional volume by entering upon the servient estate using artificial channel for drainage purposes, thereby increasing the drainage area and thereby burdening the drainage facilities. 2 Farnham on Water and Water Rights, 1052; *Ward* v. *Peck*, 49 N. J. L. 42.

Such an act is a trespass which may be resisted by the injured party, and for that purpose, all the machinery of law is at his service. Farnham, 487.

Riparian owners are entitled to the usual and natural flow of water in the stream without material interference.

No one has the right to increase the volume or hasten the flow of a stream against the will and wish of lower riparian owners especially when damages or injury are likely to result. Farnham on Water, 487, 1052; *Ward* v. *Peck*, 49 N. J. L. 42; *Water Co.* v. *Bigelow*, 60 N. J. L. 201; Wood on Nuisances, 499; *Merritt* v. *Parker*, 1 Coxe, 460; *Tillotson* v. *Smith*, 32 N. H. 490; *Gerrish* v. *Manufacturing Co.*, 30 N. H. 478; *Plattsworth Co.* v. *Smith*, 57 Nebraska, 579.

For this precise case of turning a stream from its natural channel and forcing it to run in the channel of another stream, see *Merritt* v. *Parker*, 1 Coxe, 460, cited in Angell on Watercourses, 335; the French law is fully discussed in Pardessus and Servitudes, §§ 82, 85, 88. If a man's land is materially damaged by water thrown upon it by reason of the acts of another, it can make no difference what the source of the water may be; whether it be backwater, or the flowage of the same, or the water of another stream. The wrong consists in turning any water upon the land which does not naturally flow in that place; and it can make no difference if the water wrongfully turned upon a man's land against his will flows in the channel of an ancient stream, or in a course where no water flowed before, if similar damage results. *Howell* v. *McCoy*, 3 Rawle, 256; *Bealey* v. *Shaw*, 6 East. Rep. 213, Ellenborough, C. J.; *Mason* v. *Hill*, 3 Barn. & Adol. 304, Tenterden,

C. J.; *King* v. *Tiffany*, 9 Connecticut, 162; 3 Kent's Com. 439.

It is a long established principle of the common law that wherever any act injures another's right, and would be evidence in future in favor of the wrongdoer, an action may be maintained for an invasion of the right without proof of any specific injury. *Mellor* v. *Spateman*, 1 Wms. Saund. 346, note 2; *Woodman* v. *Tufts*, 9 N. H. 91; *Snow* v. *Cowles*, 22 N. H. 302; *Cowles* v. *Kidder*, 24 N. H. 379; *Bassett* v. *Salisbury Mfg. Co.*, 28 N. H. 455. See also *Evans* v. *Merriweather*, 38 Am. Dec. 106; *Ten Eyck* v. *Delaware Canal Co.*, 32 Am. Dec. 232; *Miller* v. *Miller*, 39 Am. Dec. 544; *Norton* v. *Valentine*, 39 Am. Dec. 220; *Elliott* v. *Fitzbury*, 57 Am. Dec. 85; *Newhall* v. *Iresom*, 54 Am. Dec. 794.

Complainant has the right to the use of the Mississippi River in its natural and accustomed flow. Defendants have no right to change or alter the velocity of the stream or the volume of water passing down it. By the increased volume of water discharged into the Illinois River not only is the height of the water increased, but also the velocity likewise becomes much greater, the particular damage resulting to complainant in this respect being that inasmuch as the velocity of the current and the volume of water is increased, the longevity of disease-producing organisms is greatly advanced and the rapidity with which they pass from Chicago to St. Louis is largely accelerated. As shown by all of the evidence in the case, this constitutes a material and substantial, in fact, a great damage and injury to complainant. There is no contrariety of opinion that by the increase in the volume of water the life of the disease-producing organisms is greatly increased, and likewise, by the increase of the current, the distance traveled by pathegenic bacteria within their lifetime is largely extended.

The evidence shows that all the typhoid epidemics of consequence have been produced by infectious water. That at Washington in 1898, by a typhoid epidemic at Cumberland, Maryland, 175 miles up the stream; at Detroit, by typhoid

germs in the St. Clair River at the mouth of Black River, 67 miles from Detroit; at Lawrence and Newport, where the water was inducted into large reservoirs and so remained for a period of from two to three weeks, and yet preserved sufficient of the typhoid bacteria, alive and virulent, to produce the disease; at Pittsburg, by typhoidal conditions at Oil City, 113 miles above.

Cincinnati, Ohio, receives its water supply from the Ohio, and is known to be infected from the sewers of Pittsburg, more than 200 miles away; Buffalo, which obtains its water supply, practically, from the mouth of Lake Erie, suffers with a high typhoid mortality caused by the sewage discharge into the lake at Cleveland and other points. Covington, Kentucky, and New Albany, Indiana, suffer severely from the disease. At these points the water is pumped into large reservoirs, where it is confined for more than 30 days, during which time it retains sufficient germs of the disease that when distributed to the consumers, typhoid conditions result. Chicago, one of the greatest typhoid-ridden cities in the United States, takes its water supply from Lake Michigan, heretofore looked upon as an acceptable source for pure water. The experience of the city, however, has demonstrated that the sewage from Chicago itself has so contaminated and infected the water of the lake at such distance from the shore so as to render it questionable whether the intakes could be extended a sufficient distance into the lake to be free from infectious material.

In view of all the unquestionable facts and circumstances presented by complainant, together with the fact that defendant discharged disease germs into the canal, coupled with the fact that there has been an increase of 77.7 per cent of the typhoid mortality in the city of St. Louis, it is apparent that pathogenic bacteria do pass from Chicago to the Mississippi River at Grafton and seriously affect the sanitary condition of complainant's water supply.

One of the most remarkable disclosures in this investigation is found by the discovery of the bacilli of anthrax and

tetanus in the waters of the Illinois River. This discovery was made by Professor Zeit in his bacteriological observations of the water since the opening of the drainage canal.

Not only has the act of defendants been damaging to the people of the city of St. Louis, which constitutes one-third of the population of complainant, but also renders unsuitable the water supply of the people residing upon the Mississippi River from a point opposite Grafton to the southern boundary line of the State.

No objection is made to the construction of the canal or of the transmission of water of Lake Michigan through it, but defendant should be restrained from discharging sewage into it or disinfect it before discharging it therein.

Nor does the fact that certain municipalities of Missouri discharge sewage into the Mississippi justify the city of Chicago for doing so through the artificial canal and thus burden the Mississippi River with an inconvenience not contemplated by nature.

Mr. James Todd for the Sanitary District of Chicago. *Mr. Howland J. Hamlin,* with whom *Mr. John G. Drennan* and *Mr. W. H. Stead* were on the brief, for the State of Illinois:

The following facts are established by the proof:

The water of the Illinois River at Grafton since the opening of the drainage canal, as disclosed by chemical and bacterial surveys covering a long period of time, is, if anything, in a better sanitary condition since the opening of the drainage canal than it was prior thereto.

The Illinois River at its mouth, from a sanitary standpoint, based upon chemical and bacterial analyses, is less polluted and less dangerous to health than is either the Missouri River or the Mississippi River, and the Illinois River, emptying into the Mississippi and Missouri Rivers, is contaminated and polluted by these two rivers, instead of contaminating and polluting the combined waters of the Mississippi and Missouri Rivers.

Since the opening of the drainage canal the water of the

Illinois River has been improved for agricultural, piscatorial and manufacturing purposes by virtue of its dilution with the pure waters of Lake Michigan.

Typhoid conditions existing in the city of St. Louis, as evidenced by its public health statistics, cannot be charged, in whole or in part, to the sanitary district of Chicago.

That the water supply of St. Louis is polluted and infected defendants do not deny; but they assert that the infected material bringing about this condition is derived, not from Chicago, but from towns, villages and rural communities much nearer, in point of time, to the St. Louis intake at the Chain of Rocks.

The evidence in this case establishes affirmatively, beyond all question, that the number of deaths under the heading "Typhoid Fever" in the published reports of the Board of Health of the city of St. Louis, and as employed and used by the complainant in this controversy to establish their case that typhoid fever has increased in the city of St. Louis since January, 1900, do not correctly show the typhoid conditions existing in the city of St. Louis since 1900, or the typhoid conditions that obtained in St. Louis prior to 1900, for the reason that in the published reports of the Board of Health of the city of St. Louis there appears a column of nondescript fevers characterized under the names of intermittent, remittent, typho-malaria, congestive and simple continued fevers, and under this heading there appears a definite number of deaths attributed to these various fevers; and the evidence in this case establishes, beyond any question, that these nondescript fevers are, in reality, mainly typhoid fever, and should have been classified under the heading "Typhoid Fever," and not classified separately as distinct types of fever, and that only by uniting the deaths reported under the head of typho-malaria, etc., with those reported under typhoid fever can an approximate judgment of the true typhoid fever mortality in St. Louis be obtained; that when properly compiled and analyzed the typhoid fever statistics of the city of St. Louis, as shown in its published

Board of Health reports, do not disclose any real increase of typhoid fever, or, at most, a doubtful or a halting one, such as might be expected in a World's Fair city, with a considerable influx of population that admits of continuous sources of infection. No explosive outbursts of typhoid fever, such as characterizes water-borne epidemics, followed the opening of the drainage canal.

The evidence in this case establishes affirmatively, by a preponderance of the testimony, the following propositions:

(*a*) The typhoid germ entering the sewers of Chicago will not survive the journey to the intake tower of the city of St. Louis in a virulent condition and be able to cause typhoid fever among the inhabitants of the city of St. Louis.

(*b*) Typhoid germs from Chicago will not make the journey to the Mississippi River and become a danger and a menace to the inhabitants of the State of Missouri taking their water supply from the waters of the Mississippi River.

(*c*) That the opening of the drainage canal is not a danger and a menace, present or impending, to the inhabitants of the State of Missouri taking their water supply from the Mississippi River.

(*d*) That a typhoid germ leaving the sewers of Chicago, by way of the drainage canal, will have perished long before Grafton is reached on the Illinois River.

The necessity of purifying by filtration or other means the water supply of the city of St. Louis, as the same is derived from the Mississippi River, existed as far back as 1866, and was so recognized by the authorities in St. Louis, and has continued to be so recognized up to the present time.

The opening of the drainage canal has in no manner increased the necessity which has heretofore existed for purifying by filtration the water supply of St. Louis, and in the installation, operation and maintenance of a filtering plant sufficient to meet the requirements of St. Louis, the opening of the drainage canal has created no added cost.

The evidence in this case establishes the fact conclusively

that the sewage discharged into the Missouri and the Mississippi Rivers by the cities situated within the jurisdiction of complainant is sufficient of itself to contaminate and infect the water supply of those cities in Missouri obtaining their water supply from the Missouri and Mississippi Rivers, exclusive of all other sources of contamination or pollution entering said stream.

There is no testimony offered in evidence in this case showing that any damage has been sustained by complainant, the State of Missouri, by virtue of the opening of the drainage canal, much less any that can be measured in dollars and cents.

In the prosecution of the work of the Chicago drainage canal by the defendant, the sanitary district of Chicago, at an expenditure of over $42,500,000, the complainant had knowledge of this great public improvement and has stood by in silence and acquiesced impliedly in its construction. 2 Wood on Nuisances, §§ 804–806; Gould on Waters, §§ 530, 533.

It is the well established doctrine of the Supreme Court of the United States that laches on the part of the complainant is a bar to the granting of equitable relief. This is especially so where the lack of diligence on the part of the complainant has led the defendant to place himself in a position from which he cannot escape or recede without great loss and inconvenience.

The question of laches does not depend as does the statute of limitations upon the fact, that a certain definite time has elapsed since the cause of action accrued, but whether under all the circumstances of the particular case plaintiff is chargeable with a want of due diligence in failing to institute proceedings before he did. *McKnight* v. *Taylor*, 1 How. 168; *Badger* v. *Badger*, 2 Wall. 87; *Twin Lake Oil Co.* v. *Marbury*, 91 U. S. 587; *Hayward* v. *Elliot National Bank*, 96 U. S. 611; *Harwood* v. *Cincinnati & C. Air Line Co.*, 17 Wall. 79; *Apeidel* v. *Henrici*, 120 U. S. 377; *Galiher* v. *Cadwell*, 145 U. S. 368; *Hammond* v. *Hopkins*, 143 U. S. 224; *Willard* v. *Wood*, 164 U. S. 502; *Sullivan* v. *Portland & K. R. Co.*, 94 U. S. 806; *Lans-*

dale v. *Smith*, 106 U. S. 391; *Lane & B. Co.* v. *Locke*, 150 U. S. 193; *Mackall* v. *Casilear*, 137 U. S. 556; *Whitney* v. *Fox*, 166 U. S. 637; *Gildersleeve* v. *New Mexico Min. Co.*, 161 U. S. 573; *Ware* v. *Galveston City Co.*, 146 U. S. 102; *Foster* v. *Mansfield C. & L. M. R. Co.*, 146 U. S. 88; *Hoyt* v. *Latham*, 143 U. S. 553; *Hanner* v. *Moulton*, 138 U. S. 486; *Richards* v. *Mackall*, 124 U. S. 183; *Roberts* v. *Northern P. R. Co.*, 158 U. S. 1. See also *Wilson* v. *Anthony*, 19 Barb. (Ark.) 16; *Taylor* v. *Adams*, 14 Barb. (Ark.) 62; *Johnson* v. *Johnson*, 5 Alabama, 90; *Fuson* v. *Sanger*, 2 Ware, 256; *Fisher* v. *Boody*, 1 Curtis, 219; *Cholmondy* v. *Clinton*, 2 Jac. & Walk. 141; *Smith* v. *Clay*, Ambler, 645; *Johnston* v. *Standard Mining Co.*, 148 U. S. 360.

Equity will not interfere to aid a plaintiff who has stood by in silence and has acquiesced impliedly in the expenditure of large sums of money by the defendant in the belief that his work was rightful and would never be interfered with. High on Injunctions, §§ 618, 643, 884; *Wendell* v. *Van Rensselaer*, 1 Johns. Ch. 343; *Dougrey* v. *Topping & Holme*, 4 Paige Ch. 93; *Town* v. *Needham & Harvey*, 3 Paige Ch. 546; *Blanchard* v. *Doering*, 23 Wisconsin, 200; *Sprague* v. *Steere*, 1 R. I. 247; *Patterson* v. *Hewitt*, 55 L. R. A. 658, 662, 670; *Swain* v. *Seamens*, 9 Wall. 254, 273, 274; 2 Pomeroy Eq. Jur., §§ 816–821; *Niven* v. *Belknap*, 2 Johns. N. Y. 572, 588, 589; *Rochdale Canal Co.* v. *King*, 2 Simons N. S., 78; *Wood* v. *Sutcliffe*, 2 Simons (N. S.), 163; *Birmingham Canal Co.* v. *Lloyd*, 18 Ves. 515; *Ripon* v. *Hobart*, 3 Mylne & K. 169; *Barrett* v. *Blagrave*, 6 Ves. 104; *Binney's Case*, 2 Bland. Ch. 99; *Jacox* v. *Clark*, Walk. Ch. 249; *Gray* v. *Ohio & Penn. R. R.*, 1 Grant's Cases, 412; *Dunn* v. *Sprevier*, 7 Ves. 235; *Bassett* v. *Company*, 47 N. H. 426; *Bliss* v. *Pritchard*, 67 Missouri, 181, 190; *Landrum* v. *Union Bank*, 63 Missouri, 48. See also *Eston* v. *N. Y. & L. B. R. R.*, 24 N. J. Eq. 49.

The court of equity will refuse to grant an injunction when it appears that greater injury and inconvenience will be caused to the defendant by granting the injunction than will be caused to the complainant by refusing it.

The courts will require a very strong case for the granting of an injunction which will cause more injury than it will remedy, and it may be said, as a general rule, that an injunction will not be granted where it will be productive of greater injury than will result from a refusal of it. This rule is especially applicable when the party applying for an injunction has by his own laches made it impossible to grant the injunction without inflicting serious injury on the party so to be enjoined. 16 Am. & Eng. Ency. of Law, 2d ed., 363, 364; Spelling on Extraordinary Relief, §§ 23, 372; *Edwards* v. *Allonez Mining Co.*, 38 Michigan, 46; *Clifton* v. *Dye*, 87 Alabama, 468; *Richard's Appeal*, 57 Pa. St. 114; *Hall* v. *Rood*, 39 Michigan, 46; *Campbell* v. *Seaman*, 63 N. Y. 568.

A court of equity will not grant an injunction to restrain a party from committing a nuisance when the evidence shows that the party complaining is guilty of contributing to the nuisance of which he complains. If the granting of an injunction will not relieve him from the consequences of his own acts the injunction will not issue. If the complainant contributes to the conditions which it claims in its bill of complaint will injure it as a State, it cannot obtain equitable relief.

It is the fundamental principle of equity that "He who seeks equity must do equity," and out of this grows the maxim that " He who comes into equity must come with clean hands." In other words, courts of equity will not enjoin one from doing a lawful act upon the application of one who, while claiming said act will cause him great and irreparable injury, is himself contributing to the injurious condition complained of. In such case the parties are *in pari delicto*. 11 Paige Ch. 349.

If the plaintiff himself has contributed to the pollution he cannot recover against an upper proprietor. Gould on Waters, § 219; *Water Supply Co.* v. *Potwin*, 43 Kansas, 408; *Ferguson* v. *Firmenich Mfg. Co.*, 77 Iowa, 576. See also *Cassady* v. *Cavenor*, 37 Iowa, 300; *Richards* v. *Waupun*, 59 Wisconsin, 45; *Mowday* v. *Moore*, 133 Pa. St. 598; *Comstock* v. *Johnson*, 46

N. Y. 615; *Palmer* v. *Harris*, 60 Pa. St. 156; *Jacksonville* v. *Doane*, 145 Illinois, 23.

The cities, towns and villages in the State of Missouri, situated upon the shore of the Missouri River, which are contributing to the nuisance complained of in this suit, are all agencies of the State; their acts in so contributing will be imputed to the State, and it should not be given relief from a condition to which its agencies are so materially contributing.

An injunction to restrain a nuisance will issue only in a case where the fact of nuisance is made out upon determinate and satisfactory evidence. If the evidence be conflicting and the injury be doubtful, that conflict and doubt will be a ground for withholding the injunction, and where interposition by injunction is sought to restrain that which is apprehended will create a nuisance of which its complainant may complain, the proof must show such a state of facts as will manifest the danger to be real and immediate.

A careful consideration of all the testimony fails to establish as a fact that the opening of the drainage canal is a nuisance, causing complainant great and irreparable injury. The contention made by complainant has not been made out upon determinate and satisfactory evidence. The evidence is conflicting and the injury doubtful, and consequently complainant is not entitled to the relief prayed for. The evidence establishes affirmatively that Missouri, as a State, is not injured or damaged by virtue of the opening of the Chicago drainage canal, but on the contrary, if there has been an injury established in the evidence in this case as suffered by the inhabitants of the State of Missouri from the use of the waters of the Mississippi River, that injury has been caused by the inhabitants of the cities, towns and villages within the jurisdiction of complainant who have emptied their sewage into the Missouri and Mississippi Rivers at points above the places where the alleged injury is supposed to have existed. The evidence upon which damage is predicated is speculative and theoretical, and insufficient to show that the opening of the

Chicago drainage canal is responsible for the injury complained of.

Mr. Justice Holmes delivered the opinion of the court.

This is a suit brought by the State of Missouri to restrain the discharge of the sewage of Chicago through an artificial channel into the Desplaines River, in the State of Illinois. That river empties into the Illinois River, and the latter empties into the Mississippi at a point about forty-three miles above the city of St. Louis. It was alleged in the bill that the result of the threatened discharge would be to send fifteen hundred tons of poisonous filth daily into the Mississippi, to deposit great quantities of the same upon the part of the bed of the last-named river belonging to the plaintiff, and so to poison the water of that river, upon which various of the plaintiff's cities, towns and inhabitants depended, as to make it unfit for drinking, agricultural, or manufacturing, purposes. It was alleged that the defendant Sanitary District was acting in pursuance of a statute of the State of Illinois and as an agency of that State. The case is stated at length in 180 U. S. 208, where a demurrrer to the bill was overruled. A supplemental bill alleges that since the filing of the original bill the drainage canal has been opened and put into operation and has produced and is producing all the evils which were apprehended when the injunction first was asked. The answers deny the plaintiff's case, allege that the new plan sends the water of the Illinois River into the Mississippi much purer than it was before, that many towns and cities of the plaintiff along the Missouri and Mississippi discharge their sewage into those rivers, and that if there is any trouble the plaintiff must look nearer home for the cause.

The decision upon the demurrer discussed mainly the jurisdiction of the court, and, as leave to answer was given when the demurrer was overruled, naturally there was no very precise consideration of the principles of law to be applied if the plaintiff should prove its case. That was left to the future

with the general intimation that the nuisance must be made out upon determinate and satisfactory evidence, that it must not be doubtful and that the danger must be shown to be real and immediate. The nuisance set forth in the bill was one which would be of international importance—a visible change of a great river from a pure stream into a polluted and poisoned ditch. The only question presented was whether as between the States of the Union this court was competent to deal with a situation which, if it arose between independent sovereignties, might lead to war. Whatever differences of opinion there might be upon matters of detail, the jurisdiction and authority of this court to deal with such a case as that is not open to doubt. But the evidence now is in, the actual facts have required for their establishment the most ingenious experiments, and for their interpretation the most subtle speculations, of modern science, and therefore it becomes necessary at the present stage to consider somewhat more nicely than heretofore how the evidence is to be approached.

The first question to be answered was put in the well known case of the Wheeling bridge. *Pennsylvania* v. *Wheeling & Belmont Bridge Co.*, 13 How. 518. In that case, also, there was a bill brought by a State to restrain a public nuisance, the erection of a bridge alleged to obstruct navigation, and a supplemental bill to abate it after it was erected. The question was put most explicitly by the dissenting judges but it was accepted by all as fundamental. The Chief Justice observed that if the bridge was a nuisance it was an offence against the sovereignty whose laws had been violated, and he asked what sovereignty that was. 13 How. 581; Daniel, J., 13 How. 599. See also *Kansas* v. *Colorado*, 185 U. S. 125. It could not be Virginia, because that State had purported to authorize it by statute. The Chief Justice found no prohibition by the United States. 13 How. 580. No third source of law was suggested by any one. The majority accepted the Chief Justice's postulate, and found an answer in what Congress had done.

It hardly was disputed that Congress could deal with the

matter under its power to regulate commerce. The majority observed that although Congress had not declared in terms that a State should not obstruct the navigation of the Ohio, by bridges, yet it had regulated navigation upon that river in various ways and had sanctioned the compact between Virginia and Kentucky when Kentucky was let into the Union. By that compact the use and navigation of the Ohio, so far as the territory of either State lay thereon, was to be free and common to the citizens of the United States. The compact, by the sanction of Congress, had become a law of the Union. A state law which violated it was unconstitutional. Obstructing the navigation of the river was said to violate it, and it was added that more was not necessary to give a civil remedy for an injury done by the obstruction. 13 How. 565, 566. At a later stage of the case, after Congress had authorized the bridge, it was stated again in so many words that the ground of the former decision was that "the act of the Legislature of Virginia afforded no authority or justification. It was in conflict with the acts of Congress, which were the paramount law." 18 How. 421, 430.

In the case at bar, whether Congress could act or not, there is no suggestion that it has forbidden the action of Illinois. The only ground on which that State's conduct can be called in question is one which must be implied from the words of the Constitution. The Constitution extends the judicial power of the United States to controversies between two or more States and between a State and citizens of another State, and gives this court original jurisdiction in cases in which a State shall be a party. Therefore, if one State raises a controversy with another, this court must determine whether there is any principle of law and, if any, what, on which the plaintiff can recover. But the fact that this court must decide does not mean, of course, that it takes the place of a legislature. Some principles it must have power to declare. For instance, when a dispute arises about boundaries, this court must determine the line, and in doing so must be governed by rules explicitly

or implicitly recognized. *Rhode Island* v. *Massachusetts*, 12 Pet. 657, 737. It must follow and apply those rules, even if legislation of one or both of the States seems to stand in the way. But the words of the Constitution would be a narrow ground upon which to construct and apply to the relations between States the same system of municipal law in all its details which would be applied between individuals. If we suppose a case which did not fall within the power of Congress to regulate, the result of a declaration of rights by this court would be the establishment of a rule which would be irrevocable by any power except that of this court to reverse its own decision, an amendment of the Constitution, or possibly an agreement between the States sanctioned by the legislature of the United States.

The difficulties in the way of establishing such a system of law might not be insuperable, but they would be great and new. Take the question of prescription in a case like the present. The reasons on which prescription for a public nuisance is denied or may be granted to an individual as against the sovereign power to which he is subject have no application to an independent state. See 1 Oppenheim, International Law, 293, §§ 242, 243. It would be contradicting a fundamental principle of human nature to allow no effect to the lapse of time, however long, *Davis* v. *Mills*, 194 U. S. 451, 457, yet the fixing of a definite time usually belongs to the legislature rather than the courts. The courts did fix a time in the rule against perpetuities, but the usual course, as in the instances of statutes of limitation, the duration of patents, the age of majority, etc., is to depend upon the lawmaking power.

It is decided that a case such as is made by the bill may be a ground for relief. The purpose of the foregoing observations is not to lay a foundation for departing from that decision, but simply to illustrate the great and serious caution with which it is necessary to approach the question whether a case is proved. It may be imagined that a nuisance might be created by a State upon a navigable river like the Danube, which would

amount to a *casus belli* for a State lower down, unless removed. If such a nuisance were created by a State upon the Mississippi the controversy would be resolved by the more peaceful means of a suit in this court. But it does not follow that every matter which would warrant a resort to equity by one citizen against another in the same jurisdiction equally would warrant an interference by this court with the action of a State. It hardly can be that we should be justified in declaring statutes ordaining such action void in every instance where the Circuit Court might intervene in a private suit, upon no other ground than analogy to some selected system of municipal law, and the fact that we have jurisdiction over controversies between States.

The nearest analogy would be found in those cases in which an easement has been declared in favor of land in one State over land in another. But there the right is recognized on the assumption of a concurrence between the two States, the one, so to speak, offering the right, the other permitting it to be accepted. *Manville Co.* v. *Worcester,* 138 Massachusetts, 89. But when the State itself is concerned and by its legislation expressly repudiates the right set up, an entirely different question is presented.

Before this court ought to intervene the case should be of serious magnitude, clearly and fully proved, and the principle to be applied should be one which the court is prepared deliberately to maintain against all considerations on the other side. See *Kansas* v. *Colorado,* 185 U. S. 125.

As to the principle to be laid down the caution necessary is manifest. It is a question of the first magnitude whether the destiny of the great rivers is to be the sewers of the cities along their banks or to be protected against everything which threatens their purity. To decide the whole matter at one blow by an irrevocable fiat would be at least premature. If we are to judge by what the plaintiff itself permits, the discharge of sewage into the Mississippi by cities and towns is to be expected. We believe that the practice of discharging into the river is

general along its banks, except where the levees of Louisiana have led to a different course. The argument for the plaintiff asserts it to be proper within certain limits. These are facts to be considered. Even in cases between individuals some consideration is given to the practical course of events. In the black country of England parties would not be expected to stand upon extreme rights. *St. Helen's Smelting Co.* v. *Tipping*, 11 H. L. C. 642. See *Boston Ferrule Co.* v. *Hills*, 159 Massachusetts, 147, 150. Where, as here, the plaintiff has sovereign powers and deliberately permits discharges similar to those of which it complains, it not only offers a standard to which the defendant has the right to appeal, but, as some of those discharges are above the intake of St. Louis, it warrants the defendant in demanding the strictest proof that the plaintiff's own conduct does not produce the result, or at least so conduce to it that courts should not be curious to apportion the blame.

We have studied the plaintiff's statement of the facts in detail and have perused the evidence, but it is unnecessary for the purposes of decision to do more than give the general result in a very simple way. At the outset we cannot but be struck by the consideration that if this suit had been brought fifty years ago it almost necessarily would have failed. There is no pretence that there is a nuisance of the simple kind that was known to the older common law. There is nothing which can be detected by the unassisted senses—no visible increase of filth, no new smell. On the contrary, it is proved that the great volume of pure water from Lake Michigan which is mixed with the sewage at the start has improved the Illinois River in these respects to a noticeable extent. Formerly it was sluggish and ill smelling. Now it is a comparatively clear stream to which edible fish have returned. Its water is drunk by the fishermen, it is said, without evil results. The plaintiff's case depends upon an inference of the unseen. It draws the inference from two propositions. First, that typhoid fever has increased considerably since the change and that other expla-

nations have been disproved, and second, that the bacillus of typhoid can and does survive the journey and reach the intake of St. Louis in the Mississippi.

We assume the now prevailing scientific explanation of typhoid fever to be correct. But when we go beyond that assumption everything is involved in doubt. The data upon which an increase in the deaths from typhoid fever in St. Louis is alleged are disputed. The elimination of other causes is denied. The experts differ as to the time and distance within which a stream would purify itself. No case of an epidemic caused by infection at so remote a source is brought forward, and the cases which are produced are controverted. The plaintiff obviously must be cautious upon this point, for if this suit should succeed many others would follow, and it not improbably would find itself a defendant to a bill by one or more of the States lower down upon the Mississippi. The distance which the sewage has to travel (357 miles) is not open to debate, but the time of transit to be inferred from experiments with floats is estimated at varying from eight to eighteen and a half days, with forty-eight hours more from intake to distribution, and when corrected by observations of bacteria is greatly prolonged by the defendants. The experiments of the defendants' experts lead them to the opinion that a typhoid bacillus could not survive the journey, while those on the other side maintain that it might live and keep its power for twenty-five days or more, and arrive at St. Louis. Upon the question at issue, whether the new discharge from Chicago hurts St. Louis, there is a categorical contradiction between the experts on the two sides.

The Chicago drainage canal was opened on January 17, 1900. The deaths from typhoid fever in St. Louis, before and after that date, are stated somewhat differently in different places. We give them mainly from the plaintiff's brief: 1890, 140; 1891, 165; 1892, 441; 1893, 215; 1894, 171; 1895, 106; 1896, 106; 1897, 125; 1898, 95; 1899, 131; 1900, 154; 1901, 181; 1902, 216; 1903, 281. It is argued for the defendant that the num-

bers for the later years have been enlarged by carrying over cases which in earlier years would have been put into a miscellaneous column (intermittent, remittent, typho-malaria, etc., etc.), but we assume that the increase is real. Nevertheless, comparing the last four years with the earlier ones, it is obvious that the ground for a specific inference is very narrow, if we stopped at this point. The plaintiff argues that the increase must be due to Chicago, since there is nothing corresponding to it in the watersheds of the Missouri or Mississippi. On the other hand, the defendant points out that there has been no such enhanced rate of typhoid on the banks of the Illinois as would have been found if the opening of the drainage canal were the true cause.

Both sides agree that the detection of the typhoid bacillus in the water is not to be expected. But the plaintiff relies upon proof that such bacilli are discharged into the Chicago sewage in considerable quantities; that the number of bacilli in the water of the Illinois is much increased, including the *bacillus coli communis*, which is admitted to be an index of contamination, and that the chemical analyses lead to the same inference. To prove that the typhoid bacillus could make the journey an experiment was tried with the *bacillus prodigiosus*, which seems to have been unknown, or nearly unknown, in these waters. After preliminary trials, in which these bacilli emptied into the Mississippi near the mouth of the Illinois were found near the St. Louis intake and in St. Louis in times varying from three days to a month, one hundred and seven barrels of the same, said to contain one thousand million bacilli to the cubic centimeter, were put into the drainage canal near the starting point on November 6, and on December 4 an example was found at the St. Louis intake tower. Four others were found on the three following days, two at the tower and two at the mouth of the Illinois. As this bacillus is asserted to have about the same length of life in sunlight in living waters as the *bacillus typhosus*, although it is a little more hardy, the experiment is thought to prove one element of the plaintiff's case, although

the very small number found in many samples of water is thought by the other side to indicate that practically no typhoid germs would get through. It seems to be conceded that the purification of the Illinois by the large dilution from Lake Michigan (nine parts or more in ten) would increase the danger, as it now generally is believed that the bacteria of decay, the saprophytes, which flourish in stagnant pools, destroy the pathogenic germs. Of course the addition of so much water to the Illinois also increases its speed.

On the other hand, the defendant's evidence shows a reduction in the chemical and bacterial accompaniments of pollution in a given quantity of water, which would be natural in view of the mixture of nine parts to one from Lake Michigan. It affirms that the Illinois is better or no worse at its mouth than it was before, and makes it at least uncertain how much of the present pollution is due to Chicago and how much to sources further down, not complained of in the bill. It contends that if any bacilli should get through they would be scattered and enfeebled and would do no harm. The defendant also sets against the experiment with the *bacillus prodigiosus* a no less striking experiment with typhoid germs suspended in the Illinois River in permeable sacs. According to this the duration of the life of these germs has been much exaggerated, and in that water would not be more than three or four days. It is suggested, by way of criticism, that the germs may not have been of normal strength, that the conditions were less favorable than if they had floated down in a comparatively unchanging body of water, and that the germs may have escaped, but the experiment raises at least a serious doubt. Further, it hardly is denied that there is no parallelism in detail between the increase and decrease of typhoid fever in Chicago and St. Louis. The defendants' experts maintain that the water of the Missouri is worse than that of the Illinois, while it contributes a much larger proportion to the intake. The evidence is very strong that it is necessary for St. Louis to take preventive measures, by filtration or otherwise, against the dangers of the

plaintiff's own creation or from other sources than Illinois. What will protect against one will protect against another. The presence of causes of infection from the plaintiff's action makes the case weaker in principle as well as harder to prove than one in which all came from a single source.

Some stress was laid on the proposition that Chicago is not on the natural watershed of the Mississippi, because of a rise of a few feet between the Desplaines and the Chicago Rivers. We perceive no reason for a distinction on this ground. The natural features relied upon are of the smallest. And if under any circumstances they could affect the case, it is enough to say that Illinois brought Chicago into the Mississippi watershed in pursuance not only of its own statutes, but also of the acts of Congress of March 30, 1822, c. 14, 3 Stat. 659, and March 2, 1827, c. 51, 4 Stat. 234, the validity of which is not disputed. *Wisconsin* v. *Duluth*, 96 U. S. 379. Of course these acts do not grant the right to discharge sewage, but the case stands no differently in point of law from a suit because of the discharge from Peoria into the Illinois, or from any other or all the other cities on the banks of that stream.

We might go more into detail, but we believe that we have said enough to explain our point of view and our opinion of the evidence as it stands. What the future may develop of course we cannot tell. But our conclusion upon the present evidence is that the case proved falls so far below the allegations of the bill that it is not brought within the principles heretofore established in the cause.

Bill dismissed without prejudice.