

A HISTORY,
 CHRONOLOGICAL AND CIRCUMSTANTIAL,
 OF THE
 VISITATIONS OF YELLOW FEVER
 AT NEW YORK.

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(Read before the Academy of Medicine, and printed by permission.)

The history of the epidemic diseases of North America dates back to the commencement of the 17th century. It is related in a dedicatory epistle of a sermon delivered by Elder Cushman, at Plymouth, in 1620, just after the Colony arrived, that,

1618-19. "They, (the Indians,) were very much wasted of late by a great mortality that fell amongst them *three years since*, which, with their own civil dissensions and bloody wars, hath so wasted them, as I think the twentieth person is scarce left alive." "It raged in winter, and affected the Indians only."

Noah Webster, in his work on Pestilence, attempts to decide that this pestilence was the fever which has since received the appellation of "yellow fever;" his reliance for this opinion being the statement of Gen. Gookin, as follows: "What the disease was which so generally and mortally swept them away, I cannot learn. Doubtless it was some pestilential disease. I have discoursed with some old Indians that were then youths, who say that the *bodies all over, were*

exceeding yellow, (describing it by a yellow garment they showed me,) both before they died and afterward."

That this was not small pox, (a frequent scourge of the aborigines,) is evident from several circumstances; but the basis (above cited) for the inference that it was Yellow Fever, is too slight, especially when we remember what Webster ignores, that it raged *in winter*, which Yellow Fever never does, at least in Northern latitudes. It was most probably a malignant typhus, with bilious complications, jaundice, and nasal hæmorrhages, of paludal origin. Gookin wrote 40 or 50 years after the settlement of New England.

The same destructive principle devastated the settlers of Virginia, destroying 300 of them in 1619.

1632-37. America, as well as Europe, was severely annoyed by pestilential diseases. In 1633, a "pestilent fever" invaded the little Colony of Plymouth, carrying off 20 of their number.

1668. Malignant diseases again prevailed in America, and the first mention is now made of New York, at which time the epidemic was so fatal, that a fast was appointed in September, on that account. This was possibly the "autumnal bilious fever, in its infectious form."—*Webster*, vol. 1, p. 202.

1695. A mortal sickness prevailed among the Indians in the Eastern parts of this Continent, and a contagious sickness prevailed in Bermuda in the same year.

1699. This malignant fever, whatever might have been its symptoms, was followed by more general sickness. In this year, there raged in Charleston, S. C., and in Philadelphia, the most deadly bilious plague that probably ever affected the people of this country up to this period. It commenced in Philadelphia, about the first of August, and was called the "Barbadoes distemper." "The patients vomited and voided blood;" 220 persons died of it, of whom 80 or 90 belonged to the Society of Friends. No mention is made of its appearance in New York.

1702. The American plague, as it is called by some writers—meaning, doubtless, the Yellow Fever—raged severely in New York, to such a degree that scarcely a patient survived it; and, by some accounts, it was more fatal than any disease since that period. It was popularly known as "the great sickness." One account states that 500 died up to September, and 70 more during the succeeding week, in a population of only 6,000 or 7,000. On account of it, the Assembly was held at Jamaica, Long Island. It was said to have been imported from St. Thomas.

1719-20. A malignant pleurisy prevailed in some parts of America; and in 1720 the village of Duck Creek, in the State of Delaware, was almost depopulated by some disorder, the name or character of which is unknown.—*Webster*, vol. 1, 227.

1723. What was denominated a "burning ague," prevailed in Rhode Island, which, in proportion to its patients, was never exceeded in mortality in America.—*Idem*, 228.

1732. In the autumn, in New York, there raged a malignant infectious fever, of which died 70 persons in a few weeks.—*Idem*, 341.

In the same year the "American plague" prevailed at Charleston, South Carolina.

1741. The "American plague" appeared in Philadelphia and Virginia.

1742. A mortal fever prevailed in Holliston, Massachusetts, of which died Mr. Stone, the minister, and 14 of his congregation.

1743. New York was severely afflicted by the bilious plague, where died in one season, 217 of the inhabitants—a considerable number for the population, which was 7,000 or 8,000. "According to Mr. Colden, in a paper written in this year, it appeared chiefly in parts of the town which were built on swampy ground, from which the water could not be easily drained, and there was a filthy smell from the slips."

This year is interesting, for having been, as far as our information extends, the date of the first official report of the mortality of this city, which was made by the Mayor, John Cruger. The whole report is as follows:

"*New York*, October 24, 1743. By the Mayor of the city. An account of persons buried in the City of New York:

From July 25 to Sept. 25, 1743.	From Sept. 25 to Oct. 22.
Children..... 51	Children..... 16
Grown persons.....114	Grown persons..... 36
165	52
	165
	217

"And I do find, by the best information I have from the doctors, &c., of this city, that the late distemper is now over.

JOHN CRUGER, Mayor."

Idem, 238.

1745. A malignant bilious fever prevailed in *New York*, of which

an eminent physician, Dr. Nicoll, died. "There appears to be no question that it was the same disease now called Yellow Fever."—*Idem*, 341.

In the same year, an infectious fever prevailed in *Boston*. The Yellow Fever prevailed in *Charleston, S. C.*; and *Stamford, Ct.*, was distressed by a malignant dysentery, which swept away 70 inhabitants out of a few hundred.—*Idem*, 239.

About the same time (the precise year is not known) a malignant epidemic disease laid waste the *Indian tribes*, which, from the descriptions given by the traders, would appear to be, though it probably was not, the infectious Yellow Fever. In consequence of it, the Senecas removed their quarters two or three times in a few years. The disease was said to have been confined to the Indians, the white people living and trading with them not being affected.

1746. The *Mohegan tribe*, between *New London* and *Norwich*, were wasted by the same malady. From an account given by a Mohegan priest, "a man of good sense and integrity," as related by a Mr. Tracy, son of Dr. Tracy, of *Norwich*, who attended them as a physician, and was the only white man affected, the following were the symptoms of this disease: The patient first complained of a severe pain in the head and back, which was followed by fever; in three or four days the skin turned as yellow as gold; a vomiting of black matter took place, and generally a bleeding at the nose and mouth, which continued till the patient died. 100 of the tribe died.—*Idem*, 341.

Albany was this year visited by a malignant disease, called by *Colden*, a nervous fever, and by *Douglass*, the Yellow Fever. The bodies of some of the patients were yellow: the crisis of the disease was the ninth day; if the patient survived that day, he had a good chance for recovery. The disease left many in a state of imbecility of mind, approaching to childishness or idiocy; others were afterwards troubled with swelled legs. The disease began in August and ended with frost, after having carried off forty-five inhabitants, mostly men of robust bodies.—*Idem*, 239.

It was reported that a like disease prevailed in *New York*, and that it had been imported in a vessel from *Ireland*, but we find no account of any such.

1747. A bilious plague prevailed in *Philadelphia*, and, with a slight mortality, also appeared in *New York*.

1748. It appeared in *Charleston, S. C.*

1761. Again appeared in *Charleston*; and it was about this time that the office of Health Officer was instituted, but what gave

occasion to it was the arrival, in 1758 or 1759, of a ship crowded with Germans, in a very sickly state.

1762. It appeared in *Philadelphia*. The summer was extremely hot.

1776. The Mohawk Indians were scourged by a malignant disease.—*Idem*, 342.

1778. A bilious plague occurred in *Philadelphia*.

1780. A bilious remittent fever prevailed in the same city, which, from some peculiar symptoms, received the soubriquet of "break-bone fever."

1783. A bilious pestilential fever occurred at Fell's Point, Baltimore, and sporadic cases in various parts of the country. Almost a whole family in New Jersey perished by it in the autumn.

"It is to be remarked as a striking and interesting fact, that during the eight years' War of the Revolution, no Yellow Fever appeared in the United States.—*Idem*, vol. 2, p. 75.

1791. In New York, the Yellow Fever prevailed in Water Street, in the autumn, in the neighborhood of Peck Slip, which was loaded with every kind of filth. 200 died of it.—*Med. Rep.*, vol. 1, p. 305.

1792. There was little or none in New York, though it occasioned considerable mortality in Charleston, carrying off patients in 3 days.

1793. There was none amongst us but a few solitary cases imported from Philadelphia, the alarm from which was lost in the unfortunate individuals who had brought it from its source.—*Dr. V. Seaman, Idem*, 305.

But in *Philadelphia*, in this year, the Yellow Fever spread terror and dismay over the city, sweeping into the grave 4,040 of the inhabitants. A controversy arose among the physicians in Philadelphia relative to its origin, one party tracing the disease, as they supposed, to infected vessels from the West Indies, and the other ascribing it to exhalations from damaged coffee, and filthy streets,—a controversy which was marked by great acerbity, and the unhappy schism which it produced among the citizens generally, as well as the profession. The summer of this year was very hot, after a dry spring.

In illustration of the popular sentiment (at least in the rural districts) respecting another mooted question connected with this disease, viz., its contagiousness, we may be permitted to introduce here, as à propos to the epidemic under consideration, an anecdote from a MS. Autobiographical Sketch of a late professor in one of the Medical Schools of this city. In 1793 he was a student in Philadelphia, and says he, "we had made a pleasant commencement, and just begun

to relish our new pursuit, when the yellow fever, which proved so calamitous in that year, made its appearance. Our school was rapidly thinned by the removal of the inhabitants to the country. I continued until no one but myself remained, and until my teacher himself was seized with fever and confined to his bed. He considered his recovery, I apprehend from the beginning, to be doubtful, and furnishing me with the outlines of his will, desired me to prepare it in due form. Having assisted him in signing it, and perceiving him to be very ill, I was induced, although very desirous to remain with him and assist his wife in nursing him, to yield to their advice and leave the city. * * * I embarked in a sloop for Alloway's Creek, and spent one night on the water, and on the following night I was seized with a heavy chill, followed by high feverish excitement, which was considered as an evident attack of the disease from which I fled. My parents, 8 miles distant, were informed in the morning of my situation, and no time was lost in sending for me. By gentle and cautious travelling, I reached home without being injured by the journey, and found in an airy upper room, and in the faithful nursing of a tender mother, the most grateful auxiliaries to a restoration, which could possibly operate through the medium of the mind and affections.

"My situation excited much sympathy in the Town of Salem, (N. Jersey,) where I was pretty well known, and the attendance of my physician, who resided in the town, was very assiduous, until the fears of the inhabitants for his and their own safety, laid him under a positive interdict, as I grew more and more ill, no longer to enter my room or to go inside of the house. The very atmosphere of our dwelling was considered to be infected, so that travellers along the road, apprised of my illness, would climb over the fences and make a wide circuit, to avoid the danger. But my physician, Dr. Rowan, deeply interested in the case, and touched, I believe, by real sympathy and friendship for the family, though prohibited from seeing me, or coming to the house, continued his daily journeys to a tree above a quarter of a mile distant, where he met my father, learned the symptoms, and prescribed what he thought best. The disease terminated in a dysentery, which being suitably treated, I began rapidly to recover, and was soon restored to health."

1794. Twenty or thirty cases occurred in New York, occasioning considerable uneasiness in the minds of many of the citizens. According to Dr. V. Seaman, in a communication of Sept. 11th, to "the Committee for preventing the introduction of Contagious Diseases," which met regularly, "most of the patients that had been,

or then were, affected with dangerous fevers, were either such as resided in the neighbourhood of the slips, (which then were or lately had been cleaning out,) or whose employment led them to frequent those places." Its chief locality was the vicinity of New Slip, (foot of James Street.) During the very time that these persons were taken sick, the MUD TURTLE, as the machine was called, "was performing its pestiferous purgations in this filthy slip."—*Idem*, p. 306.

In *Philadelphia*, in this year, from 70 to 100 died of this disease, and on the 10th of June it made its appearance in New Haven, Ct., attributable, according to some, to local causes, and according to others, to foreign origin.

1795. Yellow Fever again made its appearance in New York, carrying off 730 persons, at least 500 of whom were foreigners, (452 belonged to one Catholic congregation,) most of whom had been so short a time in the country, that the pastor, Rev. Mr. O'Brien, did not know them.

The first case that attracted public attention, was Dr. Treat, Health Officer of the port, who fell a victim on the 29th of July. It is alleged, however, that 14 days at least, before the death of Dr. Treat, a man in the hospital died of a similar fever, and that another case, a blacksmith, was visited by Dr. Pitt Smith, with a similar disease, early in July. The evidence is, however, clear that Dr. Treat, himself, imputed his final sickness to communication from the sick and dead whom he visited on ship board, especially to the corpse of one which he assisted to bury on Governor's Island.—*Rev. Jno. McKnight, M. and P. Reg.*, vol. 3, p. 293.

It prevailed on the borders of the East River, in the low streets, and what was formerly the swamp, and in the narrow alleys. A small part only of the citizens fled; most of them remained and pursued their occupations in the greater part of the city, with perfect safety.

It occurred also in Norfolk, Va., both in this and the preceding and subsequent years.

1796. In New York, there had been built at Whitehall, the southern extremity of the city, a new dock, 60 feet into the river, with a front of 458 feet, the piles and timbers of which only, at this time, had been put down, forming an immense crib, having an area within of an average depth of 9 feet, and which, for a year past, had been gradually filling in with the accidental accumulations of all manner of filth, street dirt, dead animals, &c., &c. It was estimated to require 24,000 cart loads to fill up this dock, one-third of which, or

8,000 loads of perishable material, being above the ordinary height of the tides, was exposed to the action of the summer sun, while the balance of the mass was but slightly covered with water, at variable depths.

A somewhat similar condition of things was observable at Exchange Slip, foot of Broad Street, which was the receptacle of an extensive common sewer, with a great portion of its muddy bottom exposed at low water. In addition to these circumstances, the adjacent quarters contained a large number of old wooden houses, many of which, built before the raising and paving of the streets, had their lower floors two or three feet below the surface of the pavements; precisely such an arrangement as is observable at the Five Points and its vicinity, and some other parts of the city in the present year, 1856, showing how little wisdom three score years may produce.

It will surprise none to learn that 70 persons lost their lives by inhaling the poison evolved from such a seething mass of corruption. At the foot of Pine Street, and near Burling Slip, also, cases of Yellow Fever, if such it was, occurred, and four deaths occurred within fifty yards of the Roosevelt Street drain; and five others in adjacent streets. The disease did not become general, but was confined to the localities mentioned.

In Wilmington, N. C., it was preceded by dysentery, producing 150 deaths in 130 families. It also appeared in Charleston, S. C., in Newburyport, Mass., Boston, and Philadelphia.—*Med. Rep.*, vol. 1, p. 306. *Webster*.

1797. Yellow Fever appeared in Charleston, Norfolk, Baltimore, and in Philadelphia, where 1,000 persons died of it. 45 deaths occurred in Providence, R. I. It appeared to a moderate extent in New York, causing 23 deaths. Its chief locality then was East George (now Market) Street, and its vicinity. The first case occurred July 1. The patient was removed to the Lazaretto, on Bedlow's Island. Two of his next-door neighbors next fell under its power, and thence it extended itself through the most offensive parts of that offensive street; 10 of these cases occurring in the compass of 17 houses, and 12 around Fly Market, at foot of Maiden Lane.

1798. In the language of Webster, this year "was remarkable for the most general prevalence of the plague that has been known; and in some cities the disease was peculiarly malignant." It has been known since as the year of the "great epidemic." It will long be marked in annals of mortality, and it seemed as if, in the few years immediately preceding, the morbid influences of earth and air and

sky had been training for one grand, terrific, and universal onslaught upon civilized humanity.

The preceding winter was unusually long and cold. The month of May was dry, beyond many previous years. June was remarkable for numerous deluging rains, occasioning severe floods in the Connecticut, Delaware, and Susquehanna. Two or three of the first days of July were excessively hot, succeeded by 20 days of very cool weather, and then commenced a long period of the most sultry weather ever known in our climate, accompanied in some places with great rains.

In Philadelphia, the pestilence made its first appearance in June, increasing rapidly in July, and in August the city was deserted by three-fourths of its inhabitants. The disease was unusually mortal, and extended to the remotest parts of the city, where it had not formerly prevailed. The number of deaths there; was 3,440. At Marcus Hook, 57; Chester, 50; Wilmington, Delaware, 250; and it prevailed in other parts of that State, besides many deaths in Bridgetown and Woodbury, N. J. It showed itself also in Norwalk and Hartford, Connecticut.

It broke out in New York in the first week in August, in Front Street, between Old and Centies Slips, a place renowned for great accumulations of filthy substances. It disappeared from here, however, by the 26th of the month, in consequence of the active sanitary measures that were adopted, among the most important of which was the covering up of the nuisances with fresh earth.

On the 12th of August, the fever appeared in Water Street, foot of Dover, in an old broken building, where 11 had died in 1795; on the same day, corner of James and Batavia Sts.; also, 51 Cherry St.; 13th at Bruce's Wharf, (Pine Street,) and about the 20th it began to extend and assume a more formidable aspect. Its worst effects were observable in Cliff Street and that neighborhood, between John and Beekman. The aggravating cause in that locality was believed to be the fetid air from large quantities of spoiled beef, stored in the cellars in Pearl Street, on the windward side of this section. These cellars were filled with water by heavy rains, and even by high tides, and were always damp. The effect was augmented by large quantities of pickle, which, in the process of repacking, was discharged into the gutters and suffered to run into a sewer in Burling Slip, producing a very offensive smell. About the last of August, the inhabitants became greatly alarmed; some removed from the east to the west side of Broadway, but a great portion deserted the city. The disease

was unusually malignant, and exhibited frequent bubo and carbuncle.—*Webster*. The number of deaths from it was 2,086.—*Hardie*.

It carried off 200 in Boston. It appeared also in Portsmouth, N. H., in New London, Ct., where it destroyed 81 lives out of a population of 3,000. In one space in that city were 15 houses, inhabited by 92 persons, of whom all but two were attacked, and 33 died; and yet the locality is described as being as well built, clean, and airy as any street in the town.

It occurred in Salem, Mass., and in Albany, also, where about one-half who were seized, died.

In Port Elizabeth, N. J., a place of 19 dwellings and 97 inhabitants, there occurred 13 cases and 6 deaths.

It is a remarkable circumstance, (one which is quoted to sustain the doctrine of importation,) that while these northern cities and villages were sinking under its resistless fury, the Southern ports of Savannah, Charleston, Fell's Point, and Baltimore, were exempt from its ravages, although noted for their insalubrity in the autumnal season.*

1799. It appeared again in Philadelphia and New York. In this city some cases occurred early in July, increasing in August, and attaining its height in September, and declining so much in October as to be nearly extinguished by November.

1800. In this year, the type of the disorder was so mild as to render the name of Yellow Fever of somewhat doubtful application, until towards the latter part of its brief season. It at first assumed the forms rather of irregular intermittent and remittent fevers; it did not commence its attacks until August, and a frost on the night of the 3rd or 4th of October, very soon destroyed the poison. Dr. V. Seaman relates, (*Repository*, vol. 4, p. 250,) "of upwards of 150 persons with this disease, where I attended, all of them, except one, resided (or else had stores, wherein they were occupied during the greater part of the day) either in Pearl Street, or between that and the East River. This one lived on the North River shore, but lodged in a bed that had been immediately before occupied by a sick person, who had been just taken with her complaint, after removing there from Cherry Street." Of these 150 cases, but one died; but Dr. Seaman witnessed a like termination in three others, whom he saw in consultation. Two of them became yellow, with brown dry tongues and coffee-ground vomiting, which sufficiently characterized the disease.

1801. In New York it commenced about the middle of September,

* Currie. *Am. and Phil. Reg.*, vol. 1, p. 189.

and by the last of October caused 140 deaths—besides, of 30 who were sent to the Marine Hospital, a considerable proportion died. Its localities were chiefly East Rutgers and Lumber Streets, where overflowing privies and corrupting offal abounded, as well as moral and physical uncleanness—the inhabitants being outcasts of bawdy houses and others of similar condition of life; and Front and Water Streets, between Coffee House Slip and Fly Market, a great part of which “was made ground, and underlaid and overspread with all that collection of nuisances which length of time and negligence of police could allow to be brought together.” The writers of that day state, that “no reasonable doubt could exist of its domestic origin.”

In this year also it prevailed in New Bedford, though limited to a small compass, the immediate vicinity of a vessel from Demarara, whose crew had been affected with it. The vessel lay at the foot of a dirty and ill-ventilated lane; 8 or 9 deaths occurred. All the persons who sickened had either been on board of her, or lived very near her. She contained a large quantity of damaged coffee.

A few persons died also at the port of Norwich, Ct., with yellow fever, but which, it is said, could not be traced to any arrival from abroad.

It prevailed also with violence, but not for a long period, at Norfolk, Va.; and at Charleston, S. C.

1802. Philadelphia lost 250 by yellow fever. It prevailed also in Baltimore; and in Wilmington, Delaware, where 86 deaths occurred, it was most severe in proportion to the population. 10 died in Portsmouth, N. H.; 96 in Charleston, S. C., (not one of whom was a native of Charleston,) and 60 in Boston. Notwithstanding this general prevalence in these seaports, and various other places, New York remained exempt, one death only being reported. In this year commenced the regular mortality reports, which have been, with more or less care, continued ever since.

The first of these was made out by an esteemed citizen, John Pintard, who argues their value in his peculiar quaint style, remarking among other suggestions, that “the progress of increase and population can be estimated by these tables, which, to be rendered more complete, ought to be accompanied by those of births and marriages. The melancholy back-ground of mortality ought to be relieved by the more cheering and enlivening scenes of nuptials and christenings.”

1803. It commenced in Philadelphia on the 19th of July, and in New York on the 17th. In the former place, it commenced at three different points on the Delaware side, $\frac{1}{4}$ of a mile separate from each

other, within the space of 9 days, no communication whatever being traceable between the patients. A sudden and extensive depression of the thermometer lulled the disease for several days, when a reverse change occurred, the atmosphere becoming humid, warm and oppressive—a dreadful fire broke out almost simultaneously with this change in the elements, the concurrence of which circumstances relighted the pestilential flames, which continued with varying intensity until about October 20th—195 died of it. In reference to this epidemic in Philadelphia, Dr. Charles Caldwell remarks: "The shadows of night do not vanish more precipitately or certainly on the approach of the sun, than their dreams of importation recede from the touch of rigid inquiry."

In *New York* it commenced at Coffee House Slip, and was observed at the same time in several other parts. The weather during the greater part of July was intensely and uniformly hot, the thermometer being frequently above 90° and rarely below 80°, and the nights brought little relief to the oppressiveness of the day. The streets lying near the margins of the two rivers, and those inhabited by the poor, uncleanly and dissolute classes of the community, suffered the principal ravages of the disease. The deaths amounted to between 600 and 700.

It was more generally diffused than before. The 186 patients admitted to Bellevue Hospital were from fifty-seven streets, mostly on the east side of the city. Proofs of its domestic production greatly accumulated this year. One person was attacked in the Debtor's Prison, who had not been beyond its walls in 3 months.

In the village of Cattskill it prevailed severely, where it was attributed to the putrefaction of a large mass of fish; rigid inquiries, it is said, failed to establish any reason for belief in its importation from any other place.—Vols. 7 and 8, *Med. Rep.*

Alexandria was visited by it to a severe extent, commencing in July. The population of that place was estimated at upwards of 6,000, at least one half of whom left, and yet the number of deaths was upwards of 200. The evidence of a domestic origin of the disease in this place was alleged to be very clear; at least it is stated that there was no arrival of any vessel from abroad to which it could be traced, until 10 days after its first appearance there.—*Med. Rep.*, vol. 7, 190.

1804. The summer and autumn were distinguished by a singular mildness of temperature, and no malignant epidemic took place in any of the Atlantic cities.

1805. The temperature in the latter part of June, and till 20th of July, was oppressively hot, though a suspicious case of malignant fever occurred during the mild weather of the *early* part of June, in Roosevelt Street. The man recovered at the Marine Hospital, and no other case occurred until July 9th, when an ostler, recently from England, was attacked in a livery stable, in an alley in Maiden Lane. He died on the 13th day of the accession at the Marine Hospital; and two others belonging to the same stable, also recently from Great Britain, were taken ill with the same disease, but recovered at the Marine Hospital. The next case was on the 24th of July, in Water Street. The cases soon became more abundant, and were much dispersed over the city, though chiefly confined to the eastern side of the city, though it extended, by the middle of September, to the margin of the North River, and prevailed in Greenwich Street and the adjacent parts of the town, till the close of the epidemic. Six hundred cases were reported to the Board of Health. The number of deaths in the city, at Bellevue and Marine Hospitals, was about 300, exclusive of about 40 who died after their retreat into the country. 43 cases are stated to have occurred in the State Prison, (then in this city, at the upper end of Washington Street.) The Board of Health declared the principal seat of the prevailing disease to be that part of the city included between Burling Slip and Old Slip, as far west as Pearl Street, covering not more than 33 acres. De Witt Clinton was then Mayor and President of the Board of Health. One account states, that "no practitioner of physic in New York suffered any attack of this disease."

Between 300 and 400 deaths occurred from it in *Philadelphia*. It appeared also at New Haven, Providence, Newport, Norfolk and Charleston, and some sporadic cases in Boston and Baltimore, as well as in many other towns near, and at a distance from, the seaboard.—*Rep.*, vol. 9.

1806. "Though nothing approaching to an epidemic took place, several cases of Yellow Fever, highly and exactly characterized, were observed in the course of the season from June to November, in this city, and served to show what might have been reasonably apprehended from a more unfavorable course of the weather."—*Med. Rep.*, vol. 10, p. 214.

Two deaths by "malignant fever," only, are noted in the bill of mortality.—Vol. 11, p. 38.

1807. During this season only a very few sporadic cases of Yellow Fever were observed in the City of New York—not exceeding

20. Most of these occurred in September, or early in October. Four of them were in the New York Hospital.

In Charleston, S. C., it commenced about the middle of August, and proved fatal, by the 2nd of November, to 176 persons, who were almost exclusively strangers.

1808. The summer and autumn passed without any alarm of the malignant epidemic which, in so many previous years, had visited the Atlantic cities. This, and the two preceding summers were noted for their remarkably moderate heat.

An exception to the general exemption of the American cities from Yellow Fever was experienced by the small town of St. Mary's, on the river of that name, which then formed a portion of the southern boundary of the United States. This town was nearly depopulated by the disease.

The question of the *prime source* of the disease in this instance, would appear to be clearly settled on the side of *importation*. During the spring and summer the town was (as usual) remarkably healthy. During the latter end of August and first part of September, there were continued heavy rains, which filled the low grounds, and the water lay on the surface for some time; the wells were full to the surface, and the water became bad and offensive, yet no change in the health of the inhabitants occurred till September 5th, when a coasting packet, which was employed in carrying corn and a variety of provisions between that place and Savannah, and was in a distressingly foul state, arrived with two sick sailors, one of whom died in a few hours, and the other lingered for some time. A white citizen and a free black, both of whom attended these sick sailors, died—the first on the 9th, and the other on the 10th. The fire thus lighted, spread rapidly, fed by the state of the ground, a quantity of rotten provisions stored by speculators and smugglers, and the exceeding neglect of the health officers and police of the town.

A census taken the year before, showed a population of 350 whites and 150 blacks. By the 2nd of October, not more than 100 whites remained, sick or well; of this number, upwards of one-half died.

There were in the town about 30 French people, who were very useful in attending and relieving the sick, not one of whom had the prevailing fever.

The difference of mortality between the whites and blacks was also a remarkable circumstance.

Of 87 whites taken sick, 42 died.

Of 45 blacks taken sick, 3 died.

The exemption of the French residents was attributed to their mode of living, their diet being entirely very light food, vegetables, and thin gruel, and no flesh meats; their drink, lemonade.

Doubtless the light mortality of the blacks might be due to similar circumstances.—*Med. and Phil. Reg.*, vol. 3, p. 417.

1809. The city of New York remained free from malignant fever, but the neighboring village of Brooklyn suffered from it. It appeared there early in July, and continued in a greater or less degree, till late in September. Between 30 and 40 persons died of it, and nearly 20 persons were attacked in this city who had been exposed to the noxious air of Brooklyn—to a large portion of whom it proved fatal. This attack occurred in a season of unprecedented mildness.

It appears to have commenced at the margin of the water, and was confined to a circle of 200 yards, semi-diameter, from a ship (*Concordia*) which had recently arrived from Havana, the first patient being one of the hands of said vessel—Havana being infected with Yellow Fever at the time of, and four months previous to, her departure.*—*Med. and Phil. Reg.*, vol 1, p. 101.

Eight cases occurred at Charleston, S. C., amongst strangers, all of whom died, and a few sporadic cases were seen in *Philadelphia*.

1810–18. The city of New York appears to have been entirely exempt from all appearance of Yellow Fever, nor do we find any record of its occurrence in this vicinity, except in

1811, when it made its appearance at Perth Amboy, then an entrepôt of considerable importance. The Board of Health of New York appointed a committee consisting of Drs. Jos. Bayley, Jno. H. Douglas, and David Hosack, to investigate the facts respecting it. They proceeded to that locality and made a minute investigation, and reported four deaths from, and three other cases of, undoubted Yellow Fever, one of which subsequently died, with a few others of more

*The advocates of the theory of the domestic origin of the disease on this occasion, attributed it to an extraordinary assemblage of nuisances in the lower parts of the town of Brooklyn, consisting of a variety of putrefying vegetable and animal substances, together with water lodging in many low, sunken places, and also that it was partly owing to the contents of the "Mud turtle," (a machine for cleansing docks,) being exposed for some days on the wharf of New Ferry, so as to be offensive to the neighborhood. It was satisfactorily shown, however, that no more filth was observable in that vicinity than for several years previous, and that the operations of the mud turtle were not commenced until fifteen days after the first case of Yellow Fever had occurred, and that the mud removed by it consisted of an innocent blueish clay, which was quite odorless.

doubtful character; and their conclusion was unanimous, confirmed by the judgment of the physicians and residents of the place, that there were no local causes to which the calamity could possibly be referred, and that it was derived solely from vessels from the West Indies, twelve having arrived from there between June 1st and the breaking out of the fever. It was traced more distinctly to two, the ship *Favorite* and the brig *Ocean*, both from Havana. Every case was traceable to these vessels, and none took the disease from them. Non-intercourse with Perth Amboy was declared by the authorities of this city and Philadelphia, until its disappearance thence was satisfactorily established.

1819. Old slip and its vicinity (the foot of William Street) was the scene of another irruption of the Yellow Fever, though to so moderate an extent as scarcely to deserve the title of an Epidemic. It was confined almost exclusively to the vicinity of its first appearance. Out of 57 cases, 34 or 35 occurred in a single block, on the West side of Old Slip, between Front and Water Streets. It was a space anciently called "Rotton Row," where long and contested claims between the Corporation and the estates of some private individuals prevented the ordinary improvements, which might have purified or renewed the ground. The slip then extended as high as Front Street; (it is now filled and paved up to the Eastern or outer line of South Street;) was shallow, and its sides, like many others, composed of wooden piles, thick, uncovered, rotten, worm-eaten and coated with black mud, which, besides being the receptacle of the animal exuviae and decayed matter, which naturally accumulated in such a place, from the surface, was likewise the place of disembogment of a private sewer, which extended up to Pearl Street, across Hanover Square to Sloat Lane.

Of 83 persons sent to Fort Richmond, on Staten Island, which, with the consent of the Government of the United States, was occupied by the poor of New York, under the care of the city authorities, ten were taken sick with the disease, and three of them died in the Marine Hospital. It commenced on the 5th of September. The district, extending from Coenties Slip up Pearl Street to Wall Street, and down Coffee House Slip to the river, was fenced in, was declared infected, its inhabitants urged to remove from it, and the shipping at its water front all sent away, and a strong guard appointed to protect the property, with a pledge of medical aid in case of sickness, and a liberal remuneration. Whole number of cases reported, 63; deaths, 38; besides a few others out of the city.

In Boston this year it also made its appearance, as well as in Baltimore and at Fell's Point, Charleston and New Orleans, at which latter place it was exceedingly severe. Of its degree of prevalence here and at the other places named we have no precise information, although at all of them, it is asserted, that it made its commencement in every instance, and continued its existence almost exclusively, at the margin of the water, in the immediate vicinity of the shipping.

1821. The yellow fever made its appearance in St. Augustine, a place the salubrity of whose climate and atmosphere are almost proverbial. Here it commenced about the first of September, and terminated near the close of December, within which time 140 were attacked, and 132 died.

1822. Heretofore, almost without an exception, this dreaded pestilence had selected as the scenes of its manifestations, those portions of the city of New York which lie along the borders of the East River. From Whitehall to Roosevelt Street, at various spots in different years, but, be it always remembered, in the immediate vicinity of the slips, and of course of the shipping, the yellow fever had its favorite localities, whence it spread, as from a centre, over areas varying in extent, from time to time, as circumstances favored its growth and diffusion.

The scene of its irruption was, however, now altered, and the opposite side of the city was for the first time to feel its blighting influences. And another important variation in the circumstances, (important in its bearing upon the question of domestic or foreign origin,) is now to be noticed, viz., the *condition* of these localities in relation to their power of producing the disease *de novo*.

In the vast accumulations of filth of every description, in the docks and slips, and in the depraved and vitiated position and character of the dwellings and inhabitants of the quarters heretofore infected, the advocate of the theory of the domestic origin of yellow fever found strong reasons for the faith that was in him, but the circumstances, as well the scene, are now changed.

In Rector Street—a narrow but short and rapidly descending street, commencing at Broadway, between two large and elegant churches, and in its brief descent to the North River having on either side but a few dwellings, and those occupied only by the most cleanly families, and crossing only two streets before reaching its other terminus, Greenwich and Lumber Streets, the former then for many squares the home of the wealthiest and most refined of the inhabitants of New York—in Rector Street, would the non-importer of yellow fever fail

to find so much as a square foot of soil capable of emitting the poison. On the 10th of July, two little girls, children of Mr. Reder, a cooper, having a shop on the corner and residing in Rector Street, next the corner of Washington, (which latter street then faced the river,) and a young man named And. Thomas, a clerk in a grocery on the opposite corner of the same streets, were attacked with symptoms which afterwards were distinctly recognized as those of yellow fever. One of the girls and the young man died on the 17th, the other girl recovered. On the 15th a son of Reder, aged 16, was attacked and died on the 22d. In a few days it showed evidences of expansion, but not, unfortunately, of attenuation or dilution; it soon gave proof that it could "spread undivided, operate unspent." From the spot where it began, it spread slowly and regularly in every direction. In less than a month it had mounted the declivity of Rector Street, half way to its summit, and stretched a considerable distance along Washington and Greenwich Streets, north and south. On the 19th of August, it showed itself in Cedar Street, and soon after in Liberty Street. By the 23d of August, it had reached the further end of Rector Street, on Broadway, which it now crossed, and descended Wall Street to New Broad Street, and passing down Garden Street, met the Wall Street current at the corner of Garden and New Sts. In the old Sugar House in Liberty St., next the old church, now Post Office, it proved very fatal. It finally ascended as far as the Park on Broadway, and swept the whole of that part of the city lying below Fulton Street. The former localities of the fever, Cœnties, Burling, and Old Slips, though furnishing evidence of its existence there, were not affected till near the middle of September, and then gave comparatively few cases, doubtless in a great measure to be attributed to the general stampede of the inhabitants.

This was, however, not the only infected district. On the 16th of September, three cases were reported at No. 4 Lombard Street, (now Monroe Street,) and on the 20th, 5 cases occurred in Cheapside Street, (now Hamilton Street,) a short distance from and parallel with Lombard, but a remarkably cleanly street. This locality, as just stated, was a very cleanly and decent place, containing not more than 60 houses, and those not crowded—and was within a few hundred feet of Bancker Street, which was famous for being the very reverse in its physical and moral characteristic, and was the scene of a destructive local distemper of a peculiar nature three years previously.

And yet, while there occurred among the persons living in and

frequenting the former, 46 cases and 28 deaths, amongst the latter there was not one reported. The origin of the first case which occurred in this locality, which was at least half a mile from any part of the other infected district, is asserted by the historians of that epidemic to have been distinctly traced to exposure to the atmosphere of the latter.

The whole number of cases which were reported to the Board of Health as having occurred between July 10th and November 5th, when the disease terminated, was 415, of whom over 230 died. The precise number of deaths is not known from the records of the Board of Health, a large number of cases having been removed to the country, to the suburbs of the city, and to Marine Hospital. These figures would have undoubtedly been swelled ten-fold but for the voluntary desertion of that portion of the city by the wealthy, and the compulsory removal of others to distant places.

As to the source of the disease of this occasion, there appears no other mode of accounting for it than its introduction from Havana, by means of four cargoes of sugar, brought to the city from Quarantine, from vessels which were there detained in consequence of their infection with Yellow Fever, on two of which deaths had recently occurred. Between the 1st and 9th of July, twenty-four lighter loads of boxes of sugar were brought from these vessels at Quarantine, were landed at and near the foot of Rector Street, and stored in the adjacent warehouses. The first cases of Yellow Fever on shore, it will be remembered, occurred on the 10th July.

From 1822 until the present time, a period of 34 years, we have rested in repose from any serious apprehension of a visit from this dire enemy of our race—a most striking contrast with the thirty-four years immediately preceding, in which period there were seventeen visitations of it. And this is notwithstanding its continued prevalence from year to year in the Southern ports of the Union, and even last year coming so near to us as Norfolk, Virginia, where it prevailed with intense malignity.

The present year has not been without exciting apprehension among our citizens, in consequence of its abundant appearance at Quarantine, and its spread to a considerable extent over our sister city of Brooklyn, in aggravated imitation of its operations there in 1809; but, happily, we have escaped with only the few sporadic cases incident to our proximity to those scenes.

The history of the epidemic of the present year is yet to be written; we have not yet seen its conclusion.

With the questions which have so often and so deeply moved the intellects and feelings of both professional and non-professional men, in days of yore, viz., the contagiousness and the origin of Yellow Fever, your Committee have in this place no concern, any further than as we are instructed "to report upon its relations to the sanitary condition of the city in the present and past years;" and in concluding the task imposed upon us by the resolution of August last, we shall endeavor to satisfy the demands of public duty, by the presentation of a few general considerations, derived from the research which has resulted in the foregoing chronological outline.

Coming to this investigation as with the mind of a student, wholly unbiased, desirous of seeing only facts, and determined to be influenced by nothing else, we have found an abundance of that only true basis of philosophy; but in too many instances overlaid by so huge a mass of special pleading and perversion, as to satiate us, *usque ad nauseam*. If, as has been truly said, "History is philosophy teaching by example," how important is it that the facts, which alone make history, be examined and understood without prejudice or bias of any kind. In this spirit of impartiality we have endeavored to penetrate to the bottom of the well, in which the truth lies concealed, in order to present those rules of prophylaxis and defence most clearly indicated by the habits and laws of the disease in question, and from the facts pertaining strictly to the relations which it bears to the City of New York, to indicate the course which we think the medical profession and the public authorities should pursue.

Yellow Fever being a disease resulting from the infusion into the human system, through the respiratory and perhaps the cutaneous organs, of certain influences which are of a vehemently poisonous and deadly character, producing great perversion of function, and disorganization of fluids and solids, it is necessary to determine, in the first place, the source of the poison or the channels through which it comes to us. That it is invisible, intangible, and inodorous, will be admitted on all hands; that it is the product of combined terrestrial, vegetable and animal emanations, high temperature, and other peculiarities of certain latitudes and seasons, will be disputed by but few, if any; that it is a disorder of a peculiar type, as distinct from any other as small pox is from measles, any one of experience in diagnosis need but look upon it to be convinced. The question then arises, In what latitude and localities does it or can it originate? and this, as far as we are directly interested, brings us to the question, Has it ever originated or can it originate here at our own doors? Is any combination of terres-

trial and meteoric circumstances possible, in *this* latitude and climate, from which this venom can be evolved?

As just now stated, on this question your Committee are not called upon to *express* an opinion; and though they may entertain a decided view upon the subject, it is their duty to look upon it only in its relations to the public sanitary interests of this great city, and to recommend such a course as will best conduce to their preservation.

True history alone can solve this intricate problem. The domestic origin of the poison is asserted by numerous writers, and in many instances of proof quoted by them, reasons of plausible character, based upon apparently well-authenticated facts, are urged in support of their views. We say *apparently*, because at this distance of time, and in the impossibility of cross-examination as to the facts, we can only yield a passive acquiescence to many of their statements. And in view of the importance of the subject, prudence would also justify an acquiescence in the theory of its *possible* domestic production, *provided* always that we, at the same time, do not ignore the existence of the incontrovertible proofs of its importation from abroad, and the necessity of a vigorously enforced quarantine at whatever cost.

Such shocking collections of all that was vile and offensive, as we know to have existed in the numerous slips and docks, in the unpaved streets and alleys, and the crowded cellars of this city, in the latter part of the last, and the early part of the present century, were cause enough for miasmata of some kind, capable of sweeping off scores and hundreds of the people living adjacent; and whether the atmosphere of these localities was a direct provocative of yellow fever, or served only as a richly manured soil in which the germs of that disease, introduced from abroad, would grow with redoubled vigor, it matters not to us practically. It is enough to know that such conditions of things are inimical to human life, and should never be permitted. Sad experience has too often shown, that in them there exist, wanting only the proper time and temperature to leap into active life, the seeds of evils as numerous and pungent as Pandora ever dreamed of.

It is nevertheless at least a coincidence, that in such a depraved condition of its Eastern margin, New York sustained in 16 years, (from 1791 to 1807,) 13 attacks of yellow fever, causing the death of at least 5000 persons, and each time compelling the flight from their homes and occupation, of many thousands of the population. And it is another interesting fact, that since the year 1807, New York has been visited by it but twice, viz., 1819 and 1822, and the latter visitation was on the opposite side of the city, against which no

complaints of nuisances could be made; and the commencement of this period of exemption was moreover coeval with the enforcement of a law for the filling up of these slips, and the general improvement of those ancient haunts, in which the opponents of its importation so clearly saw the domestic source of the disease.

Whatever consolation, therefore, the advocates of domestic origin may derive from these facts, they are fairly entitled to, after we have stated some other remarkable coincidents which bear strongly upon the opposite doctrine.

The circumstance which was quoted from N. Webster, that during the revolutionary war our country was not visited by yellow fever, *he* would doubtless attribute to an interposition of Providence, though he does not hold so in express language. He speaks of it simply as a "striking fact," in the middle of his labored effort to prove the source of nearly all epidemics to lie in local domestic circumstances, in combination with meteoric influences, and the appearance of comets. A more rational solution of the circumstances may, we think, be found in the fact, that during the war nearly all foreign commerce was suspended.

In relation to the localities at which the fever invariably appeared, before 1822, attention has already been drawn to the fact, that they were upon the borders of the city, and of course in the immediate vicinity of the shipping, where importations of every kind were first received; while at the same time there existed in the centre of the city other localities, the receptacles of all manner of filth and nastiness, in whose neighborhoods the fever not only did not originate, but which were, in fact, exempt from its incursions when it prevailed elsewhere. Of these places the most noted was "the Collect," in Centre and Canal Streets.

The next coincidence to be remarked in the relations of this city to the yellow fever, is this, that it was not until the commencement of the present century that our Quarantine laws took a definite shape, and sanitary enactments were enforced with the vigor which now characterizes them. It was only in 1805 that infected vessels were prohibited from coming within 300 yards of the Island of New York, after being discharged of their cargoes; while the law of 1806 even restricts vessels from the West Indies and the Mississippi, arriving between June and October, to only 4 days' detention at Quarantine, and prohibits intercourse between their crews and the city of New York, except under regulations of the Health Officer. And since a year after that time, though yellow fever has frequently hovered along

our border, it has on but two occasions, up to the present year, planted its foot beyond.

These, then, are the premises from which, as conservators of the public health, we are to draw our conclusions of duty with respect to yellow fever:

1st. To maintain a thorough condition of cleanliness and purity in all the borders, and throughout all the interior of the city.

2d. By a rigid continuance of the Quarantine, to watch its approaches from abroad, and arrest its progress ere it reaches even our threshold.

Supplemental Report on Yellow Fever.

(Read August 5th, 1857.)

In the Report on "Yellow Fever and its relations to the sanitary condition of the city in the present and past years," presented to the Academy of Medicine, in October last, by the *Section on Public Health and Legal Medicine*, a review was given of the different attacks which New York had experienced up to the year 1822, the date of its last appearance within the precincts of the city. The attack of 1856 being then incomplete, the account of its appearance and prevalence in that year was left for future consideration; so that, unbiased by any of the conflicting views of different parties, we might, when all the facts connected with its advent and progress had become winnowed out and established, arrive, if possible, at a clear, judicial understanding in relation to it. The Section propose now to complete the work assigned them, and believe that their fellow academicians will find in the facts and views which will be presented, an interest equal to their own.

The history of the manner of attack, and the extent of Yellow Fever in this vicinity, in 1856, have been detailed with great particularity in his report to the State Legislature, by Dr. Elisha Harris, then physician of the Marine or Quarantine Hospital. To this able document the Section refer for a more complete exposition of the facts connected therewith, while we shall content ourselves with a recapitulation of the main points, and a few remarks upon some of the questions which have agitated scientific circles respecting the circumstances which have controlling or modifying influence over the origination, communicability, and power of extension, of the disease.

The most recent theory respecting the relations of Yellow Fever to terrestrial and atmospheric circumstances, and which has arrested the

attention of medical minds in a powerful degree, is that advanced by the New Orleans Sanitary Commission of 1853.

The doctrine of the causes and controlling influences of Yellow Fever, as laid down by that able board of professional gentlemen, as understood by us, is as follows: 1st. That there must exist in the soil such a condition of animal or vegetable, or a combined animal and vegetable material, as by the decomposition thereof a malarious agency will be emitted, capable, upon being received into the human system, under proper circumstances, of developing that peculiar disease. 2nd. That in order to give efficacy to the poison power of this terrene malaria, a certain condition of the circumambient atmosphere is necessary; which atmospheric condition consists of a combination of two distinct elements, viz., a *high temperature*, and a *high degree of humidity*.

To illustrate this position, the report of the Commission employs the figure of the "Shears of Fate," of which, one blade represents the terrene, the other blade, the atmospheric circumstances. In the absence of one or the other of these parts, the remaining one is powerless. Thus, though the necessary terrene exhalations be ever so abundant, if the temperature of the air be not high enough, and the atmosphere does not contain a sufficient amount of moisture, Yellow Fever will not ensue; and, *vice versa*, if the temperature and moisture of the air are at their highest point, and there be no appropriate terrene emanations, no danger will exist. The shears are themselves shorn of their power; but one blade exists, a harmless instrument. But by a combination of all these circumstances—by upturning a deleterious soil, and exposing it to a tropical atmosphere replete with vapor, then we have every reason to apprehend the appearance not only, but also the epidemic prevalence of Yellow Fever.

Such is the doctrine enunciated by the New Orleans Commission, which they maintain has been verified in that city and other places; which has been given to the world in their elaborate and learned report, and which was last November boldly and eloquently proclaimed from this rostrum, by one of that commission's most learned members, Dr. E. H. Barton, as of sufficiently frequent observation to justify its establishment as a *law*.

The position thus assumed, is, if correct, one of vast importance—the only theory, in fact, ever presented of a really philosophical and practical character; and of sufficient amplitude to cover all cases; and, from the evidence adduced, seems justified, so far as the city of its birth is concerned. At any rate, it is not within our province, under

the resolution of last year, to criticise the theory as it relates to any other locality than our own; but it appears to be our duty to inquire into its applicability to the epidemic visitations of Yellow Fever to this city and vicinity, and to this extent, and by that light, we propose now to complete the labor assigned us by the Academy.

From the years 1791 to 1807, inclusive, this city experienced eleven attacks of Yellow Fever. It did not appear again till 1819; and all of these attacks had their locality on the southeastern margin, in the vicinity of the wharves of the East River.

Besides these, in 1809, it broke out in Brooklyn, destroying between 30 and 40 lives; it was there confined entirely to a well-defined area of about 200 yards semi-diameter, the centre of which was a vessel from Havana, on board of which the first case occurred. It did not extend to the New York side of the river.

In our former report, allusion was made to the difference in locality of the disease before and after 1820. Prior to that period, every eruption of it was on the East River border, while in 1822 it suddenly shifted its point of attack, and for the first time the western margin of the city, on the Hudson River, received its approaches, and over the adjacent streets it swept with desolating marches. Nor were the topical characteristics of these localities less marked than their * geographical positions.

While the former were, from all the accounts we have read, low and marshy, and pregnant with an abundance and great variety of filth, natural and acquired, the opposite side was equally opposite in character. If such a term can be applied to any class of inhabitants in this land, it was the aristocratic quarter; the residence of a population, aristocratic at least in cleanliness, and the cultivation of the elegancies of life, and did not present a square foot of soil from which such a fatal miasm could possibly have emanated; nor was it charged by the most strenuous of the domestic-origin theorists, that it could have originated from any other locality than the graveyard of Trinity Church, and even that idea was soon abandoned as untenable.

With respect, therefore, to the theory of the *exclusive* domestic origin of Yellow Fever in this city, we had then and there a case in which that idea was inadmissible, and the circumstances connected with the landing at this very point, of large cargoes of produce from vessels recently from ports where Yellow Fever prevailed, and which were themselves infected, are abundantly sufficient to establish its exotic origin and importation. With regard to its source, in the attacks experienced on the eastern side, all of which were prior to 1820,

we have, perhaps, sufficiently discussed that question in the conclusion of our former report, and it will suffice here to express the opinion, that the evidences of its domestic origin, though at first sight numerous and somewhat powerful, are either susceptible of other explanations, or are outweighed by strong negative, if not positive testimony of opposite character. This consists of the fact, that other quarters of New York were equally, if not more filthy than the slips and docks of the East River, and, therefore, more capable, under the theory of its domestic origin, of producing the disease; yet it was unknown in those localities; and further, that the places where it appeared were the wharves at which the shipping from infected ports hauled in and discharged their cargoes, and the vicinities of which were frequented by their crews. And furthermore, it must not be forgotten that its frequent repetitions prior to 1808, *ceased simultaneously with the adoption of new and vigorous Quarantine laws.*

1856. Commencement and progress of the Yellow Fever of 1856, at the Port of New York, (*as given in Dr. Harris' Report.*)

April 10th. The first case observed this year was admitted to Marine Hospital from a vessel from Havana.

June 18th. The "Julia M. Hallock" arrived with three sick, and three lost on the passage from St. Jago de Cuba.

June 21st. The "Jane H. Gliddon" arrived from Havana, with several sick, and two deaths on the passage. As part of her cargo she had several bales of uncleansed rags.

July 2d. The "Eliza Jane" and "Lillias," from Havana, with one sick each. E. J. lost three on the passage.

July 6th. "Lady Franklin," from Havana to Trieste, put in in distress, all hands sick; two died on the passage.

From June 18th to July 15th, a period of 27 days, 27 yellow fever infected vessels arrived at Quarantine.

July 12th. A marked case of yellow fever was received in the Marine Hospital, from 14 Oak Street, (the first one known in New York city,) with black vomit. The patient had arrived from Ireland, July 3d, in a vessel which had anchored at Quarantine, in the midst of the infected fleet. He remained in the ship over-night, and was subsequently landed at Castle Garden, and was taken sick a week afterwards.

July 14th. Two persons were taken sick in the Quarantine village, who had been unloading cargo from the "Gliddon" and "E. Jane."

July 15th. A lighterman engaged in conveying cargoes from Quarantine to Atlantic Dock, was taken to the Marine Hospital, with the fever.

The whole number of infected and suspected vessels arriving up to October 4th, was 79.

July 29th. It made its advent on *Governor's Island*, producing in four weeks 64 cases, but being confined wholly to the "South Battery," which is nearest and most exposed to the Atlantic Docks, and separated therefrom only by a narrow channel.

July 22d. It commenced in epidemic form at Marine Hospital, 25 of the officers and employes, and 8 other residents were affected, of whom 5 died.

July 11th. Two men employed by Mr. Bergen, on Hunt's Place, a little below Greenwood Cemetery, opposite Marine Hospital, went bathing Saturday evening, July 11th, and examined a quantity of straw left on the beach by the receding tide, and removed it to the farm yard. One of these men was attacked on Monday, and the other on Tuesday following, and both died with black vomit. After their death, two other laborers were hired, lodged in the same room; both successively sickened and died with black vomit.

July 27th. By this time 14 cases, 10 of which proved fatal, had occurred on the Long Island beach, opposite Marine Hospital.

August 1st. Fort Hamilton district was attacked. It attacked the shore line from Gravesend Bay and Gowanus, about 4 miles, at three nearly equi-distant points.

September 10th. It was received into a house at Partridge's Mill, near Coney Island; the persons affected were believed to have handled materials which had floated ashore.

Fifty cases in all were admitted to Marine Hospital from New York City, 8 of which were traceable to Brooklyn, and nearly all the others directly to infected vessels.

July 23d. A man from Bergen shore, New Jersey, was admitted to New York Hospital, a farm laborer, and had not been absent from the farm for a long period. He died next day.

September 4th. Four persons, citizens of New York, who had been 2 or 3 weeks at Craven Point, Bergen, N. J., were admitted to Marine Hospital. Two of the family had died previously. The dwelling they occupied was nearly surrounded by water at high tide, and much refuse material was frequently left on the beach. The owner of the dwelling suddenly sickened and died, and his widow had subsequently been ill, but recovered.

"The total number of well-authenticated cases of yellow fever occurring in the various localities in the vicinity of the port of New York, during the summer and autumn, (of 1856,) as ascertain-

ed by the most rigid investigation, was *five hundred and thirty-eight*. More than one-third of this number died of black vomit." (*Dr. Harris' Report*, p. 39.)

It is quite probable that the number of cases recorded as having occurred in New York and Brooklyn is incomplete, but we think it will be entirely safe to set down the whole number of cases which occurred within a circle of 5 miles radius, having its centre at the Marine Hospital, at much below 600.

From this brief summary of the circumstances of the attack of 1856, no one can reasonably hesitate as to the true source of the disease on that occasion. We have seen that the first case occurred as early as April 10; this, under the most liberal construction of the New Orleans theory, with the thermometer at only 50°, could not have been the produce of domestic causes; and besides that, we are told that the case was taken to Hospital, from a vessel from Havana. More than two months then elapsed before the occurrence of another case, which was from a like source, on 18th June, from which date, in 27 days there arrived 27 infected vessels.

With such abundant cause as this for all that followed, both on land and water, during the next three months, we could not be seriously asked to scrutinize the adjacent shores in the hope of a disclosure of some upturning of soil, upon which to cast the burden of causation. We have nevertheless made inquiries upon the subject, from intelligent residents of the section most seriously affected, and failed to find *any ground* whatever for such a conclusion.

But there is another circumstance of interesting character, which cannot be regarded as a mere coincidence in this history. In speaking of the meteorological phenomena of the season, Dr. Harris remarks upon the record kept at Fort Hamilton "between the 21st and 30th July, the wind was continually from the southwest during the afternoon of each day, while the temperature ranged unusually high, and was accompanied with a corresponding degree of humidity of the atmosphere," p. 59. (The wind prevailed also in the same direction *all day* in 6 of those 9 days.)

Now, by an inspection of the map accompanying Dr. Harris' Report, it will be seen that this S. W. wind was in a direct line from the fleet of infected ships near Gravesend Bay to Fort Hamilton, and it was at the end of that time, viz., on the "first of August, the pestilence set its fatal seal on the Fort Hamilton district. On that day, Gen. Stanton died, and as his mansion was situated on an elevation which looked out on Gravesend Bay, and was surrounded North and

West by a dense grove, it is fair to presume that the deadly infection was wafted to his delightful residence by the winds which swept over the infected shipping at Gravesend," p. 55. From that date to Aug. 8th, 12 cases occurred in the Fort, and thence it gradually spread, and uniting with the infected atmosphere at the other points of the same vicinity before alluded to, it soon covered with its fatal pall the whole sweep of that beautiful locality; yet, nevertheless, (a fact hard for domestic theorists to explain,) confining itself to a belt not over 300 yards wide, though stretching four miles along the shore.

There are few persons who, after this recital, we apprehend, will deny the importability of the Yellow Fever miasm, in the cargoes and holds of vessels from infected ports, and its communicability to others who may go on board of them after their arrival at this port. If any such there are, we would recite for their consideration the following case, kindly furnished us by Dr. Elisha Harris, from the Quarantine history of the present year, 1857, not as a new or rare case, but because of its perfectness and entire invincibility:

253 4TH AVENUE, July 13, 1857.

JNO. H. GRISCOM, M.D.,

Dear Dr.—The first vessel subject to Quarantine restrictions on account of Yellow Fever, this season, was the "Lucy Heywood," that arrived at this port from Gonaives, June 12th, having lost captain, mate, and two seamen, from Yellow Fever, on her passage, and on arriving at Quarantine, one sailor convalescent from the fever was transferred from the vessel to the Marine Hospital.

The vessel was laden with sugar and woods, and was ordered to anchor in the lower bay, off Seguine's Point. June 20th, (or 21st,) a robust man, aged about 30, a seaman, who had just arrived directly from Bangor, Maine, was employed by the consignees to proceed to the vessel, and take charge of her, as master and shipkeeper, while her cargo was being discharged on lighters. He remained constantly on board, and on the morning after the 7th or 8th night, viz., June 29th, he was seized with the premonitory symptoms of Yellow Fever, which disease soon became unequivocally marked, and he was sent up to the Marine Hospital, where he died of black vomit on the 14th day of his fever.

Hæmorrhages and profuse evacuations of blood, imperfectly transformed into black vomit, occurred on Wednesday, the 10th day of his fever.

It is worthy of remark, that in this instance *there could have been no other source* for the origin of the fever in that man, who had just

arrived from Maine, than such infection as inhered in the cargo and cavities of the "Lucy Heywood."

It is an incontrovertible instance of the imported origin of Yellow Fever in the Port of New York.

Another case of a doubtful character was received from the same vessel, July 4th, the final history of which is unknown to me. I saw the cases first mentioned, and know them to have been Yellow Fever.

Respectfully yours,

E. HARRIS.

The members of the New Orleans Commission, in their able report, admit "the susceptibility of the importation of Yellow Fever with the atmosphere which generated it;" at the same time claiming for almost every visitation of the disease in New Orleans, a local origin; by such modes as "upturning of the soil in digging the Carondelet and other canals;" "by extensive exposures of fresh earth in street paving;" "large fillings up and enclosures of the batture," or "immense exposures of a swampy soil in digging the Bank canal," or "digging extensive trenches and canals in draining," or "the immense excavation of two acres of ground, and with the removal of upwards of 336,000 cubic feet of earth for the foundation of the new Custom House in the heart of the city," during which latter occurrence a severe epidemic of cholera destroyed 3,843 lives, and 769 were lost by Yellow Fever.

Extensive upturning of new earth, levelling streets, digging cellars, spreading acres of sawdust over the streets and low places filled with it; exposures of the river bank from large cavings; excavations for cisterns and wells; marshes and pools near the town, and a great variety of other circumstances of a similar character, are mentioned as furnishing one blade of the "Shears of Fate," for a considerable number of other instances of Yellow Fever in other places in Louisiana and the neighboring States.

Now, as before remarked, with respect to this part of the New Orleans theory, we have nothing to say as to its applicability to that city, or any other Southern port; any criticism upon it by us must be confined to its relations to this city and vicinity, and within that range we unhesitatingly declare the opinion, that it has no shadow of ground upon which to stand, since the year 1820, nor do we believe it can be maintained for any of the attacks which this city has experienced within the present century. For if the theory of its domestic origin in this city possessed any validity whatever, surely, since the year 1807, a period of 50 years, there have been more than three occasions for its spontaneous production. There are compara-

tively young men living, who can remember the vast alterations which the face of this island has undergone within that time; what hills have been levelled; what valleys filled; what miles of streets have been paved, repaved, and paved again; how many thousands of cellars dug, wells sunk, cisterns, cesspools, and privies excavated, filled and emptied by the hundred annually, and numberless nuisances of every description created, abolished, and re-created. Within a few years, 90 miles of railroad track have been laid within the city limits, and since the introduction of the Croton water, in 1842, trenches have been dug for 255 miles of pipe; and finally, 130 miles of sewers have been put down, which receive, besides the ordinary overflow of the surface, the washings of nearly 40,000 water closets, and a vast amount of other refuse matter, all of which is discharged into the docks, and which, in turn, the "mud machine" is continually at work upon, raking it up from the bottom, and exposing to the air, regardless of winter's cold or summer's heat.

It is true that the soil of New Orleans is of a different character from that of New York; but we claim the palm for filthy streets, and for density of population, with all their concomitant evils.

We turn now to the consideration of that part of the theory which relates to the atmospheric influences which affect the development and extension of yellow fever, and we have to perform the more agreeable duty of giving an assent to that part of the doctrine of the New Orleans Commission, as far as our observation of the circumstances of last year's epidemic enables us to express an opinion.

It is claimed by Dr. Barton, (to whom, we believe, must be awarded the credit of the discovery,) that without a high general temperature, combined with a high point of evaporation, yellow fever cannot spread, cannot become epidemic. It was a matter of great interest to us, as well as to its distinguished discoverer, to ascertain whether this idea was in any degree verified last year in the precincts of the Quarantine and the opposite shore. In company with that gentleman, the Chairman of the Section visited some parts of the "infected district," particularly the region about Fort Hamilton, in the month of November last, with the double purpose of inspecting the locality, and ascertaining the condition of the atmosphere at the time of the fever visitation. The meteorological register kept at the Fort was opened before us, and on inspecting its columns, we found indubitable confirmation of these views.

In order to render this matter more fully understood, it must be remembered, that the meteorological observations referring to these

points are taken with a double thermometer, or rather two thermometers attached to one frame. One is a simple Fahrenheit, to ascertain the temperature; the other is a wet-bulb thermometer, to ascertain the temperature of evaporation. The bulb of the latter is covered with a layer of muslin, which is kept constantly moist by connection with a small reservoir of water, and the elevation of the mercury in the stem is influenced by the evaporation of the water on the bulb. If the water evaporates rapidly, the cooling thus induced causes the mercury to fall, and the number of degrees of difference between the two thermometers indicates the rapidity of evaporation. It is at once apparent, that if the atmosphere in which the instrument is placed is highly charged with moisture, the evaporating process must proceed slowly, and hence there will be little difference between the two thermometers; but if, on the other hand, the air contains but little moisture, its capacity for vapor being unsupplied, it will absorb the water more rapidly from the wet bulb, and the cooling thus induced depresses the mercury in the stem. The difference thus created between the two thermometers is the indication of the amount of moisture in the air, and is technically called "the degree of dryness" observed. In other words, the greater the difference, the drier the air.

Based upon these observations, calculations may be made of the number of grains of vapor contained in each cubic foot of air.

The atmosphere, like all other elastic fluids, has a capacity for vapor in proportion to its temperature; an amount that would saturate it at 50° would come far short of supplying it at 80° , and hence at low temperatures we find the mercury of the two thermometers in closer approximation; but in a heated atmosphere, the point of saturation being less easily attained, rapid evaporation is induced, and the two scales indicate a greater difference except under extraordinary circumstances. When, therefore, in hot weather we find the two columns of mercury approximating, or equalizing each other, we have an approach to, or the actual existence of, the point of saturation.

Let us now inspect the Meteorological Record of New Orleans during an epidemic of Yellow Fever. One of the severest attacks with which that city has been visited, occurred in 1853, when 7,849 died of that epidemic, besides 1,954 of various endemic disorders. On turning to the record we find

The average temperature of the air in July was	79.88 $^{\circ}$
" " of evaporation "	76.16 $^{\circ}$
Degree of dryness	<u>3.72$^{\circ}$</u>

The average temperature of the air in Aug. was	...	81.25°
“ “ of evaporation “	...	76.13°
Degree of dryness	.....	5.12°

The condition of the atmosphere thus expressed is regarded by the Sanitarians of the “Commission” as an example of true Yellow Fever atmosphere; as presenting, in fact, in perfect unison, the elements of the upper blade of the “shears of fate.”

Let us now inspect the records kept at Fort Hamilton during the epidemic of Yellow Fever at that place in 1856. We find the average

Temperature of the air in July was	..	77.28°	in Aug.	..	75.06°
“ of evaporation “	..	72.52°	“	..	70.03°
Degree of dryness	.....	4.76°			5.03°

Here, then, we find a very close correspondence in the condition of the atmosphere of the two localities, and so far as this instance goes, a verification of this part of the theory advanced in New Orleans.

But the question will probably occur to others that occurred to us on the discovery of these facts:

Why did this city, with its teeming populace, its unmeasured filth, and the actual introduction of at least fifty cases from without, and doubtless some fomites with them—why did this city escape a participation in the epidemic which trod so closely upon its southern border? Could there have existed a difference in the condition of the atmosphere of the two localities, sufficiently marked to account for our exemption, and if so, how shall it be ascertained? This exceedingly interesting inquiry, upon which, indeed, hung, in great measure, (at least in our opinion,) the fate of the theory which has been discussed, received upon investigation a solution as gratifying as it was unexpected.

For a long time, no reliable clue could be obtained to the secret. Upon reverting to our recollections of the season, it was well remembered that, to our personal feelings, the general temperature in both July and August, of last year, was unusually cool and comfortable for the season, and the air possessed a remarkable degree of balminess, and it was a matter of frequent remark, that the probabilities of a spread of the disease were, from these circumstances, very slight. But such evidence was too loose to base a conclusion upon, and it was not until some months afterwards that a record of the weather, kept on the eastern side of the city, fell under our observation, in which

we found indications of a decided difference in the atmosphere of the two localities. These records were made by Dr. J. P. Loines, of the Eastern Dispensary, and were furnished us by him.

We have obtained also, from the Report for 1856, of the Governors of the Almshouse, the Meteorological Record kept on Blackwell's Island, which so decidedly confirms the existence of a wide difference between the atmospheric conditions of the infected and the non-infected districts, that we think no apology is necessary for their full insertion in this place.

1856.	JUNE.				JULY.				AUGUST.				SEPTEMBER.			
	Mean Out-Door Temp. New York City.	Evaporation below.	Ditto at Blackwell's Island.	Ditto at Fort Hamilton.	Mean Out-Door Temp. New York City.	Evaporation below.	Ditto at Blackwell's Island.	Ditto at Fort Hamilton.	Mean Out-Door Temp. New York City.	Evaporation below.	Ditto at Blackwell's Island.	Ditto at Fort Hamilton.	Mean Out-Door Temp. New York City.	Evaporation below.	Ditto at Blackwell's Island.	Ditto at Fort Hamilton.
1	...	...	...	...	72	8	10	1½	75	9	5	3½	65	6	6	4
2	...	...	...	...	71	6½	8	5½	77	7	5	2½	66	10	9	6½
3	...	...	...	...	72	4	5	3	76	5½	3	1½	69	8	6	3
4	...	...	...	...	72	3	3	3	75	4½	3	2	71	8	8	4½
5	...	...	...	...	72	8½	6	5	68	2	1½	1½	71	9	7	3½
6	...	...	...	...	75	7	6	4½	70	7	7	3½	70	6	5½	2½
7	...	...	...	...	75	5	4	2½	76	10	7	5½	71	7	6	3
8	...	...	...	...	69	4	4	2	75	7	5	2	70	2½	3	...
9	...	...	...	...	67	4	2	1½	74	8	7½	3½	73	8	8	3½
10	...	...	...	...	70	6	4	3½	72	8	8½	3½	73	8½	8	3
11	...	...	...	...	75	5	3½	2	74	8	8	6	80	8	7	2½
12	...	...	...	...	75	5	3½	3	72	9	8½	2½	72	9	8	4½
13	...	...	...	...	76	5	4	2	71	8½	7	2½	73	10	7	3½
14	...	...	...	...	84	6½	4	2½	71	7	7	1½	69	7	7	5½
15	68	8	5	4½	83	8	7	4½	73	10	4	5	69	7	5	1½
16	67	8	4½	2½	85	10	9	5½	72	9	8	3½	...	...	...	...
17	67	6	4	4½	84	9	9	5½	71	10	7	5½	...	...	...	...
18	64	1½	3	1	84	9	10	9	71	9	10	3½	...	...	...	...
19	70	5	3½	2½	75	10	9	3	67	3½	3	1½	...	...	...	...
20	74	9	9	5	74	10	3	7	70	5	5	1½	...	...	...	...
21	83	8½	9½	6½	71	9½	9	7½	67	8	6	3	...	...	...	...
22	84	9½	8	3½	77½	11	7	5½	69	10	10	4½	...	...	...	...
23	72	5½	5½	2½	80	12	8	6½	73	10	8	3½	...	...	...	...
24	66	4	5	8	82	11	11	9½	73	10	8	4	...	...	...	...
25	69	4	4	3	77	13	10	8½	66	9	8	3½	...	...	...	...
26	73	5	3½	2	80½	13½	10	4½	61	10	8	3½	...	...	...	...
27	76	7	9	3½	85	14	12	7	65	11	8	2	...	...	...	...
28	76	8½	8	2	87	14	12	7	68	7	6	2½	...	...	...	...
29	84	8	6	6½	78	9	7	3½	69	6	5	1½	...	...	...	...
30	81	9	7	8	82	10½	7	3½	68	9	7	3½	...	...	...	...
31	...	...	...	...	76½	9	8	2½	68	8½	7½	3	...	...	...	...

Mean average of evaporation below temperature of three months: New York City, 8½°; Blackwell's Island, 7°; Fort Hamilton, 4½°.

We submit, then, that in these facts and figures we find a confirmation of that part of the rule laid down by the New Orleans Commission, that a concurrence of high heat and abundant moisture is a "*sine qua non*" to the development and spread of Yellow Fever miasma; and with the admission that the germ which is planted may have been *transplanted* from another soil, and is not necessarily or exclusively indigenous, the *whole* doctrine of our Southern friends stands justified in our own experience.

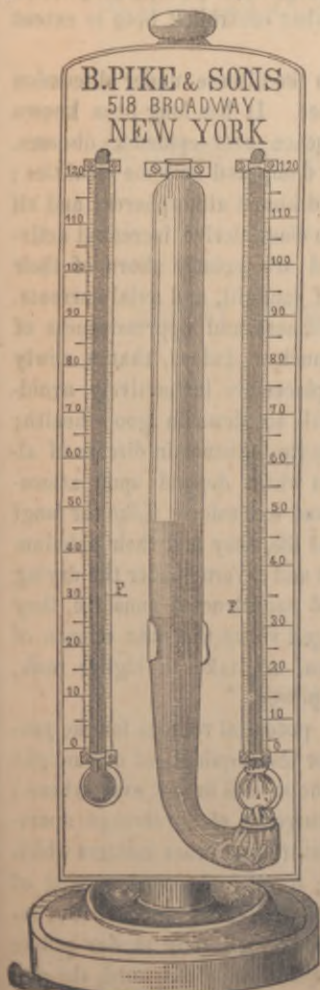


Figure of the Hygrometer referred to on page 112.

The next important inquiry is the practical one, how far this discovery may be applied to the prevention and extension of the disease in question, in this climate. Although this point has not been given to the Section to discuss, we may be indulged with a few suggestions on the subject. In the first place having demonstrated that Yellow Fever cannot be produced here from our own soil, we have only to be vigilant in preventing its importation, to avoid the approach of that blade of the "shears of fate," to escape it altogether. This is certainly not an impossibility, with stringent Quarantine laws, administered with integrity and intelligence. But should it again find a lodgment by accident or otherwise, should this blade of the "shears" be menacingly presented, then should all our energies be given to the application of every known means by which the second blade may be deprived of its temper; every means of drying and purifying the air should be resorted to.

The heat of the season, which is one of the necessary elements, we may not indeed be able to modify; but the moisture, at least of our

dwellings, and of the atmosphere immediately surrounding, we may in some measure control. Chemistry presents us with a variety of means for this purpose. Quick lime is a powerful absorbent of it; a low temperature will condense, a high temperature will dissipate, and a strong current will remove it. By these and other means of like character, we might, on certain occasions and circumstances, present a decided check to the progress of Yellow Fever, and probably had the public authorities possessed a knowledge of this law, the epidemic of 1822 might possibly have been somewhat controlled, both in extent and virulence.

But it is not alone in connection with the disease under discussion that this law assumes a great importance. It has long been known that dampness exerts a powerful influence over epidemic diseases. Cholera luxuriates in cellars, and other damp and noisome localities; dysentery becomes infectious in pent and humid atmospheres; and all other diseases, especially of the zymotic class, derive increased activity from dampness and confinement, and are greatly shorn of their virulence and fatality by the presence of sunlight, and ærial currents.

Every one is aware of the disagreeableness and oppressiveness of a dwelling teeming with moisture—so much so, indeed, that a newly finished house and other similar damp places are instinctively avoided, if possible. Its effects are perceptible to those in good health; how much more injurious, then, must be its influence in disease of almost every kind, but particularly those which depend upon atmospheric influences for their propagation and extension. Like the fungi of vegetable and the amphibæ of animal life, they find their pabulum in the dampness and gloom of the forest and cavern; under the drying power of the breeze, and the warmth of unobstructed sunshine, they shrink and vanish. It is in these enlarged views that the science of Hygiene, the *preventive* branch of medical art, takes a higher rank, and fills a wider field of usefulness and power.

We see in these facts and inferences potential reasons for the prohibition of cellar residences in cities—for the requirement of sunlight in sleeping rooms, school rooms, work shops, and in fact everywhere; for ventilation, or the transmission of currents of air *through* apartments; for the rapid removal of the moisture and other matters which continually distil from our own bodies; for the thorough paving of our streets, that no water may stagnate upon them; and for the incessant practice of the virtue of cleanliness, not only in our public thoroughfares, but also in our private quarters. In a word, the *philosophy* of the precepts of Hygiene becomes more apparent than ever.