

An account of the yellow fever : as it prevailed in the city of New-York in the summer and autumn of 1822 / by Peter S. Townsend.

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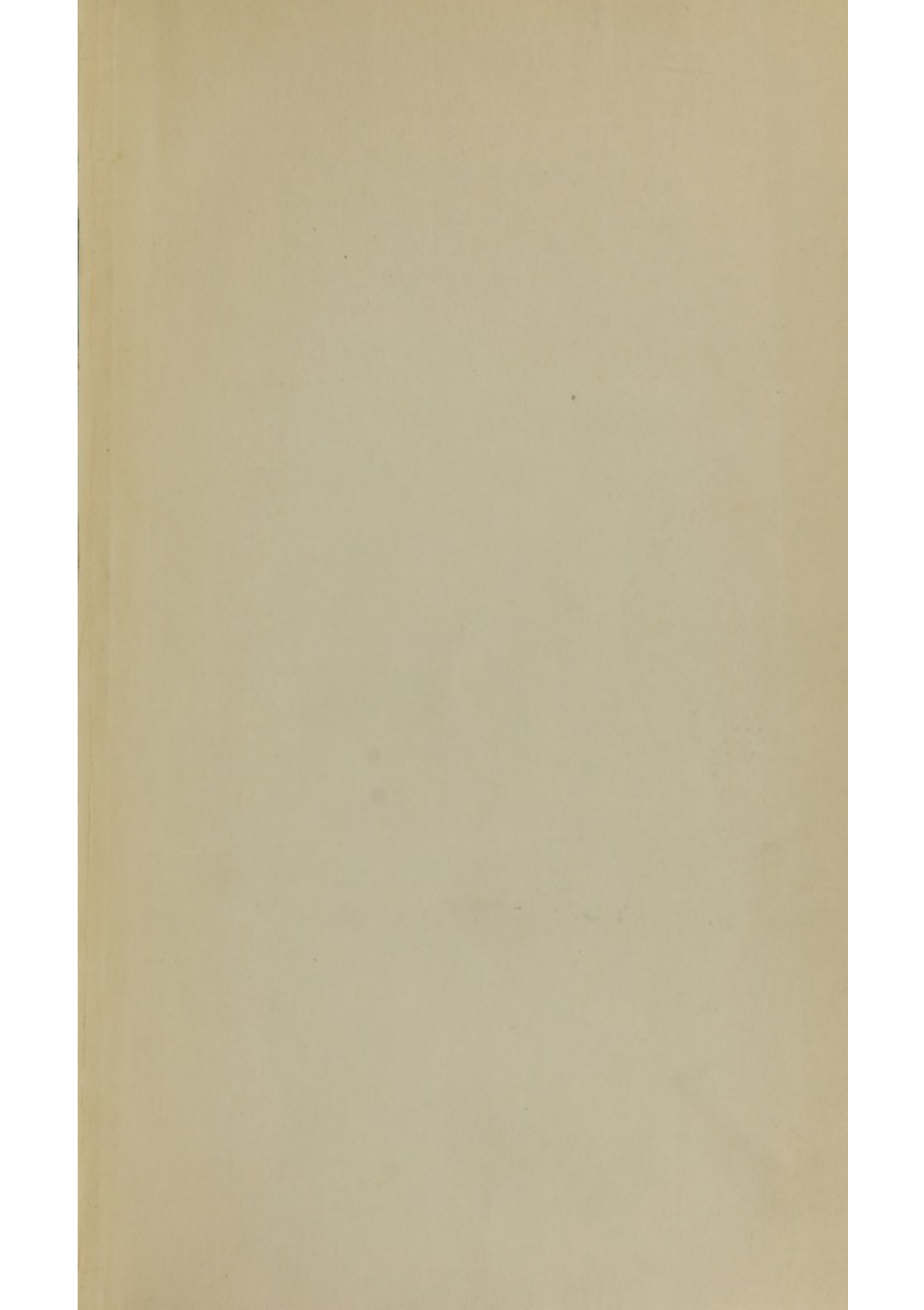
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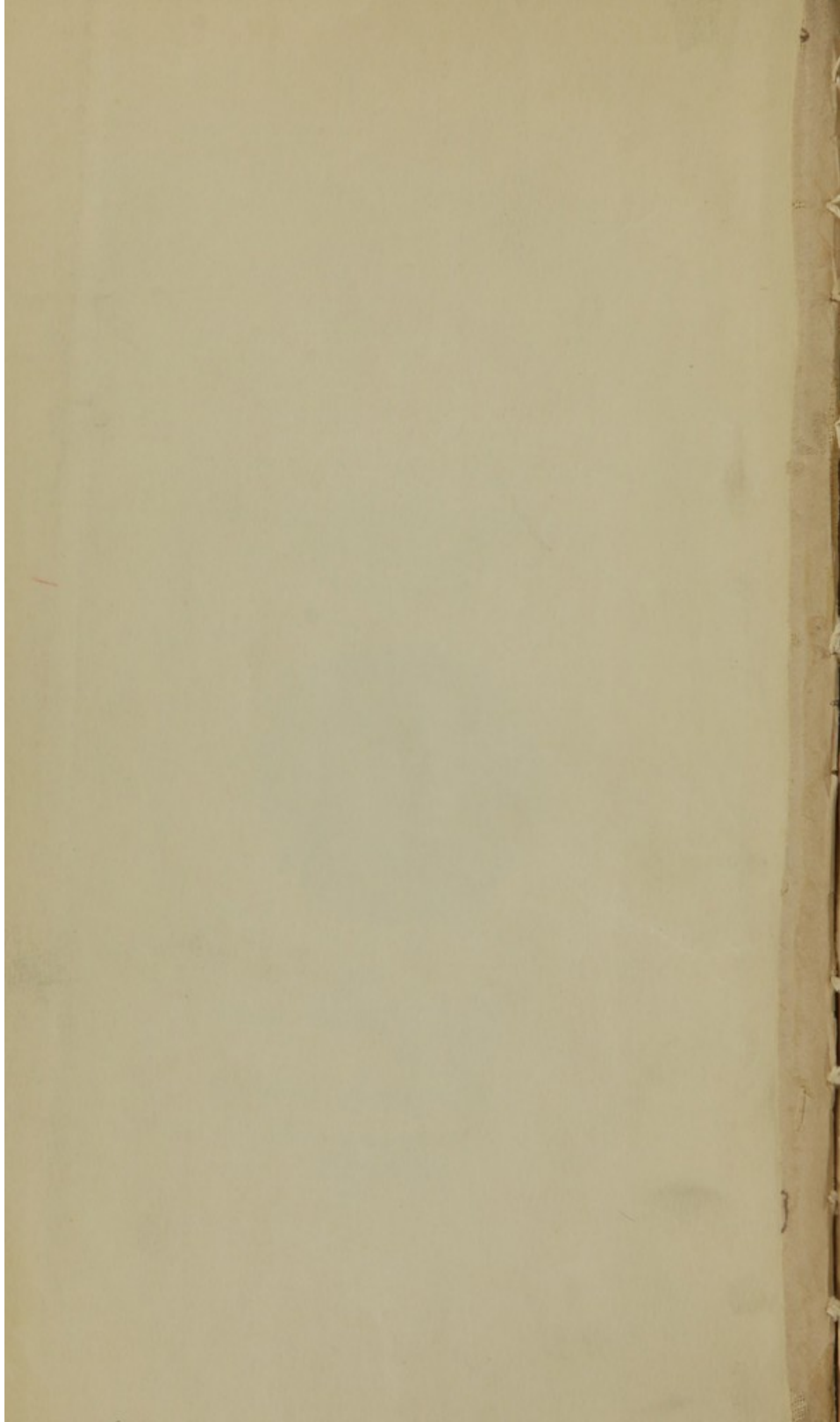
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Section *Foreign Yellow*

Number *55048*





To James Copland M.D.:
London with the highest

regard y^rh

ACCOUNT *Author*

OF THE

YELLOW FEVER,

AS IT PREVAILED IN

THE CITY OF NEW-YORK,

IN THE SUMMER AND AUTUMN OF

1822.

BY PETER S. TOWNSEND, M. D.

Honorary Member of the Royal Jennerian Society of London; Fellow of the
Literary and Philosophical and of the Physico-Medical Societies
of New-York; Member of the American
Geological Society, &c.

— καὶ αὐτὸς ἰδὼν ἀλλοὺς πασχόντας.

Thucydides.

NEW-YORK:

PUBLISHED BY O. HALSTED,

No. 249 Broadway, corner of Murray Street.

1823.

Some additions &c by D.S.S.
in pencil, in Dr Copland.

New York July 13. 1847.

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"An Account of the Yellow Fever, as it prevailed in the City of New-York in the Summer and Autumn of 1822 By Peter S. Townsend, M. D. Honorary Member of the Royal Jennerian Society of London; Fellow of the Literary and Philosophical and of the Physico-Medical Societies of New-York; Member of the American Geological Society, &c.—και αὐτὸς ἰδὼν ἄλλους πασχόντας.—*Thucydides*."

In conformity to the Act of the Congress of the United States, entitled, "An Act for the encouragement of Learning, by securing the copies of Maps, Charts, and Books, to the authors and proprietors of such copies, during the times therein mentioned. And also to an Act, entitled, "An Act, supplementary to an Act entitled, an Act for the encouragement of Learning, by securing the copies of Maps, Charts, and Books, to the authors and proprietors of such copies, during the times therein mentioned, and extending the benefits thereof to the arts of designing, engraving, and etching historical and other prints.

JAMES DILL,

Clerk of the Southern District of New-York.

TO

JOHN W. FRANCIS, M. D.

PROFESSOR OF OBSTETRICS AND THE DISEASES OF WOMEN AND CHILDREN
IN THE UNIVERSITY OF NEW-YORK, FELLOW OF THE MEDICAL
AND CHIRURGICAL SOCIETY OF LONDON, &c. &c.

SIR—Your intimate acquaintance with the occurrences of the past season, and your individual experience in the malady, the history of which I have undertaken to narrate, will apologise for my freedom in inscribing this production with your name.

As you have seen and braved the pestilence in its own dominion, you are fit to be the umpire of my pretensions.

I submit it to you, to determine, whether the delineation I have given be true or false.

Your friend,

P. S. TOWNSEND.

My dear Sir,
I have the honor to acknowledge the receipt of your letter of the 10th inst. in relation to the matter of the
of the said matter, and in reply to inform you that the same has been forwarded to the proper authorities for their consideration.

I am, Sir, very respectfully,
Your obedient servant,
J. J. Townsend

cc in its own file
intensions
be definition
of
J. J. TOWNSEND

and in relation to the matter of the
of the said matter, and in reply to inform you that the same has been forwarded to the proper authorities for their consideration.

PREFACE.

WHEN I had begun to visit some of the first cases of the late fever, I determined, for my own private use, to take a particular minute of all the phenomena and changes in the disease, which I might have an opportunity of observing, without, however, any distinct intention at the time of making my remarks public. I was the more anxious to study the subject, as I had hitherto seen but few cases of yellow fever, and because so much difference of opinion exists among practitioners in this country, and in some parts of Europe, as to its nature and origin. Every day opened to me new and interesting information concerning its character, much of which, no doubt, would have escaped my notice had I not made it a rule to pass a considerable time in the chamber of the patient, in order that I might faithfully and attentively watch his actions and symptoms.

When the epidemic terminated, the experience I had obtained during my visits to the sick, and especially from a careful and daily examination of some of the more strongly-marked and malignant cases, warranted me in believing, that the opinion I had

formed of the nature, origin and laws of this disease, though it differs in many particulars from the views of those for whom I entertain a high regard, might nevertheless be entitled to some share of consideration. I accordingly arranged my observations in a manner somewhat more systematic than that in which I had written them, and was much surprised to find that the different topics of which I treated had swelled out to a bulk far beyond what I anticipated. On reading them afterwards to some of my friends, they were pleased to approve of them, and prevailed upon me to permit them to appear in print. Such as they are, I present them to the world, without, however, importuning either their indulgence or their applause, regretting only that the short space of time in which they were drawn up has rendered it impossible for me to make them as worthy of approbation as I could have wished.

For many of the opportunities I have had of seeing the yellow fever of the past season, I am under great obligations to several of my medical acquaintance, who, where it was practicable, afforded me every facility of visiting their patients.

A number of valuable facts communicated to me by these gentlemen will be found inserted in the work.

I have taken particular pains in the first chapter to show, that yellow fever is of foreign origin; that it was imported into the city from the West-Indies, and that it is propagated solely by a specific

contagion. I have extended this chapter to great length, in order that I might embody and preserve the volume of facts brought to light on this subject during the prevalence of the disease. I have not done this with any view to excite a spirit of controversy, but because I have found myself unable to resist the evidence which has been thus collected; and therefore conscientiously believe in the truth of the deductions which I have made; and because, moreover, the establishment of these positions is pregnant with consequences of the highest importance to society, inasmuch as they discover to us the means by which, if faithfully and vigorously put into execution, we may reasonably hope to exclude the disease from our city, and prevent, hereafter, the recurrence of this deplorable calamity.

I take great pleasure in returning my acknowledgements to his Honour Stephen Allen, Esq. the President of the Board of Health, who gave me free access to the documents and official papers relating to the introduction and progress of the disease, in his own possession; as well as to those in the archives of the Board. I am also under many obligations to Dr. Bayley, the Health Officer; to General Morton, the Secretary to the Board; to Dr. Cuming, the city Inspector; and also to the Assistants of the Board, who in their respective official stations have had it in their power to furnish me with many interesting and important facts, which I could have nowhere else obtained.

During the time the latter part of the first chapter was printing off, I was unfortunately prevented by indisposition from superintending it, by which means several palpable typographical errors occurred. A careful list of the errors is to be found at the end of the book, and I beg to refer the reader particularly to this, while he is perusing that part of the chapter.

Among the authors who have written with most ability, on the origin or nature of yellow fever, and upon whose candour and veracity, most reliance can be placed, are Towne, Warren, and Bruce, of Barbadoes, the Dutch author Rouppe, and Lining of Charleston. The description of the disease by these old and classical writers, who flourished nearly a century ago, has never yet been equalled by those who have followed them. That by Warren, and by Lining evince a clearness, profundity and originality of thinking, and a purity of style which might well serve as a model for physicians of the present times.

Nor must I omit the names of some excellent modern authors, whose writings are every way worthy of their distinguished predecessors. Of these, Sir Gilbert Blane, Moseley, Chisholm and Hosack, Sir James Fellowes, Arejula and Pym, are particularly pre-eminent. Their pages are rich with information, and sound and practical reflections. The late work of Sir James Fellowes, on the Pestilential Disorder of Andalusia, (London 1815,) contains more abundant circumstantial and positive evidence in favour of the contagious nature of yellow fever, than

* This was once the distinction - but infection is now rather applied, - not to terrene or natural miasmata, but to the specific contagious transmissible germ or virus of disease contained in fomites, the air or other medium or vehicle, & thus capable by contact with it or by inhaling it or reproducing the same type as that existing in the person from whom the human effluvia or seminum emanated. All matters containing or retaining this

PREFACE.

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I have ever before met with. I am confident no un- living organic prejudiced person can peruse the book of Sir James animal germ without being thoroughly convinced of this truth. seminum are

The words Contagion and Infection, it appears to now called infe me, have occasioned much unnecessary dispute, as - ~~truth~~ & a I do not see any thing particularly mysterious in contagious dis- their meaning. By Contagion, I understand a speci- itself whether fic poison or virus, emitted from the body of a person transmittes or labouring under disease, and possessing the power of - mediately & reproducing the same disease in another individual, contact, or m either through the medium of the air or by contact. - diately through

The word Infection refers, on the contrary, to mor- the infected bific exhalations derived most usually from organic medium, is substances, in a state of decomposition. * also by man

The word Infection I have occasionally used as called infectio synonymous with Contagion. Infection is

The word Infectious is not, I believe, to be found human efflu embracing a in this work. The word Infected occurs very fre- contagious or quently. I was under the necessity of adopting it be- transmissible cause the term Contagion has no corresponding verb, germ, whether and, of course, no preterite participle. that human

By Infected, I mean that condition of the atmos- effluvia, be- sphere where it is charged with the matter of contagion, directly from as it is found to exist in apartments, neighbourhoods, the human bo- or certain sections of streets, where many persons or whether it have fallen sick of yellow fever. Virus and Poison is conveyed is also used synonymously with Contagion. fomites, a

After the first chapter had been printed off, and diffused in the when it was too late to alter it, the industrious an or - Contag researches of Dr. Walters placed me in posses-

is still used synonymously with infection but frequently referred to disease communicated by contact only. By the term contagious however we amplify the meaning so as to include infection & infectious also -

sion of a number of additional facts relating to the introduction of the yellow fever into Lombardy and Cheapside streets, which, taken in connection with those contained in that chapter, and what I have since collected myself, do, in my humble judgment, divest this subject of all ambiguity, and prove most incontrovertibly, that the disease which prevailed there was of foreign origin. I have inserted them in the Appendix.

I have allotted a particular chapter to the subject of Immunity and Predisposition, with a view of turning the inquiries of American physicians to the subject of an immunity from a second attack of the disease; a question which bids fair to produce as much dissention as the long-contested controversy about the contagious and non-contagious nature of yellow fever. From the frequent opportunities that are unfortunately offered to us of seeing this disease in some one or other of our sea ports, it is obvious that much may be done by the physicians of this country toward determining whether this law of exemption belongs equally to yellow fever as to most contagious diseases.

Since the chapter on the weather was printed, I have had the good fortune to obtain an inspection of the Meteorological tables belonging to the family of W. Laight, Esq. deceased. They comprise a space of thirty four years, and are more perfect, and go much farther back, than any other tables known in the city.

tables embracing that interesting period, that exist or that have ever been made in this city. & then accuracy from the well-known methodical habits of Mr. Laight who kept them, & who did so purely for his gratification as a gentleman of inquiring mind & leisure, - may therefore be wholly relied upon. He was no medical man & had no theory to support.

PREFACE.

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For this rare and invaluable acquisition I am indebted to the courtesy of General Laight and Henry Laight, Esquire. *

The extensive abridgment which I have made from the tables, and inserted in the Appendix, will be the better appreciated, as the greater part of these observations have never before appeared in print.

I am also indebted to I. L. Kip, and C. Bogert, Esquires, whose private Meteorological Observations have greatly assisted me in making out my abstract.

This comparative view of the weather triumphantly proves, what reiterated experience had long ago maintained, that the variations of atmospheric temperature and humidity have, in this climate, as little to do with the production of yellow fever as any other of those domestic sources to which it has been attributed.

The communication of B. B. Seaman, Esq., in relation to a subject which occasioned a good deal of remark during the prevalence of the fever, will be read with particular interest.

I have placed by itself, in the Appendix, an account of the cases of yellow fever that occurred on Brooklyn Heights. It is one of those powerful links in the chain of proofs in favour of contagion, which time will not corrode, and which neither arguments can sever, nor sophistry distort.

NEW-YORK, JANUARY, 1823.

NEW-YORK was founded by the Dutch in 1609. It is built on the southern extremity of the island of Manhattan, at the conflux of the Hudson and East Rivers. The island is fifteen miles long, and varies from half a mile to two miles in breadth, being gently undulated from one extremity to the other, and in the more central parts from forty to fifty feet of altitude. Its position for health and salubrity, as well as for beauty, is surpassed by very few other places. North of the city, the island is occupied, almost exclusively, by country villas, whose shrubbery and ornamental trees, growing with great luxuriance, add much to its picturesque appearance. The shores are bold and every where more or less elevated above the water, and on the north west part high and abrupt. There are no marshes or low lands, except those of Hærlém Creek ten or twelve miles north of the city, on any part of the island; nor any on the opposite banks of the rivers; that of the Hudson, rising into a lofty mountain parapet of columnar basalt, known by the name of the Pallisado Rocks, and that of the East-River, being formed by the high hills of Long Island.

The soil of Manhattan Island is of good depth, and very fertile, but rather dry than wet, the foundation consisting of solid primitive rock, chiefly mica slate, which here and there appears above the surface. Where the two rivers join, they expand into an oval and very elegant bay of seven miles diameter, bounded by green sloping hills, and on the south, by the passage called the Narrows, where it empties into the ocean.

The latitude of the city, according to the observations of Mr. Nash, is $40^{\circ} 42' 45''$ north; and its longitude 74° west from Greenwich Observatory.

The number of the inhabitants of New-York, is about 126,000.

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SYNONYMES OF YELLOW FEVER.

Matlazahualt—*By the native Mexicans.*

Coup de barre, [stroke of a whip—from the pain in the legs]—*Father du Tertre.*

Peste	}	— <i>In the French West-Indies.</i>
Fievre de Matelottes.		
Mal de Siam.		

Vomito Prieto—*By the Spaniards.*

Kendal's Fever—*Formerly at Barbadoes.*

Febris Ardens Biliosa—*Towne.*

Malignant Fever—*Warren.*

Putrid Bilious Fever—*Hillary.*

Typhus Icterodes—*Cullen, Sauvages, &c.*

Continua Putrida Icterodes Caroliniensis—*Macbride.*

Elodes Icterodes—*Vogel.*

Febris Maligna flava Indiæ Occidentalis—*Moultrie.*

Causus Tropicus Endemicus—*Moseley.*

Remitting Yellow Fever—*Rush.*

Malignant Pestilential Fever—*Chisholm.*

Pestis Occidentalis—*Hosack.*

Synochus Icterodes—*William Currie.*

Typhus d'Amerique—*Bally.*

Pestilential Disorder of Andalusia—*Fellowes.*

Bulam Fever—*Pym, &c.*

Ardent Yellow Fever—*Bancroft.*

Fievre gastro—adynamique—*Pinel.*

ACCOUNT
OF
THE YELLOW FEVER

IN NEW-YORK, 1822.

CHAPTER I.

Origin, Progress, and Propagation.

THE poison, contagion, or infection of yellow fever, by whatever name it may be termed, was this season introduced into the city, of New-York, at the foot of Rector-street, from the port of Havanna. It commenced at that spot, and in conformity with the same laws which have always governed it heretofore, slowly diverged or radiated from the point where it first sat out, multiplying itself by becoming compounded with, and diffused through the air, until it had spread over nearly one half the city.

Previous to entering, however, more directly on the subject, it will be necessary as a preliminary step, to make a few observations on the topography of that part of the city, where the yellow fever first appeared, and which was in the first instance, with more particular propriety, denominated the "Infected District."

It has been with much reason thought, that the imported poison must have been unusually concentrated, from the extreme fatality which it occasioned among those who were

first exposed to it, and from its having begun and spread, from a part of the city where it never had appeared before, and which, from its salubrity and cleanliness, was thought to be entirely exempt from its influence; so much so, that with the exception of Washington-street, this part of the town had for a great number of years been selected by wealthy merchants, as a place of residence, rather than of resort or business. It is exclusively occupied by them, without being mingled at all with the poorer classes of the population; and having only two narrow streets crossing it, one of which is Rector, and the other Beaver lane, both beginning at Broadway, and ending on the wharf.

The situation of this part of the city, near the promenade of the Battery, and fronting the Hudson, the bay of New-York, the Narrows and the Ocean, together with the spacious and airy avenues of Broadway, and Greenwich streets, which run longitudinally through it, and near and parallel to each other, and the open unprotected position of the store houses which stand on the wharf, expose the whole of this beautiful quarter of the city, to constant ventilation, from all the cooler and purer winds of the horizon, and such as at the same time are the prevailing winds of our climate; the cold North and N. West, rushing down the Hudson from the highlands, and the South West, and southerly breezes, which every afternoon of summer, sweep up from the ocean through the Narrows, and coming directly off the bay, render the air here almost always cool, agreeable, and refreshing.

Had not, however, the late interesting discoveries of the Spanish and French physicians, concerning the laws of yellow fever, proved past all doubt, that the theory of domestic origin, and of local filth, is utterly inapplicable to tropical as well as to northern latitudes, and that this disease to

all appearance pursues its course, independent of what in common language is understood by a pure or impure air, we should have had more reason to wonder than we now have, that it began in the part of the town where it did.

Rector street, in which the disease commenced, and to which it was for several days exclusively confined, is a very short street, which begins at Broadway, between Trinity and Grace churches, and making from thence a precipitous descent, passes down across Lumber and Greenwich streets to the wharf on Hudson's river. That part of it between Broadway and Lumber streets, is taken up by the yards of the two churches. From thence to Greenwich-street, the declivity continuing very steep, there is perhaps from 5 to 10 two story dwellings, generally of brick, on either side of it. Thence again till it opens upon the wharf, it is more level, and has not more than three or four houses on either side; the distance between Greenwich and Washington streets, in other words between Greenwich-street and the wharf, being chiefly occupied by the yards of the two corner houses which stand fronting on Greenwich-street. It was on this last section of Rector-street, and which is only 183 feet long, that the first cases occurred.*

The declivity of Rector-street is greater, and more abrupt, than that of almost any other street in town; so much so, that it is always remarkably clean. Indeed, if any filth were ever collected in this street, or if the character of the inhabitants or the nature of the buildings were such as to give rise to its accumulation, it would as instantly be washed away by the torrents produced by rains, or which could at any time be artificially created by opening the pumps.

* The width of Broadway is 30 feet, of Rector-street, 32 feet, and of Greenwich-street, 66 feet.

The part of Broadway, between Rector-street and the Battery, long known for its salubrity, and as much admired for its beauty, is entirely occupied by superb dwellings. The same may be said in a more particular manner of the part of Greenwich-street, between Rector-street and the Battery, where this street, as well as Broadway, both terminate. There are about 180 houses in this part of Greenwich-street, all of which are elegant three story brick buildings, and almost all of them built uniformly alike. This part of the street is, however, from 20 to 40 feet lower than the parallel part of Broadway, being on a level all the way to the Battery, while Broadway from Rector-street gradually descends to it. Washington-street, next below, and parallel to, and lower than Greenwich-street, and much nearer to it than Greenwich-street is to Broadway, consists of one single row of brick stores, running like the wide wharf on which they stand, and open in a direct line to the Battery. This wharf is substantially built, and being of the nature of a long quay, which runs parallel with the stores, and with but few recesses or projecting piers where filth might collect, and become stagnant, as it does in the irregular slips on the east side of the town, the current of the river freely and constantly washes by it, and keeps it always clean. Hence the reason why this side of the town has heretofore been thought protected from the introduction of the pestilence; and hence, too, the cause why the commissioners of health, and the board of health, as their respective minutes will show, have always preferred to send suspicious vessels, which the law has allowed to come up from quarantine, to this, instead of the opposite side of the town.

The yards of the houses in this part of the city, in corres-

pondence with the buildings to which they belong, are almost without a single exception clean, airy and spacious, and enriched and ornamented with trees and shrubbery.

From the extensive and beautiful promenade of the Battery on the bay, at the termination of Broadway and Greenwich-street, to Rector-street, which may be considered the northern boundary of the district we have been describing, this whole section is in no part of it in the least degree cramped or confined. Much the greatest portion of ground included within these limits, is occupied by the streets which traverse it, to say nothing of the large open space comprised in the yards, particularly those in the rear of the houses on Broadway, on the side of Greenwich-street. *towards*

We have been thus minute, in order to make ourselves understood to those who live at a distance, and may not be particularly acquainted with our city. The part of the town we have delineated, was the more particular and immediate seat of the disease for several weeks after it first broke out.

The part of the city above Rector-street, being a continuation of Broadway and Greenwich street, and where many cases afterwards occurred, so nearly resembles the other part, that it is unnecessary to describe it.

When the yellow fever broke out on the wharf, at the foot of Rector-street, and radiating slowly in different directions, had not, until after the lapse of 30 days, finally ascended the steep declivity of that street, and the street called Lumber-street, which traverses it, and passes behind the stone wall of Trinity church yard, a suggestion, which until this period had lain dormant in the minds of those who have the credit of conceiving it, was put forth, that this church yard was possibly the source of the pestilence! A

* This wall is about 20 feet high & the top of it is on a level with the church yard & Broadway -

church yard which, during the 120 years it had existed, and the generations of human bodies that have been interred there, has been notorious for the salubrity of the atmosphere which surrounds it, and for the healthiness of the elevated, spacious, airy and beautiful part of the town in which it is located. The only time of which we have ever heard it spoken of before as a source of disease, was on one occasion during the American revolution, when the British, who then had possession of the city, finding it becoming offensive, owing to the graves of the soldiers, who had been buried there in the hard winter of 1780-1, being necessarily dug very shallow, caused the yard in the succeeding summer to be covered with a thickness of fresh earth. But we are told of no sickness or pestilence, much less of a yellow fever, having been generated by this stench. We have the authority, also, of the reverend gentlemen who are attached to this church, for saying that they have never, during all the burials they have attended in this cemetery, been offended at any time with a putrid or disagreeable smell, except in those few instances when vaults have been accidentally left too long open. The sextons, and gravediggers employed in the ground, also testify to this fact. It may also be asked, why the disease, after passing up Broadway, until it nearly reached the spacious yard of St. Paul's church, seemed to have been checked in its progress, and instead of becoming more virulent in the neighbourhood of this cemetery, took on the contrary a direction through Wall and Broad streets, Maiden-lane, John, Fulton, and other streets, leading down to the slips on the East river at the other side of the town, instinctively attracted, as it were, to this more compact and crowded part of the city, and where from the greater *concentration of human effluvia*,

it was sure of meeting an atmosphere much more congenial to its propagation. Why, also, in passing down these streets, was it not rendered more virulent in the neighbourhood of the cemeteries of the churches in Wall, Garden, Liberty, and Fulton streets, in the vicinity of which places, the disease was perhaps less prevalent than] in any other part of what was called the infected district.

The further discussion of this subject, however, is not worthy of our attention, and is at least too chimerical to be treated of in the narrow limits which we have assigned ourselves.

The Yellow Fever was introduced this year, into the city of New-York, by several vessels from Havanna. The following is the mode in which we have every reason to believe the contagion was brought to the wharf, at the foot of Rector-street, where the disease first made its appearance.

Between the 25th day of June, and 1st day of July, 1822, there arrived at Quarantine, after a few days passage from Havanna, the following vessels.

The Brig Spanish Soldier, arrived June 25th.

Brig Abeona, . . . 28th.

Brig Ambuscade, . . . 28th.

Ship Eliza Jane, . . . July 1st.

The *Abeona*, was what might be termed a regular trader to and from Havanna. The crew also, being all Spaniards, were therefore accustomed to the climate of the tropics.

The *Ambuscade*, might be considered in the same light. Her captain was a veteran in the West India trade.

The *Spanish Soldier* lost two men with yellow fever on her voyage, one of whom died a few days before her arrival.

The *Eliza Ann*, also, lost two men of yellow fever on the voyage.

The cargoes of all these four vessels, consisted chiefly of

Havanna sugar in boxes, and it was all brought up to town, and landed at or near the foot of Rector-street, between the 1st and 9th days of July. The vessels employed to do this service, were *decked* lighters, having of course holds, where the air might be confined, and carried from one place to another, without the chance of being dispersed. Each lighter had from two to three men, all of whom had been in that service many years, and were frequently exposed, and necessarily habituated to the air of infected vessels from West India ports.

Between the dates above specified, viz. from the 1st to the 9th of July, 24 lighter loads of boxes of sugar, out of the above named vessels, were brought up from Quarantine, seven miles distant from the city, and discharged at or near the foot of Rector-street, in the short distance between Carlisle-street, and the piers at, next to, and south of Rector-street. About five lighter loads were discharged each day, amounting to nearly one half the cargo of either of the vessels. More than one half probably of the cargoes of the above four vessels was discharged within three or four days of the period mentioned. The cargoes were stored in the ware-houses which stand and open on the wharves to which they were brought.

During the time the lighters were receiving their loads from the Havanna vessels, the thermometer ranged steadily at a high temperature, and the weather was unusually calm. At the house of the health officer, which is upon an elevated and airy position within the Quarantine ground, and open to the sea, and where the weather was of course much cooler than in the city, the thermometer in the shade, in all this period, comprised within the nine days, averaged at 2 P. M. 80°. At 8 in the morning, and 6 in the evening, the average was 77°. The medium for the whole day was 78°.

The weather was so calm, that scarcely a breath of air was stirring, so that very little or none of the infected matter adhering to the cargoes, could be blown off or dissipated. We thus see, that during all this period, an accession of causes, each of which of itself was almost sufficient to have introduced yellow fever, was daily accumulating, and that too under circumstances peculiarly favourable for the introduction of the disease, at one particular point of the city. That the contagious matter did adhere in considerable quantities to the cargoes of the vessels, which had so recently arrived from Havanna, and where the yellow fever was prevailing, at and after the time of their sailing, there can be no doubt. We have direct and positive proof, that two of the vessels, at least those in which several of the crew died, contained the poison in all its virulence. The boxes of sugar, to those who know the manner in which they are constructed, are extremely well calculated to imbibe, as well as to retain this virus. They are made of rough pine boards, presenting an exterior surface of a porous or bibulous nature, which like fomites, and similar solid and spongy substances, for which the contagious poison of yellow fever is known to have so strong an affinity, must have been particularly well calculated to entangle and retain it. This will appear still more probable, when we recollect the compact manner in which these boxes are put together, and the great number of them that may be stowed in the hold of a vessel; for this porous surface is thus multiplied to a prodigious extent. One of the vessels contained near six hundred boxes.

There never perhaps had accumulated before, so large a mass of cargo from Havanna vessels, at that particular season, and in so small a space. This was owing to the circumstance of the frequent piracies in the West Indies,

and particularly to the nest of pirates who infested the coast of Cuba, whereby our merchant vessels were obliged to come under convoy of our ships of war, in consequence of which a considerable number frequently arrived in port nearly at the same time.

I have said, that the lighter-men had become habituated to the infected air of Havanna vessels, and were to a certain degree insusceptible to the contagion of yellow fever brought in such vessels. We will give one or two striking examples as an illustration, and which are abundantly sufficient to establish this fact. Two of these same lighter-men were employed at the foot of Rector-street, in taking off cargoes from out the stores near the wharf at Rector-street, in the latter part of September, and one of them slept on board of a lighter for four nights at the foot of Rector-street. Not one of the men thus exposed, took the disease. In addition to this, it may be stated, that from the beginning up to the termination of the epidemic, labourers have been constantly at work in building out a dock at the foot of Rector-street, none of whom have taken the disease.

The disease began at the two opposite corners of Rector-street where it terminates on the wharf in Washington-street, July 10th, 1822. As Washington-street has but one row of buildings, fronting the wharf, Rector-street, terminating also here, has but two corners. The N. W. corner was the cooper-shop of a Mr. Reder, and his house, a neat two-story building, stood next to the shop on the same lot but in Rector-street. The opposite corner was a building occupied as a grocery, by a Mr. Falkner. The first cases were Reder's two little girls, the one named Amanda aged 11, the other named Caroline, aged 9, and Andrew Thomas, a young Scotchman, aged 23, of a robust, hale con-

stitution, who had only been in this country *three or four months*, and who was clerk in Mr. Falkner's grocery. They all sickened July 10th, 1822. Dr. WALTERS was called to see Reder's two daughters the following day, July 11th. Thomas was sent immediately to the New-York hospital, without having been attended by any physician, and died there July 16th, with black vomit, but was not reported to the board of health, nor recognized in that institution, according to the best of my information, as a case of yellow fever.

The great question now to be determined, is from what source these first cases derived their sickness. It is very evident, that both Thomas and the little girls, by falling sick on the same day, with the same disease, in two opposite though different houses, derived their illness from the same cause. At least it is hardly possible to suppose, that a coincidence so extraordinary as this should have happened by mere chance. It is also beyond all question, that this was the beginning of the pestilence ; for a few days afterwards an alarming number of persons took sick of the very same disease, most of whom died, in the houses in Rector-street, next to Reder's, and to the grocery. We see that the lighters had been discharging their cargoes at, above, and below the wharf directly at the foot of Rector-street, and not more than fifty feet distant from the houses where the three first cases happened, up to the day before that on which they all sickened. This alone is sufficient to account for the origin of the disease, supposing the Reders and Thomas to have had no direct communication with the lighters. But in addition to this we know it to be a fact, that the two Reder girls, at least, were still nearer than this to what we consider to have been the source of the disease. Reder, in his vocation of cooper, was constantly employ-

the account of the beginning of the disease & its introduction as
the substance of a communication from Joseph R Bayley (deceased)
the then Health Officer, than whom no one was ever more
scrupulously accurate, reliable & conscientious. He was the
ablest & most 25 clear-headed & unprejudiced physician who
ever held

ed along this wharf, in repairing water casks, boxes of
sugar, &c., and was at that very time engaged in this busi-
ness. This much is certain, that the little girls frequently
visited their father, while he was at work, and were in the
daily habit of amusing themselves in playing about the
dock. Why others did not fall sick until after the Reders
and Thomas, and not at the same time with them, though
many were doubtless exposed to the same original cause,
cannot be determined. Because perhaps Thomas especi-
ally was peculiarly predisposed to the disease, and the
Reder girls particularly exposed to the cause which pro-
duced it.

Because, moreover, the boxes as they were discharged
from the lighters were immediately stored in the warehouses
on the wharf, and thus in the same way as when shut down
and confined under the hatches of a vessel, placed in a
situation in which it was impossible for them to give off the
fatal poison adhering to them.

Here then we have detected the disease in its origin.
There can be no confusion of dates and names and places;
no cavilling about the beginning of the disease, and the
first cases of it, a species of subtlety, which has been so
often resorted to in previous years, and which to those who
did not know the motives by which they who used it were
actuated, has for a time passed off as a plausible objection
to the doctrine of the importation, specific character, and
contagious nature of yellow fever.

We do say boldly, and without the fear of having our
assertion contradicted by any medical gentleman of this
community, that before the cases of Thomas and the Re-
ders, nothing this year of the kind had happened in any
part of the city; no disease which bore the least resem-
blance to theirs, or with which it was possible to confound

honorably exception & was an excellent physician &
rigid disciplinarian. I remember that of over
20 yrs as a potent or Principal Health Officer, gave
him admirable opportunities to investigate the infectious
foreign character of yellow fever, & has short monographs
weekly to the Board of Health, contain precious evidence as
you see by some of his published communications, of the truth
of his opinions.

their symptoms. The season had been uncommonly mild and serene, and continued so during the whole of the summer and autumn, so that it was the subject of general and pointed remark, that the air had never been observed to be more perfectly free of fog, vapour, or clouds, the temperature never more pleasant and uniform, nor the city more generally healthy before as well as during, and after the epidemic, except in that particular part where the yellow fever prevailed. There had been but little rain in all June, and the sky continued unclouded through all that, and the succeeding months of July, August, September and October. There were no sudden vicissitudes of excessive heats for three or four days, followed by remissions to which our climate is so subject. There were no forebodings of the approaching calamity, no long prevalence of dry winds, nor hot oppressive weather, no previous pestilential and morbid condition of the atmosphere, blighting the hopes of the harvest, corrupting the fruits and waters of the earth, and poisoning with death, not only human beings, but insects, fish, and all the other tribes of inferior animals. The atmosphere never perhaps exhibited so few of the usual phenomena of the season. Most of the time, the weather was calm, or only a gentle breeze blowing from the South West or South East. Hence the scrupulous and studied silence which has been observed by the advocates of domestic origin on the subject of those general and imaginary causes, which under the various denomination of astrological and meteorological influences, malaria, epidemic constitution of the atmosphere, and yellow fever periods, have heretofore been insisted upon with so much pertinacity.

These fanciful pictures, drawn with so much apparent care and detail, but which are found to be the copies of an

antiquated and now obsolete superstition, are delineated with much more taste, by the immortal bard, than in the laboured productions of modern writers.

Therefore the winds, piping to us in vain,
As in revenge, have sucked up from the sea
Contagious fogs ; which, *falling in the land*,
Have every pelting river made so proud,
That they have overborne their continent :
The ox hath therefore stretch'd his yoke in vain,
The ploughman lost his sweat ; and the green corn
Hath rotted, ere his youth attain'd a beard :
The fold stands empty in the drowned field,
And crows are fatted with the murrain flock ;
The nine men's morris is fill'd up with mud ;
And the quaint mazes in the wanton green,
For lack of tread are undistinguishable ;
The human mortals want their winter here ;
No night is now with hymn or carol blessed :
Therefore the moon, the governess of floods,
Pale in her anger, washes all the air,
That rheumatic diseases do abound :
And thorough this distemperature, we see
The seasons alter : hoary-headed frosts
Fall in the fresh lap of the crimson rose ;
And on old Hyems' chin and icy crown,
An odorous chaplet of sweet summer buds,
Is as in mockery set ; the spring, the summer,
The childing autumn, angry winter, change
Their wonted liveries ; and the mazed world,
By their increase, now knows not which is which.

MIDSUMMER-NIGHT'S DREAM.

Audi alteram partem :

“ Arrivé à Philadelphie dans le commencement du mois d’Août, 1793, je n’ai pu étudier les constitutions médicales antérieures. Je crois cependant nécessaire de donner une idée de celle qui avait précédé la maladie, d’après les rapports certains qui me furent faits. L’hiver avait été très-doux, le printemps très-précoce, et l’été excessivement chaud. Il n’y avait eu ni pluies, ni orages ; l’air avait été très-sec. Les gens de la campagne avaient observé que la sueur des ouvriers ne coulait point sur leur corps, comme à l’ordinaire ; mais qu’elle était absorbée à mesure qu’elle se présentait à la surface de la peau. Les fruits furent de très-mauvaise qualité, l’eau des puits très-corrompue et les rivières très-basses. On vit une grande quantité de poissons morts flotter sur les rivières ; ceux de la mer, ainsi que les huîtres qu’on portait au marché, étaient maigres et d’un goût fade très-désagréable. Les vents principaux qui soufflèrent venaient de la partie du sud, et il y eut une quantité extraordinaire d’insectes. On observa avant l’épidémie une epizootie qui attaqua les chats ; il en mourut un grand nombre. La même chose arriva en 1797.

“ Avant que la maladie se manifestât, il avait régné beaucoup de maux de gorge, qui étaient évidemment d’un caractère inflammatoire. Quelques jours après se développa cette fièvre jaune, dont les effets furent si funestes.” *Traité de la Fièvre Jaune, par Jean Devèze, p. 20. Paris, 1820.*

“ The common atmosphere, for the most part, was opaque and smoky, as if the earth’s surface were undergoing a slow combustion. It seemed a heterogeneous mixture of particles, in a state of opposition and propulsion ; respiration frequent and unrefreshing. The sun, in mid-day height, appeared as a volume of blood, dark and angry. As it declined to the western horizon, its diameter widened greatly ; and at an hour’s height, or more, was almost invisible, or shrouded as with sack cloth. These appearances, however, were not constant.” *Account of*

the Yellow Fever, as it appeared at Boston, in 1798. By Samuel Brown, M. B. Boston, 1800, p. 26-7.

Reder's daughters appeared to be affected very much alike, without any inordinate excitement, but with some heat of skin and a soft frequent pulse. The symptoms of both went on, *pari passu*, from the beginning, but on the morning of the 5th day, Caroline had black vomit. That same day, in the evening, Monday, July 15th, John Reder, aged 16, a son of Mr. Reder, and who had officiated as a clerk to his father, took sick. He and his sisters were pronounced, July 17th, by Dr. Walters, to be cases of YELLOW-FEVER; being the first cases that had occurred this season, and the first that were reported to the board of health. Caroline died on the 16th. Amanda recovered; and John died on the 22d. Dr. Walters, before reporting these cases, had mentioned them to Dr. Hosack, the Mayor, to Messrs. Phillips and Noah, the editors of the *National Advocate*, to Dr. Francis, and a number of other individuals, to all of whom he freely declared, that they were, in his opinion, unequivocal cases of yellow fever, and that we now had a disease among us that could not be indigenous. But the board of health, and some of the public prints, were unwilling to believe this unwelcome intelligence. Too many melancholy proofs, however, soon afterwards occurred of the truth of what he had asserted. Dr. Walters was so well satisfied that he could not be deceived in his opinion, that he recommended, at that early period, to Mr. ———, who lived in Rector-street, next to where Thomas sickened, and to Mr. Waldron B Post, who lived in Greenwich-street, in that neighbourhood, to remove as speedily as possible. Mr. ——— moved accordingly with his family to Brooklyn, where one of his sons fell sick with yellow fever, and narrowly escaped death.

On the 20th of July, a little girl by the name of Louisa, daughter of Mrs. Rose, and who had been in the habit of playing with Reder's daughters, and who sickened the same day as John Reder, was reported at the corner of Greenwich and Rector-streets, about 80 feet from Reder's house; and on the 26th, Euphemia Dobson, Mrs. Edwards, Leonard W. Archer, and Mrs. Waters, were all reported in the same house, where Miss Rose sickened and died. They took sick the 24th and 25th of July. As none of these cases after those reported by Dr. Walters, were designated to the board under the appellation of yellow fever, and as the Resident Physician, the official adviser of the board, and who had seen these, as well as the first cases, strenuously persisted from the beginning, that there had been no yellow fever in the city, the citizens lulled themselves with these assurances into a fatal security, until the 31st of August, when two of the cases at Mrs. Rose's were now announced by Dr. Neilson, to the board, as having developed unequivocal symptoms of yellow fever. Six out of the whole number of reported cases having now died after a few days illness, and the board remaining still unconvinced, the public became alarmed at their extraordinary apathy, and feeling no longer that implicit confidence in their decisions which they were wont to in previous years, began to judge for themselves on the measures most prudent to be adopted, to stay the pestilence or escape its ravages. The Resident Physician also, finding that the course which the Board, at his instigation, pursued, had become the subject of severe and general animadversion, at length acquiesced in the common belief, and on the 4th of August, nearly one month after the disease had begun, and when it was now no longer possible to stop the impulse

which it had received, or to stifle the truth, reported Mrs. N. Phillips, who had removed from Greenwich-street, near Rector-street, as a case of yellow fever, stating by way of explanation, that the infected air which had until then produced nothing but bilious fevers, had now become sufficiently concentrated to generate yellow fever. [*See his Official Communication to the Board of Health.*] The disease now began to radiate slowly and regularly in every direction from the spot where it began, proceeding as it were step by step, to the different houses in Greenwich and Washington streets, adjacent to this part of Rector-street, and on the 9th of August it had ascended to Lumber-street, half way up the hill of Rector-street, on its course towards Broadway. In this short and narrow street, (Lumber,) lying under the hill, and cramped up behind the high stone abutment, which supports the rear of Trinity church yard, and so shut in at either extremity, as to be deprived of a free circulation of air, the disease proved uncommonly mortal. In the mean while, however, it had continued to extend, North and South, along the level of Greenwich and Washington streets, and as early as the 6th of August, had arrived also at the Albany basin. On the 19th of August, most of the inhabitants in the immediate vicinity of Rector-street, having now retreated before the appalling malady, and fled from their homes, the disease kept steadily on its march, attacking the few persons who remained, and made its appearance in Cedar-street, another narrow street, running down to the wharf, beyond Albany-street, and parallel to, and at a considerable distance north of Rector-street. On the 22d, it had arrived to Liberty-street, the cross street next beyond and parallel to, but wider than Cedar-street. On the 23d, it had completed the

ascent of the hill of Rector-street, and reaching the ridge of Broadway, through this street, as well as by intercommunication between the yards of Lumber-street with those of Broadway, below Rector-street, now crossed Broadway, and began to descend again east towards the other side of the town, down the hill of Wall-street, and down the gentle declivity of Broadway, south, to the Battery, creeping at the same time at an equal pace along the dead level of Broadway, north of Wall-street. On the 24th, it had passed out of Lumber-street, into Thames-street. On the 26th, it had descended to No. 19 Wall-street; on the 27th it had begun to descend rapidly the declivity of Broadway towards the Battery. In the mean while it had passed southerly from Rector-street, along the level of Greenwich and Washington streets, where, finding nothing to afford it pabulum, as almost all the inhabitants of this part of those streets had fled, it proceeded on the 28th, westerly up Beaver-lane, which, like Rector-street, also runs down from Broadway across Greenwich and Washington streets, to the river. Here it met another column of the infected air coming down Broadway from Rector-street; for we find, on the 26th, a case was reported at No. 96 Broadway, and on the day after, one at No. 84, and on the 28th one at No. 82, and two at No. 40 Broadway. On the 29th, it had descended southerly from Wall-street, into New-street. On the 1st of September, it continued to descend Wall-street, towards Broad-street, and on the 2d, it had passed from Broadway, down the steep descent of Garden-street, as far as the corner of New-street. On the same day it had arrived at Courtlandt-street, the cross street parallel to, and next above Liberty-street. It must be observed that, while the infected air appeared to

have taken the hill of Rector-street, as the most direct course to Broadway, and no doubt first reached this spacious avenue through this route, it had soon afterwards attained it also through Beaver-lane, and through Greenwich, Washington, and Marketfield streets on the south of Rector-street, and through Lumber, Thames, Cedar, Liberty and Courtlandt streets, on the north of Rector-street. It had begun to descend Wall-street, as early as the 23d of August, as this was in the immediate vicinity of Rector and Lumber streets; but having had to go some distance north in Greenwich-street, before it came to Liberty-street, it did not reach the summit of that street at Broadway, until a short time before September 7th; for on that day, we find it had already crossed Broadway at that street, and descending as it had done, down Wall-street, reached the sugar house at the corner of Liberty and Nassau streets, in which building so many fatal cases occurred. Having now descended Broadway, south from Rector-street, and having before reached Broadway by a southern course also through Greenwich, Washington and Marketfield streets and Beaver-lane, we find on the 6th of September, that it had crossed Broadway, at Beaver-street, and had met the column of moving poison, which had passed down Wall and New streets, and down the hill of Garden-street from Broadway; for on that day a case was reported in New, near Beaver-street. On the 9th, it had got into Pine-street, where, as most of the inhabitants, being wealthy, had fled, very few cases occurred. On the 10th, in its course through Broadway and Greenwich streets, north, it is said to have reached Dey-street near Greenwich-street, next above, and parallel to Courtlandt-street; and on the same day, showed itself at the foot of Broadway, in an opposite

direction, near the beautiful little park, called the Bowling-green, adjacent to the extensive promenade on the point of the island known by the name of the Battery. This is another proof how intensely concentrated was the poison, converging and meeting, as it were, at this point from several quarters at once, and capable of infecting the three or four solitary individuals, who had been left to take charge of the superb dwelling houses in this open and airy section of the city. On the 11th, it is reported to have reached Maiden-lane, and to have already descended that street, on its way to the East river, as far as William-street.

On the same day it is said to have ascended not only Courtlandt-street but also Fulton-street, the street next above, and north of Dey-street, as high as Broadway. We have seen that it had already passed some distance down Wall-street. On the 13th, it descended from Wall down into Broad-street, one of the widest and most beautiful in the city. On the same day it is said to have reached Broadway, also at the summit of Dey-street, which is the cross street between Courtlandt and Fulton streets. On the 15th of September, having passed through Greenwich, Washington and Marketfield-streets down Broadway to the Bowling-green, it proceeded along Whitehall-street to the corner of Stone-street. But on the next day, viz. the 16th of September, three cases were reported at No. 4 LOMBARDY-STREET. As these cases could not be traced to what had hitherto been considered the infected district, and as Lombardy street was at least *half a mile* north east of any part of this district, the intelligence of the disease having appeared in this street occasioned considerable alarm. On the 20th of September this alarm was greatly increased, for on that and the next day five cases, none of which could be traced to the old infected dis-

trict, were reported in CHEAPSIDE-STREET, a narrow but remarkably clean street, parallel to, and next below, and east of Lombardy-street. Three of these five cases died, and the board of health immediately recommended the abandonment of that part of the town, and on the 21st they commenced spreading lime through this street and Lombardy-street. On the 17th of September a case was reported also in Mill-street. On the 23d another case was reported in Cheapside-street. On the 25th two women were reported, who had nursed Catherine Bailey, their sister, who had died in Cheapside-street. They were sent to Quarantine, and died with black vomit. In the mean while the disease had now appeared not only in the different streets between the Battery and the Park leading from the east side of Broadway, but also at the various slips on the East river, or opposite side of the town to that where it had begun. Thus, the 17th of September a case was reported at Old Slip; at which place we recollect that the advocates of domestic origin had pretended to say that the yellow fever of 1819 had been generated; on the 20th a case occurred at Fly market slip, and on the 26th one at Coffee house slip, cases occurring in the mean time in Water and Front streets (then mostly abandoned) which run along the East river in that part of the town. On the 26th, another case was reported in Lombardy-street, on the 27th another in Cheapside, and one at Fulton-slip on the East river. On the 30th, another case was reported in Lombardy-street; and on the 3d of October, another case, Moses Ward, who came down from Corlaers Hook to No. 20 Cheapside-street to attend and assist at his father's funeral. On the 6th, another case in this street. On the 10th, another in Lombardy-street. On

the 11th, one at No. 36 Lombardy-street. On the 13th, another in this street. On the 16th, one on the corner of Cheapside and Catharine streets. On the 19th and 22d, two others in Lombardy-street. On the 23d and 25th, two others, traced to Cheapside-street.

From the 17th of September up to November 1st, when the epidemic terminated, straggling cases continued to occur also in Stone, Mill, Pine, Pearl, Nassau, William, Water, Front, and similar streets in that low and compact part of the city, between Broadway and the East river, but as nearly all the inhabitants had prudently abandoned this part of the old infected district at a seasonable time, those few only perished, who, from obstinacy, fool-hardiness, or indigence, remained behind.

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The following comparative table will give some idea of the progress of the disease, and its relative mortality in the different streets :

Street.	Cases.	Deaths.	Street.	Cases.	Deaths.
Rector,	19	11	Courtlandt,	12	8
Washington,	27	18	Broad,	14	7
Greenwich,	22	11	Maiden-lane,	10	4
Lumber,	11	7	Fulton,	4	2
Albany,	2	2	Nassau,	10	5
Carlisle,	3	1	William	11	4
Cedar,	8	7	Pine,	2	1
Liberty,	16	9	Dey,	1	0
Broadway,	33	20	John,	2	1
Thames,	6	4	Beaver	5	2
Wall,	7	4	Stone,	3	1
Beaver-lane,	4	4	Mill,	1	0
New,	3	2	Moore,	2	0
Garden,	1	0	State,	3	1

<i>Street.</i>	<i>Cases.</i>	<i>Deaths.</i>		<i>Cases.</i>	<i>Deaths.</i>
Pearl,	13	8	Persons who fre-		
Water,	19	14	quented the in-		
Front,	3	4	fected district,		
Old-slip,	2	2	but resided in the		
Dutch,	6	2	upper part of		
Ann,	1	1	the city,	65	34
Ferry,	1	1	Persons who lived		
Chamber,	1	0	in or frequented		
			the vicinity of		
			Cheapside st.,	46	23
				—	—
			Total,	401	230

In addition to which, 11 deaths occurred out of the city, and 10 after the Board of Health had adjourned. (Oct. 26.)

Thus, then, we see that the disease being once fairly introduced at the foot of Rector-street, it spread from thence at a slow and measured pace over all the lower parts of the city. At first every case reported, could be traced to the immediate neighbourhood of Rader's and Rose's. Then, after it had enlarged a little its boundaries, the cases were traced to the vicinity of those houses. After some days had elapsed, the air of Lumber-street also became imbued with the virus of the disease, for an alarming number of persons, the greater part of whom were found to have had communication with the neighbourhood first infected, were all taken sick in this street nearly or about the same time. Then the streets north, south and east of Rector-street immediately adjoining, and parallel to it, began to be included within the limits of infection more or less according as circumstances favoured its introduction and propagation, so that, although the disease did appear to some to have ra-

diated or divaricated as it were from a point or centre, and that we also have availed ourselves of this metaphor to make the description more clearly understood; yet this ought not to be taken in the literal sense of the word. To make the language accord with the facts which really did occur in the progress of the epidemic, we ought rather to say, that there existed, or was created, one after the other, in all the lower part of the city, several centres, or foci, each of which had, indeed, either directly or indirectly, sprung from the point where the disease began, but when once established, constituted of themselves new foci of propagation. Many, however, who were impressed with the belief that the disease did radiate or diverge at an equal pace, and in all directions from the foot of Rector-street, thought, in confirmation of this opinion, that they could make it appear that the infection had penetrated through brick walls, and over fences, with a determinate march, and in straight lines, so that it actually arrived at the same date to places which were equi-distant from the point where it began. So confirmed were several persons in this belief, that when the disease appeared at any given spot, they thought they could predict by the scale and compass where it would next show itself. The date at which the cases appeared in several places, did, at first view, seem to correspond with this opinion. It was, however, more specious than true, for the course of the disease, according to this hypothesis, was studied with reference merely to the absolute distances of these several places from the foot of Rector-street, as though the city were an open uninhabited plain, and without making any allowance for the obstructions which the infected air must necessarily have had to encounter from the angles, turn-

ings, and elevation of the streets. The progress of the epidemic was, however, *ceteris paribus*, at an equal ratio from the point at which it was first introduced, which was a result natural enough to be expected when it is remembered that it was from this place more particularly that the population commenced their retreat, falling back and dispersing during the first month of the epidemic, exactly in proportion to the advances which the disease made. In several instances, however, we shall see that it anticipated its victims, and by forming new centres of propagation where it was least expected, cut them off in ambush before they had time to ~~reach there~~.

escape

THE CASES IN THE VICINITY OF CHEAPSIDE-STREET.

This new focus of contagion, or the "upper infected district," as it was termed, was put into action by the seeds of the disease having been transplanted there from the original, or lower infected district. Samuel Ward was reported sick of yellow fever at No. 36 Lumber-street, in the old infected district, on the 9th of August, 1822. His father, Nathaniel Ward, who lived at No. 20 Cheapside-street, and his mother and several of her sons and daughters, came down into Lumber-street, *then uninfected*, to see him, and staid there on several occasions to nurse him until Friday, the 16th, when they had him carried up into their house in Cheapside-street. The introduction of a sick man into that street, considered and known at that time to be perfectly healthy, produced a great deal of alarm. Mr. Corgan, living about 10 doors below, on the corner of Cheapside and Catherine streets, together with Mr. Messenger, and a number of others of the most respectable persons in that neighbourhood, took the precaution before the

sick man came, to remonstrate to the Board of Health against having him brought there, at which the father was very much incensed. The petition was not taken notice of. We shall soon see what were the consequences. Ward soon recovered. He is stated to have brought with him his bedding; but this Mrs. Ward denied, feeling herself, I presume, implicated in the distress which had been occasioned in that neighbourhood, in some measure, perhaps, through her agency. As the sick man lived in Lumber-street, and as his father and mother and their children were constantly down there to see him before he removed, it is altogether preposterous to suppose that some of his clothing, at least, was not brought up into Cheapside-street. I learn from such authority as leaves no room for doubt, that the dirty clothes of Ward, which he had accumulated during his sickness, and before he was removed from Lumber-street, were all packed up in a large bundle, and taken along with him in the carriage, the day he arrived in Cheapside-street. On that and the succeeding day, the 17th, they were unpacked, washed and dried; after which they were sent to his brother, Moses Ward, who lived with a Mr. N—, in Walnut-street, Corlear's Hook. From thence they were sent to Flushing, where the family of the sick man were then staying.

Mrs. Ward also denies, but it is positively averred by the neighbours, that the bedding upon which Ward lay, was hung out, for several days, upon the fence which separates the deep broad yard of Ward's house from that of Mrs. Brown's, next door, and which is No. 18. Ward's house stands on the street, but Mrs. Brown's stands back at the bottom of a deep yard, so that the front part of the house is but a few feet behind the rear

of Ward's. Fanny Ward, aged 6, daughter of Ward, Mrs. Ward his wife, and another of her daughters, and also two Misses Morrisons, who lived up stairs in Ward's house, all took sick about one week after the dirty clothes had been unpacked to be washed, i. e. about the 25th or 26th of August, but the attack being slight in all except Fanny, they soon recovered. Fanny remained sick in bed about a fortnight. When I first visited Ward's house, viz. September 21st, the father was then lying dead of yellow fever. Hannah, aged 10, was sick of that disease in the same room, having been taken on the 19th, and Fanny was walking about, but very feeble and emaciated. From the relation which was given me of Fanny's symptoms, and from the deep greenish yellow tinge of her adnata and of the face, neck, arms and chest, there can scarcely be a doubt that her disease had been yellow fever. Ward, the father, sickened on the 15th or 16th of September, and died on the 20th, on which day he was reported by Dr. Boyd to the Board as a case of yellow fever. His skin, which I examined as he lay a corpse, was all over of the peculiar tinge of the disease. Hannah was also reported on the same day, and recovered. On the 15th of September also sickened of yellow fever Mrs. Brown and her daughter, who lived, as we have already stated, next door to Ward; and on the same day also Catherine Bailey, an Irish girl, aged about 14, who had been but a short time in America, and died in a cellar at Mr. Scott's, No. 12 Cheapside-street, three doors below Brown's.

Sept. 9th, a Mrs. Carey and a Mrs. Snow her daughter, sickened of yellow fever at No. 4 Lombardy, the street next above, running very near and parallel to Cheapside-street. The distance of their house from that of Ward's was

about 150 feet. Mrs. Carey died on the 14th, and Mrs. Snow on the 15th. They were both reported on the 16th. A young man by the name of Mott, who slept at this house, also sickened September 6th or 7th. As the house of Ward was the source of the disease in Cheapside-street, so was that of Mrs. Carey the more immediate source of the disorder which spread through Lombardy-street. For a few days before Mrs. Carey, Mrs. Snow, and Mott sickened, a son of Mrs. Carey arrived with his clothing and effects in the ship *Superior*, captain Jocelyn, from New-Orleans. The yellow fever had already begun at New-Orleans, and spread to some extent before the ship sailed from that port, although no notice had yet been given of the existence of the pestilence either by the official authorities or in the public gazettes. His mother, Mrs. Carey, was employed previous to her attack in washing Carey's clothes. His bedding had been destroyed before she sickened.

Mrs. Brown and Catharine Bailey died. The latter was lying dead in the cellar when I made my first visit to Ward's house, September 21. The inhabitants of the street had also many of them abandoned it on that day, and the Board of Health had strewed it with lime. On the 22d two cases were reported in Bancker-street, the street next above and parallel to Lombardy-street, neither of which could be traced to the old infected district.

On the 24th, Mrs. Bailey and Eliza Bailey, sisters of Catherine, whom they had nursed in Cheapside-street, were taken sick, and both were removed to the Marine Hospital, where they died with black vomit. I saw Eliza Bailey a few hours before her death, Monday afternoon, September 30th, 1822; it was a genuine and strongly marked case. Her sister-in-law, Mrs. Bailey, died on the evening before. Eliza

was about 18, and her sister Catherine, who died of yellow fever in Cheapside-street, September 21, about 14. They had been but 17 months in America from Ireland. Mrs. Bailey was also Irish, but had been several years in the country. Eliza and Mrs. Bailey died both with black vomit within 24 hours of each other. Here we have a strong proof of the peculiar predisposition of northern constitutions; but what is more important, a clear and unequivocal instance of the *direct communication* of the disease from Catherine to her sisters.

On the 27th Mr. Vreeland was reported, who sickened the 21st, and who kept a grocery in Cherry-street, directly in the rear of Ward's and Mrs. Brown's, their yards joining upon each other. The disease continued to spread through Cheapside and Lombardy streets, as we have already said, up to the arrival of frost.

The following recapitulation will place this subject in a clearer light :

August 9th.—Samuel Ward, who had been down to the foot of Rector-street, was reported sick of yellow fever in Lumber, near Rector-street. He was the first case in that street.

16th. He was brought sick with his dirty clothing to his father's, No. 20 Cheapside-street.

16th—17th.—Dirty clothes of Ward were washed.

26th—30th.—Mrs. Ward sickened, also Fanny and another of her daughters. Two Misses Morrison in the same house.

September 6th or 7th.—Mott sickened from No. 4 Lombardy-street—died in the country.

9th.—Mrs. Carey, at No. 4 Lombardy-street, sickened—died.

—Mrs. Snow, in same house, sickened, died.

15th.—Mrs. Brown, next door to Ward's, sickened—died. Her daughter sickened.

—Catharine Bailey, three doors below Mrs. Brown's, sickened—died.

16th.—Nathaniel Ward, father of Samuel, sickened—died.

19th.—Hannah Ward, his daughter, sickened—recovered.

21st.—Vreeland, directly in the rear of Ward's and Brown's, sickened—recovered.

24th.—Mrs. Bailey sickened—died. And also Eliza Bailey, do. do. Both had nursed Catharine who died the 21st.

26th.—A case at No. 30 Lombardy-street was reported.

27th.—A case from No. 21 Cheapside-street reported, nearly opposite to Ward's.

30th.—One case at No. —, Lombardy-street, reported—died.

October 3d.—Moses Ward, son of Nathaniel, died.

6th.—Another at No. 23 Lombardy-street.

10th.—A case at No. 53 Lombardy-st. reported.

11th. do. 36 do.

— do. 52 do.

13th. do. 28 do.

16th.—Corner of Cheapside and Catherine.

19th.	from	31	Lombardy
22d.	do.	37	do.
23d.	do.	7	Cheapside-street.
25th.	do.	7	do.

To Ward, therefore, who was brought sick of yellow fever with his dirty clothing into Cheapside-street, and to Carey, who brought his effects to his mother's house at No. 4 Lombardy-street, are we to attribute the sickness which began at these houses, and spread into the adjacent and neighbouring houses in those streets. How can we resist this obvious conclusion, when we see that the cases, like the continuity in the links of a chain, are all united together, and began regularly to succeed each other from Ward and from Carey immediately after their arrival in Cheapside and Lombardy-streets.

Setting aside the cases of Mrs. Ward and one of her daughters, and those of the Misses Morrison, as all doubtful, there occurred in the two streets of Cheapside and Lombardy, within the short distance between Market and Catherine streets, and comprising not more than 60 houses, the extraordinary number of twelve cases in Cheapside and eleven in Lombardy-street, though nearly one half of the houses mentioned, and nearly every house in Cheapside-street, were abandoned as early as September 21st. The distance between Catherine and Market-streets is about 500 feet; the width of Catherine-street is 45 feet, and that of Market-street 60 feet. Both run down transversely to the river by a very considerable descent, being at their junction with Harman-street, at their upper extremity, about 20 feet higher than Lombardy and Cheapside-streets, which on the other hand run parallel with the river, and are not more than 15 feet above its surface. Cherry-street, parallel to and next below

Cheapside-street is 60 feet wide ; Bancker-street, parallel to and next above Lombardy-street, is 45 feet wide, being also from 15 to 20 feet higher than that street.

I have purposely abstained from placing in the above list, the names of those cases which were reported in Bancker-street, and that neighbourhood, because I have satisfactorily ascertained, beyond the possibility of contradiction, that each, and every individual of those persons, had had communication with the infected part of Cheapside and Lombardy streets.

The following is the order in which they occurred, and their history, derived from personal inquiries, made at the time, in company with Dr. Francis.

Sept. 22. Mr. Scott, at No. 122 Bancker-street—died.

Mary Mosier, at No. 125 Bancker-street—
recovered.

Oct. 16th. George Whetty, at No. 118 Bancker-street—
died.

17th. Mary Kirk, No. 90 Bancker-street—reco-
vered.

Whetty, son of George, 118—died

19th. Elizabeth Crawford, No. 123 Banker-street—
died.

Clarissa Chapeau, . . . —died

Scott had been down to the shop of Mr. Jacobs, merchant tailor, at the corner of, Maiden-lane and Nassau-street, for whom he worked as a journeyman, about five or six days before he was taken sick. This fact was not known to the board of health at the time he was reported. Consequently, as Maiden-lane, and particularly this very part of it, had been before that period included within the infected district, from several cases having previously occurred there, he must be put down as having derived his disease

from that place, and none other. The next was a little girl, by the name of Mary Mosier, aged ten years. She had been in the daily habit of passing in the vicinity of the infected part of Cheapside and Lombardy streets, on her way to the market at the foot of Catharine-street. Although, therefore, we are fully persuaded, that she received her disease from Cheapside and Lombardy streets, we will, for argument sake, suppose, not only that it was a genuine case of yellow fever ; but furthermore, that she had not been sufficiently near the infected parts of those streets, to have taken her disease from that source.

Not until after Mary Mosier was reported, did, as far as I can learn, a single person remove out of Bancker-street. About *forty* or *fifty* person only now left it, while the great mass of inhabitants continued still to reside there, with the most perfect security ; for we see that not until nearly after the lapse of an entire month, was another case reported in this street.

This was George Whetty, at No. 118. His son was reported the day after at the same house. The father had been down several times through Cheapside and Lombardy streets, a few days before he sickened. He was an intemperate man, and in the habit of ranging all over the city. The next is Mary Kirk, a young girl at No. 90. She was taken sick on a Thursday, and on the Sunday before, had walked through Lombardy-street. The last two were Crawford and Chapeau, both women of indifferent character. Crawford was taken sick of a Monday night. A short time before, and particularly on the Saturday previous, she took a walk to that part of Cheapside and Lombardy streets, where they terminate in Catharine-street, being but a few doors from Ward's house ; Chapeau, four

or five days before she was taken sick, had been down into Lombardy and Cheapside streets, on her way to and from the market.

If, indeed, the local accumulation of filth, crowded, damp and unventilated apartments, the condensation of human effluvia, and habits of excessive intemperance and depravity, can generate yellow fever in this latitude ; then surely ought the solitary case, which we have supposed to have occurred in Bancker-street, to be attributed to these sources. But why, if as some pretend, this part of the town produced from its own resources all these different cases, as well as the mortality also in Cheapside and Lombardy streets, and without the necessity of supposing any foreign cause ; why, I repeat, did not these domestic causes become operative at an earlier period ? Why, out of the mass of dissolute population in Bancker-street, none or but very few of the inhabitants of which fled then, or since, from the pestilence, while Cheapside became almost entirely, and Lombardy-street nearly all deserted, did not other cases also fall sick of yellow fever in Bancker-street ?*

Why had the lower and extreme parts of the town, and especially the salubrious and cleanly neighbourhood of the Bowling Green and Battery, and the terminations of Broadway and Greenwich streets, suffered so long before this period, and so severely from the pestilence, while Bancker-street, the very hot-bed of filth, was enjoying for months, and until the middle of autumn, a peculiar exemption from disease of any kind ? Why, again, I finally ask, if Bancker-

* There were not altogether more than fifty persons who fled from this long and thickly populated street, during the whole season, and no one removed until after Mary Mosier was reported.

street and filth, were the sources of the disease in this upper part of the town, did the first cases break out in Lombardy and Cheapside streets, both of which, and particularly Cheapside-street, by being retired and never made use of as thorough-fares, are in comparison to Bancker-street, or indeed to most parts of the city, proverbial for their cleanliness, and for the reputable character and comfortable condition of their inhabitants?

Why, if this statement be, as we know it to be, true, after this solitary case in Bancker-street was reported, did no more cases *originate* there, while the disease continued up to the termination of autumn, to be limited and circumscribed to the narrow short streets of Cheapside and Lombardy, comprised between Market and Catharine streets, and containing both together not more than sixty houses. Whereas in the most filthy and thickly populated and nearest and corresponding part of Bancker-street, where each individual house almost contains from three to five or six families, nearly all of whom continued to remain there, not a case of yellow fever occurred?

The following notice from the New-York Statesman of Oct. 15th, 1822, though we do not accede to the inferences which it makes in favour of the use of lime, will give some idea of the number of persons who continued to occupy this part of Bancker-street, up to that date.

“In what has been called the upper infected district, about Bancker and Lombardy streets, lime has been used in the streets, and in the yards, alleys, sinks, &c. The yellow fever which has appeared there, has had a crowded and filthy population to spread among them its contagion or infection, but the disease has been arrested, because if the lime had done no good, the yellow fever would not have stopped its

ravages in a concentrated population of 3000. I say 3000, because the person now engaged, reported on Saturday morning 1997 persons, and he was little more than half done taking the census of the square lying south of Henry-street, to the East River, and between Catharine and Pike streets."

From my own personal examination of Cheapside and Lombardy streets, and especially of the five adjacent buildings in Cheapside-street, where the cases of the Wards, Bailies and Browns occurred, I can positively affirm, and with the concurrence of every physician who has been to those houses, that there is in no part of the city, five buildings of the same dimensions more cleanly and commodious in their apartments, nor furnished with more spacious and beautiful yards; nor any streets, especially Cheapside, more free of filth or refuse of every kind whatever.*

If the yellow fever of Cheapside and Lombardy streets was generated there, the domestic causes must have been totally at variance with those which existed at Rector street. There ~~was~~ neither decayed wharves, nor putrid bilge water, *were* nor offensive timbers of shipping, not so much as a single grave yard within the compass of a whole mile, from which might ooze out the foetid distillations of human putrefaction! What then were these peculiar domestic causes, which seemed so intense within the narrow limits of these two small streets? I ask the question by anticipation, knowing

* The yards are all of them from 60 to 100 feet deep, and from 20 to 40 feet in width. I could not help admiring the neat, dry and cleanly manner in which they were kept, and the numerous flower-beds and vines which tastily adorned them, occurring to me at the time as a silent, but most eloquent comment on the theory of domestic origin.

that although no person has yet had the boldness to offer, or the ingenuity to invent, any plausible explanation, on the principles of domestic origin ; something of this nature will in the course of time be advanced. I answer it, therefore, by saying that no such domestic causes did exist, and that whatever circumstances did exist there, being totally different, and indeed in direct opposition to those which, according to this hypothesis, are to be found at Rector-street, they could not, as the causes which did in reality exist, have done, produce the very same effects. In other words, contrary causes could not generate the same specific and identical disease.

Why, too, if these cases of Cheapside and Lombardy streets originated from domestic sources, did the intermediate section of the town between *this and the lower infected district*, and that which had in previous years been considered the seat of the pestilence, in other words, the whole of that compact, populous, and filthy part of the city, included between Fulton and Catharine streets, escape its ravages, though it continued to be inhabited for some time after Ward, and many others, had died in the neighbourhood of Cheapside-street? If domestic sources could possibly generate yellow fever, then at an early season might we have reasonably looked for it not only along the filthy wharves, docks and sewers, of Fayette, James, Roosevelt, Dover, Peck and Fulton slips, in this section of the town, but also along the whole range of docks on the East River between Fulton-street and the Battery.

During the yellow fever in the vicinity of Old Slip in 1819, and also during the present season, the wharf from Dover to Roosevelt-Street, has been undergoing an entire alteration. The proprietors of that section of the town

have settled out a bulk head, which being still unfinished, stagnant water has collected in different places along the dock, where, from the filth, excrements from tubs, and dead animal and vegetable matters usually thrown in while filling such places, the air, especially during the hot weather, and the progress of their decomposition, has been rendered excessively offensive. But neither in the yellow fever of 1819, nor during that of the present year, has a single instance of the disease occurred there. On the contrary, a short distance above Roosevelt-street, and between that street and James-street, several cases of yellow fever, just before the termination of autumn, occurred at Nos. 343 and 349 Water-street, two small wooden sailor boarding houses which stood about forty feet apart on the same side of the street. Although this was close to the slips where, in previous years, the yellow fever had broke out, and been extremely mortal, [especially in the memorable year of 1798,] and although this part of the town had been all the season placed as it were between the two fires of the upper and lower infected districts, the inhabitants continued to reside there with impunity, and the shipping to remain at the docks. No one took sick in the similar dwellings opposite, nor in any part of the neighbourhood. Even after these cases had happened no alarm was produced, for the season had now become quite cool and chilly, and a few days after the last died, a frost actually occurred. (October 23.) The people were, therefore, satisfied, that it was absurd to imagine that any exhalations from docks, privies, confined apartments or yards, would have been harmless or suspended during all the hot weather, and now at this late hour of autumn, just at the arrival of frost, become so intense as to generate yellow

fever. No one was fool-hardy enough to say it originated in the two houses. Consequently, upon inquiry, and personal examination, accompanied by a medical friend, it was found that the sickness was as usual traceable to the old infected district. No. 343 was occupied by John Bresland, and No. 349 by Mrs. Bolien. Bresland was reported Wednesday, October 9th, and died that day. On Monday following, October 14, Martin Keaugh, a boarder in Bresland's house, a labourer about the docks, was taken sick. He was in the habit of seeing Bresland frequently while the latter was lying sick. The next day, Tuesday, October 15th, John Freeman, a sailor, and also boarder in Bresland's house, sickened. He had also seen Bresland repeatedly during his illness. Bresland confessed, on his death bed, that he had been a few days before down to White-Hall, in the lower infected district. Keaugh and Freeman took it without doubt from him, and as is usual with the law by which the contagion of yellow fever is propagated, from four to six days after exposure to the disease. [See the valuable letter of Dr. Joseph Bayley, health officer of this port, *New-York Medical and Physical Journal*, vol. 1. No. 1.*] The ample experience, and close and accurate observation of this gentleman, has almost definitively settled this point. Keaugh died. Both he and Bresland were Irish.

On Thursday, October 10th, Robert Smith, who had been complaining the night before, took sick of yellow fever at Mrs. Bolien's, No. 349. He was mate of the brig Margaret, lately arrived from Turk's Island, and had been wandering about through the city in all directions, and on the Saturday preceding his illness, viz. October 6th, had

* Edited by Drs. Francis, Dyckman, and Beck.

made an excursion on foot, down Broadway, and through the fences into the old infected district. He was quite frightened on his return, and told of it, saying he had been "where the town had all been shut up." Mrs. Bolien's black woman who officiated afterwards as nurse to Smith, rebuked him for his inconsiderate conduct, and asked him how he could be so rash. He endeavoured to excuse himself. Smith was now confined to his bed, which was in a very small apartment of low ceilings of about 12 feet square in the second story of Mrs Bolien's house. About four feet from Smith's bed slept, in the same contracted apartment, an Irishman, by the name of Joseph Curiel, on another bed. Curiel had been for a long time a cripple on crutches, and had not for five weeks been farther from the house than the door. He had been a sort of clerk or accountant to Mrs. Bolien; consequently, this was no wanderer, and had been neither in the upper nor lower infected district. On the Saturday night, [Oct. 12th] following, the day on which Smith sickened, this man also took sick, having continued from the beginning of Smith's indisposition to sleep in the same room. The room and bedding were perfectly clean, and without any offensive odour; and Curiel, beyond all doubt, took his disease from Smith. They both died. Curiel had unfortunately taken an emetic the second day of his illness at the recommendation of some person who told him his disease was merely a bilious fever. This is one of the sad and fatal consequences of the unitarian system of confounding the symptoms as well as causes of all diseases together. To recapitulate:

Oct. 9th. John Bresland reported sick of yellow fever at No. 343 Water-Street, died.

10th. Robert Smith taken sick of yellow fever at No. 349. Reported Oct. 17th, died.

12th. Joseph Curiel sickened at No. 349. Reported Oct. 17th, died.

14th. Martin Keaugh, sickened at No. 343. Reported Oct. 17th, died.

15th. John Freeman sickened at No. 343. Reported Oct. 18th.

Thus while the slips and sewers above Fulton-street remained. during the whole epidemic, free from infection, those below Fulton-street, comprehending Beekman, Fly-Market, Coffee-House, Old, Coenties, and Whitehall slips, afterwards included within the infected district, did not become so until the poison had, after the lapse of more than two months, been carried thither from the streets in the vicinity of Broadway, or those across the town, on the opposite side of the city.

“During the present season, the two long wharves on the east and west side of Coffee-house slip have, owing to the decayed state of the timber, been broken up. The work was commenced about the 10th of June, and continued, by a great number of men, through the hot season, to about the middle of August: the logs were in different states of decay; some entirely rotten, which, with the discoloured earth, was piled in large quantities in front of the stores in South-street, about two rods distant, a part of which remained subject to the effect of heat and moisture, until the 24th of October; during which time it is said no bad effects have been experienced from it, either by the workmen employed or others; and from its commencement, *even during the present sickly season*, the store at the corner of South-street and Coffee-house slip has been constantly occupied, and is within about two rods of the decayed timber, &c. referred to.

“As this timber, so much decayed as partly to be thrown up with shovels, was taken out during the hottest season of the year, without producing any bad effects, it might be inferred (unless cases to the contrary could be referred to) that the timber saturated with, and decayed in salt-water, was less dangerous when exposed to the air than if decayed in other situations.”*

So far from these places being the generating foci of infection, as in previous years they were represented to have been, Catherine market and slip at the foot of Catherine-street, in the immediate vicinity of Cheapside-street, and Fulton market and slip, at the foot of Fulton-street, remained during the whole season exempt from sickness, insomuch that persons continued fearlessly to resort to those markets, and the ferry-boats, between those slips and Brooklyn, to ply with their accustomed regularity.

Market-street and Catharine-street, the street next above and parallel to it, and both in the immediate vicinity of Cheapside-street, as well as Cherry-street, immediately below and parallel to Cheapside-street, and lower and nearer than that street to the river, continued, with the exception of Mr. Vreeland, who lived directly in the rear of Mr. Ward's and Mrs. Brown's yards, free of sickness, while the few individuals in Lombardy-street, and the still fewer number who continued in Cheapside-street, one after the other fell sick of yellow fever, until the frost finally extinguished the poison. It was absurdly conjectured by some, that the part of Bancker-street corresponding to Lombardy and Cheapside-streets, as it continued up to the termination of the

* R. Bulkley's letter to the Board of Health, on the subject of purifying sewers. See *New-York Statesman*, Oct. 26, 1822.

disease nearly as thickly populated as before, owed its exemption to the lime scattered through the street. I am not in the least prejudiced against the supposed disinfecting properties of this substance, but on the contrary am disposed to believe that it might prove of considerable utility. Those who have hazarded this opinion of its efficacy in Bancker street, and who, strange as it may appear, attribute at the same time the production of yellow fever to domestic filth and confined apartments, forget that, while Cheapside and Lombardy streets, so much more cleanly, and so much less populous, than Bancker-street, were also strewed with lime, and almost totally deserted of their inhabitants, those few individuals who remained nearly all fell victims to the disease !

“Adverting to the condition of the city of New-York, anterior to the American revolution, and before a regular system of police regulations was adopted ; to the offensive state of the town during the revolutionary war, when inhabited by the British troops ; to the immense collection of foul materials of every sort in the cellars of the numerous buildings, destroyed by the great fire of 1776, during the whole of which period, this city enjoyed a total exemption from the pestilential fever, we must be convinced of the limited and incorrect views of those who look no farther for the origin of this evil. In like manner the offensive state of our slips, our wharves and our market places, until within a very few years ; the putrefactive processes attendant upon our tanneries, morocco, starch and glue manufactories, slaughter houses, tallow chandleries, sugar houses, &c. &c. the filthy and neglected condition of our streets, and we may add, of many of our burial grounds, furnish incontestible evidence, that these are innocent, when considered

There is often, says a distinguished writer,* a blind impulse in public opinion, which arrives by a more speedy and certain method at the truth, than all the reasonings of philosophy. May not this too serve us as a guide in the strong sentiment of repugnance and open expressions of alarm and discontent manifested by all the inhabitants of Cheapside-street, when Ward was brought into that neighbourhood? What induced them to fear this intruder, and why do the world continue on all occasions to show that dread of approaching near the persons of those who are doomed to become the victims of this cruel malady? Does this show us that the theory of importation and contagion, as some persons have had the temerity to say, is an exploded phantom, engendered in superstition, and sustained by misrepresentation and duplicity? Does this show that quarantine restrictions are a libel upon the common sense of mankind, and an insolent usurpation of their rights?

Whether the yellow fever of Cheapside and Lombardy-streets be ascribed to the clothing or person of Ward, or to the clothing and effects of Carey, or to both, we see the *communicable* character of the disease brought home to our conviction, without the possibility of mistake or deception. We see ourselves irresistibly compelled to believe that the disease had, in reality, the power of propagating itself directly or indirectly from the sick persons to those who were well, and through those again the means, had such existed within the sphere of its influence, of multiplying itself by its own specific contagion, as it had already done in Rector street to an indefinite extent. Had not the population of Lombardy and Cheapside-streets fled as precipitately as they did, or had the season been not so far advanced, hundreds

* Abbé de Pradt.

* [two miles distant & on the shore of the wide Hudson
here a mile & a half in breadth with a line of mountain
on its opposite bank]

might have perished. Thousands of lives too have thus been saved to the public by the timely desertion of the lower parts of the city.

It may be asked why the numerous cases of yellow fever in uninfected parts of the town, and who had either taken the disease in, or were removed sick with it from the infected district, together with the large quantities of furniture, bedding and goods brought out of this district, did not also communicate the disease. With regard to furniture, goods, and other articles, it may be observed, that it was almost exclusively taken out of those streets which the disease had not yet reached, and moreover, that it was all carried into the open suburbs of the city or to the village of Greenwich, to which last place the custom-house, post-office, banks and insurance companies, together with the great body of the merchants and tradesmen, removed as soon as it was ascertained that there was danger in remaining in the lower part of the city. So also with those persons who lived and were taken sick in the infected district. Those of them who were removed were all carried, together with their effects, either to the suburbs or to the neighbouring villages, or to some distance into the country, but very rarely or never into other parts of the city.

But Ward we see came doubly fortified with the powers of contagion. He not only contained it in his person, then labouring under yellow fever, but in the more virulent and concentrated form of fomities in his dirty clothing. Besides which he removed from Lumber-street, and had taken his disease in Rector-street, in the very heart and centre of the infected district, and where, from the great mortality which occurred in those streets, the poison must have been uncommonly virulent. I venture to say that no person was removed out of the infected district under circumstances so favourable as Ward to communicate the disease. Out of 415 cases, which was as nearly as can be ascertained, the whole

number that occurred between July 10th and November 5th, when the disease terminated, about

70 were removed to the Marine Hospital at Staten-Island,

104 were sick of yellow fever in uninfected parts of the city,

73 were removed to the country,

44 to the suburbs of the city,

16 to other parts of the infected district,

2 to the New-York Hospital,

1 to Bellevue Hospital, out of town.

Of those taken to the Marine Hospital it may be remarked, that they were removed successively at distant intervals, and but two or three at a time, and therefore never accumulated. As the wards also of this spacious building were kept in the most perfect cleanliness, and from the healthy situation of the building exposed to the sea, are more roomy and airy than are to be found in most other hospitals; and as there were also but few or no persons sick in the house of other diseases during the whole of the epidemic, there was nothing for the contagion of yellow fever to operate upon. There are but two physicians attached to it, the Health Officer and Dr. Harrison; and no person was allowed to have any communication with the sick but the three or four nurses of the establishment, who, like the physicians, had been long habituated to the care of yellow fever patients, and were therefore less liable to take the disease, especially in the diluted condition in which the poison must have existed in the airy rooms of this fine building. Their effects, of course, were not allowed to accompany them.

Out of the 104 persons sick of yellow fever in the uninfected parts of the city 65 out of this number did not reside in the infected district, but had been employed there

as labourers, or merely passed through it. These, therefore, could have brought neither dirty clothing nor any other infected articles with them. Why these, however, and the remaining thirty-nine scattered over various parts of the city, supposing some of them to have brought their bedding or clothing with them, did not communicate the disease to their physicians, nurses or attendants, or to the inhabitants living in the neighbouring houses, it is perhaps impossible to say. I will not deny, that several of these cases, from the confined situation of the apartments in which they lay and the inattention of their nurses, seemed to have been placed under circumstances particularly favourable to communicate the disease. But it must be remembered that all these were individual cases, and more or less insulated, not only by being placed in parts of the city remote from each other, but because they were in a great number of instances abandoned through fear by their relatives as well as friends, by all indeed but their physician, and some desperate fellow whom cupidity more than philanthropy tempted to do some few reluctant services to the forsaken sufferer. On the other hand, as an extraordinary exception, all the family of Ward seemed by their actions, as well as conversation, to set at defiance altogether the idea of yellow fever being a contagious disease. Hence they continued to remain at their house in Cheapside street through the thickest of the disease. The poisonous emanations from each individual, by being insulated, and therefore readily weakened by dilution with the circumambient air, were not of themselves sufficiently intense to infect the neighbourhood in which these cases occurred; but had they been concentrated into one confined spot, as were the Reders, Thomas, &c. at the foot of Rector-street, or the Wards in Cheapside-street, and the cases at Mrs. Carey's; and had the persons in the ad-

x The case cited by Humboldt must refer to persons at Vera Cruz who are natives of & recently from the table land of Mexico immediately in the rear of Vera Cruz. This table land has an average height of 7000 to 8000 feet above the level of the sea, & those who live

there are

Account of the Yellow Fever.

emphatically
northern men
in constitution,
which fact is
very year
demonstrated
by their liability
to the vomito
when they
come down
to Vera Cruz
on the sea-
shore & which
port is on
every respect
tropical in
position & on
its latitude
which is
about 19° N.
& also our
constitutions at
New York are
of northern
than those
of the Irish, &
English etc.

joining houses continued under such circumstances to remain, imprudently as they did in the vicinity of Rector-street for several weeks after these emanations were put in motion, there can be no doubt that the result would have been precisely, and in every respect, the same.

Mr. E. H. Brien, in his communication to the Transport Board, London, expresses very nearly the same opinion. He considers the disease not communicable to those contiguous, when occurring only now and then in an individual, but highly contagious when several were labouring under it, at the same time: [*Bancroft's Sequel*, p. 162.] So also Dr. Currie, of Philadelphia, says it can only become contagious when accumulated or concentrated in the atmosphere in confined unventilated situations. [*Letter to Dr. Hosack, Amer. Med. & Philos. Reg.* p. 195.]

To those whose obstinate adherence to preconceived theories will take nothing as true unless it squares precisely with their notions, this explanation will not of course be satisfactory. In return, therefore, I may be allowed to put certain interrogatories to them.

Why, for instance, does the native of the West Indies escape yellow fever, while the northern man going to the tropics, is so peculiarly obnoxious to it? And why, on the other hand, are we ourselves far less susceptible to yellow fever, when introduced here, compared with Europeans newly arrived in our country? Why, too, does the native of Vera Cruz take the yellow fever of Havana, and vice versa, though both those places are low in the tropics? [*Vid. Humboldt*, p. 771.] All these are apparent contradictions; but yet no one would deny, that as a general law of yellow fever, northern are much more predisposed to the disease than tropical constitutions. I am not therefore bound to explain why the yellow fever of the present year has not

It may furthermore be remarked (see my brochure on the yellow fever at Havana 1830) that while there cases of the vomito attacked & proved fatal in some instances, to natives of Cuba, who resided at their healthy plantations & on the cool upland or mountainous regions of the interior, but took the disease in coming down to Havana in the summer =

propagated itself to other parts of the town in the same manner it did to Cheapside and Lombardy streets, any more than I am bound to trace out on a diagram the radii of contagion, and the precise mode and direction in which the disease has been communicated, or why it was not communicated to every individual, who has been exposed to its influence. What farther proof, I repeat, do we wish after its mortality in the lower part of the town, and the law of progression which it observed, of its power of propagating and multiplying itself by the force of its own specific poison, exclusive of all other aid or medium than that of human effluvia and a certain condition of temperature and humidity, but totally independent of putrid, animal or vegetable exhalations.

But to return to the subject of the disease, as it appeared in the lower part of the city, and where alone it became, in the true sense of the word, epidemic. The board of health, having been misled by the assurances of the resident physician, unfortunately disbelieved the existence of yellow fever for nearly a *month* after it broke out in Rector street, and neglected to recommend the early abandonment of this part of the city. In consequence of which from the cases of the Reders, Thomas, Rose, Archer, and others, which occurred in quick succession, amounting in all to *thirteen* cases within the narrow compass of 180 feet, *six* of whom died, the CONTAGION rapidly multiplied and spread over all that part of the city. The mortality in the high and spacious avenue of Broadway, as much admired as the Boulevards of Paris or the Strada Toledo of Naples for its beauty, cleanliness and superb buildings by all the foreigners who come here, like the street called the New-street at Barcelona during the last year, teaches us what devastation the pestilence might have caused had not as many persons

= season. A remarkable case with all the particulars of which I became acquainted, was that of Miss *Gellows* a beautiful young lady who while I was at Havana, came from her father's plantation many miles distant, to purchase her wedding dress, & died in a few days of the vomits in the city.

deserted this part of the city as did. While at Montpellier, I^x became acquainted with Dr. Bally, who was then on his return from Barcelona to Paris. He stated his opinions very frankly, and told me that the disease which prevailed at Barcelona was the genuine yellow fever, and that the contagiousness of the disease, as well as its importation, was demonstrated by a thousand examples. Dr. Bally appeared to be very conversant with the peculiar doctrines taught in the *Medical Repository*, and was by no means sparing in his strictures on the editors of that work.

Of the physicians at Barcelona, nine-tenths he said coincided in opinion with the commissioners.

The remnant who maintained the domestic origin of the disease, attributed it to a foul sluggish sewer in one of the streets, over which the stones were so loosely placed that the putrid vapour generated there exhaled freely into the air of the street. But, unfortunately for this opinion, it was at the very mouth of this sewer, that three hundred fishermen, after the fever had first broke out at the little healthy village of Barcelonette, came to moor their barks. Not one of them took the disease, except four or five who went into the city. On the other hand, the street called the New-street, the widest and most airy and beautiful in town, suffered *most* from the pestilence.

By the earlier advocates of domestic origin, we were told that yellow fever was a disease produced by marsh miasmata, and therefore the same as the common autumnal remittents all over the world. But if vegetable miasms be the peculiar and proper source of all these diseases why does not yellow fever, which Bancroft and a few other writers call a higher grade of remittent, prevail among the boundless marshes, swamps, prairies and savannahs on the coast and in the interior of our country? Why is the

disease confined exclusively to our sea shore and sea ports ? It is indeed very extraordinary that this higher grade of remittent should have proved so mortal in the city of New-York, built on an elevated ridge of primitive rock, entirely separated by the rivers, at whose conflux it stands, from the high surrounding country, and where, with some few exceptions on the opposite side of the bay, and at the distance of several miles from the city, no marshes are to be found, and none that ever proved unhealthy.

“ It may also be remarked as an additional testimony to that stated by Dr. Stewart, on the yellow fever of Granada, (Amer. Med. & Philos. Regist. vol. 3. p. 183.) to prove that the yellow fever does not derive its origin from decomposed vegetable matter, that whenever the disease has prevailed in the United States, it has not appeared in the country where such vegetable matter is most abundant ; but has been chiefly confined to our largest cities, and those towns which are situated on the sea board ; a fact totally inexplicable upon the principle that the yellow fever is the product of vegetable putrefaction. I am fully aware the opinion has been entertained that this form of fever prevails in the interior of our country, and especially in the vicinity of the lakes ; but whoever will consult the statements furnished by physicians residing there, and who have had the best means of obtaining correct information, will find ample refutation of that opinion.” *Hosack on Contagion, Note E. p. 68.*— See the works referred to by that author, viz. Frisbre’s Sketch of the Medical Topography of the Military Tract of the State of New-York ; and Brown’s Sketch of the country watered by the Mohawk river, &c. Amer. Med. & Phil. Register, vol. 4.—Needham’s Sketch of the Medical Topography of Onondaga, state of New-York, in Barton’s

Med. & Phys. Journal, 1st supplement.—See, also, Letter of Dr. J. W. Francis, touching the opinions of Professor Ellicot, in Hosack's Observations on Medical Police, Appendix, p. 71.

One of the authorities of Bancroft, Dr. Gray, comes to the sweeping conclusion, that “the yellow fever of the West-Indies, the endemic fevers of Bengal, and of Batavia, in the East, with those on the coast of Africa, and the bilious remittent of the Mediterranean, and southern parts of Europe and America, spring from the same source, marsh miasmata, being in a more or less concentrated state, and modified by local circumstances of climate,” &c. p. 155.—But if Bancroft was well assured of this surprising analogy, and that the jungle, or bilious remittent fever, which makes such dreadful havoc in the East, was the identical yellow fever of the West-Indies, surely, in order to prove this, he does not need the accidental occurrence of some twenty deaths happening to watering parties, at two obscure and remote little islands in the Indian Ocean.—See his account of the sickness of some ships, crews at the Islands of Edam and Joannah, *ib.* p. 129. When yellow fever was at length found to be generated on ship board, in the tropics, and out of sight of land, it was said to arise from putrid bilge-water, the rotten limbers of the ship, or the vegetable and animal exhalations arising from the ballast and hold. They even pretended that these emanations resembled, in every particular, those from marshes on land, pushing this idle and unfounded hypothesis, so far as to call this combination of causes by the puerile epithet of *ship-marshes*.—[*Vid. Sequel to an Essay on Yellow Fever, by Dr. Bancroft, p. 211.*] But as if the genius of truth was determined to give her enemies

no quarters, and to expose to the world the unwarrantable means that have been employed to counterfeit her image, we now find the disease "to make assurance doubly sure," and to prove, beyond all doubt, its specific and contagious character, and how little it has to do with *terrestrial* emanations, exhibiting the same unalterable laws of propagation, not only in the lanes and streets of cities, on land, but on shipboard in fleets at sea. Under this aspect it has appeared in so new a light, that I feel confident the reader will agree with me that the important and highly interesting facts which follow, and which confirm the observations I have made, ought not to be permitted to remain in obscurity. I am indebted for this communication to Professor Griscom. It was published in the New-York Evening Post of Oct. 8, 1822.

"The following statement of the spreading of the yellow fever in the harbour of Marseilles, during the last autumn, in consequence of the arrival of infected vessels from Malaga, in Spain, is taken from the official statement of Drs. Labrie, Robert, Muraire and Girard, physicians and surgeons of the Lazaretto. Their statement was published in Marseilles, in one vol. 8vo. of 132 pages, 1822. An abstract of it is contained in the *Reveu Encyclopedique* for June last, received by the *Stephania*, arrived a few days since. This statement may serve to throw some light upon the disputed question of the communication of the disease.

"When, during the last year, the yellow fever broke out in the city of Barcelona, and extended rapidly to Tortosa, Malaga, and Mahon, the vessels lying in this port sought safety in flight, and presented themselves in crowds before Marseilles, to obtain an asylum in its outer harbour; but

several of them which had not taken this precaution, until after multiplied communications with the infected, or with other vessels which had become infected, were already tainted with the disease when they cast anchor upon the coast of France. It cannot be doubted that their arrival upon any other point of the coast, than that where the most sanitary regulation (*service sanitaire*) in Europe is organized, would have exposed the population of our southern provinces to the most imminent peril; and in any other place it would have been impossible to oppose so pressing and formidable a danger, by means sufficiently prompt and powerful to stifle the contagion.

“It is well known that the port of Marseilles has the advantage of possessing, about two leagues from the entrance of the basin, a good anchorage at the island of Pomègue, on which the Lazaretto of the city is situated, and where vessels perform their quarantine. The anchorage is large enough to guard, in common times, against the transmission of pestilence from one vessel to another, either by the atmosphere or the facility of communication, but in the first few days of September the eruption of yellow fever into Catalonia so increased the arrivals, that 34 vessels were stationed in the port of Pomègue, whose crews, with the health guards, amounted to 600 individuals, and it became impossible to station the vessels as far from each other as the danger required.

“The Danish brig *Nicolino*, captain Mold, had arrived at Malaga from Stettin in the beginning of July, and left it at the end of August, 26 days after the yellow fever had been brought from Barcelona by the Danish schooner *Gniesion*, captain Becker. In her passage from Spain, the crew was pursued by the disease which had already mani-

fested itself at Malaga, and which had induced the administration of the city to order her to the lazaretto of Mahon. Two sailors were attacked at sea—one recovered and the other died in the hold where he was abandoned, and whence his body was not taken out till two days after the arrival at ~~Porriague~~ ^{some}. The health of crews of the other ships at the anchorage had not before this suffered the least change, but almost immediately after the cruel effects of the disease became manifest. It extended to the right and left in the line of the anchorage, of which captain Mold occupied the centre, and precisely in the ratio of distance, or according to the facility of direct or indirect communication. The Austrian brig *Compte de Goes*, captain Chariotto, from St. Jean d'Acre and Cyprus, where assuredly the yellow fever has never before appeared, had ten of her crew taken down, five of whom died. She was stationed at a short distance from the *Nicolino*. The Sardinian brig *Saint George* had four men attacked, who all died. An English vessel from the Ionian Islands had three of her crew affected, who eventually recovered. The *Catharine*, captain Simon, the fourth vessel in the line, had four of her men seized with the fever, one of whom died. She left Malaga the 19th of August, three or four days before the fever appeared there; and 35 days had elapsed from the time of her arrival on the 5th of October of another Danish ship which left Malaga on the 19th of September. On her arrival in the road only two of her crew were able to do duty, the rest being either dead or dying. She was repelled from her anchorage, and went ashore at Leon, opposite to the *Saint de Maroc*, where the rights of humanity were bestowed upon her by the health intendant of Marseilles. We have thought it our duty to report these facts, because they are of great importance, and

x The ~~factoprove~~ writer comes to these conclusions:

but little known. They are proved entirely by official documents drawn up by the most respectable authorities, and have the guarantee of four physicians who had been long in the habit of observing contagious diseases.

1. That these facts prove the yellow fever imported from Malaga to Marseilles.

2. That it was communicated to the anchorage of *Pomegue* ~~Por-~~rique, from one vessel to many others.

3. That of 34 individuals who were seized on the coast of France, 25 were attended by physicians of the lazaretto.

4. That of this number 15 escaped death, and 10 died.

5. That the disease was not propagated in those places where the sick were subjected to the sanitary measures of quarantine, which the administration of the lazaretto of Marseilles have employed for a century past with success against the plague of the East.

6. That on the contrary, the disease was transmitted when persons were attacked with it in a vessel which anchored in the port, at a short distance from others, and this transmission was in direct proportion to the proximity of the vessels, and inversely as the distance opposed the communication.

7. To show the importance of these facts it is necessary to observe,

1st. That this is the first time since the prevalence of yellow fever in Rochefort in 1694, that this contagion has shown itself on our coast under so threatening an aspect, and caused the death of so considerable a number of persons.

2d. That its appearance in the port of a city, whose population exceeds 100,000, was much more to be deprecated than in the Antilles, in the United States, and in the South of Spain, where the inhabitants of no city are so numerous or compact.

3d. That since the lessons of the past ought to enlighten the future, it is important to be made acquainted with events which fate may reproduce, but which a wise foresight may again disarm of their terrors, by guarding by a rigid quarantine against the introduction of the pestilence."

Finally, yellow fever was found to attack, sometimes dry, elevated, and sandy situations, devastating cities like Cadiz and Gibraltar, built on solid and high precipices of limestone—even villages on the tops of dry and barren cliffs, and far remote from woods and stagnant pools; sometimes selecting, as we have seen, wide and beautiful streets, remarkable for their cleanliness, and occupied by spacious dwellings of brick or stone, while low, dirty and narrow streets of wooden houses, inhabited by a depraved population, entirely escaped.

"Is it conceivable (says Sir Gilbert Blane,) that a disease totally different from any till then known in the memory of man, by tradition or history, should in the course of seventy years, as at Cadiz, make its appearance six times at unequal intervals, and in no other spot in Europe, except once at Malaga, unless from a foreign cause? Is it conceivable," continues this eloquent writer, "that during the hundred years that Gibraltar had been in possession of the English, that is from the year 1704, when this fortress was taken by the army under the command of the Prince of Hesse, to the year 1804; in which this pestilential fever for the first time broke out, this disease should never once have showed itself, if it depended on causes at all times existing and present."*

Hear also the Spanish Physicians: "And if (say they) these causes of the yellow fever at Cadiz were not, in fact re-

* Elements of Medical Logic, p. 150.

cent and exotic, how could Cadiz have been, during so many ages, the emporium of the commerce of Europe and the point of assemblage of the greatest squadrons? The formidable expeditions fitted out against Algiers, Mahon, Colonia del Sacramento, Gibraltar, Jamaica, &c. what destruction would they have not suffered in the port, if such a fever had been endemic within its precincts? Can it be, that the influence or causes, to which it is pretended to attribute the origin of the fever which have been inactive during so many ages at Cadiz, should happen to develop themselves at the precise moment when the most evident proofs of its importation appeared? And can this phenomenon, so wonderful at Cadiz, have by another singular combination of circumstances, occurred also at Barcelona, Malaga, Leghorn, Pomegue, Majorca, Canaries, &c.? It would do much violence to credulity to assert such arbitrary suppositions; this single reflection would have determined the society to answer by a simple negative, if the importance that has been attached to the arguments on the other side, did not oblige it to treat this subject somewhat more at length.

Espejo, Ronda, Ubrique, Espera Jumilla, Arcos la Rambla, situated upon dry and elevated grounds without woods, marshes or lakes, to infect the atmosphere, nor obstacles to impede its current, of very small population, whose manners are simple and employments rural, were attacked by the contagion, which was propagated among their inhabitants. Veger, Tarifa, Chipiona, Conil, towns, some upon the very shore, and others surrounded by marshes and lakes, producing the intermittents of the country, have never suffered the disease, although surrounded by infected places.

Arcos is nine leagues to the N. E. of Cadiz, upon a very high cliff, among hills and fruitful places, abounding with trees and plants, and is very healthy; it experienced yellow fever in 1800 and 1804.

Tarifa, is in a hollow between two mountains, on the sea shore, fifteen leagues east of Cadiz, upon a low miry soil; the fever has never been communicated to its inhabitants, even where some persons have come with it from abroad. Chipiona is to the north of Cadiz, on the coast between Rota and San Lucas de Barrameda, from north to east, it is filled with vines and groves of pines; it has some small lakes near it; its atmosphere is clear and well ventilated; its inhabitants have always continued healthy, even at the time when all the neighbouring towns were infected.

Conil, at seven leagues east of Cadiz, a town whose wharves fill it in the spring of the year with considerable quantities of putrid fish, has always continued in the best health.

Medina Sidonia, eight leagues east of Cadiz, upon an elevated mountain; within its bounds, are some small lakes that produce light intermittents in such as work in their neighbourhood; the fever was not communicated to its inhabitants in the year 1800; but in 1801, when the towns were enjoying good health.

Los Barrios. The town is eighteen leagues east of Cadiz; half a league from the coast, in a plain surrounded by marshy lands, and adjoining the river Palmones, autumnal intermittents are experienced by its inhabitants, the yellow fever was not known until the year 1804.

San Roque, is eighteen leagues east of Cadiz; and half a league from the coast, on a height of considerable elevation; its soil is dry and very salubrious; it has experienced the yellow fever only in the year 1804.

Jimena is fifteen leagues east of Cadiz, and thirteen from the coast of the Mediterranean, on ground elevated about 100 yards above the level of the sea; it had the fever in the year 1804.

If follows from what has been stated, that neither the

Dr. Mo. B. Beck (now Professor of Health) was sent by the then
 Res^t. Thynne of New York & myself to Health Commissioner, to
 report to our board of Health, on the cases of yellow fever
 which had broke out at Middletown; & which disease
 was introduced there by & traced to the big Sea Island
 from the West Indies - ⁷⁸ *Account of the Yellow Fever* - it is well worth while to compare it honestly =

height or lowness of the ground, nor lakes, marshes nor
 shores have had the influence that some persons suppose to
 produce or prevent the yellow fever in the towns, and that
 it has depended more upon the greater or less degree of
 intercourse that they have respectively had with the infected
 places, and upon the prosecution or abandonment of mea-
 sures of precaution with respect to persons coming from
 them. Rota and Port St. Mary prove this, whose indis-
 pensable trade with Cadiz has caused them to suffer the
 same epidemic with that city."*

In addition to this overwhelming testimony of the Spanish
 Physicians, we subjoin an extract from Dr. Beck's Report,
 on the yellow fever of Middletown, in 1820.

State of
 Connecticut

"The next four cases were those at the Upper Houses.
 The occurrence of these cases at this place is so very sin-
 gular, that it will be necessary to speak particularly of their
 locality, and of the circumstances attending them. They
 all took place in a cotton factory about four miles from the
 centre of the city, situated in a pleasant valley, and without
 any houses in the immediate neighbourhood. The distance
 between this and the river is perhaps about half a mile.
 Dr Tully accompanied me to this place, and on visiting
 the factory we found nothing that was in the least offensive.
 From its situation, too, one would suppose that it must en-
 joy a constant and free circulation of air. It may be deem-
 ed by some of consequence to state, that the factory had
 been closed for some time, and that they commenced work-
 ing in it only a short time before. There were at that time
 7 girls and 3 men employed in it. Such were the circum-
 stances at the factory, when John Wild, one of the men, was
 taken sick. This was the 7th case.

* Report of the Medical Society of Cadiz, to the Spanish Govern-
 ment, 1822, published in the 3d. vol. of the Medico-Chirurgical
 Journal of Cadiz, and translated for the Evening Post.

Worack's office, & when he wrote this plain unvarnished account, in
the bitter & vindictive abuse he afterwards (on account of an antipathy
to Dr. Worack from a sense of remorse I believe for his (B's) persecutions
of B.H.) heaped on all who advocated the contagion & importation of yellow
fever. Dr. Beck was one of the most active in the war against his own precept
B.H. & almost mortal Account of the Yellow Fever. A College 79 of Ship's & Surg's &
until by the party influence his friends at Albany had with the Regents of the

"7. John Wild, taken sick on the 19th of June, and died
on the 25th. He had redness and wildness of the eye—yel-
low skin—vomited a dark matter, and on the last day
brought up some blood. On inquiring of the superintendant
of the factory where Wild had been previously to his attack,
we found, that two days before, he had been on board of a
vessel from the West-Indies, called the brig Defiance, of
Middletown, and then lying alongside a wharf about two
miles below the factory. This brig had arrived here the
15th of June, and sailed again on the 19th. While in the
West-Indies, one of her men was sick with yellow fever. She
went up the Oronoko, and brought home a cargo of hides,
tallow, molasses, &c. The vessel is said to have been clean
—between her and the shore there was a constant inter-
course—numbers of people went daily aboard of her. I can-
not learn that Wild was aboard of the brig Sea-Island,
though at the time he was taken sick she lay opposite the
factory, where she had grounded. It was while she lay
here that Harrington was taken from her and carried down
to Middletown.

"8. Abigail Treat, a girl employed at the factory, taken
sick on the 21st of June, two days after Wild was attacked,
and with the same symptoms; red eyes—great distress
about the præcordia, together with irritability of the sto-
mach; brought up the same kind of matter. She had been
at the factory for one month. She recovered; the fever
coming to a crisis on the seventh day.

"9. Rhoda Clark, another of the girls working at the fac-
tory, where she had been only three days, was taken sick on
the 23d of June. She was immediately removed to her fa-
ther's, about a mile and a half south of Middletown, where
Dr. Tully attended her. She had the red and muddy eye
—great præcordial distress—coma, and decided black vomit.
She died on the 27th.

University of the
State, he succeeded
in his homicidal
& schemes—to wit
to drive Dr. Day
Worack, & most
of our & get
in their lives a
Dropsical—
Since which
this college
has been a
miserable
rickety &
disgraceful
concern of
drowsy
professors (all
appointed by
party favor)
& empty benches
That a motto
to day has
500 pupils
& Beck's 100
Just reward
of baseness
& ingratitude
P.S.

"10. Catherine Hubbard, another girl at the factory, where she had been one week, was taken sick at the same time with Rhoda Clark. Symptoms very similar to those of Abigail Treat. She recovered.

"It does not appear that any of the three girls who were sick at the factory had been on board of any vessel. On the Sunday previous, some of them had been down to Middletown, but at this time the Sea-Island lay four and a half miles above that place.

"During Wild's sickness, the superintendant informed us, that the girls occasionally went in to see him, and that they slept in an adjoining room, with only a wooden partition between them. Only one circumstance more concerning the factory is worth noticing, and this is, that a state of invariable general health has always prevailed about that place."*

Surrounded thus on all sides, and driven to the last extremity, the shifts and subterfuges of which the advocates of domestic origin had heretofore availed themselves, being exploded were abandoned in despair; leaving us, so far as regards the promises which they had held out to us of clearing up this matter, absolutely more in the dark than ever, except with the advantage of knowing that the immense mass of error and rubbish under which the truth has been so long hidden, and which has served so much to encumber the march of our discoveries, has now been removed out of the way.

The reviewers in the London Quarterly Journal of Foreign Medicine and Surgery, (a very useful work) though avowedly the advocates of domestic origin seem to have been aware of the necessity of relinquishing the old ground of this controversy as utterly untenable. They have veered entirely round, and now propose that the domestic production of yellow fever be attributed to the *richer constituents*

* New York Medical and Physical Journal, No. 2.

of clay and absorbent soils eliminated in the state of gas, and associated with aqueous vapour by the direct rays of the sun! "This source of yellow fever we had obtruded on us, by observing that the most malignant type of this disease [on the coast of Africa] took place in situations where those deep and rich soils most abounded, and where they had been inundated during the rainy seasons." It was observed to be still more malignant after the rains, and during the dry season when the earth was cracked into deep fissures. [See their review of M. Devèze's work on yellow fever. Vol. III. p. 101.] Dr. Shecut, of Charleston, has made still greater concessions, and having abandoned both the earth and the sea, thinks he has discovered the source of yellow fever in a *specific gaseous poison*, caused by an insufficient quantity of electric fluid in the air. [See his *Med. & Philos. Essays*. p. 92, *et seq.*] We are not prepared to accede to this assertion without farther proof, although it must be confessed, that if the facts stated by Dr. Shecut are true, the condition of the atmosphere, which he speaks of, appears to have favoured the *propagation* of the disease. He says the years in which yellow fever has prevailed most at Charleston, viz. 1732—39—45—48—have been either excessively hot and dry, or excessively hot and moist, and *always* attended with but little thunder and lightning. (p. 97.) But he afterwards states some exceptions. (p. 105.)

After endeavouring to show that yellow fever depended upon this or that extraneous cause, and exhausting the whole catalogue of chemistry and meteorology, to find some substance with which to associate it, it has been at last found, that in the eagerness of the chase we have overreached ourselves, and been more prodigal of our conjectures than close in our investigations. The farther we have pushed this inquiry, the more do we find ourselves

compelled to admit that yellow fever is the product of a specific poison governed by its own laws, and capable of propagating and multiplying itself by contagion in an atmosphere of a certain temperature, especially when accompanied with humidity, and rendered impure by human effluvia, but often totally independent of soil or situation. The more it multiplies in any given spot, the more contagious it becomes, and the less dependent on human effluvia. Hence, by the increase of the sick, the whole atmosphere, to a certain extent, becomes charged as it were with the poison, and thus itself the source *apparently* of the disease; so much so, that those who come out of a different atmosphere, and are immersed in any part of this, are almost sure of taking yellow fever, though the infected part of the town may have, for some time before, been entirely abandoned both by the sick and the well. In proportion to the number of sick, and the circumscribed limits which they occupy, facilitated, no doubt, also, in its progress by certain states of the air, and certain degrees of temperature and humidity, will be the danger of the poison spreading.

That yellow fever does usually prove most fatal in the place where it first appears, is a fact that no one will deny. The reason is obvious and familiar to every one. Because, when the first cases happen, the inhabitants in the vicinity, not being willing to abandon their homes before they are well assured of the existence of the disease, have generally delayed too long a time within the reach of its influence. Thus it happens, that the contagious poison, having had full time to propagate itself to the immediate neighbourhood, has become accumulated to so great an amount, that no human means can stay its march. The spark being once kindled, it is too late to extinguish the

flames. This, however, is not always true, for on many occasions, yellow fever, like other contagious diseases, has proved equally fatal in those places to which it had afterwards become propagated as in that particular neighbourhood into which it was first introduced. The inference of Bancroft, therefore, that yellow fever is not contagious from this circumstance, is unfounded. [*Vide his Sequel to an Essay on Yellow Fever, p. 125.*]

The disease, after being introduced, has always multiplied itself *cæteribus paribus* in a direct ratio to the number of individuals exposed to its influence, and the circumscribed space which they occupied. The fever of the present year was equally as virulent, and more so in several parts of the town, and in several houses, far removed from the place where it first made its appearance. Thus it began on the two corners of Rector-street in Washington-street, on the dock, and the mortality in Rector-street between that point and Greenwich-street, which is only 183 feet distant, was exceedingly great. But when, as we have seen, it had reached Lumber-street, on its ascent up the hill of Rector-street to Broadway, and which was not until one month after it broke out, its mortality was observed to be greater than at any other time. Again; several weeks after this period, and at the distance of several hundred yards from the foot of Rector-street, it became alarmingly fatal in the wide avenue called Broadway, and about that part of the city at the intersection of Wall, New, and Broad streets, of which streets Broad and Broadway are remarkable for their width and salubrity. So, also, did it cause much sickness in a house at No. 164 Broadway, still farther off, where Mr. Dover lived, and who took the disease and died; having refused to remove from a persuasion that this spacious street would, as it had

maintain

enjoyed,

in every previous year, ~~enjoy~~ an immunity from the disease. So, also, on the opposite side of the town, at Nos. 48 and 50 Pearl-street, and near the intersection of Depeyster and Front streets. But at the sugar house in Liberty-street, which is nearly as remote as those from the foot of Rector-street, the disease proved so, uncommonly mortal, that it became the subject of a general remark. We shall explain the reason of this in another place. And, lastly, at the distance of nearly two miles from the foot of Rector-street, and not until the beginning of September, the disease was introduced into Cheapside and Lombardy streets; in which streets, but only in that short section of them comprised between Market and Catharine streets, it proved nearly as mortal as in any street in the lower part of the city.

Does not the gradual and regular progression of the disease, and this power which it possessed of multiplying itself at different points in the course of its march, as circumstances happened to favour its propagation, prove most conclusively its contagious character?

What need have we to collect individual facts to prove the contagiousness of Yellow Fever, when the general history of its progress, from its introduction into the city, to its extermination by frost, constitutes of itself one entire mass of overwhelming evidence in confirmation of this truth?

To those who marvel at the disease having been transferred to, and propagated through, Cheapside and Lombardy streets, from the clothing and person of Ward and the effects of Carey, I might put in return the question why, in its regular march towards the north, in the old infected district, it seemed to have been suddenly arrested at Fulton-street. For, although the open space at the Park may, perhaps, account for its not proceeding any higher

up Broadway, no reason can be given, on the doctrine of domestic origin, why it should not have crossed Fulton-street, and continued on its course on the west and east sides of the town. But allowing that the current of fresh air passing through Fulton-street, as it is the first street in advancing from the Battery north, that gives full sweep to the breeze from river to river; allowing that this free draught and ventilation cut off to a degree the communication between the infected district and the upper part of the city, it is scarcely credible that it should have put an effectual check to it. For the almost mathematical precision with which it diverged, and slowly crept along, as it were, in every direction from the point where it sat out, spreading wherever it found subjects to operate upon, proves that up to the time it had reached Fulton-street, it could have been but little influenced either by the winds and rains with which the city was several times visited, or by the height, width, declivities or windings of the streets. This measured gait of the disease does not correspond with the irregular and undefinable march of an epidemic produced from general causes existing in the soil or atmosphere, breaking out simultaneously in places remote from each other, and levelling, as it were at one blow, whole populations at once. On the contrary, this disease slowly and methodically enlarged its boundaries, and regardless of promenades or burying grounds, cist-pools or sewers, clean or dirty streets, pursued its retreating victims in every direction, wherever they tarried long enough to come within the range of its deadly influence. The advocates of domestic origin will find themselves puzzled to reconcile, or even to enumerate the endless variety of contradictory and dissimilar circumstances which they will be obliged to encounter in following up the progress of this disease.

Why, then, I again ask, if the air had become all infected, and that the cause according to the theory of domestic origin, existed from the beginning, and constantly afterwards in the air itself, dispersed promiscuously over all the lower part of the city, without being at all modified, or rendered in the least degree more deleterious by the disease which it produced, why did it not extend beyond Fulton-street, to the other streets which are immediately above Fulton-street; and which, though principally deserted before the disease had reached Fulton-street, continued to be inhabited by a far greater number of persons collectively, than could be found in all the streets together of the lower part of the town, south of Fulton-street? This exemption is certainly no less extraordinary than the introduction of the disease into Cheapside-street at so great a distance from what had been denominated the infected district.

We will now see that this difficulty entirely vanishes when we come to examine it on the principles of contagion. The poison had at first accumulated in prodigious quantities in the immediate vicinity of Rector-street and Lumber-street, owing to the narrowness of those streets, and from the inhabitants having neglected to move out in time; but seeing at last that the only security was in flight, the panic extended so far into the city, that the streets became entirely deserted up as far as Fulton-street, as early as Sept. 1st, and before the disease had actually reached there. In consequence of which, the quantum of poison necessarily diminished from the want of subjects to operate upon, and though more and more diffused, became of consequence, less and less intense, so that the few scattered individuals who afterwards fell sick on the confines of the infected district, below Fulton-street, had not the power of communicating

the disease to those who continued immediately above it, and who were placed without the radius of contagion.

I consider the doctrine of *importation* and *contagion* to be one and the same thing. If we admit that this disease may be imported, it follows conclusively, that it is contagious. Thus if it be true, that Yellow Fever may be brought here in a vessel from the West-Indies, it is no more unreasonable to suppose that it may be brought from Rector-street to Cheapside-street, or to any other part of the town. It was not until after a long struggle that the advocates of domestic origin have been driven to the necessity of acknowledging that yellow fever is in every respect a peculiar and specific disease, totally, and altogether different from Typhus, Plague, or Remittent, Intermittent, and Bilous Fevers, as much so as Hydrocephalus differs from Small Pox. But they do not know how valuable a concession they are making to their opponents when they grant that the disease may be imported. It is a subject of congratulation, however, that this opinion is daily gaining ground, showing that the simple and unsophisticated truth, though its march be slow and gradual, must in the end, triumph over all opposition.

To give the appearance of a spirit of reconciliation, or to ingratiate themselves in the eyes of the people, many have affected to declare that the doctrine of importation does not militate against that of domestic origin, and that both may be true. This is not only unphilosophically calling to our assistance a redundancy of causes, but when we come to examine this double-faced creed, which professes to harmonize all disputes and differences, we shall see that it is a gross imposture, purposely intended to mislead the public into a snare. For we find in pursuing the investigation, that such as maintain this opinion,

are in fact advocates of domestic origin in disguise. Thus, say they, if a vessel possesses in itself those causes, or that combination of circumstances, which under the influence of a tropical heat, will generate yellow fever here, these causes may also in the hot season of our climate produce the same disease, while the vessel lies at our wharves. This however, is no more than the identical doctrine of domestic origin, transferred from the land to the water.

The advocates of this theory saw, though they were unwilling to confess, that the occurrence of yellow fever in the United States is some how or other always intimately connected with the shipping and tide water. They felt themselves obliged to admit, what is now, with some few solitary exceptions, conceded, on all hands that this disease, unaccountable as it may seem, is invariably confined to maritime situations. They have therefore consented, at last, to transfer the dispute from the marshes of the interior to the sea-board, and finally to the decks of the ship. I am afraid, however, that the field of controversy will be found too contracted for the broad and sweeping mode of warfare which they are in the habit of resorting to. If it were true, that the disease is not *contagious*, and was this year generated in shipping at the wharf, I would ask how it came to break out only at that particular spot, where West-India produce happened at the time to be arriving in unusual quantities, and how it came to be propagated slowly and regularly from thence up to Broadway, and finally over all the lower part of the city. After affecting Thomas and the Reders, or others who were directly exposed to its influence, and within the radius of this supposed local cause, it ought, if this opinion were true, to have proceeded no farther. For, having no means of increasing its amount but to a very limited extent, and the disease produced by it being, accord-

ing to this opinion, not contagious, and therefore not capable of multiplying itself in this way, why did it increase in a slow and regular ratio from the first cases, and afterwards, long after all the shipping had been entirely removed, spread into the interior of the city? It ought to have been confined to the streets along the wharf, and to have extended up and down Washington-street, not directly *back*, and from one single point only of the wharf, *up the hill* of Rector-street, *into* the town. The merchants with their clerks remained in their counting houses on the wharf of Washington-street, close to the termination of Rector-street, employed in their business as usual for some days after the first cases occurred. The same may be said of the seamen in the shipping, and the cartmen and various labourers, and other persons in their different vocations about the docks. If the disease was generated on the spot, from the foul holds of the shipping which continued to lie there, why did it not attack and simultaneously also, those who must have been every moment then, as well as long before, directly exposed to the influence of the cause which, according to this opinion, produced it, and who were, therefore, imbued with and breathing in large portions of the infected air. On the contrary, many of these very persons were in the habit of going down to the wharf in the vicinity of Rector-street before, and for days, for a fortnight indeed, after the Reders and other first cases sickened, while the shipping all still lay there—but *after* the lighters had gone, and *their cargoes had been stored*, did not fall sick, and when they did it was not until some time afterwards, and when the fever had regularly progressed up into the interior of the city, and attacked them in their own dwellings! So also did persons who, out of curiosity, or from necessity, went down to this part of the town months after the shipping had been entirely removed

away, and when the winds ought to have completely dispersed the air which they had poisoned take the disease and die.

Bancroft has been one of the first to advocate this new doctrine. He contends that yellow fever, which has so frequently occurred in New-York, and other northern seaports of the United States during the hot season, was generated [*Sequel to his Essay on Yellow Fever*, p. 213.] from the foul condition of the holds of vessels lying at our wharves, from bilge water, unclean limbers, putrid vegetable and animal exhalations. But it is, on the contrary, notoriously true, that out of some hundreds of vessels, always lying at our wharves, the disease is always directly traceable, not to several ships, not to a number of ships, coming from this or that part of the world indiscriminately, but almost always to some one or two vessels, and they perhaps in a perfectly clean condition, but always recently arrived from a West-India port, where the yellow fever had prevailed. Is it not incredible and preposterous to suppose that such could be the fact if the foul state of the holds of ships lying at our wharves in hot weather could generate yellow fever? If it were true also that this latitude, during the hot weather could thus generate yellow fever, then ought vessels arriving here in the summer, from the Baltic, from England, France, and from the colder latitudes of Europe, to be affected in precisely the same way as they are known to be on going into the tropics. The exhalations from their holds ought to become alike offensive and deleterious, and generate yellow fever in the bay of New-York in the same manner as in the harbour of Havanna—which is absurd.

“During the years in which our commerce with the West-Indies was interdicted by the embargo, and during the

subsequent years of wars with Great Britain, when our communication with her possessions in those climates and countries, the usual seat of fevers of this description, was altogether suspended, the cities and towns along the whole of our seaboard were totally exempt from the fever of the tropics.

“A recurrence, too, to the meteorological observations of that period will show a thermometrical range frequently higher than in those years when the yellow fever prevailed in our cities; the rain too fell as in ordinary seasons. and, judging from the prevalent diseases, a general constitution of atmosphere favourable to the generation of this malignant form of fever, if domestic causes could engender it, pervaded our country as heretofore; the local circumstances of our seaports were the same, nay worse, for they were crowded with shipping; the new made ground remained unchanged in its condition; the same offensive vapours arose from our slips, our market places, our privies, and from the soil where the latter did not exist—yet, unfortunately for the doctrine of the believers and supporters of the domestic origin of yellow fever, the health of our cities remained undisturbed by the deadly visitor.”*

But the most conclusive refutation of this opinion of Bancroft and others, that I have any where seen on record, is that which is contained in the unanswerable letter of Dr. Joseph Bayley, and which cannot be too often quoted.

*Communication from DR. JOSEPH BAYLEY, Health Officer
for the Port of New-York.*

NEW-YORK November 10, 1820.

DEAR SIR,—At your request, I am induced to give you a concise statement of some observations which are founded on facts, as noticed by me at the Quarantine establishment,

* Hosack on Medical Police.

[I have found as you will see in my work on the subject of the
Yellow Fever 1830 that most of these suggestions are founded in truth.
Dr Bayley did not however go far enough as to the holds of vessels,
& the particular reasons (apart from all large mounds, &c.) that
infectious effluvia should concentrate there. This I shall explain
in a future work.]

of this port, relative to the influence which the apparently foul or clean condition of vessels has on the health of their crews; which occurrences were recently mentioned to you, when we were conversing on this subject. I have known many vessels to arrive here, from ports where yellow fever prevailed, that were free from any unusually offensive smell, and their cargoes in a sound state; also vessels in stone ballast, from ports similarly circumstanced, which were infected with the same contaminated air that existed at the place they sailed from, without its appearing to proceed from any foul materials generating it on board such vessels that could be detected by the senses. The evidence of such infection was not only manifested by the crews and passengers having died on board after leaving port (which, in many cases, would properly be ascribed to their being infected before they sailed,) but even after such crews had apparently resisted the malignant influence of such infected port, they have sickened and died of yellow fever after they began to discharge the cargoes, which were in good condition. May not such occurrences arise either from the infected air, which was confined in the hold, becoming more virulent by its being shut up? or may not the crews be rendered more susceptible of infection, after they have breathed the pure atmosphere of the ocean? or from the combined influence of both causes acting at the same time? It may not be irrelevant to remark, that these seamen are very slightly, and, but for a short time, exposed to the confined air below the decks (until they begin to discharge the cargoes) which in some degree affects the fore-castle, the usual place of their residence; for they commonly prefer sleeping on deck, in the summer season, to occupying that place.

But still stronger cases have been remarked by me, which

* There is no doubt that in all such cases which would be improving the West India atmosphere itself to shut up in the hold. There has been an infection by every organic germ of yell^l fever previously imported to that confined air by some person such with the disease in the clothes, bedding &c. of some such person so sick of yell^l fever.

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do not admit of the same objections as may be offered to the before mentioned facts: it is where the crews of vessels who were accustomed to make West India voyages, have arrived here from sickly ports without any interruption to their health during the voyage, or the continuance of their quarantine; while other persons employed on board with them to discharge the cargoes, have died of yellow fever, although the cargoes were in a sound state, and the vessels free from any unusual impurities. This fact certainly proves the presence of a deleterious air, that does not appear to arise from any evident cause originally in the vessels or their cargoes, but infection derived from the unhealthy port from whence they sailed, received into such vessels, and contaminating both them and the cargoes. It may be said these are only negative proofs—that the yellow fever is not generated on board by a decomposition of animal and vegetable substances—and, although not cognizable by the senses, that such decomposition is nevertheless constantly in operation. *

I now ask your attention to the following observations, which may be adduced as the converse of the above stated facts, where, in many cases, animal and vegetable decomposition had taken place on board vessels from southern latitudes, yet no yellow or any other fever ensued from such causes. I have known extremely foul vessels, coming from healthy places in the West Indies, and other southern ports, at the same season of the year as those above mentioned, some of which passing through the tropics, with damaged cargoes of jerked beef in bulk, hides, coffee, and cotton, without the health of the crews being impaired; and, I add, that other persons employed to assist in discharging and receiving these cargoes, have performed such service with impunity. In these cases there were animal and vegetable

* (All this recals to mind your remarks on the unacidity which the emanations in the dissecting room have for silk textures &c. Also the soundness of your advice to dampen fumes by dry heat, for you then are sure to render the infection innocuous by extreme volatilization. The astonishing affinity for gases for porous textures will unravel much. [See Liebig on burnt platinum &c.]

decomposition accelerated by heat and moisture, yet no yellow or malignant fever ensued. Whether these causes of disease had not been long enough operating to produce their effects, or how long a time is essentially necessary for such perishable materials to be acting on each other, before a sufficiently deleterious air is evolved to cause pestilential fever, I am ignorant: but I have often noticed that these vessels, loaded with jerked beef and hides, which were partly damaged, had these articles long enough on board to taint the timbers and planks (those of the ceiling particularly) of the hold, to so great a degree, that after such vessels had been well scrubbed with water and ventilated, as to remove for the time the extremely offensive smell existing in them, it has, after the application of whitewash to the planks, been reproduced to a much greater degree than it was at first; and upon the second cleansing with lime, made a few days after, when the foul air was very much lessened, the putrid effluvia was again renewed; which same phenomenon was repeated in a diminished degree after each whitewashing, until the vessels were purified. This obviously is the result of the chemical action of lime on putrid matter adhering to the timbers and planks, which would not have been so extricated, and thereby rendered evident, without some such agency. May we not hence with propriety infer, that contaminated air producing infectious fevers, attaches itself to the timbers and planks of vessels, although we are not acquainted with the manner in which it can be rendered apparent, and discover itself only from its effects on the human constitution? It is on such facts and observations that the provisions of our health law, relating to the external means of preventing the introduction of infectious fevers, is founded;—and I am persuaded that every unprejudiced person, who will deliberately reflect

*(See p 28 above) - but not in Richard Bailey who was the first
Health officer at New York in 1799 when the quarantine was first
established regularly. & R B. was mule-headed & ignorant. He like
others then took all Rush said for law & gospel. This R Bailey
insisted fool-like that the mud of our docks generated the yellow fever*
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on them, will concur with me in opinion. that they are better adapted to guard against the introduction of infectious diseases, than that system which totally overlooks the very obvious distinction which arises between vessels arriving from healthy or from sickly ports, and that does not regard the difference of the condition of those vessels coming from cold and northern climates, or from warm and southern ones; but confounds them all together, and places an exclusive reliance upon the removal of those impurities that are discoverable by the senses alone.*

Yours, with great respect and regard,
JOSEPH BAYLEY.

DR. DAVID HOSACK,
Resident Physician.

We thus see to what absurd conclusions we arrive, when we attempt to explain the origin of this disease, on the hypothesis of domestic origin. All these incongruities, however, vanish when we call to our assistance the plain obvious and more simple and natural process, which the laws of contagion place at our disposal. Thus, after the contagious poison of yellow fever brought by the lighters had first affected Thomas and the Reders, they in their turn communicated the same disease to others, in the houses immediately opposite; and thus it went on, day after day, from house to house, multiplying itself more and more, and charging the air with an amount of contagious matter in a direct ratio to the number of persons who fell sick, until the total desertion of all that part of the city had lessened the quantity of poison; and the gradual approach of cool weather, at the same time, depriving the air already freed of human effluvia, both of moisture and heat, rendered it a difficult medium of transmission. Hence the number of cases necessarily

* Hosack on Medical Police.

diminished, until the frost, by congealing the humidity existing in the air, precipitated the materials with which the poison had been associated, and the medium by which it had been propagated.

It is expressly admitted by the advocates of domestic origin, that typhus is contagious, and that it is soon dissipated by the heat when introduced into tropical latitudes. (Vide Bancroft's Sequel to his Essay on Yellow Fever, p. 233-40.) It follows that it becomes more readily epidemical in a temperate or mild latitude. Why could they not see the propriety of applying the same law to yellow fever? All are willing to allow that a certain range of temperature must pre-exist before yellow fever can become epidemical. It follows, therefore, that a *certain range of latitude* must have the same effect; and we ought not to wonder, that although yellow fever may be the product of the concurrence of a tropical heat with a northern constitution, it does not become so frequently epidemical, except in the mild temperature of the south of Europe, and of the United States. The elements which contribute to the production of yellow fever may differ widely, in their character and properties, from the laws which characterize the disease itself. Writers in comparing the summers of temperate latitudes with the climate of the tropics, are led into a misconception, which will explain, to a great degree, the fallacious conclusion which they are apt to form concerning the origin of yellow fever. As this disease has, sometimes intentionally, perhaps, been confounded with fevers of a remittent, intermittent and bilious character, or such as prevail in autumn in marshy and inland situations, so, also, has it been said, that the climate of the temperate zone, because its summer is characterized, for several months, by a high range of temperature, is, in fact, in every sense of the

word, a tropical climate. This *syllogistic* mode of reasoning has been resorted to, in order to prove, that an identity of meteorological causes must therefore exist, and consequently an identity of those effects which are to be ascribed to such causes. In fine, the ~~effect~~ was to show that yellow fever may be the product of this temperate zone as well as of the tropics. But the condition of the atmosphere of our climate is totally overlooked for three fourths of the year. We forget our long cold and inclement winter, and the storms and sleets, and damps, of an inhospitable spring. Why does not the same reasoning apply throughout? Without entering into a minute examination of the different effects which our varied climate may cause in the moral as well the physical character of the inhabitants, I would merely ask why, if it be the same as the climate of the West-Indies, are not also our animal and vegetable productions the same? While yellow fever is shedding its deadly poison over our cities, we ought to see at the same time, the orange, the ~~olive~~ and the pine apple, blooming through all the year in our gardens and fields. This doctrine, however, would overturn the laws of philosophy, and bring together the most discordant elements and natures. But when we confine the analogy to its proper limits it becomes more reasonable. We may say, perhaps, in figurative language, that we have a tropical summer, but can it be denied, that the peculiarities of our climate and soil guaranty to us a northern constitution. Can it be said, that great as the heat sometimes is during our short summers, it has ever moulded our organization into that particular state or condition which is known under the appropriate term of acclimation, and which every individual acquires who emigrates to the tropics? We have therefore that particular form of organization best suited to the latitude in

*object**lemon*

de novo

which we live, but most obnoxious to those morbid causes which are peculiar to a tropical climate. As the two elements, therefore, essential to the origin and production of the disease, are remotely separated from each other, and cannot by any human art be made to co-exist naturally, so neither can we with any reason look for the generation of the disease in temperate latitudes. It is different with the *contagion* of the disease. This is a law, or property of the disease itself, and does not necessarily have any connection whatever with that particular combination of circumstances, which must precede the production of the disorder. But, on the contrary, seeing that our constitutions are by our distance from the equator, particularly predisposed to receive the fatal poison, which has been generated in the tropics, is it strange, that we should become so susceptible to the disease? Supposing the heat to have nothing to do with the propagation of the complaint, one would say, a priori, that this peculiar predisposition was almost of itself, sufficient to render the disease epidemic even in winter. But when, in addition to this, the introduction of the poison is favoured by warm summer weather and concentrated human effluvia, as it always is, we ought rather to be astonished that, under this propitious state of things, yellow fever has not always spread with inconceivable velocity, and destroyed all within its reach. *Northern constitutions therefore, in temperate latitudes, during the warm season, are incapable of generating, but are peculiarly predisposed to favour the propagation of yellow fever.*

We have now concluded all that we had to offer of a general nature in the way of objections and arguments, against the domestic origin of yellow fever; as it has appeared in previous years in the northern latitude of the United States, and more especially as it has appeared this year in the city of New-York. As we have said before

* [You will observe by contagious I always mean the broad sense which you give to the word infectious - i.e. by the air respired as well as by contact.

the general history and outlines which we have furnished of the progress and march of the disorder, first in the lower part of the city, and afterwards its introduction into, and propagation through Cheapside and Lombardy streets, the details of which agree in every respect with what has always been observed to hold true of yellow fever in previous years, and particularly of those diseases which are acknowledged by all, to be contagious, ought to convince any person whose mind is not clouded with prejudice, that yellow fever is truly and justly entitled to be ranked as a contagious or communicable disease, propagated from one individual to another, by the power of its own specific poison, and characterized by symptoms which distinguish it from all other affections. Every other mode by which we attempt to explain the origin and progress of yellow fever, however ingenious and plausible it may at first sight appear, leads us, as we shall see when we enter into a close investigation and comparison of facts with the principles or doctrines of the theory which pretends to account for them, into so many absurd and preposterous conclusions, that we find ourselves under the necessity of abandoning it as totally inadequate to explain the phenomena under consideration.

We find ourselves at last compelled to acknowledge, that the contagious property of yellow fever, is that alone which will rationally and satisfactorily account for the peculiar circumstances which attend its introduction, and propagation over different parts of the town. In order, however, to indulge ~~this~~ species of mental idiosyncrasy, which affects not to understand, or to tolerate any theory on this subject, that is not substantiated by an over minute detail, however trivial, of every of circumstance of which the senses are enabled to take cognizance, and which seems to be incapa-

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that

* [The sheets are all numbered thus: the odd numbers on one side & the even on the other. Thus No I. on one side & No. II. directly opposite & so on.]

destined

ble of making those broad deductions and bold generalization which, as Lord Bacon says, distinguish the minds of those who are ~~deemed~~ to hold an empire over society, and "to handle the affairs of men, we will furnish a table and catalogue of particulars, which, we venture to affirm, are sufficient to reconcile even the scrupulous nicety and delicate perceptions of this microscopic class of philosophers. We call upon them, with their elaborate machinery of dates and names, and circumstances, to produce more positive, unambiguous, and detailed testimony, in favour of the contagious nature of any disease, than that which we shall soon offer in support of the *contagiousness of yellow fever*,"

COMPARATIVE TABLE,

Showing the number of cases and deaths that occurred in the same, adjacent and opposite houses, and also the whole number of cases and deaths in the streets in which those houses were situated, as well as the condition of those houses in which two or more cases occurred in each.

<i>Rector-street.</i>		<i>Greenwich-street.</i>	
Total cases,	19	Total cases,	22
Deaths,	11	Deaths,	11
At No. 26, four cases, clean—two deaths.		At No. 89, two cases.	
At No. 24, one case.		At the two corners of Cedar-st. four cases, clean—one death.	
At corner of Washington-st. opposite, two deaths, clean.		Corner of Liberty-street, two cases, clean—one death.	
At corner of Greenwich-st. clean, same side, eight cases, four deaths.		At No. 4, two cases, clean—one death.	
At No. 15, two cases—clean.		<i>Washington-street.</i>	
		Total cases,	27

Deaths, 18 At 96, two cases, clean—one
At No. 55, three cases, clean death.

—two deaths

At 21, one case.

At 23, one death.

At 40, one death.

At 42, two deaths—dirty.

Carlisle-street.

Total cases, . . . 3

Death, 1

All of which were at the same
house—clean.

Lumber-street.

Total cases, . . . 11

Deaths, 7

At No. 32, one death.

At 34, one death.

At 36, one case.

At 38, three cases, clean—
two deaths.

Beaver-lane.

Total cases, . . . 4

Deaths, 4

Of which there were in one
house three—dirty.

And the other in one opposite.

Albany-street.

Broadway.

Total cases, . . . 33

Deaths, 20

At No. 111, two cases—clean.

At 61, one death.

At 62, two deaths—clean.

At 82, one death.

At 84, one death.

At 40, two deaths—clean.

At 42, three cases, clean—one
death.

At 116, one death.

At 118, three cases, dirty—
one death.

At 164, three cases, clean—
one death.

City Hotel, two deaths—clean.

At 94, one case,

Total cases, . . . 2

Deaths, 2

These two cases were at No.
6—clean.

Thames-street.

Total cases, . . . 6

Deaths, 4

At No. 14, two cases, dirty—
one death.

At No. 12, one death.

Cedar-street.

Total cases, . . . 8

Deaths, 7

At No. 78, three deaths—
clean.

<i>Wall-street.</i>		Death,	1
Total cases,	7	At No. 66, two cases, clean—	
Deaths,	4	one death.	
At the two opposite corners of			
New-street, in this street,		<i>John-street.</i>	
two deaths—clean.		Total cases,	2
		Deaths,	2
		Both at one house, No. 6 John-	
		street—clean.	
<i>Broad-street.</i>			
Total cases,	14	<i>Liberty-street.</i>	
Deaths,	7	Total cases,	16
At No. 23, two cases, dirty—		Deaths,	9
one death.		At No. 122, two deaths—	
At 41, one death.		clean.	
At 42, one death		Corner of West-street, two	
		deaths—dirty.	
<i>Nassau-street.</i>		At 74, two cases, clean—one	
Total cases,	10	death.	
Deaths,	5	Sugar-house, five cases—three	
At No. 22, two deaths—dirty.		deaths.	
Corner of John-st. two cases—		Corner of Nassau, four cases,	
clean.		dirty—one death.	
At 45, two cases, clean—one			
death.			
<i>William-street.</i>		<i>Courilandt-street.</i>	
Total cases,	14	Total cases,	12
Deaths,	4	Deaths,	8
At No. 69, three cases, clean		At No. 5, five cases, clean—	
—one death.		three deaths.	
At No. 60, three cases, clean		At 45, one death.	
—one death.		At 42, one death.	
At 105, two deaths—clean.		At 69, four cases, clean—one	
		death.	
		At 43, two deaths—clean.	
<i>Pine-street.</i>			
Total cases,	2		

<i>Maiden-lane.</i>		At No. 48, three deaths—dirty.	
Total cases,	16	At 50, five cases, dirty—two	
Deaths,	4	deaths.	
At No. 35, three cases, clean		At 51, one case.	
—two deaths.			
At 124, two cases, clean—one		<i>Water-street.</i>	
death.		Total cases,	23
		Deaths,	19
<i>Fulton-street.</i>		At No. 80, two deaths, dirty.	
Total cases,	4	At 67, five cases, dirty—four	
Deaths,	2	deaths.	
At No. 199, one case.		At 15, two deaths—dirty.	
At 197, one death.		At 51, two cases—dirty.	
		At 343, three deaths—dirty.	
<i>Stone-street.</i>		At 349, two deaths—clean.	
Total cases,	3	<i>Front-street.</i>	
Death,	1	Total cases,	5
At No. 15, two cases—clean.		Deaths,	4
At corner of Whitehall, one		At No. 88, two deaths—dirty.	
death.		Corner of Depeyster, two	
		deaths—dirty.	
<i>Moore-street.</i>		<i>Dutch-street.</i>	
Total cases,	2	Total cases,	6
Death,	0	Deaths,	2
Both at No. 3—dirty.		At No. 11, four cases—clean.	
<i>State-street.</i>		At 10, two cases, clean—one	
Total cases,	3	death.	
Death,	1		
At No. 3, two cases—clean.		<i>Cheapside-street.</i>	
At corner of Pearl, one death.		Total cases,	12
		Deaths,	7
<i>Pearl-street.</i>		At No. 20, three cases, clean	
Total cases,	13	—one death.	
Deaths,	8		

At 13, two cases, clean—one death.	At No. 20, two cases, dirty—one death.
At 12, three deaths—clean.	At 28, four cases, dirty—two deaths.
At 16, one case.	
At 7, two deaths—clean.	

Banker-street.

<i>Lambardy-street.</i>	Total cases	. . . 7
Total cases, . . . 13	Deaths,	5
Deaths, 8	At No. 118, two deaths—dirty.	
At No. 4, three deaths—clean.	At 128, two deaths—dirty.	

19 *Rector-street.*—Out of ~~10~~ cases, 15 occurred either in the same, opposite, or adjacent houses; of which two occurred in one house, four in another, and eight in a third, all in that short section of this street, between Greenwich and Washington streets, within the space, as we have already said, of 183 feet by 32. The number was unusually great in this part of Rector-street because they were the first that happened, and the public not being aware of the danger that existed, did not abandon the neighbourhood until the disease had already proceeded up into Lumber-street.

Greenwich-street.—The width of this street, and its being on a level with the Battery, and therefore exposed to a free ventilation from the current of air which comes off the bay, together with the circumstance of its being inhabited by persons of the first respectability, and who were therefore in a situation to escape from the city in time, account for the small number of cases which occurred in it. Hence we see that it preferred its way up the steep ascent of Rector-street, which is so much more narrow, and where the inhabitants, though comfortably situated, live in much smaller houses. Beside which, Rector-street is shut up at its termination in Broadway, and being very precipitous at that

x [On the west or North river side & close to the wharves]

part where it runs into Greenwich-street, is precluded in some degree, at least, much more so than Greenwich-street, from ventilation. Hence, though Greenwich-street is two miles long, and courses all the way upon a dead level the whole length of the city, the disease, though it did finally proceed along this street, north as high as Fulton-street, showed constantly a much stronger inclination to pass up the cross and narrow streets which descend transversely into it on their way from Broadway, and which in respect to ventilation, are all under the same disadvantages as Rector-street. Hence, therefore, the total number of cases in Greenwich-street amounted to but twenty-two, out of which ten occurred in four houses.

Washington-street.—The small number of cases in this street is accounted for from several circumstances. In the first place, from Liberty-street to the Battery, all the buildings, with the exception of six or seven small and indifferent houses, occupied by poor persons, are ware houses or stores; and all on one side the street, and thus so completely exposed to the prevailing winds of the climate, as well as to those that blew during the continuance of the epidemic, that the air could not possibly have remained infected for any considerable length of time. Hence, too, the exemption of a number of labourers who were constructing a long pier directly at the foot of Rector-street, and who continued to work upon it about two hundred feet from Rader's house, with perfect impunity during the whole season.* The situation of Washington street explains also why the disease did not extend higher north through this street than Liberty-

[upon the wharves
as the street has
but this side]

*A similar occurrence took place at Barcelona, during the dreadful epidemic which desolated that city in 1821.

* [New & Garden Streets are on one both extremely narrow & confined. They form a right angle & cross. New St. ran from Wall St. to Broad St. & Garden St. further South ran from Broadway to Broad St.

street, although it had passed up Greenwich-street, which, unlike Washington-street, is sheltered by houses on each side as high as Fulton-street: Hence, of twenty-seven, the whole number which occurred in Washington-street, all were in the immediate vicinity of, or below Rector-street, and five of these in two small dirty houses at Nos. 55 and 42, only a few doors, however, from Rector-street.

Lumber-street.—We have already adverted to the confined situation of this street as accounting for the great mortality which occurred here; in addition to which it may be remarked that the houses being mostly occupied by poor persons, were crowded with inhabitants.

Broadway and Broad-street.—We have also spoken of this street, and endeavoured to explain why the disease proved here so mortal. It will be observed, that this mortality was principally confined to the lower section of Broadway, between the Battery and Rector-street; in which street and in Lumber-street, immediately in the rear of Broadway, the disease had previously spread in the most alarming manner; Broad-street being unusually wide, many persons continued to occupy their houses, under the fatal belief that they would escape. The poison, when it reached there, did in reality appear to have lost somewhat of that intensity which it acquires by being compressed, as it were, into narrow streets. Thus, though it had reached Wall-street, near Broad-street, as early as Aug. 23, and as early as Aug. 29, had begun to pass down New-street; and on the 6th of September, had descended the hill of Garden-street, from Broadway as far as the corner of New-street and Beaver-street; Broad street remained exempt until September, 11th. Why did the poison prove so mortal in Broadway, which is nearly as wide as Broad-street, and so much more elevated? Because it had been pouring into this street through various channels. Rector-street afforded a short

x Lumber street is very short & begins at Thames & terminates a little south of Rector St. Its southern terminus after crossing Rector St, was exclusively almost occupied by the stables belonging to the corresponding house dwellings in Broadway.

and direct passage, beside all the collateral and parallel streets which traverse Broadway, Greenwich and Washington streets, on their way from the North River. Because, also though the disease had never appeared here before, and though the mortality was greater in the same given space, than in any of the narrow streets on either side of it, most of the inhabitants, from its being so remarkably wide, cleanly and elevated, continued to reside there, even after the disease had crossed this street into Wall-street, under a belief, like those of Broad-street, that it would be exempt from the pestilence. The mortality, however, was principally confined to that particular part of it nearest to Rector and Lumber streets, where the disease began, and where the contagious poison must necessarily have been accumulated in the largest quantity. May not the inhabitants of Broadway have been rendered more susceptible to the disease, by living in the pure air of that spacious street? "For those (says Dr. Hosack in his work on Contagion, p. 33, 4to.) who were least accustomed to the impure air of the city, or of the infected spot, were uniformly observed to be most susceptible of the contagion."

some of

Carlisle, Beaver-lane, Albany, Thames, Cedar, and that part of Liberty-street, west of Broadway. These streets are all narrow, and though almost entirely abandoned at an early period, furnished a number of cases of the disease. From a comparative view of the mortality it occasioned among the few who remained, it is very evident that the disease is much more readily propagated through narrow confined and sheltered passages like these, than through such as Broadway and Greenwich-street. The cases in Thames-street were chiefly in that part of it where it receives Lumber-street. Those in the other streets were principally in those sections of them joining Greenwich-street, and therefore

x

but a little distance from the spot where the disease broke out.

Wall and Broad streets.—We have spoken of Broad-street. Wall-street being almost exclusively occupied by banks, insurance companies, and other public offices, was immediately and totally deserted on the appearance of the first cases in the street.

Courtlandt-street, Maiden-lane, Liberty-street, east of Broadway.—No one scarcely remained in Courtlandt-street, with the exception of those in the houses where the disease occurred. It is worthy of remark, that it proved most mortal in three *boarding houses*, the apartments of which are always necessarily more or less confined and surcharged with human effluvia. Hence, out of twelve cases in all this street, eight occurred in three of these houses, namely, Nos. 5, 43 and 69, the first and last of which are at two opposite extremities of the street, and several hundred feet apart. The same observations apply to Maiden-lane, where, out of *ten* cases, *five* were at two houses, and to Liberty-street, on the east side of Broadway, where there were *nine* cases in two houses, being more than one half the whole that occurred in this street. This part of Liberty-street is extremely narrow and confined, and five occurred in the sugar house, of which we shall speak in another part. These cases in the sugar house did not take the disease from one another, but they all lived in the upper parts of the town, and persisted in coming down to work at this house, though it was well known to be an infected neighbourhood.

Nassau, William, Pine, Dutch, State, Pearl, Water, and Front streets.—As this is the oldest part of the city the streets are irregular, narrow and compact, and the ground undulated into hollows and hills such as existed before the place was settled. This holds true, particularly of Wil-

liam, Front, Water, Stone and Nassau streets, where the windings of the streets might readily stagnate and diffuse the poison undisturbed. But on the West side of Broadway, which street may be considered as a central line dividing the city and island longitudinally, the ground which is also generally much higher, especially above Courtlandt-street, has been levelled down into a gentle descent, towards the Hudson, while the streets, at the same time, are all wide and straight. We have thus a solution to this fact, why the disease, though it has generally broke out much later in the season, has in previous years proved, notwithstanding, so much more mortal than in this : for it will be remembered, that hitherto the yellow fever has always been introduced, first upon the east side of the city ; and especially at the lower and older part of it, of which we have been speaking. It is to the circumstance of its having broke out this year where, from some experience, it was thought we had reason to suppose it could not be introduced, or at least generated, that we are principally to attribute the small number of deaths that have occurred, when compared to the amount of population. The timely and almost total abandonment of all that part of the city south of Fulton-street, served still more effectually to check its progress, for although the germ which had been unsuspectedly permitted to take root, could not be destroyed, its growth by this measure was materially retarded, until the frost finally came to complete the salutary work which prudence had begun.

We see also that this older part of the city, being vacated before the disease had fairly reached there, but very few cases occurred in the streets we have enumerated. For, about the last of August, or first of September, when it was clearly ascertained that the disease had crossed to the east side of Broadway, and that cases had begun to occur at the

junction of that street and Wall-street, all the inhabitants south of Fulton-street, following the officers of the custom house, post-office, banks and of other public institutions in this part of the town, deserted the city, en masse; with the exception of some few individuals scattered in different houses, and about 2 or 300 persons, who continued to remain in the streets immediately adjacent to the East River, principally between Fulton-street and Old Slip. The intercommunication between Broadway and the streets along the East River, being thus cut off, the disease did not propagate itself to that side of the city, and appeared therefore only in a few insulated spots, to which those who had had communication with the sick or with infected houses near Broadway, carried the contagion. Beside which, as these cases did not happen until late in the season, and when it began to grow cool, the transmission of the contagion was circumscribed generally to those few houses into which it had been introduced. Hence in Pearl, Water and Front streets, which run along parallel and near to the East River, and nearly the whole length of the city, out of thirteen cases in Pearl, nine occurred in three houses; out of twenty-three in Water, sixteen occurred in six houses, and the five in Front all occurred in two houses. In those streets nearer Broadway, and where the disease appeared much earlier in the season, the few families scattered here and there, who persisted in remaining in their houses, suffered dearly for their temerity. Thus in almost all those families one or more deaths occurred, for out of ten cases in Nassau-street, six occurred in three houses, eight out of the eleven cases in William-street were in three houses; in Pine-street, which being the residence of persons of affluence, was almost entirely abandoned at an early period, the only two cases that occurred were in the same house; in Stone-street,

to which the same remark applies—the *only three* cases in this street were in *one house*; in Dutch-street, which is quite short and narrow, and entirely shut out from the wind, and at the same time occupied chiefly by poor persons, the *six* cases that occurred were all in *two houses*; in State-street, to which the same observation applies as to Pine and Stone streets, the *only three* cases that occurred were in *two houses*.

We may thus form some idea of the havoc the disease would have occasioned, especially in these narrow streets, if there had been subjects for it to act upon.* *It is the sick who infect the air, not the air that infects the sick.*

Cheapside. Lombardy and Bancker streets. We have already entered fully into the examination of the disease, as it happened in those streets.

Fulton-street.—This seems to have been the *ultima Thule*, or extreme boundary of the lower infected district. I am of opinion, however, that neither this street nor John-street, the next below, ought at any time to have been included in the enumeration, of what is understood by *infected district*, any more than Ann-street, the northern part of Nassau-street, Vesey-street, Chamber-street, Ferry-street, or any

* Hence it happened, that as the contagion had no chance of multiplying itself in this deserted part of the town, such as went through those streets where the disease had not existed, escaped; as was the case with labouring persons, several merchants, physicians and others, who made a constant practice of going down into this part of the town. This points out to us, in a still more imposing manner, the important fact, that the disease is only propagated by contagion, and *that the air is in no other way infected than by the emanations from the sick.* The watchmen, also, though double the number on this side of the district, to those on the west of Broadway, generally escaped, whereas nearly *one half the latter perished.*

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other part of the town above Fulton-street. I have already expressed this, as my opinion, also in regard to those parts of Front, Water and Pearl streets, below Fulton-street, and which run along parallel with the East River, but at a considerable distance from the parallel and infected sections of Nassau and William streets. I mean those sections of these streets which are below Fulton-street. Some three or four cases, as we have seen, did occur in Ann, Vesey, Ferry, Chamber and Nassau above Fulton-street; but most, if not all, were upon examination found to have had communication with the part of the town below Fulton-street. But we might with the same propriety say that those streets in the upper and thickly inhabited part of the city, to which patients were removed sick with the disease from below, were also infected streets, which would be absurd. The same observations apply to Cheapside and Lombardy streets, to the full extent. In regard to the *extreme limit* of the lower, or original infected district, it is probable that the air never became actually infected higher north than Courtlandt-street and Maiden-lane, most probably not even beyond *Liberty-street*. The limit on the east side of the town did not perhaps extend farther than William-street, and its continuation through Stone-street to Broad-street, and thence to the East River.

ly
On the west, the infected air reached the Hudson. The *infected district*, therefore, ought properly to be comprised under the following boundaries: beginning at the intersections of Liberty and William streets, and proceeding thence down William-street, south to Stone-street, through Stone-street to Broad-street, and thence to the East River, then following around the Battery or southernmost point of the island, and taking the Hudson River as the western boundary, and as high north as Liberty-street, and thence through

that street again to the place of beginning. It is impossible to reduce things of this kind to exact measurement ; but I am firmly persuaded, that most, if not all the cases which occurred without these boundaries would, if this subject had been closely investigated, have been found to have had communication with the part of the city comprised within the above limits. There were in all but *fifty five* cases which occurred without these limits, of which *twenty-three* are directly traceable to that part of the city ; leaving only *twenty-two* doubtful cases, concerning which the general impression is, that they all had been within the infected district. Many circumstances also are stated, which have left but little room to doubt, that they had actually received the disease there. Setting those aside, however, they constitute so small a number, in proportion to the grand total of cases, that it is of no manner of consequence to say any thing of them when discussing the general position which we have laid down. In the mean time, I must not be understood to mean by the word *infected district*, that the whole air of that part of the city included within the limits I have given was absolutely infected with the contagious matter of yellow fever. I do not believe that the whole number of cases, which occurred this season, when considered in relation to the space of ground which they covered, and the early abandonment of the lower part of the city, could have possibly infected so large a quantity of air. Nor do I believe, that the air itself ever becomes, to any considerable distance, and throughout, impregnated with the virus of the disease. Such an effect could not take place, or at all events if it did ever happen, it could, from the mobility of the atmosphere, continue so but for a very short time, except perhaps low down in the air, and in very narrow sheltered and confined streets, as in European cities, particularly those in

the south of Europe—Italy, France, and Spain, for example, where, in order to be shaded from the rays of the sun, which is scarcely ever obscured in that brilliant climate, the houses are built to a great height, and the streets made uncommonly narrow. The long continued mild temperature of those latitudes, together with the compact and unhealthy mode of constructing their cities, the crowded and small condition of their houses, the necessary concentration of human effluvia which must result from this state of things, explain why the yellow fever, when once introduced here, has always spread and multiplied with inconceivable rapidity; meriting, in every respect, the appellation of an epidemic. In the cities and sea ports of the United States, constructed in general upon a plan entirely different, and the streets of which are, for the most part, spacious, and the houses in general never crowded to excess with inhabitants, the yellow fever seldom or rarely becomes epidemical, unless peculiar circumstances, connected with the introduction of the disease, have favoured its propagation. But never, as I have said before, can I believe that the air becomes universally and totally infected with the contagion of the disease. What I mean by an *infected part* of the city, is where so many cases have occurred in particular houses, or particular neighbourhoods or streets, that the air to a certain extent surrounding those places more or less, according to the number of cases that have occurred within a given space, becomes infected for a certain length of time, the duration of which depends, in a great measure, on the chemical and physical changes which afterwards take place in the state of the atmosphere.

From whence it appears, that out of about 422 cases, the total number this season, 295, or very nearly TWO THIRDS, occurred in EIGHTY-SIX HOUSES, all of which were either

* { The above table was made by myself ~~by~~ after all the families had moved into the city, after frost, & the facts were obtained by me personally at the infected houses, from those who lived in them & had lost more or less of the residents.

opposite to, or adjoining each other, or contained each from two to eight cases. What is still more worthy of remark, TWO HUNDRED AND SEVENTY-SIX of the whole number of cases occurred in SIXTY-SEVEN houses, and each one of these sixty-seven houses furnished from two to eight cases, and out of these same 276 cases 104 died; that is nearly *one half* of the whole number of deaths of yellow fever on the records of the Board of Health! This accumulation of cases in particular houses appears in a still more striking light when we call to mind that out of the remaining 146 cases, which did not occur together in the same houses, 65 were persons who resided in uninfected parts of the city or in the country, and caught the disease by exposing themselves to those places in the lower part of the city where many persons had sickened. Thus, out of *four hundred and twenty-two*, the whole number this season, there remain but *eighty-one* cases which did not occur in the number of more than one or as many as eight in the same house; or in other words, there were but eighty-one cases which occurred singly in different houses. *

Facts such as this table exhibits do not need the embellishments of diction—their eloquence is irresistible. Though twenty-two out of the sixty-seven houses, and in which sixty-one cases and forty-one deaths were reported, were in a very filthy and crowded condition, the forty-five others, in which one hundred and nine cases and sixty-five deaths occurred were, in every respect, perfectly clean. If numbers therefore have any weight, the reasoning on this subject ought rather to preponderate in favour of that opinion, which looks only to the specific contagion of the disease, and not to filth or uncleanness, as the cause of its propagation, since two thirds of these sixty-seven houses were clean, comfortable dwellings, and twice the number of cases

occurred in such houses to the number which occurred in those that were filthy. It will be observed, however, that the average number of cases in those houses that were filthy or dirty, was greater than in those that were clean. Thus in the former it was nearly three cases to each house, while in the latter it was only a little more than two in each. But the houses that were filthy were, it must be recollected, also *crowded* with occupants, which indeed was the principal cause of their filth. The habits of those who occupied them corresponded also to their condition of life, which accounts also for the mortality being somewhat greater than in the clean houses, the families of which were, of course, respectable persons. The concentration of human effluvia in the crowded and filthy houses, facilitated, without doubt, the propagation of the disease; but whether their loose and intemperate habits predisposed them to it is not so certain. The *filth* with which they were surrounded is generally admitted to have a contrary tendency.

5 The more, I suspect, we examine into this subject the less we shall find ~~that~~ filth has to do with the propagation, and infinitely less with the generation of yellow fever. It is certainly true that in the lower part of the city, and especially on the west side of it where the disease broke out, there are few or no houses which can with any propriety be denominated filthy. The inhabitants are all of a respectable cast, and most of them wealthy and of the first consideration in society. Very little or no business being carried on on that side of the town except in the counting houses of the merchants along Washington-street, it is not, as I have said before, a place of resort. The houses being almost exclusively dwelling houses, are none of them over crowded with occupants with perhaps some eight or ten exceptions. There are besides no manufactories in this nor in any other part of the

city below Fulton-street, nor any work shops or places where unwholesome fumes or exhalations are emitted in the different processes of the arts. On the east side of the city, however, which is, at the same time so much older and more compact and filthy than the other, nearly all the trade and commerce of the port is concentrated. Along Front and Water-streets especially, which are near the East-River, there are a great number of indifferent buildings occupied by mechanics and tradesmen, or persons who keep boarding houses or small groceries, fruit shops, &c. The population of this part is therefore crowded; and hence it is, that from the concentration of human effluvia more especially, and not so much from the accumulation of filth attendant upon this condition of things, that yellow fever, when introduced into this part of the city has always spread so rapidly among the inhabitants.

Two thirds of all the cases of the yellow fever during the present epidemic occurred, we have seen, either in adjacent or opposite houses, forming small clusters, scattered here and there, over different parts of the city. Does this look like a disease arising from a pestilential condition of the atmosphere spreading over the whole city, and as abundant in one street as in another? But to say nothing of this fact, which of itself is sufficient to set at nought the whole theory of domestic origin, let us come more directly to the point. Why did nearly all those cases occur in so few houses? How came it to pass that *two hundred and seventy-six* out of the *four hundred and twenty-two* reported cases of yellow fever, occurred in *sixty-seven* houses; and that from *two* to *eight* cases occurred in each and every one of these houses? Can any one be so mad as to suppose that a local cause existed in each of those buildings sufficient to produce this disease? Admitting, for a moment, that such a cause could exist,

would any person in his senses hazard the assertion that this cause was identically the same in each house? For this is the necessary inference, seeing that each and every one of the cases fell sick in those houses, with the same identical disease. If then these local causes were different, what was it that brought about that peculiar arrangement, or combination of circumstances which produced the very same disease in each house? Can it be possible, that these causes may be apparently different, and yet, that all the variety of combination, of which they are susceptible, may each generate yellow fever? Is the production of yellow fever a matter of so little difficulty? If that were true, one would say, that the chemist in his laboratory could at any time artificially produce it. Ought not these causes, also, which were so promiscuously dispersed over different parts of the city, and in streets and houses between which no one ever before discovered any particular analogy; ought not these causes to have begun to give out their morbid exhalations nearly at or about the same period? Can we conceive that the causes which produced such frightful mortality at Mrs. Rose's, at the foot of Rector-street, in the beginning or middle of July, would remain inert and innocuous, during all that month, and even during the warm months of August and September, and up to the cool of autumn and middle of October, and then prove so deadly in the houses of Bresland and Bolien, in so distant a quarter of the city from that where the disease began? Can we conceive, that these local causes, strewn about in this manner over the city, and the activity of which are supposed to depend upon particular states of temperature and the humidity of the air, would one after the other begin to go into operation in defiance of all the changes of wind and weather, occurring in this long interval between the beginning of July and last of October?

If, too, this local condition of things existed in each one of those houses, were not the occupants or residents in each alike exposed to it? And ought they not, supposing the predisposition to sickness to have existed, or to have been necessary, ought they not in each house to have one and all fallen sick, nearly, or about the same time? But now let us see what did actually happen. Instead of cases falling sick in different parts of the city, nearly at the same period of the season, the disease occupied a range of several months and ~~weeks~~ ^{went} progressively from place to place, according as circumstances, more or less favoured its introduction and propagation, through particular neighbourhoods. Instead of the inhabitants in each of the sickly houses falling sick simultaneously, or nearly at the same time, they fell sick in succession, one after the other, and nearly all at determinate intervals. Supposing all the inhabitants of any given house to have been at a certain time exposed to any given cause of disease, it is utterly impossible to believe that the constitution of each, should have been affected in so peculiar a manner, as to cause them to fall sick, one after the other, and that too exactly within a given period of time. Supposing, then, that where five or six took the disease in the same house, that all had been at the same time exposed to places or neighbourhoods, where the air was admitted to be infected, it is altogether impossible to think that they would have fallen sick in regular succession. Let us even imagine, for a moment, that these five or six cases were all exposed to this source of disease, one after the other ^{and that} intervals would be observed in the different times in which they fell sick. Could an occurrence like this take place in any considerable number of instances? Is it possible to believe, that this could happen in two thirds of all the cases reported? In every direction, in which

we examine this theory of domestic origin it leads us always to the same preposterous and absurd conclusions.

On the other hand, we know for a certainty, there were not more than *ten or fifteen* cases out of the *two hundred and seventy six* that fell sick in the same house simultaneously, or at such long intervals that their disease could not be attributed to one another.

If, then, it be found in this long catalogue of cases constituting the great bulk of all that occurred, that in the *sixty-seven houses* mentioned, the cases in each house occurred in succession and at regular and determinate periods, or intervals of time; are we not bound to believe, that they were in some way or other, intimately associated or linked together, some how or other dependent upon each other after the manner of causes and effects. Although we may never see the chain which binds them, the same philosophy applies here, that forms the basis of the greatest discoveries that have ennobled human nature. The same process of reasoning, and the same deduction from cause to effect, hold true in studying the affections of the human body, or in investigating the sublime subject of the mechanism of the universe.

If, then, from the case which first fell sick, the rest followed after, each in its turn, and at the lapse of a definite number of days, and that the disease in each was, in every respect, identically the same; it is of no manner of consequence for us at present to consider from whence the first derived his sickness.

In other words, the disease with which he was afflicted caused the disease in the one who succeeded him, and so on in regular order; proving that it was *communicated* from one to the other, or, which is the same thing, that it is a *contagious* disease.

EXAMPLES OF THE CONTAGIOUS NATURE OF YELLOW FEVER.

The numerous instances in the lower part of the city of individuals falling sick one after the other in the same building, were of such frequent occurrence that very few or no persons took the pains to note them. Though we are unable, therefore, to give, with as much precision as we could wish, the exact periods of time which elapsed between their sickness, enough may be gathered from the dates on which they were reported to the Board, and those on which their deaths were afterwards announced, to serve as a criterion by which we may arrive at an estimate very near the truth. We shall find that the whole together is sufficiently distinct in all its parts, and that it will constitute, with the details we have given of the progress of the disease, from street to street, a mass of evidence in favour of the doctrine of contagion. *irrefragable*

1st. To begin with the house of Reder, where two of the first cases happened. Caroline and Amanda sickened July 10th—Caroline died July 16th. On the same day her brother John, aged 16, sickened, and died on the 22d. Reder was from Holland, and is, as is proverbially known of the Dutch in every part of the world, uncommonly neat and particular in his mode of living. His family was not large, and his house was in every respect commodious, and always kept clean, as well as the yard attached to it. Dr. Walters particularly remarked this circumstance in his attendance upon the family; and observed to me, that it would have been preposterous to attribute the sickness in his house to any local causes. Though Reder himself escaped, perhaps from his time of life, and his constant habit of exposure along the docks to an atmosphere more or less impure; it is, nevertheless, highly probable that he had communicated to a certain degree the natural predisposi-

tion of his constitution, and which those from the north of Europe never entirely get rid of in this latitude, to his children. Is it not also probable that the age of his children, all of whom were between nine and sixteen, and their high health also rendered them, as well as Thomas, who lived opposite, and who had in addition to this been but three or four months in this country, more particularly liable to an attack of yellow fever? The brother took it from the girls, and it was communicated probably on the first or second day of their illness, ~~having~~ *giving* four days for ~~a~~ *its* development.

2. But when we come to the neighbouring house of Mrs. Rose, at the corner of Rector and Greenwich streets, and about 120 feet from Rader's, the contagious nature of the disease is illustrated in so overpowering a manner, that no one could any longer doubt, though it were the only solitary instance on record. This is a small two story wooden building, the lower part of which was occupied as a small grocery; consequently, the unusual number of occupants who resided here were crowded in the upper story. From this circumstance the disease was the more readily propagated from one individual to the other, and thus proved uncommonly mortal. It was the mortality in this house, which about the last of July first occasioned so great an alarm through the city; though the Board of Health, while the pestilence was immolating its victims took no precautionary measures, but continued, under the consoling assurances of their official adviser, to slumber upon their oars until it was too late to remedy the evil. They did not give official notice of their having had a meeting to take this important subject into consideration until July 31st. On the following day Mr. COLEMAN, the editor of the Evening Post, and who, though not a member of the profession, by his unremitting vigilance and able defence of the doctrine

of contagion, merits the highest eulogium, published this meeting in his Evening Post, together with the judicious remarks which accompany it. As it contains the particulars of what occurred at the house of Mrs. Rose, under the sign manual of the Resident Physician, we cannot do better than insert here the part which more immediately relates to this matter.

Board of Health, July 31st, 1822.

On the 20th, the Resident Physician visited Miss Rose, at the corner of Greenwich and Rector streets, and reported that she was seven years of age, had sickened on the 16th of July, and had bilious fever. The child died on the 24th instant.

On the 26th he visited Euphemia Dobson, at No. 10 Beaver-street, aged 38 years: she sickened on the 24th, and removed from the house of Mrs. Rose, at the corner of Greenwich and Rector-streets, where she had assisted in nursing the child that died on the 24th. He also visited Mrs. Edwards, aged 46 years, sister to Mrs. Rose, and a resident in the same house; she sickened on the morning of the 25th with bilious fever. Also, Leonard W. Archer, aged 23 years, nephew to Mrs. Rose, and residing in the same house; he sickened on the morning of the 25th instant, and has bilious fever. The Resident Physician was also informed that a Mrs. Waters, aged 58 years, had likewise sickened at the house of Mrs. Rose on the evening of the 24th but was afterwards removed to Brooklyn. She had been indisposed for the last three months, and died on the evening of the 29th, with very malignant symptoms. This person was not seen by the Resident Physician.

On the 29th, the Resident Physician reported that he had visited another child of Mr. Reder, who was sick with the same disorder as those before reported; that he had also

visited Susan Buck, aged 11 years, residing at 24 Rector-street, opposite the house of Mr. Reder; that she sickened on Friday, with bilious fever.

On the 30th he visited Mrs. Jones, at No. 115 Washington-street, who sickened on the 27th, and has bilious fever. He also visited John Hamilton, a cartman, whose stand was in the vicinity of Rector-street; he resides at No. 20 Howard-street, and sickened on the 27th with bilious fever.

On the 31st, Dr. Neilson reported to the Board of Health two cases of *yellow fever*, viz. Leonard W. Archer, and Mrs. Edwards, both at the house of Mrs. Rose, corner of Greenwich and Rector-streets. On Monday last Dr. Neilson appeared before the Board of Health, and declared these two cases to be bilious fever. The resident physician visited those patients again this day, and reports them as *bilious* fever. There has no case of fever occurred in that vicinity within the knowledge of the Board of Health, for the last three days.

By order of the Board of Health.

STEPHEN ALLEN, President.

REMARKS.

"Such remarks as my duty calls upon me to make on the above report, I shall submit to my readers, regardless of any offence they may give to any individual. Disclaiming any desire to interfere with medical men or medical science, I am well aware that these will not, and perhaps ought not to attract much serious attention; but let them pass for what they are worth, *valeant quantum valere*.

"The Board of Health is the source of information to which the people are taught to look for the real situation of the city, as to its being healthy or otherwise; and some go so far as to declare that we are bound to give implicit credit

to their official reports, when published. Without giving an opinion on this point, we may at least be allowed to express some doubts, when those reports contain the opinions of physicians which stand staring in the face of each other; I say, I cannot think it improper, or arrogant, in such a case, for any plain man to entertain and to express doubt as to which of them is right, since it is very evident both cannot be. In the report before us, we have the opinion of the Resident Physician, an officer of the Board, and consequently entitled to our confidence, that the disease which now exists in a certain quarter of the city, and agitates and alarms its inhabitants, is but a bilious fever of ordinary occurrence, and ought not to excite any alarm, and that those extraordinary measures of precaution which are sometimes resorted to by the guardians of the public health, would be superfluous and unnecessary, and we find it stated in the same report, that another equally respectable physician, after having formerly, when he first saw the disease, expressed the same opinion of its character with the Resident Physician, yet now, having attended it and watched its symptoms and progress for a week, ~~deeming~~ *deemed* it due to truth, to himself, his fellow citizens, and to the Board of Health, to acknowledge that he was mistaken in that opinion, and to pronounce it a clearly marked case of yellow fever, that justly dreaded scourge of our cities when once it has been introduced into them. And here I beg permission to ask, if, in such a case as this, where the health and prosperity of a city is at stake, it would be any violation of the delicate rules of politeness and etiquette, if the Board should invite other respectable gentlemen of the faculty, to visit the patients and report their opinions to them? But it so happens here, that although the physicians above alluded to have not given in detail the reasons on which they have founded their

opposite judgments, yet the facts in the case are recorded with sufficient particularity. It appears that no less than sixteen cases of fever, (using the general term,) have appeared in quick succession at the lower part of Rector-street, near the wharf, since the 10th of last month, and that of these, six have died, *the disease having run its course in from four to six days*, that one recovered, that three are considered convalescent, that six are yet ill, and their fate uncertain.* Now we submit these facts, without one word of profane comment, (which would render us liable to the charge of quackery) to the judgment of experienced physicians, (whether their theories be those of domestic or foreign origin,) and request them to say whether they are the characteristics of yellow or bilious fever. We merely will add, that we have been informed, that the cases alluded to have been seen and examined since yesterday morning, at the importunate solicitation of many of our most respectable citizens, by a number of our first physicians, and particularly by Dr. Hosack, all of whom, we are told, unite in the opinion that the disease in question is decided *yellow fever*.

“ We now expect from the wonted vigilance and activity of our Board of Health, the immediate adoption of those prompt and vigorous measures the occasion imperiously demands. Better in such a case, is it to err on the side of over-precaution, than on that of hesitating procrastination. We hope this plain and zealous language will be excused by the candid on consideration of the motives of the writer.

The explanatory Letter of Dr. Neilson is also annexed.

TO THE PUBLIC.

“ From the manner in which the Report of the Board of Health is worded this morning, it would appear that I had

* One of these, Leonard W. Archer, died this morning.

* This is a very rare symptom.

made two contradictory statements to that body. Justice demands an explanation of the facts.

“ By an ordinance of the Board of Health, every physician is required to report all cases of malignant fever which may fall under his care. In compliance with this regulation, on Monday last I reported to the Board of Health two cases of malignant fever, at the corner of Greenwich and Rector streets. On being asked whether I reported them as cases of *yellow fever*, I answered. No—but as cases of bilious fever of a very malignant character. I also strongly urged the propriety of measures being taken to have the family removed to a more healthy situation, as they were not in circumstances to remove themselves. Although the Resident Physician and Health Commissioners, upon whom I called, saw these cases, no farther notice was taken of them; and the malignancy of the symptoms increasing on Wednesday morning I reported them as cases of *yellow fever*. It may be remarked, that the disease of the young man (Archer,) was ushered in by copious bilious vomiting. *

“ Now, if a yellow skin; red, suffused eyes; cool surface and extremities; pulse nearly regular; tongue red and dry; and, as the disease progressed, vomiting of *black flocculent* matter, and bleeding from the gums and nose, all of which symptoms took place—if these do not constitute malignant fever, in its worst form, I should be glad to know from the Resident Physician, or Health Commissioners, what more is wanting. These symptoms your Resident Physician was, or ought to have been, acquainted with. Some of these did not develop themselves, until after I had the honour to appear before the Board of Health, and declared the disease to be, in my opinion, *bilious malignant fever*—not simply bilious fever, as is erroneously expressed in the report of the Board of Health. *

“ The young man died this morning. Mrs. Edward continues very ill.

JNO. NEILSON.”

Thus the contagion passed from the daughter of Mrs. Rose to her nurse, Mrs. Dobson, to Mrs. Waters, to Mrs. Edwards, and to Archer, all living in the same house, and who had had constant intercourse with the little girl in the small apartment in which she lay during her illness. Miss Rose had been sick eight days, and Mrs. Dobson, and Mrs. Waters sickened on the day of her death, viz. the 24th day of July, and Archer and Edwards the day after. Supposing the interval from the reception to the development of the contagion requires from *two to four* days, the contagion must have been received from her the first or second day, or between the *first and third* day of her illness. Miss Rose had passed the house of Reder and Mr. Falconer's grocery daily, on her way to Mrs. Melmoth's school in Washington-street, a few doors from Reder's shop : a few days before she sickened she called at Reder's stoop to inquire after Amanda's health.

3. From Rector-street we shall go on to the numerous parallel instances of contagion in other houses, taking them up according to the dates at which they were reported to the Board of Health.

Matilda Ann Hill, aged 16, sickened at No. 6 Albany-street, next street but one north of Rector-street, on the evening of the 4th of August, and died on the 7th. Mr. John Hill, her father, aged about 40, an Englishman, who had been in this country for years, and was a coppersmith and pewterer by profession, sickened on the evening of the 7th, and died the 13th. Both father and daughter had been in great dread of taking the disease. The house in which

they lived is a wooden three story building and clean, but the family very large.

4th. John Scorgie, a Scotchman by birth, aged 49, grocer, and his daughter Mary, who had both been frequently to the foot of Rector-street, removed from No. 55 Washington-street, between Rector-street and Beaver-lane, on the 15th of August, and were reported on the 17th following—they both sickened on the 16th—the father died on the 19th. His wife, also Scotch, and aged 48, and therefore, like him, predisposed, sickened on the 19th, and died the 23d. This places the periods of communication and development nearly the same as in the last cases.

5th. John M'Kenna, an Irishman, and grocer, aged 27, sickened on the 17th of August, and died on the 20th. He lived in a two story wooden building at the corner of Greenwich and Cedar-streets. He was the first case that had occurred so high north in this street. Edward Arcularius, who had been frequently with M'Kenna during his illness, and in whose arms it is said M'Kenna died, sickened at the same place on the day of M'Kenna's death. This agrees with the other cases. Arcularius's father is a German. The house was perfectly clean, and also the yard.

6th. Miss Jenkinson, a dress maker, who had been through Cedar-street, where cases had occurred, sickened on the 20th of August, at No. 62 Broadway, in which street no case had yet occurred, and died on the 26th. Elizabeth Jackson, a mulatto woman, aged about 50, who had been nursing her, sickened on the 27th, and died on the fourth day of her illness, with black vomit. The contagion was here sufficiently concentrated, it would seem, to overcome even the natural insusceptibility which coloured persons are usually found to possess.

7th. The first case reported in Courtlandt-street, which is

remarked for its cleanliness and the elegance of its buildings, was Ellen Kearney, an Irish servant girl of Mr. Morse, keeper of the York Hotel, at No. 5, a few doors from Broadway. This is a very respectable hotel, and being much resorted to, and at the same time a small building, is therefore most of the time *crowded*. The boarders moved away on the 24th August. Mr. Morse came to a determination to move his family on the 30th. On that day, in the evening, Ellen was taken ill, and vomited considerably. She had been down into the infected part of Broadway as *far as the City Hotel* a few days before. It was attributed to fatigue in preparing to remove. The next morning early she appeared a little better, but grew worse in the course of the day. Mr. and Mrs. Morse moved away that morning. Ellen remained. In the course of the day her brother John, aged 20, who was a clerk, and her sister Mary, and both from Ireland, came to stay with and nurse her. Mary did not leave the house. They continued with her until the 5th of September, when they both sickened. John was removed to Orange-street, and Mary to Kip's bay, out of town. John died September 8th, and Mary the 13th. When Mrs. Morse moved away she was not sick, but was taken down on the 5th of September following, and died on the 11th. She had not been below Courtlandt-street, but had seen Ellen several times during the first *twelve* hours of her illness. Though Ellen recovered, as Mary and her brother John, and also Mrs. Morse, all took sick on the sixth day after having seen Ellen, there is no doubt they took the disease from her. As Mrs. Morse saw her only during the first *twelve* hours of her illness, she must have received the contagion from her at that early period of the disease, though it did not take effect until five days afterwards. After it had begun to take effect, however, it ran its course with much greater rapidity

than in Mary, in whom it took effect sooner, for she did not die until two days after Mrs. Morse. This is also to be accounted for from the circumstance that Mrs. Morse had not been in good health for some time previous.

8th. About the 20th of August, Mrs. Aphya Colfax, aged 34, was taken sick of yellow fever at No. 69 Courtlandt-street. She kept a respectable boarding house at this place. Her mother had gone out of town the day before, and her boarders had moved away about a week before she fell sick. She remained sick a fortnight, and recovered. On the 4th day of September her daughter Mary, aged 10, and who had not been out of the house, took sick of the same disease, and also recovered after sixteen days illness. Three days after Mary sickened, namely, on Saturday September 7th, Mrs. Mary Merrit, aged 32, from Connecticut, sister of Mrs. Colfax, and of an asthmatic habit, also took sick, and died on the 13th. Three days after Mrs. Merrit sickened, namely, on the 10th, her husband Charles Merrit, from Massachusetts, and her son Frederic Forsyth, a boy, both of whom had nursed Mrs. Merrit, and frequently lain on the same bed with her during her illness, also took sick, but both recovered. After Mrs. Colfax's mother and boarders had removed, she and the four others whom we have said fell sick, were the only persons who ~~recovered~~ *remained* in the house. As it was next to impossible to procure a nurse, in order to assist each other, they all lived together, but in the *same room*, which is an apartment of low ceiling in the back part of the house on the first floor, and not more than fifteen feet square! Whether this was not enough to concentrate and propagate the disease I leave the impartial reader to decide. Mrs. Merrit was perfectly well assured that she had taken her disease from her niece, and said before her death that she might have saved her

life if affection had not forbid her to desert her. Mr. Merrit also was satisfied that he and his step-son had both received their sickness from their attentions to Mrs. Merrit. It is of no consequence where Mrs. Colfax received her disease—who will deny that the others owed their illness to her? It seems that the intermission between Mrs. Colfax and her daughter's illness was much longer than that between the others. It is curious to observe how the poison multiplying itself through the mother and daughter did not prove fatal until it had reached Mrs. Merrit, and afterwards seemed to have lost again its intensity when it reached the husband and son. But the circumstance of habit and time of life are to be taken into account.

9th. The contagion of the disease spread in a most remarkable manner through the family of Mr. Bunn, shoemaker, who lived in a small confined but clean house at No. 69 William-street. Mr. Bunn's family consisted of himself, wife, and ten children, beside three or four other persons, who lived or were employed in the house, all of whom continued to remain, though this part of the street had been for some time before entirely abandoned. There are perhaps very few houses in the city of the same size which contained so many individuals under the same roof. Hence, their situation must have necessarily been very crowded, and the air of the apartments loaded with human effluvia. The moment the spark was introduced it communicated to almost every individual; but what is singular, the disease, though strongly marked in the greater part of them, proved fatal to one only. No cases had yet appeared in this street.

Amelia Torbuss, aged 22, the first, sickened Wednesday, August 28th—recovered.

Sally Bunn, aged 14, sickened 29th August—recovered.

Rosetta Bunn, aged 8, sickened September 5th—recovered.

A black woman who was a servant, sickened September 13th—recovered.

Mrs. Bunn, the mother, sickened September 14th—recovered.

An infant of Mrs. Bunn's, aged 2 years, sickened September 17th—recovered.

Mr. Bunn, the father, aged 52, sickened September 19th—died.

Sophia Bunn, aged 12, sickened September 29th—recovered.

Mrs. Mount, sickened September 26th—recovered.

Thomas Bunn, aged 19, sickened September 30th—recovered.

The disease was no doubt introduced by Amelia and Sally, the first two cases. They had been in Broadway, where there were several houses in which cases had previously occurred. Rosetta, the third case, slept in the same room with Sally, to attend upon her. Mrs. Bunn, and the black woman, had both been employed in taking care of Sally, Amelia, and Rosetta, and Mrs. Bunn frequently slept in the same room with them. Mr. Bunn had devoted himself to his wife and children during their sickness, and died 24th September, in the arms of Mrs. Mount, who took sick two days after. Thomas had also assisted in nursing his afflicted sisters and parents. The family did not remove until after Mr. Bunn's death. Mrs. Bunn and the black woman took the disease probably from Rosetta; and the infant, the husband, and Sophia, from Mrs. Bunn. Though the contagion did not prove mortal until it had reached Mr. Bunn, twenty-two days after the first cases sickened, its intensity, or at least its power of propagating itself, appeared to have been as great before as after his death. Its

* This Mr Murray had been Stewart & said to Earl Grosvenor
 & was a classical scholar & translator of — — —. Towles
 Hook is on the New Jersey shore of Hudson river, directly opposite
 to the foot of Cortlandt. His English constitution & daily breathing the
 pure air in crossing the river, were a double predisposition.

fatality in him was attributable perhaps to time of life, nature of his occupation, or some other circumstance.

10th. Mr. James Woodhull, kept a very respectable private boarding house, a neat three story brick building, at No. 35 Maiden-lane. He continued to remain there with his wife and three or four boarders until most of the neighbourhood had removed, and cases had begun to occur in the adjacent streets south of Maiden-lane. Cases had already occurred near Maiden-lane in Broadway, but none near Mr. Woodhull's. He took sick September 14th, a day or two after all his boarders removed, and among them Mr. Alexander Murray, who went to Powles-Hook. but came daily to see Mr. Woodhull until the 20th, when he was also taken sick. * Mr. Woodhull recovered, but Murray died on the 23d, at Powles-Hook. Mr. Woodhull moved himself with his family from Maiden-lane September 21st, and on the 23d his wife, Mrs. Harriet Woodhull, aged 33, who had been nursing him, also sickened, and died the 29th. Thus Mr. Woodhull, who was sick about seven days, and escaped nevertheless, communicated the disease to Murray, and to Mrs. W. who both died: in the first the contagion was received and developed within the first five days of Mr. Woodhull's illness; but in Mrs. Woodhull the period required nine days. The duration of the disease was however more rapid in Murray than in Mrs. Woodhull, for the first died in four days, and the last in seven days.

11th. On the 14th of September, Ralph Smith, aged 35, segar maker and day-watchman, sickened at No. 22½ Nassau-street, and died the 19th with black vomit. On the 18th, Mrs. Smith, his wife, was reported at the same house, and recovered. Her husband was reported on the 15th, at which time she could not have been sick or she would have been reported with him. She sickened therefore in all pro-

bability on the 17th. Therefore, the contagion must have been communicated and developed with as much rapidity as in the case of Curiel, at No. 349 Water-street, and others of which we have already spoken. It was received by the wife from the husband on the first or second day of his illness, and began to take effect in her two days after she had received it. Cases had occurred in Liberty-street near their place of residence. It may therefore be doubted by some whether the disease was communicated from the husband to the wife, or whether they both received it from the infected houses in that neighbourhood. As they sickened, however, one after the other, and as the interval nearly agrees with the law which appears to have been observed in the preceding cases, it is most probable that she received the disease from her husband. This opinion is strengthened also by the frequent recurrence of similar facts; for we see that in many instances those who were allied together by the ties of consanguinity or marriage, have been too often doomed to share the same grave.

12th. Thomas Smyth had been engaged in his mechanical employment, that of white-smith, in repairing locks in some of the more infected neighbourhoods of the city, constantly, to within a few days of his illness. He sickened on the 11th September, at No. 6 John-street, where he had removed some time before, and in which no case of yellow fever had occurred. The following letter, in my opinion, shows most undoubtedly, that the disease of Smyth was communicated by him to his wife, although the writer (Dr. Francis) does not seem to have felt himself warranted in coming to that conclusion.

To the Editor of the New York Evening Post.

Learning that some uneasiness and misapprehension

exist in the public mind relative to the case of Mrs. Smyth, who is represented to be, at present, extremely ill of yellow fever, at Westchester County, I beg leave to communicate the following particulars.

The late Mr. Thomas Smyth sickened of yellow fever, at his residence No. 6 John-street, on Wednesday the 11th of September. I was requested to see him professionally, on the evening of Friday, and I reported him to the Board, at their next meeting on Saturday. At the time he was first seized, his wife was in the country. She returned on the afternoon of the 14th, and continued with him, at the house in which he sickened, until he removed on the following day at noon to the corner of Grand and Sullivan streets. Here she also attended on her late husband until his death, on the morning of the 17th. Mrs. Smith was within what is termed the infected district about twenty hours.

The doctrine of the occasional contagiousness of the yellow fever rests upon multiplied experience and undoubted evidence; but derives no support from the case of Mrs. Smyth. I make this communication, fearful that the public might be needlessly alarmed, and an opinion obtain, that the present infection has diffused itself more extensively than is the fact.

JOHN W. FRANCIS.

New-York, September 27.

13th. Mrs. Wilcox, who had had charge of a house in the infected part of Broadway, near the Bowling-green, and had moved from thence to No. 66 Pine-street, near the East River, and remote from the infected district, on Saturday September 14th, took sick on Sunday following, and died on Friday, September 20th. Two of

her daughters, who had been staying with their mother in the house of which she had charge, were taken sick on Monday, September 16th, and recovered. Mrs. Margaret Rix was sent by the Board of Health to nurse the Misses Wilcox on the 21st: she took sick on the 24th, that is, on the fourth day after exposure, and on the same day was sent to quarantine, where she recovered. The house was very clean and comfortable: no other cases had occurred before, nor none occurred afterwards in this street. I am indebted for these particulars to Dr. Eddy, who was the family physician.

14th. John Murphy, aged 6 years, living at No 51 Pearl-street, who had been in the infected parts of Broad-street, was taken sick, September 19th, and died the 22d. Mrs. Hull, an English woman, aged 30, who lived opposite, and had been in to see this boy ~~on~~ his illness, took sick on the morning of September 29th; and on the 30th, in the evening, John Hull, her husband, aged 35, also English, was taken sick. The house at which they lived was No. 50 Pearl-street, an old wooden building of contracted apartments, extremely dirty, and crowded at the time with about twenty poor tenants. Hull was one of the men employed as a watch; but whether he took the contagion from his wife or from without, and that its development in her only served to excite into action the poison in him is not so easy to determine. They both died on the 5th of October, with black vomit. They occupied the same bed, in a small dirty room, about *ten feet* square. On the 2d of October, Mrs. Lawler and her brother-in-law, Edward Kearney, who lived in an upper apartment, and both had been frequently in to see Hull and his wife, both sickened and recovered. On the 18th of October, William Nettle also took the disease.

in the same house, and was sent to quarantine, where he recovered.

15th. Eliza Fury, aged 13, of Irish parents, who had been in infected parts of the town a few days before, sickened at No. 88 Front-street, in a part of the street where no cases had yet occurred, Sunday, September 22d, and recovered. Catharine Dempsey, aged 50, Irish, who lived in a small dirty apartment, about *twelve feet* square, in a back wooden building in Mrs. Fury's yard, came frequently to see Eliza, from the first day of her illness, and sickened September 26th. She died on the 30th. John Dempsey, her husband, (Irish, a porter) who continued to sleep on the same bed with her, until her death, took sick the day she died, was sent to quarantine October 2d, and died on the 11th. As Catharine took sick on the 4th day of Eliza's illness, and John on the 4th day of his wife's, the contagion in both was probably received on the 1st or 2d day of the disease, leaving from two to three days for its development

16th. On the 23d of September, John Wareham, aged 57, an Englishman, a man of intemperate habits and a bell-hanger by profession, was reported sick of yellow fever at No. 67 Water-street. He died the same day. He had rambled all over the city. About the 7th of October, Jane Wareham, his wife, aged 45, and an Irishwoman, sickened at the same house. She died the 15th. Supposing Wareham, her husband, to have been sick four days when he died, and she seven on the day of her death, the contagion, if she took it from him, must have been lurking in her system at least two weeks before she fell sick. On the 11th or 12th of October, a man by the name of Abraham Ball, aged 67, an Englishman, sickened of yellow fever at the same house, and died on the 17th. His wife also sickened about

the same time, and was sent to quarantine, and recovered. They had lived in the garret, and had been nursing and attending upon Mrs. Wareham. Mrs. Sarah Walker, aged 30, who lived in the room back of Mrs. Wareham, and had been frequently in to assist her, and also to see Ball, sickened about the 17th, and died the 22d. It is immaterial where Mrs. Wareham got her disease, the others took their's from her in quick succession. We do not know why the dates at which Mrs. Wareham, the Balls, and Mrs. Walker sickened *have not been given*, but the date of their deaths is on record in the public archives, and cannot be garbled or concealed.

Mrs. Wareham died on the 15th of October.

Abraham Ball died on the 17th of October.

Sarah Walker died on the 22d of October.

Mrs. Wareham had been sick six or seven days. Ball and his wife and Sarah Walker about the same time. Then Ball and his wife took sick on the third day of Mrs. Wareham's illness, and Mrs. Walker on the fifth day of Mr. and Mrs. Ball's. The house is an old two story wooden building, in an extremely dirty state, and was crowded with poor tenants, each small apartment containing a family, and being not more than fifteen feet square. There were a man and his wife in the back room on the first floor; Wareham, his wife and five children, occupied the front room of the second floor; Walker and his wife and three children occupied the room back of them; and above, in the garret, there were Ball and his wife. Before Mr. Wareham's death, there had been no cases in this part of Water-street.

17th. John Laddy, a cartman, lived at 28 Lombardy-street, in the front room of the first story. It is a small uncomfortable house, and not remarkably neat nor dirty. Laddy was aged forty-four, and was an Irishman, had been in

and

[Sept 25] this country about *six* years. On Wednesday morning, September 25th, an alarm occurred by the deaths of Mrs. Snow, and Mrs. Carey, a few doors below his house, and the recommendation of the Board of Health to the inhabitants, [September 21] to abandon the street, induced him to move with his family to Division-street. He had been long under great apprehensions of taking the yellow fever, and on the evening of the same day he had removed to Division-street he actually took sick of the disease. He continued sick until the Monday following, September 30, when he took it in his head to move back again to Lombardy-street, as he preferred to die in his own house. He died that night. Mrs. Letty Farley, aged 30, of robust habit, and who had been but three years in America, lived in the garret of the same house. She came down stairs on Tuesday morning, October 1st. and was greatly alarmed to find Laddy a corpse, not knowing that he had come back to the house. She had been in great terror of yellow fever—she took sick on the Thursday following, and died October 7th, of the same disease. The day after Laddy's death Mrs. Laddy began to wash his things—she had also been lying on the bed with her husband during his illness, and was constantly over him to nurse him. She had been complaining a day or two before his death, having lain in only two weeks before, which had very much exhausted her. About two days after Mrs. Farley began to complain Mrs. Laddy was also obliged to take to her bed, and continued sick two weeks, but recovered. Mrs. Laddy is also Irish, and has been in this country about three years. Mrs. Farley's son, about ten years of age, who had come out from Ireland with his mother, and lived with her, sickened the same evening with her of yellow fever, and recovered.

The disease seems to have taken twice as long to become developed in Mrs. Laddy as in Mrs. Farley and her son, and, contrary to the usual mode, the contagion appears to have been given to the two last as late as the last or ~~fourth~~ ^{fifth} day of Laddy's illness. We can hardly suppose that Mrs. Laddy had not received it during the second and third days of her husband's illness; but her ~~debilitated~~ ^{particular} situation may have rendered her less susceptible to it, which is most probable, inasmuch as she was not severely attacked, and recovered. Eight days before John Laddy took sick he had been helping to move some bedding and other things where a woman was sick of yellow fever. But it is not improbable that he may have taken the disease from the infected house a few doors below that ~~where~~ ^{in which} he lived.

18th. George Whetty, Irish, aged 34, an intemperate man, and sawyer by profession, who had been in the infected part of Lombardy and Cheapside streets, sickened October 11th, in a small back room, about fifteen feet square, in a two story wooden house, at No. 118 Bancker-street. No case occurred in Bancker-street during all the month previous, though it continued, as we have already said, to be thickly inhabited: while in Cheapside and Lombardy-streets, parallel to it, and only 300 feet distant, the disease proved uncommonly malignant. Whetty and his wife, and two or three children, all slept and ~~eat~~ ^{ate} in the same small room which they occupied. His son James aged seven, slept on the same bed with himself during his illness, and sickened on the 14th. They both died on the 17th.

19th. The cases which occurred at Nos. 343 and 349 Water-street, were also striking illustrations of the contagion of the disease. They are detailed in the ~~body~~ ^{fore part} of the work.

20th. Patrick Phelan, Irish, aged 55, a respectable grocer,

living in a commodious three story brick building at the corner of Depeyster and Front-streets, sickened October 7th, no cases having yet occurred in that neighbourhood. Phelan died the 13th. His son Andrew Phelan, who had been taking care of his father, took sick immediately after his death, and died the 19th.

21st. Catherine Jones, aged 37, sickened of yellow fever at No. 7 Cheapside-street, and nearly opposite to where Catherine Bailey had died, on Wednesday, October 16th, at noon, and died on the 23d with black vomit. Her daughter Henrietta, aged four years, sickened in the same house, October 21st, that is, on the beginning of the sixth day of her mother's illness, and died on the 30th. The contagion here also was received probably on the first or second day of her mother's illness, leaving from two to four days for it to become developed.

[Almost every one of the above examples, unless otherwise stated, was investigated by myself in a personal visit to the several families mentioned, & whom I closely interrogated on all the circumstances that had occurred, & especially as to the dates. There was no apparent design or wish in any of them to make any concealment & my visits were made within a few weeks after the events occurred. - J.]
transcribed

CHAPTER II.

ANALYSIS OF THE SYMPTOMS.

INVASION.

THE invasion was generally sudden, and at night; sometimes in the morning, and most usually like that of an ordinary fever, with, or sometimes without chill; also gaping, yawning, loss of appetite, languor, hurried respiration, faintness, nausea, and in some instances vomiting of bilious matter, or rejection of drinks and food: most usually acute pain in the head and back, and sometimes violent affection of the nervous system, and severe rigors. In a few instances, the patient had been complaining for some hours before he was taken down, and imagined that he had caught cold, to which the first symptoms of the disease do, in fact, bear some analogy.

FIRST STAGE.

Most usually considerable excitement, especially in full habits, and in children, and nervous temperaments, or in the sanguine, as in the Irish or English. The increased

tone which the excitement gives to the system may explain why the vomiting, which sometimes manifested itself in the invasion of the disease, is now, for the most part, obscured or suspended, showing, at the same time, as Moseley has remarked, that it was with more probability owing to irritation in the stomach, not to plenitude or engorgement of bile, as some have supposed. There is now almost invariably, severe pain in the head, especially in the forehead, and in the back and loins, sometimes extending down the legs to the calves.

Eye.—Usually inflamed, and tinged or swollen, and often at the same time dull and suffused with tears, or of a drunken appearance, the interstices between the red vessels of the adnata remaining white, and the cornea natural or uncommonly brilliant. In several instances the adnata was so crowded with vessels carrying bright florid blood, as to give it a beautiful pink colour and the appearance of being blood-shot. I saw this in two instances. It was also remarked by Dr. Neilson. This brilliant tint, finally disappeared altogether, leaving the adnata of a deep greenish and dirty yellow.: sometimes the eye was almost natural in appearance, with a bright yellowness of the adnata, and the red vessels upon it not more numerous than in health, and both easily accounted for, from the intemperate habits of the patient, which ought always to be recollected when the physician is called to the poor or labouring classes. Pain usually over and across the eyes, and through the eye-balls, often very severe, and locating itself more especially along the superciliary ridge, causing the patient to contract his eye-brows, or about the centre of the forehead, extending occasionally through the head to the occiput. In some few instances the pupils were unusually dilated, and in others the eye was intolerant of light. Sometimes the patient described the pain as deep seated, ap-

parently at the bottom of the orbits. This was observed by Dr. Francis, in the present epidemic, and by Dr. Hugh M'Lean, in that of 1798.

Tongue.—Generally thick and somewhat swollen, more frequently pointed than broad; most usually in the beginning covered with a dirty white or lead coloured fur; darker towards the base.

In one mild case there were no other symptoms than a slight retching on the first day, with some nausea and languor, a pulse little more frequent than natural, and dilatation of the pupils, without the least redness of the eye until the sixth day, when a slight hiccup came on, and lasted for a few hours—on the seventh day the pulse was 72, and then came on a dingy yellow hue of the adnata with a little suffusion. The tongue from the beginning had been of a livid colour, moist, and unusually thick and broad, and utterly destitute of slime or fur until the seventh day, when it grew a little brown and dry only towards the base.

In some few instances the tongue was besmeared with a thin white moist slime or paste until towards the termination of the disease. In one very mild case, the fur was of a bright and light yellow hue, and the tongue unusually flat and thin; but the red vessels, and afterwards the yellowness, succeeding upon the adnata, though it never reached the neck and trunk, and also the red clear margin on the tongue, (which however was less distinct and narrower than in any other case I saw,) together with the constant nausea and oppression, without vomiting or irritability, and only slight pain on pressure; and also, what was of more importance, the slow measured pulse of convalescence, are sufficient to show that it was a genuine case of yellow fever. In a few instances the tongue was very narrow and pointed; but in one or two others, so broad, thick,

and swollen, that it was with difficulty the patient could thrust it out of his mouth.

Pulse.—Varies from 90 to 120, and in children, 150.— Sometimes as low as 80, and even 60, and 55* from the beginning of the attack ; in which case the stage of excitement had not existed at all, or passed within a few hours into that of collapse ; generally full, but in a majority of instances, not sufficiently strong to resist any considerable pressure. In a case attended by Dr. Minor, it was 60 on the first day, and never afterwards rose beyond 80. The patient recovered. In a case under the care of Dr. Francis, the pulse, six hours after the invasion of the disorder was 45, and never became more frequent than 70. In such cases the skin was, for the most part, unnaturally cool from the beginning.

Skin.—Flushed, generally hot, and somewhat dry in this stage ; the degree of temperature corresponding with the force of the circulation ; moist often throughout, but rarely or never characterized by the biting, stinging heat and dry surface of typhus.

The skin is sometimes, (says Warren,†) though rarely, parched and dry, but oftener, and indeed generally moist, and disposed for sweat.

Respiration.—Hurried in proportion to the violence of the excitement, and almost invariably attended with deep sighing, evincing the influence of the poison on the nerves.

Bowels.—Generally constipated in this stage, but after they had been opened the evacuation continued often natural in colour and quantity, without foetor, and as Lining says, rarely bilious, soft or liquid, during the whole progress of the disease.

* The case of Mr. Dusenberry, attended by Dr. Blachley. The pulse was 55 the first day, and rose afterwards to 60 and 70.

† Warren on the Malignant Fever of Barbadoes. p. 9.

In three fatal cases, one of which was unattended with hiccup or black vomit, the disease came on with a diarrhœa, which continued until a few days before death. And in another case, which was attended with black vomit, but recovered, the menstrual discharge, and dysenteric symptoms, accompanied with tenesmus and griping, supervened in the last stage of the disease. The catamenia were, in this case, more copious than usual.

Stomach.—Usually calm, but sometimes a constant nausea or sense of oppression at the præcordia, accompanied occasionally with eructations and cardialgia. Sometimes, but very rarely, extreme distress and pain at the præcordia from the beginning of the attack, producing violent spasms and retraction of the abdominal muscles and legs on the slightest pressure. I saw this in a case attended by Dr. Francis.

Urine.—Variable; often natural in every respect; but in many cases the urine was scanty and high coloured; in some few the discharge was copious or natural.

Countenance.—Most usually natural and flushed; often a wild stare and gaze of the eye, and not unfrequently the expression of the countenance remained unchanged to the last.

Position and actions of the patient.—Invariably lies on his back, and has an inclination to throw his arms above his head. Rouppe also observed the position of the patient.

“Semper in dorso jacuerunt ægri.”

Intellectual functions.—Occasional delirium, attended with coma, especially if the excitement be great.

SECOND STAGE.

In some few instances the first stage was protracted even to the fifth day. In the case of Denn, in Barclay-street, attended by Dr. Francis, there was a state of high ex-

citement until the morning of the fifth day. Deveze also saw it protracted to the fifth day.

But most usually the first stage having continued from 24 to 48, or sometimes to 72 hours, there now comes on, not a remission, but a sudden prostration of all the animal forces producing what is termed a state of collapse or metaptosis, as denominated by Dr. Moseley. The excitement falls, the countenance is more or less pale and shrunk, and the patient becomes calm and composed, and though languid and debilitated entirely free of pain. The blood retires apparently from the surface to the interior organs, which accounts, in the opinion of some, for the stomach being now more irritable and more predisposed to hæmorrhage. But it must be remembered, that this predisposition to hæmorrhage exists also in the external passages, which shows that it is not so much owing to the retiring of the blood as to the subsidence of the circulation, and the general loss of tone in the contractility of the capillary arteries, occasioned doubtless by the paralyzing influence of the poison.

Eye.—The red vessels begin to disappear, while a yellowness is now first observable at the angles, especially at the outer angles, accompanied at the same time with, or followed soon after by a yellowness in the rugæ, running down from the alæ of the nose to the corners of the mouth; also around the eyes and borders of the lips, and between the lower lip and chin—as this stage advances the red vessels gradually disappear, and the eye becomes less turgid as the adnata becomes more and more yellow.*

Tongue.—The fur often remains moist and still of a dirty white, or leaden colour, but most usually accumulates and

* We cannot say, with that accurate observer Dr. Lining, that we ever saw the inflammation of the conjunctiva to increase at this *stadium*.

becomes at the same time with or before the adnata, of a brownish yellow hue, and dry and darker towards the base, surrounded almost invariably by a moist clean red or livid margin, now distinctly contrasted with the thick, dark fur, and extending along the sides and ~~round~~ *around* the apex of the superior surface—the papillæ on the apex also frequently inflamed and swollen. An unfavourable symptom, and which frequently happens at the termination of this stage, is a spasmodic movement of the tongue when thrust out of the mouth, as is often seen in typhus.

Lips.—Most usually dry and cracked, or somewhat parched.

Pulse.—Sinks to ninety, eighty, or seventy, rarely lower, varying a little more or less, from day to day, becoming at the same time soft and easily compressed. In one or two fatal cases the pulse in this stage sunk as low as 60, 50, or even 45; but I never saw it *intermittent*. In the case of a young man ill, on the fourth day, Dr. Francis observed the pulse to intermit. Dr. Physic saw a case in the yellow fever of 1793, at Philadelphia, in which the pulse sank to 30.*

Skin.—Becomes comparatively cool, but still retains a higher temperature than is natural. The heat and moisture of surface are often unequally distributed, and the feet and hands are now frequently cool, especially as this stage advances; while the trunk, particularly about the epigastrium, is preternaturally warm. In a great majority of cases, especially in those which were more mild, the yellowness which began on the adnata and about the eyes and mouth, did not extend farther than over the face, blending with the partial flush which still remained over the face, and giving the

* Rush on Yellow Fever of 1793, p. 54.

countenance a yellowish red, or damask hue. But in the more strongly marked and worst cases, it became of a greenish hue and extended down the sides of the neck, over the scalp, to the chest, shoulders and arms; gradually growing deeper and spreading over the trunk on the eighth, ninth and tenth days; but not reaching the lower extremities until just before, or even after death.

When this colour is perfectly formed, it has, if the complexion of the patient be fair, a pale lemon colour, and is of a greenish, mottled or bruised appearance; in some instances darker and resembling a vegetable stain; in others the appearance of a dead body, which has begun to putrify. If the skin was naturally sallow, it resembled a deep orange or saffron colour, epithets used by Towne, Jackson and other writers, to designate this appearance.—Dr. Pym says, it is of a pale lemon colour, when the disease terminates favourably. Sir James Fellowes says, in strongly marked cases, the colour was of a dark yellow tinge; and Sir Joseph Gilpin, also, says, that the colour in this disease was of a dingy yellow hue unlike the bright yellow of the bilious remittent. The observations of Fellowes and Gilpin are conformable to general experience.

I do not believe, however, that the yellowness is in any manner connected with a putrefaction of the body. It generally becomes of a deeper, stronger, and somewhat darker or dingy hue in malignant cases, and after it is fairly out.

In one fatal case it was of a bright golden yellow after death, but the patient was an Irishman, and of fair, sanguine complexion. In some few mild cases, the only symptom was this peculiar greenish yellow tinge, which gradually came out, and in conformity to the laws of the disease, spread entirely over the trunk and extremities at the usual period; while the pulse, skin and other functions remained perfectly

natural.* Dr. Harrison, who from his long residence at the Marine Hospital, has had ample opportunities of becoming acquainted with yellow fever, mentioned to me a case of this kind, where the patient continued to walk about for several days, as though he was in perfect health; the stomach and other functions all regularly performing their duty, until black vomiting suddenly came on, and in a few hours carried him out of the world.

Where the deep yellow tinge spread entirely over the trunk, the disease proved almost invariably mortal. I saw one exception, which was, in every respect, a most extraordinary case. [Sarah Cadwell.] Every symptom was present in the most aggravated form, beside several uncommon symptoms. Black vomit, which came on about the sixth day; hæmorrhage from the mouth, hiccup, which continued during convalescence, eructations; the beautiful pink coloured adnata in the beginning, changing to a deep green yellow towards the termination; the yellowness extending over her trunk and down to her feet on the eighth day, and of a dark or dirtier hue, from the sallowness of her complexion; delirium frequently, but most usually a listless state of pervigilium, convulsions, deep, anxious and frequent sighs, pensive sadness of countenance, great distress and irritability at the præcordia, particularly on pressure; dysenteric symptoms, with tenesmus, griping, and frequent but scanty discharges of black foetid matter; a fiery red tongue, besmeared with blood, inarticulate moaning, retracted legs, petechiæ; towards the termination a petechial or purple efflorescence, or extravasation in large blotches on the trunk and limbs. In addition to these, a painful swelling of the jaws and cheeks and of the parotid glands, and an ulcerated

* Sir Gilbert Blane was the first, I believe, who particularly noticed this peculiarity.—*Vide Diseases of Seamen*, p. 406-7.

condition of the inner lining of the lips with a mercurial foetor (though she had taken no mercury,) all of which continued and even increased during convalescence. The breath was exceedingly offensive from the coagulated and decomposed blood collected under her tongue and between her lips and teeth. What was remarkable, the menstrual discharge came on, though it was not the period, and was protracted until near the termination of the disease. This, by Lining, and especially Deveze, is considered a favourable symptom. The excoriations also produced about the anus and thighs, by the involuntary discharges of the catamenia and from the bowels, towards the last days of the disease caused distressing pain, and bled considerably. She was a native, of the melancholic temperament, tall and robust, with jet black eyes and hair, and very dark skin, aged 40. She was neither bled nor blistered, nor but once or twice gently purged.

There In a young Frenchman, at quarantine, the chafing between the scrotum and thighs from lying, also, brought on hæmorrhage, during convalescence. Deveze, in his *Traité de la Fièvre Jaune*, mentions a case where the *genital* organs *it* were very much inflamed and greatly augmented in size, ending in gangrene of the scrotum, (p. 92.) In the yellow fever of Cadiz, in 1800, there was often observed a considerable irritation of the urethra, similar to patients labouring under an attack of stone.* Towne, also, sometimes saw in the decline of this disease, painful pustules, and aphthæ in the mouth, and dangerous imposthumations in the throat. [*Diseases of the West Indies, &c.* p. 51. ed. 1726.] Lind says, buboes and a swelling of the *parotid glands* are unusual, though salutary symptoms.

* Reports on the pestilential disorder of Andalusia. p. 56. Lond. 1815.

Petechiæ, not always an unfavourable symptom, consisting of little spots of variable shape, of extravasated, purple or pink-coloured blood, without any elevation of the cuticle, are now observable about the forehead, cheeks, and on the neck, but more especially on the backs of the hands, and on the arms and chest. Mr. Bally thinks they are favourable, if they preserve a rose colour, but unfavourable if they pass to a violet, or brown.

I observed in one or two fatal cases, a vesicular eruption about the corners of the mouth, interspersed with petechiæ: but Rush says, it is a favourable symptom. In one strongly marked case, (a German from the sugar house, Liberty-street, attended by Dr. Van Arsdale,) which recovered, a miliary vesicular eruption appeared all over the surface, on the third day. This was frequently observed in the yellow fever of Spain. Moseley has remarked, that a prickly heat has often saved the new-comer in the West Indies. Warren has seen the patient recover by a large critical eruption of boils, or small abscesses all over his body. Sir Gilbert Blane observed, that an eruption of white pustules on the trunk, at the termination of the disease, was a favourable symptom. It is otherwise with anthrax, which now and then, but very rarely, has been observed to form on some part of the body, being always an unfavourable symptom, and not appearing until the last stage of the disease. Out of 425, the whole number of cases, there were only two instances of anthrax. One was a female patient attended by Dr. Neilson. The tumour formed about the lower jaw and parotid gland, and went through all the stages of that affection. The other occurred on the knee of a boy in Vesey-street, who died. It was mentioned to me by Dr. Pascalis. Out of seven thousand deaths of

yellow fever in Cadiz in 1800, Arejula saw only three instances of carbuncle, two of which proved fatal.*

Respiration—Continues perfectly natural and easy, except that the sighs are now deep, long, and frequent.

In one case only (Mrs. Clear, 75 Cherry-st.) there was occasionally a hacking loose cough. It had existed for years. In another (Mrs. Brown, in Cheapside-st. attended by Dr. Howe,) there was hæmorrhage from the gums, and also from the lungs, accompanied with cough just before death. The respiration, Deveze says, is always difficult in this stage. One would suppose, by the indistinct manner in which some writers speak, that the respiratory functions were as much disturbed in this disease as in pleurisy. This want of precision in their language must lead to a gross, misconception of the nature of yellow fever; for the sighing is the peculiar and only phenomenon which the lungs exhibit.

Bowels. Stools occasionally become foetid and dark; but in a great number of cases retain their natural colour, and remain in every respect unchanged, to the termination of the disease.

Stomach. This stage being formed, the patient generally begins to reject his drinks and medicines, and about the third or fourth day of the disease, complains of a soreness, tenderness, slight burning, or irritability at the pit of the stomach, and appears in great distress on pressing the hand upon this part, or on giving him any thing unusually cold or hot to drink; at the same time the heat appears to be concentrated on the surface of that region. In most cases, this irritability was unaccompanied with nausea, but sometimes there were distressing flatulence and cardialgia from the beginning of the disease, but unlike remittent and bilious fe-

* Sir James Fellowes, p. 56.

vers, seldom or never with continued or severe retching, or vomiting after the invasion, or first day of the disease. But at no time of the disease was there pain or tension of the right hypochondrium.

Urine.—Generally diminished, and of a deep yellow colour, where the yellowness had extended over the trunk. Sometimes entirely suppressed for several days, which usually proved to be a fatal symptom. In one instance of a male patient, aged about twenty-eight years, attended by Dr. Francis, there was a total suppression of the urine, attended with great distress in the region of the kidneys, which continued for three days. The patient was finally relieved by saline cathartics and the use of the sweet spirits of nitre. Hence a plentiful discharge of urine, as Sir Gilbert Blane has also remarked, was observed to be a favourable symptom. In a case attended by Dr. Van Arsdale, it was critical.

Countenance.—Usually more or less anxious and melancholic, or marked by an expression of pensive sadness. Never or very rarely entirely deprived of its florid colour, though this is somewhat modified or changed to a damask hue by being blended with the yellow.

Intellectual Functions.—Sometimes muttering delirium, but the delirium was never long-continued; at other times more or less comatose and disinclined to talk during the whole disease. Most usually constant pervigilium, occasionally interrupted by dozing;* the eye now frequently has a wild fixed gaze, and appears inattentive to what is

*The patient whose case is detailed, [Cadwell] had been quite deaf for years, but could now hear a whisper, but lost the sensibility of this organ again on becoming convalescent. Dr. Rush, however, says that in some cases there was observed a deafness and also dimness of the sight.

* [These with us are those wonderful and unique peculiarities in this disease, which we particularly call "Walking Cases" to which there is nothing I believe in any disease on record that bears the slightest analogy.]

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passing, as if the mind was abstracted; the patient being disinclined to talk, but always answering promptly to any questions that are put; showing, as does indeed also the distressing pervigilium which characterizes this disease, that the sensibility of some of the nerves is often morbidly increased. The only author in whom I have seen this peculiarity of yellow fever noticed, is Rouppe, who describes it in so accurate a manner, that it would be impossible to mistake it: "ægri, insuper anxii, inquieti, leviter delirantes, admodum incuriosi, nihil æstimantes, nihilque querantes, evaserunt; attamen ad quæsitâ fere semper, recte responderunt."* Sometimes, however, the patient affects a forced gayety, becomes extremely loquacious, talks over his affairs to all that enter the room, and proposes to himself schemes of business and of pleasure. He appears to be under the dominion of a delusive train of ideas, and a fatal confidence that he has recovered from his illness and is about to resume on the morrow his wonted occupations. In a case attended by Dr. Francis, (Denn, already mentioned,) the patient began to count over his money and examine his accounts and papers, as he lay in bed on the seventh day of his disease. He died on the ninth day. In others this hallucination changes to a particular species of derangement, and the patient gets up out of his bed, dresses himself, and says he wishes to go home, the muscular powers remaining unimpaired to the last moment of life. He does not seem to recognize his nearest relations, and loses also the consciousness of his own personal identity, thinking that some other individual is talked of when his own name is mentioned, and joining in the conversation as though he were a third person.

* In one case there were convulsions for a quarter of an

* De morb. Navigant.

hour on two successive occasions, but there was little or no mental derangement, the patient lying constantly in a listless or torpid state, disinclined to talk, but not comatose.

Position and actions.—It is unfavourable at this time to see the patient showing an inclination constantly to keep his legs drawn up to his abdomen; for this position is assumed to obtain momentary relief from the distressing burning of the stomach. Another unfavourable symptom is an irregular twitching and restless motion of the hands and arms, as if the patient were affected with chorea.

THIRD STAGE.

The second stage continues from two to four, five, six or even to seven or eight days.

The transition from the second to the third stage is much less perceptible than from the first to the second. The symptoms are all rather aggravated than changed. The countenance becomes more anxious, the adnata of the eye of an unnatural green yellow of the deepest hue, and entirely clear of red vessels, which, contrasted with the brilliant colour of a blue or hazel cornea, gives the look an unnatural and grotesque appearance. The globe of the eye seems now to have resumed its natural shape, and the wild stare is rarely seen at this late period. In two or three cases I observed a short time before death a purulent secretion from the meibomian glands, of so glutinous a nature in one fatal case, (William Cisco, a remarkably robust and light-coloured mulattoe, attended by Dr. Herriot,) that the patient could scarcely open his eyes with the aid of his fingers. The lids also in this case were puffy, livid and bloated, and the inner lining of them deeply inflamed and pouring out a bloody sanies. In several strongly marked cases, I observed towards the close of the disease, a dark extravasated appearance under the lower eye-lids. Dr. Walker also informs me that he

saw in one or two cases livid spots on different parts of the surface before death. Rouppe also, one of the oldest and best writers on yellow fever, mentions this: "in nonnullis magnas lividas vidi maculas."* The aspect of the face does not materially change. In fatal cases, and sometimes also in strongly marked cases which recover, the yellowness generally becomes of a deeper and stronger tinge, and continues to extend farther down the trunk and upon the lower extremities, often however not reaching the feet until just before or after death: and where the case terminates in death, before the seventh day not usually reaching below the trunk, as in White in Franklin street, a printer who returned to town from the country, and died on the seventh day, attended by Dr. Walker. Sometimes the patient has furious delirium, and cries out in inarticulate sounds, expressive of his distress, particularly when he has inclination to vomit. Sometimes the skin, circulation, and other organs, all assuming as it were, their natural functions, give for a few hours the fairest assurances of speedy recovery. Suddenly, and without cause apparently, the pulse is observed to become greatly accelerated, amounting perhaps to one hundred and ten and one hundred and twenty, at the same time full but exceedingly weak and compressible, while a corresponding glow and warmth is suffused over the surface and extremities, giving the appearance of a feeble effort in the system to produce a paroxysm or exacerbation. But in a few hours it sinks again, or retaining the same velocity, becomes thready and vermicular to the feel, and at length entirely imperceptible at the wrists. Though these exacerbations and remissions may occur several times in the last twenty-four hours of the disease, and the surface and

* De morb. Navigant

extremities become alternately heated and flushed, or cold and damp, they observe no certain periods, and are altogether too irregular and adventitious to be mistaken for the symptoms of a remittent. Should the pulse retain its natural size, though soft, and subside gradually to forty or fifty beats in a minute, and move with a slow measured and regular pace, accompanied with a natural condition of the other functions, it shows that the force of the poison is spent, and is one of the peculiar and most characteristic indications of convalescence. It is astonishing indeed to see how long a time it takes for the circulating functions to regain their tone, and to recover from the deleterious and deadening influence which the poison seems to have produced upon the contractility of the arterial system.

The extremities now begin to lose their heat entirely, and are pervaded by an unnatural coldness and clammy moisture, which finally extends over the forehead, shoulders, chest, and thighs, the surface at the precordia still retaining its heat. There was in two cases which came under my notice at this late hour of the disease a general tremor of the whole body as if from a chilly sensation, or when the blood retires from the surface. [The case of Eliza Bayley, and that also of Mrs. Clear, Cherry-street.] In one case there was an hour or two before death, a subsultus of the muscles of the mouth, gastrocnemii, and of the eye, producing in the latter a strabismus, accompanied at the same time with remarkable dilatation of the pupils. [White, in Franklin-street, already mentioned.]

The tongue cleans or sloughs off, and becomes dry and of a fiery deep red colour, sometimes moist, but very frequently having its surface parched brown towards the base, and rough to the feel.

The only author I have met with who has accurately described the appearance of the tongue in this stage, is Dr.

Bruce of Barbadoes, published in Lind. "*Lingua in principio, muco albescenti obducta, squalescit circa finem morbi et in media scabra, coloris primum rufi, dein quasi, nigrescentis, horrida apparet.*"

The gums and inside of the lips also, as Lining and Jackson have remarked, became spongy and of a deep florid red colour, while the lips externally perhaps, were pale or livid. The blistered surfaces also became of a deep red colour, as if they were highly inflamed, and in many cases the inner lining of the eye-lids also became engorged with blood as in ophthalmia tarsi.

These ought all to be considered very unfavourable symptoms, as they indicate a state of engorgement and hæmorrhagic disposition in the capillary vessels; all doubtless, attributable to the sedative and relaxing influence of the poison, and not to the excitement caused by the reaction of the blood vessels in the beginning of the disease.

The patient was now observed occasionally to be hoarse, and complained of a huskiness or dryness of the throat, and of great thirst and a strong desire for cold water.

A soreness of the throat, which came on in several instances at this period, was observed to be a fatal symptom. But thirst is usually a rare occurrence in the earlier stages of this disease. Dr. Rush considers it, in the last stage, an alarming symptom.

Blood of a bright florid hue and watery consistence distilled in a number of instances from the gums and nose, and besmeared the tongue, or, becoming dry on the teeth and lips, encrusted them with a black sordes, as though they had been covered with soot, resembling the appearance of the teeth and lips in the last stage of typhus, where, however, it proceeds not from the blood, but from the foulness of the excretions.

In one formidable instance, besides black vomit, there was hæmorrhage from the mouth, nose, and also from the blistered surfaces. Dr. Francis also saw in a case under his care, hæmorrhage from the blistered surfaces, which commenced forty hours before death. In another there was black vomit, and hæmorrhage from the nose, mouth, ears, and eyes. This was a black, attended by Drs. Francis and Clinton. Lining also mentions having seen hæmorrhage from blistered surfaces; and in the years 1739 and 1745, one or two instances of "hæmorrhage from the skin, without any apparent puncture, or loss of any part of the scarf skin."

If the stomach becomes more irritable, as most usually happens at this late period, the patient now complains of a distressing burning, and incessant, though not acute or darting sensation at the præcordia, causing him to wince and cry out on the slightest pressure, though the surface is not blistered, nor his drinks rejected. He sighs more frequently, and every now and then hiccups, which causes him to place his hand involuntarily on his stomach, and forcibly to draw up his legs, the pain producing in some cases loud cries and shrieks, which may be heard across the street.

The disease having now reached the sixth, seventh, or perhaps eighth day, and the burning sensation at the stomach, continuing to increase, the patient rejects every thing that is taken, and begins to vomit up, from time to time, a reddish brown, turbid-looking, insipid, and perfectly inodorous matter, which settling in, but without colouring the beer, porter, water, or other drinks he has rejected, resembles very much coffee grounds, or blood that has undergone partial change, from having lain some time in the stomach, mingled with mucus, which gives to it a ropy and glutinous feel, and causes it to stain and dry upon the blankets, sheets and pillow. There were also seen floating

in this coffee ground substance, transparent pieces of gelatinous matter here and there streaked or tinged with florid red blood. These may have come from the trachea in vomiting, as the blood which they contained appeared more of a natural colour, and not at all coagulated. The ropy mucous coffee-ground black vomit was also observed by Jackson to be sometimes streaked with blood, which induced him to believe that it came from the throat or gums. "I may now add, says he, that streaks of blood were sometimes found to be joined with them, [villous or mucous flakes,] the greatest part of which seemed to come from the throat and gums." I cannot by any means concur with this learned physician in opinion, that "the black colour of the vomited matter was evidently owing to a mixture of vitiated bile." An old and faithful delineator of this disease in 1760, and who had ample opportunities of studying it in the West Indies, did not discover this intermixture of bile in the matter of black vomit:—"Remittente dein febre sanguinem fuscum sat copiose vomitu rejecerunt et hi fere omnes obierunt, et quidam paucis horis post hujus symptomatis apparitionem."*

Rush does not consider this coffee-ground matter black vomit; but applies the term to some other discharges from the stomach, of which, however, he does not give any definite description.

When the coffee-ground matter was examined by the solar microscope, it appeared to be an inorganic mass. Strained through coarse linen and dried on paper, it retained its dark brown and red colour, and by the mucus which it contained adhered to the paper in streaks. When the residuum of the first straining was passed through fine mus-

* Rouppe, de Morb. Navigant. p. 304 et seq.

lin, and an impression taken off with white paper, I found it to be a dark brown powder in fine particles, resembling minute scales of smoky mica, both in the colour, feel, and general appearance. I am inclined to believe that the matter of black vomit consists chiefly of the red globules of the blood, which from the dissolved condition of this fluid when poured out from the exhalents, have easily separated from its other constituents, and become decomposed or disintegrated by lying in the stomach, or by the action of the gastric juice or other secretions of this organ. There is always more or less of the same kind of dissolved blood which oozes from the gums, nose, &c. We see also that this blood which distils from the nose and gums acquires the same colour as black vomit, ~~but~~ becomes dry on the lips and teeth, in consequence of exposure to the air; whereas the matter of black vomit is held in a fluid state by the heat and secretions of the stomach. Sometimes the formation of the matter of black vomit is first announced in the alvine discharges, succeeded soon afterward by the ejection of the same matter from the stomach.

Contrary to the usual observation of writers, the stomach, in a very considerable number of cases, (some of which were fatal,) was affected only with nausea or slight irritability on pressure, and retained the drinks and medicines, to the last moment, without the occurrence of vomiting. Black vomiting was comparatively less frequent than in previous years, but there were very few fatal cases in which there did not exist a morbid and distressing irritability at the stomach after the third or fourth day, sometimes not until the sixth or seventh. The species called the coffee-ground black vomit was most frequent. In a number of cases I observed it was not thrown up more than two or three times, being in several suspended many hours before death. They all died ~~but~~ *when it*

* [Autopsies have since demonstrated (see Ashbel Smith's yellow fever of Galveston, Texas - & Copleland Brit. of Pract. Med.) that the stomach in every fatal case probably is more or less filled with the matter of black vomit, though none has been ejected during life.]

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three. I did not see a single case of the flaky or tinder-like species of black vomit, though I am informed, on such authority as leaves no room to doubt, that this remarkable species of black vomit was observed in several instances, as appears from the following note, which I have received from Dr. Francis. "I do not find that the black vomiting, comparatively speaking, was so often met with, in this, as during the preceding years, when the yellow fever has prevailed among us. It was, however, equally fatal when it did occur, as in former seasons. Of sixty two cases of yellow fever, which I witnessed from the commencement to the termination of the late fever, I have observed only sixteen cases in which the black vomit took place. Of these, three were of the kind generally denominated the flaky or tinder-like vomit." Out of two hundred and fifty-four deaths reported to the Board of Health, I cannot discover that there were more than eighty or ninety cases of black vomit, which, compared with the whole number of deaths, makes the proportion a little more than a third, though most usually it has been found in previous years that one *half* who died had this symptom.

In a very considerable number of cases, the alvine discharges which had been dark and offensive at first, became, as Lining also has remarked, perfectly natural in colour, smell and quantity but a few hours before death; and what was still more extraordinary, in several cases which occurred in the practice of Dr. Walters, *natural discharges actually alternated with dejections which were in every respect precisely similar to the matter of black vomit.*

Although there was in some instances a disagreeable odour emitted from the mouth, owing to the blood which had oozed out from the gums, collecting under the tongue and between the lips and teeth, and after lying there some

time and mingling with the saliva undergoing decomposition, there was nothing as in typhus, particularly offensive in the breath, sweat, stools, urine, or other excretions; nor was there ever, at any time, as far as my experience goes, a foul cadaverous effluvium from the body, a symptom spoken of by Deveze and others, and so peculiarly characteristic of the latter stage of typhus with which yellow fever, however, ought not to be confounded. On the contrary, in a majority of cases, every thing about the patient seemed perfectly inodorous, and for hours after death, showing that the fluids were comparatively exempt from taint, and much less concerned in this disease than the nervous system. In a patient with black vomit at the Quarantine, I was particularly careful in examining the breath three or four hours before she died. There were no foul excretions in the mouth, and the air expired was as inodorous and untainted as in the most perfect health. In another, the breath from the nostrils and mouth two hours and a half before death, were without the least odour. Neither did I observe in any case a gangrenous condition of the blisters on the skin which Monsieur Deveze speaks of.

The restlessness and inquietude now increase to an alarming degree; the face, cheeks and lips become bloated and livid, and the respiration hurried and painfully laborious; the muscles of the neck being actively engaged to assist the breathing, and the os hyoides and larynx forcibly drawn down in every inspiration. Sometimes he wheezes or pants, like one labouring under asthma.* Even in this dying state I have seen the patient get up and methodically

* Towne also mentions "heaving of the lungs" as a symptom of the last stage, p. 21.

put on his clothes, cravat and hat, and though all the while partially insane, retain the natural motions of his limbs and his hearing, and other senses as well as his powers of deglutition and voice, in all their perfection. Though the perceptions and reasonings of the patient appear somewhat confused and troubled, they are not obtunded, but like the muscular strength retain, apparently, their energies up to the very moment of dissolution. The loss of sleep and the ravages of the disease produce, however, more or less exhaustion, and the voice, towards the close of life is, most usually, somewhat enfeebled, and the ability of the patient to walk evidently impaired, for as he gropes about his bed or around the room he staggers and is very willing to be supported by the attendants.

In one remarkable instance of this kind, (Fowler, attended by Dr. Brush and myself,) the patient seemed to labour under a kind of intoxication. He dressed himself, put on his over coat and hat, and though his laborious inspiration, livid bloated face, and cold extremities showed that he was actually dying, continued to grope about the room, and was even, to the last hours of his life, with difficulty restrained from going into the street. He repeatedly went to the door, to the astonishment of all the neighbours, saying, that he wished to breathe the fresh air and to go home. No one at first would have singled him out, as the patient among the friends and physicians, who came to see him, were it not for the blood which almost constantly oozed from his nose and stained his lips and jacket, and the remarkable deep yellow of his adnata contrasted with the beautiful azure blue, of a most brilliant and transparent cornea. Nor was there any bleeding from his gums or mouth, but the blood from his nose had concreted in black scales on the lips and at the external openings of the nares.

What was still more extraordinary in this case, was, that the stools continued perfectly natural until death, that he did not reject his drinks, and that there was at no time black vomit, although for the last two or three days of his illness, there was a constant inclination to vomit, and agonizing distress at the præcordia. He lived until the termination of the tenth day, and the laborious respiration and other symptoms of dissolution had continued for more than thirty-six hours! His face, trunk and limbs, were all deeply imbued with the peculiar tint of yellow fever during the last three or four days of his life. He had been addicted to intemperate habits, and often, also, to a *bleeding from the nose*. When the exacerbations came on, and the skin grew warm, the epistaxis was suspended. He had been employed by the Board of Health to carry lime into the infected district, but though surrounded constantly, as he must necessarily have been, with a cloud of this supposed antidote, fell a victim, nevertheless, to the poison which he inhaled there. These "cold walking cases," as they have been termed, were not unfrequent. A patient attended by Dr. Walker, and who had black vomit to a profuse degree, (James Mc Ginnis,) got up an hour before his death, said nothing was the matter with him, and dragged his bed-stead across the floor, to the window.*

It was difficult at this time, to make the by-standers believe that the patient would not recover. The laborious inspirations, the extreme restlessness, the livid bloated face, the occasional rattling in the trachea, the irregularity and

* In several instances, the patient after having lain, during the whole disease, in a state of alternate coma and pervigilium, was seized with furious delirium, and rushed out of his bed just at the moment of death.

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threadiness of the pulse, the cold, damp moisture on the forehead and extremities, though they escaped the notice of the inexperienced observer, were however, but too many certain indications of the near approach of death.

In several cases, there seemed to be a partial paralysis of the tongue, and an impaired condition of the organs of speech, rendering the articulation indistinct and thick, without, however diminishing the strength of the voice. In one case it was accompanied with a quivering of the lower lip, and general tremor of the body. The intellectual functions were not impaired in the slightest degree, though the patient was then throwing up the coffee-ground black vomit, and died four hours afterwards. Dr Perkins also observed the same affection of the tongue in a number of cases.

More frequently, however, at this late hour of the disease, the eye and countenance remaining calm and perfectly natural in their expression, and the intellectual functions unclouded, the patient lies tranquil and unconscious of danger, and expires without a struggle. "In some, says Dr. Rush, "the last hours of life were marked with great pain and strong convulsions; but in many more, death seemed to insinuate itself into the system with all the gentleness of natural sleep."

CHAPTER III.

PATHOGNOMONIC SYMPTOMS.

The first or forming stages of all fevers bear in their symptoms so close a resemblance to each other, that the most skilful and experienced practitioners confess themselves at this early period incapable of determining their pathognomonic and diagnostic features. There may be sufficient data to form a *probable* opinion as to the shape or character which the disease will assume, but, in regard to yellow fever, it is not until after it has existed for some time that its phenomena are boldly and unequivocally developed. The second or third day, at farthest, usually puts it in our power to come to a definite and positive conclusion.*

* "In mild cases of this disease," says Dr. Pym, "it is impossible to point out any symptoms distinguishing it from an attack of fever from any cause; and even in bad cases, until the fatal symptoms make their appearance, I may say, excepting its prevailing epidemically, that it is as difficult to decide positively upon its real nature, as it is in the fever of small-pox, before the appearance of the eruption."

This, therefore, is no objection to the specific, idiopathic and peculiar nature of yellow fever; for the same objection obtains to the vast and entire catalogue of all *Pyrexious* diseases, or those whose invasion or

*Make this
note, text.*

The anxious solicitude of the patient, and of his friends, as well as the eager curiosity of the public to unravel this mystery, often places the physician in a dilemma, from which he cannot always extricate himself without considerable difficulty. A regard for his reputation ought to teach him to exercise the utmost caution and discretion in giving an opinion; but the pressing importunities and interrogatories with which he is besieged, assisted sometimes perhaps by a vain ambition to acquire the credit of being gifted with more than common acumen, too often induces him to hazard assertions which it is afterwards found necessary to retract; and which, to the confusion of the short-sighted policy he had adopted, have a contrary tendency to that which they were designed to produce. Numerous illustrations might be given of the truth of this observation; but it is not our business at present to enter into any personal allusions, in-

commencement is characterized by febrile action. Physicians, in this respect, are placed on the same level, and have only to blame the imperfection of their art. It is disingenuous, therefore, as well as unphilosophical and unworthy of any writer, however he may be bewildered by the delirium of controversy, to attempt to make use of this fact, to establish the identity and unity of these diseases. Bancroft, however, who is never scrupulous about the means which he employs to support his extravagant assumptions, urges it as an overwhelming argument against the specific nature of yellow fever! *Vide his Sequel to an Essay on Yellow Fever, p. 32-40.*

The world do not make allowance for the perplexities with which physicians have often to contend, in disentangling the peculiarities of one disease from those of another. Though they are at all times ready to doubt the infallibility of our art, they are on the other hand, often led astray by the other extreme, and on those occasions where they find themselves in the dark, look up with a superstitious credulity to the physician, to do what is beyond the capacity of human ability to achieve.

asmuch as we are ready to acknowledge that we are all liable to err, and that we ourselves in a more particular manner are desirous of maintaining as good an understanding as possible with our medical brethren. Where there is so much room for debate, from the very nature of our profession, it is not only prudent, but praiseworthy, to abstain from all superfluous disquisitions.

As far as our observation has gone in the yellow fever of this season, it would appear that the following are the pathognomonic or undeviating symptoms, constituting an aggregate or assemblage, which, though few in number, and some of them apparently trivial or unimportant when considered individually, were, however, when the disease was well formed, almost always found associated together, or at least a sufficient number of them to characterize yellow fever from all other diseases.

Tongue.—Covered with a moist thick and dirty yellow, or sometimes thin slimy white fur, bordered almost always by a broad clean red margin, and clean edges—the fur usually growing thicker, darker, and drier, and sloughing and clearing off like the cuticle in blisters, while the surface of the tongue itself became moist, and of a fiery deep red colour, and near the base frequently dry, and rough to the feel towards the termination of the disease.

Sighing.—Deep and frequent, accompanied ordinarily with a sense of lassitude or tired feeling, and sometimes faintness. Jackson judiciously observes, that this faintness when present is more owing to a torpor of the nervous power than to excess of mobility. “The patient, says he, was often able to stand upright for some time, even to walk to a considerable distance; and when at last overcome, was observed to fall down in a torpid, rather than in a fainting state.”

Eye.—Almost constantly an adnata injected with vessels carrying florid arterial blood, radiating or diverging from the outer parts of the ball of the eye, and especially from the canthi towards the cornea. The eye, at the same time, often suffused with tears, as in catarrh, but the cornea always unusually brilliant and transparent, and never inflamed. The adnata afterwards becoming yellow, first on the outer angles, the red vessels at the same time gradually, and at length entirely disappearing, while the yellowness becomes of a deeper and greener hue, and extends up to the cornea. The yellowness, as the disease advanced, beginning to appear about the eye-lids, eye-brows, base of the nose and forehead, and around the lips, and at length if the disease protracted or proved mortal, extending down upon the neck and chest, and arms, not reaching the lower extremities until the eighth, ninth, or tenth day; sometimes not until just before or even after death.

Pain.—More or less acute, over the forehead and along the superciliary ridge, shooting for the most part from thence through the eye-balls to the occiput, and in almost every instance, down the back and loins to the lower extremities, affecting in many cases, more especially the calves.

Pulse.—After the disease is formed, and the stage of collapse supervened, regular, very little more frequent than natural, but always more or less soft and compressible.

Stomach.—A morbid irritability most commonly after the third or fourth day, sometimes not until the seventh or eighth day, always before the disease terminated:—especially denoted on pressure at the præcordia, accompanied sometimes with nausea, a sense of oppression at the stomach, eructations, hiccup, cardialgia, inclination to vomit, or rejection of drinks. Very frequently about the

* We consider the Cardialgia or heartburn, as an equivocal symptom rarely present. Its constant of Typhus (water brash) we never saw in yellow fever. They would both indicate a degree =

the stomach in yell. is as indicative of a bearing any resemblance to a bilious derangement of that organ from regurgitated bile. There is no retching or straining or strong well-developed normal contractions. The vomiting is a spasmodic ejection or involuntary spouting out of the black flocculi & liquids, as if there was a

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fifth or sixth day, in the more strongly marked cases, or where the disease proved fatal, a vomiting of dark coloured matter, resembling coffee grounds, attended with a burning and distressing sensation at the præcordia, frequently accompanied with, or preceded by, hæmorrhage from the nose, gums, and tongue.

It may appear strange to see the phenomena of the tongue, which have by many been thought an uncertain indication, placed here in the foremost ground. The unanimous testimony of the profession, however, and my own particular observation, authorizes me in giving it this pre-eminence in so far as it regards the fever of the present year.

The same may be said of the symptom of sighing, which though sometimes a symptom of typhus, and of other diseases, was next to the appearance of the tongue, perhaps, more constantly present than any other symptom.

The eye was less constantly affected than could have been anticipated, had we depended for our diagnosis on the representations of most writers on the yellow fever, for this is usually their leading symptom. The pain was in the beginning of the disease a good criterion; for although the distress over the orbits is common to many other diseases, and especially to those fevers that are attended with or caused by a deranged condition of the alimentary functions, yet it was found, on tracing the direction of this symptom, that it observed a peculiar route, and affected almost constantly and exclusively a particular set of nerves. Thus it rarely or never failed to become seated in the balls of the eyes; often towards the bottoms of the orbits, almost invariably passing through the head to the occiput, and down the back and loins: less frequently, however, ex-

= of action, & that - morbid action, - in the liver which the pathology of the disease as respects that organ & it does not warrant. In the condition of the stomach & chyliferous vessels there is nothing that bears any resemblance to dyspepsia -

* All this is perfectly consonant with the demonstration of Dr. Bell on the source of sensation from the posterior divisions & nerves of the cerebro-spinal centres; for it is this great sensorium as we conceive, upon which the malarial virus acts with most intensity. Reflex action from the brain, on pericardium & lungs, will explain

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= gastric will tend to the thighs and calves, but rarely or never affecting the anterior part of the trunk, nor the chest nor abdomen, except occasionally when there was present an universal soreness of the surface.

* The pulse was only remarkable in a negative point of view, by retaining in so extraordinary a manner after the first stage had passed off, nearly all its natural phenomena, at the same time that other functions were characterized by the most alarming symptoms. The quiet state of the circulation, and the calm, tranquil and confident manner of the patient, interrupted only by occasional sighs, often led the friends and attendants to indulge in flattering hopes, which were but too soon to be destroyed. The pulse became unnatural only in convalescence, of which its slow and measured pace, as well as the long protracted debility of the body, were found to be the most characteristic symptoms.

The same remark applies to the stomach, which, nevertheless, unerringly proclaimed its fidelity to the dominion of the disease, at all events before its termination; fully justifying the eloquent words of Dr. Warren, that this is "the chief seat or throne of the furious conqueror."

at this period at least,

CHAPTER IV.

DIAGNOSIS.

AFTER determining the pathognomonic symptoms of yellow fever, or those which give to it a specific and idiopathic character and contradistinguish it from all other diseases, our next object is to contrast it with those particular diseases, to the symptoms of which some of those belonging to yellow fever, bear a resemblance, and with which they might possibly be confounded. This constitutes the *Diagnosis* of yellow fever, and requires in the practitioner, as a preliminary step, a thorough knowledge, not only of the pathognomonic symptoms of yellow fever, but also of those symptoms, which are never, or only sometimes, present in that disease, as well as an intimate acquaintance with the symptoms of those diseases, which most nearly resemble it.

I am not acquainted with any author who has not, as far as I am able to judge, scrupulously avoided entering into the examination of the diagnosis, though undoubtedly the most important subject which could possibly claim the attention. I have been induced to undertake it, fully sensible of my incompetency, to perform it in the manner in which

it ought to be done. I shall feel the satisfaction, at least, of having opened the way for others.

We shall confine the diagnosis to the following diseases : Synocha, Typhus, Intermittent Fever, Remittent Fever, Plague, Gastritis, Enteritis, Hepatitis, Phrenitis, Catarrh, Intoxication, and Asthma.

Fevers.—To this order, the febrile action present in the beginning or first stage of yellow fever, renders this disease more or less analogous. But what particularly distinguishes the pyrexia of yellow fever from them, is, that it is constituted of but one paroxysm followed by a sudden remission, which remission, though accompanied usually by a moist natural skin, an abatement of heat and entire absence of all previous pain, is not followed by an immediate solution of the disease, as in fevers of a synochal type, particularly : nor by a periodical exacerbation of arterial excitement after a determinate lapse of time, as in those of a remittent or intermittent type, but by great prostration of the system. The remission of yellow fever, therefore, is an alarming state of collapse, though it comes under so insidious a disguise. It behoves us, therefore, to have closely watched the preceding symptoms, with the greatest care, in order that we may be prepared to undeceive the by-standers and friends of the patient, of those flattering expectations, which they are too apt to form, of the favourable termination of the disease, at this stage of it.

Synocha.—In fevers of this type, there is usually more general heat and dryness of skin diffused equally over every part of the surface. The pulse, also, is strong ; the tongue covered universally and without a margin or clean edges, with a bright white fur, not slime ; yellowish when bilious symptoms are present. The eye, also, does not present that unusual redness, or turgid watery appearance, seen in yellow fever. The activity and tone of the absor-

Dents produce rather diminution of the lachrymal, as well as other secretions. Hence, synochal fevers, are sometimes called ardent and inflammatory fevers. There is rather a dryness or aridness of every part of the system than moisture in the first stage of the disease. There is, also, most generally a universal soreness, or pain over the surface. The pain does not observe, as in yellow fever, a determinate and peculiar course, nor is it, as in yellow fever, almost invariably located along the superciliary ridge and through the eye-balls, except when the stomach is particularly deranged from engorgement of bile, in which case the pain of the head, though seated more particularly in the forehead, is diffused over that part. The respiration is hurried, but without sighing: the analogy between inflammatory fevers and yellow fever, however, soon vanishes when the second stage of the latter disease arrives.

Typhus. The beginning, or first two or three days of typhus, may much more easily mislead the unguarded practitioner than synocha. For as in yellow fever, there is never present that vigorous and unremitted impetus in the movement of the arteries which characterizes, in so peculiar a manner, fevers of inflammatory action; it will be found, however, that the pulse in typhus is far more frequent, and, what is more striking, quicker, smaller, and more irritable than in yellow fever; where~~as~~, on the contrary, it is most usually full, bounding and soft. The tongue is not particularly marked in the commencement of typhus. The pain, also, is chiefly located in the occiput, but follows, as in yellow fever, the track of the vertebral column. The heat, also, x is universally distributed over the surface in this disease, and is characterized by producing a remarkable sensation of a biting or stinging nature, called *calor mordax*, totally different from the skin in yellow fever, which even in the

x [because in typhus ²³ too as in yellow fever there is a poison introduced, whose appropriate action is first on the encephalon & its immediate appendages.]

[2. Scarlatina the living, even stinging sensation imparted by the heat of the skin, is still more characteristic than in typhus.]

x first stage is often pliable, soft, and suffused with a degree of moisture.

There is a hebetude or sluggishness, also, of the intellectual functions and a loss of energy in the organs of sense; symptoms rarely or never present in the beginning of yellow fever. Afterwards the tendency to continued coma as contradistinguished from the distressing pervigilium of yellow fever, places the disease in a relief too bold and imposing to be mistaken. We often hear physicians speak of yellow fever terminating in typhus or typhoid symptoms. I never saw this phenomenon, but must be permitted to declare, that as far as my experience goes, this disease is throughout its course totally unlike typhus, and especially so in its concluding stages. I have already adverted to this in the chapter on Analysis of Symptoms; but I cannot refrain from observing, that the tongue, and in a more especial manner, the eye, the cold, clammy moisture of the skin, the regular, full and soft pulse, the præcordial anxiety, and absence of pain in all other parts of the system, together with the untainted and inodorous condition of the excretions and the remarkable self possession of the patient, remove the pathognomonic and diagnostic character of yellow fever too far from that of typhus, for any person, possessed of ordinary apprehension, to confound the two together. Instead of the parched black scales, collecting on the tongue, from the foulness of the excretions, the surface of this part, at this stage of yellow fever, is most usually of a deep fiery red colour, often soft to the feel, or only a little rough towards its base, and most generally besmeared with fluid arterial blood. The blood also, which oozes from the gums in yellow fever, and dries on the teeth, of a black colour, though it resembles the sordes often observed upon the teeth in typhus, is a hæmorrhage, which has undergone this

alteration ; whereas in typhus, it is an excretion. Moreover the lips in yellow fever, though often dry and somewhat cracked and scaly, are not covered with that thick black excretion observed in typhus. On the contrary, they are often pale, livid and clean to the hour of death, which never holds true of typhus, where the universal taint and putrescency of the fluids shows itself in every excretion, insomuch so, that the body itself emits a tainted, cadaverous and extremely offensive odour.

The subsultus tendinum, sighing, tremulous motion of the tongue and palsied state of some of the secretory organs, form points of resemblance too imperfect to merit attention.

Intermittents.—I shall not dwell on the resemblance of yellow fever to this well-defined order of fevers. The common symptoms of intermittent fevers are as familiar to the uneducated million as to the most skilful practitioner. It may be observed of one striking symptom of these fevers, the chill, that it is not commonly present in yellow fever. It would be preposterous to discuss, at this age, whether yellow fever be a type of the intermittent. It may serve the purposes of those who are hard pressed for arguments to show the domestic origin of yellow fever ; but it will never do to be brought into a serious debate on the specific character of this disease.

Remittents.—The same remarks apply to these, but in a more limited sense. The remission observed in these fevers is like that of yellow fever, a part of the train of phenomena which characterizes the disease, but does not bear so deceitful a resemblance to that perfect state of apyrexia, which constitutes the solution or termination of synochal fevers, as the state of collapse in yellow fever.

When this stage arrives in yellow fever, the hasty ob-

does.

server is apt to imagine from the regular and nearly natural pulse and the cool temperature, softness and moisture on the skin, that a perfect apyrexia or absence of fever and an entire solution of the disease have taken place until the unnatural slimy fur and margin on the tongue, the frequent sighing for breath, and above all, the burning irritation at the præcordia particularly on pressure, show the physician that all is not going on right, but that he has more danger, perhaps, to apprehend from this contradictory assemblage of symptoms than if they existed separately. He will be still more deceived if, under the erroneous impression that yellow fever and remittents are descended from the same parentage, he waits to see a return of the exacerbations and remissions. There are ~~sometimes~~ bilious symptoms associated with remittents. It is these which have given rise, perhaps, to more errors on the pathology and diagnosis, and, I lament to say, treatment of yellow fever, than any other circumstance.

*almost always,
strong-marked*

I will not undertake to say that the yellowness in yellow fever has no connection whatever with the bile, though I am very much inclined to be of this opinion, not only from its being always of a hue or tint ~~totally~~ different from that produced by the bile; but because, as we shall afterwards see the biliary organs, in this climate, at least *never* or very rarely participate in any degree with the symptoms of yellow fever. The subsidence of the red blood from the eye in yellow fever is followed by the dusky tinge which spreads over the adnata in the place of it, and afterwards the yellowness comes out methodically and in regular succession, first around the eyes, nose and mouth, then down the neck and over the breast and shoulders and arms, finally spreading over the lower part of the trunk and the legs, the patient sometimes dying before it reaches the knees. Is this the

manifestly

* though more legitimately belonging to this type of fever, may however be adventitious there also.

order followed by a suffusion of bile over the surface? Does not the bile, as in jaundice for example, spread at once over the whole or the greater part of the body? Is it not always also a harmless symptom? But in yellow fever, who does not know the formidable dangers of which it is too often the harbinger.

8 In remittent fevers, bilious symptoms ~~are altogether adventitious~~ ^{also}. They may occur in typhus, and in synocha, and especially in hot seasons or climates; also in all the phlegmasiæ; in short, in any disease.

8 But there is another set of bilious symptoms which concern particularly the stomach. It is contended that the vomiting, ~~retching~~ and irritation of the stomach in yellow fever, are all to be ascribed to an engorgement or redundancy of bile in that organ, and that the disordered state of the stomach so frequently present in remittent fevers, is precisely the same as these symptoms. A very serious and important objection to this opinion is, that the gastric and præcordial irritation in yellow fever are attended with a deficiency in the quantity of bile as well as of other secretions in the stomach; while in remittent fevers they are entirely attributable to a redundancy of this secretion. Moseley points out this in the most clear and explicit manner: "The nausea and bitter taste in the mouth in yellow fever indicate the quality, not the quantity of the offending secretions. The vomiting is from irritation in the stomach, not from plentitude." I refer also to Sir Gilbert Blane on the Diseases of Seamen, and other authors, for illustrations of this truth.

What proves that the bile cannot have any share in this disease is, that the biliary organs exhibit very rarely any functional or organic derangement during life, or morbid appearances after death. In all cases of the yellow fever that came under my observation, I never saw one complain

of distress in the right hypochondrium or region of the liver and gall bladder.

There is another discrepancy which occurs to us in comparing the gastric irritation of yellow fever with the vomiting present in bilious fevers of a remittent type. It conclusively puts this dispute at rest ; for it appears that the gastric irritation in remittents is never or very rarely of an inflammatory character, and that it comes on in the *invasion* or first stage of the disease from inordinate secretion of bile, and may be effectually removed by cleansing out the stomach with emetics, whereas, in yellow fever it is of an inflammatory character, and in a great majority of cases, does not exist at all as far as our senses are capable of judging, until the *third day* or afterwards, but unlike that of remittent fevers, becomes more and more aggravated from day to day, especially if emetics are given, until the burning distress at the præcordia and black vomit close the scene.

Though a slight *vomiting* sometimes attends the invasion, it may be set down as an almost invariable rule that the *irritation* of the stomach rarely, and the *yellow tinge* of the eyes and skin never, come on until about the third day ; whereas in remittent fevers the yellowness most usually comes on at or soon after, and in some instances, *before* the accession of the fever. Dr. Hosack, in his Nosology, has happily made use of these peculiarities to contrast the two diseases. The diagnosis we have given has been verified and confirmed in every case of yellow fever that has fallen under my notice. It is also corroborated in every particular by the description of those authors who have treated of the Jungle fever of the East Indies, the Bilious fever of Africa and the Mediterranean, and lastly by our own authors (already quoted in chap. 1st,) who have treated of the Remittent and Intermittent fevers of the lakes and marshes in the interior and southern parts of the United States.

The cases of yellow fever also that were transported from this city to the Marine Hospital at Staten Island, prove the idiopathic and specific character of the disease, and its total dissimilitude from bilious fevers in the most conclusive manner. It must be recollected that those persons who are sent to this public hospital, are of the most indigent and generally of the most depraved description of the community. Consequently, from the habits of intemperance and irregular life so common among that class in this country, we ought to look naturally for hepatic obstructions and bilious symptoms in any disease that might befall them. Let us see if those expectations were realized: for, certainly, if yellow fever be a bilious remittent fever, the type of the disease, assisted by this powerful predisposition in their systems to disorder of the biliary organs, ought to have developed bilious symptoms. But out of seventy cases taken to the hospital, *four only* had hepatic obstructions, which, however, did not commence until *after they had recovered* from the yellow fever. Of this number two or three died.

*Says Dr Bayley
the Health
officer*

Dr. Warren, of Barbadoes, who had the good fortune to live at a time when the wholesome admonitions of common sense were more implicitly obeyed than the illusions of the imagination, and when it was not thought derogatory to the interests of science to apportion a certain part of their duties to a close observation of facts, has dwelt with so much force, clearness and truth on the fallacy of those speculations which have deduced the identity of yellow fever and bilious fever from the symptom of yellowness which characterise the former disease, that I am sure I shall be pardoned by the reader for having transplanted his invaluable remarks into the pages of this work. In describing the symptoms of yellow fever, he comes to the second stage. "This is the second stage of the distemper, which I chose to call

[This however frequently occurs also in Jaundice, unequivocally the result of regurgitated or resorbed bile, & therefore is not a conclusive argument.]

[?] by the plain name of the yellow state; for the word *bilious* or *icteritious*, I take to be very improper and inadequate terms. This yellowness, I am persuaded, chiefly arises from a more complete colliquation or dissolution of the red globules of the blood into a yellowish serum, which will naturally soon give that tincture to the whole skin. The same is often observable on human bodies soon after the bites of some poisonous serpents or other venomous animals; and in such case it cannot with any reason be supposed to proceed from a suffusion of bile, but rather from a colliquation, and perhaps gangrenous diathesis of the sanguineous mass, occasioned by the force of the deleterious venom that had been infused into it. What is observable every day in all common bruises of the flesh, may serve somewhat farther to illustrate this matter; for here when the texture of the extravasated blood begins to loosen and dissolve into a liquid serous consistence, in order to acquire a proper fluor and permeability for passing on and being received again into the mass of circulating juices, a very visible yellowness does always appear in and about the part; but this soon goes off again, when the matter is fully absorbed back into the vessels, where it commits no hurt, but is readily overcome by the force of nature, as the quantity of such dissolved blood is small, and at the same time very innoxious. I do not, however, deny, but that through a great propensity and straining to vomit, some quantity of bile may be thrown into the blood; but then I must observe that the yellowness of this distemper I am speaking of, very frequently shows itself when there has been *no vomiting* or retching at all, or *scarce any sensible sickness* of the stomach, for the truth of which I can appeal to many.*

* Warren on the Malignant Fever in Bardadoes, p. 11, et seq.

Plague.—As I have not had an opportunity of seeing this disease, I shall not enter into a detailed comparison of its symptoms with those of yellow fever. The frequent occurrence, however, of carbuncles and buboes in plague, and their very rare occurrence in yellow fever, besides several other symptoms and peculiarities of plague, are sufficient to show that the two diseases are radically different. Out of forty-eight thousand cases in Cadiz in 1800, Arejula saw only three carbuncles, two of which proved mortal.*

In the yellow fever of the present year, out of four hundred and twenty-five cases of yellow fever, there were two of carbuncles, one of which proved mortal. Buboes are rarely or never seen in yellow fever.

Gastritis.—This is a local disease, and begins with all the strongly characterized symptoms of inflammation of the stomach, accompanied constantly with those common to other phlegmasiæ. The principal of these are the pale visage, hard, small, frequent pulse, tenderness to the touch at the præcordia, and rejection of drinks, &c. There is no particular affection of the head or eyes, or back or limbs, as in yellow fever, where the gastric irritation does not announce itself distinctly till the third day, before which time gastritis has generally terminated in gangrene or sphacelus.

Enteritis.—It is hardly necessary to describe the peculiar symptoms of this disease, as they are so well known to every practitioner. What has been said of gastritis applies for the most part also to this disease. Its course is equally rapid. It is scarcely possible to confound this local affection with yellow fever.

* See Sir James Fellowes' Reports on the Pestilential Disorder of Andalusia, p. 50, 56.

Hepatitis.—Under the head of Remittents, I have said that there are rarely or never present in yellow fever any symptoms of disorder in the biliary organs. Hepatitis is to be considered as included in that remark. As yellow fever therefore and hepatitis are as distinctly characterized from each other as it is possible for a general and local disease to be distinguished, and as they never come into collision with each other, it is scarcely necessary to compare their symptoms.

Phrenitis.—This is a local affection, confined altogether to the head, and very rapid in its course. The affection of the head proceeds from an inflammation of the membranes and substance of the brain, and is therefore much more violent and of an entirely different nature from that of yellow fever.

Catarrh.—There is no disease, perhaps, which might be so readily mistaken at first sight for yellow fever as this. The pain along the superciliary ridge, the redness, suffusion and pain in the eyes, flushed countenance, with a pulse often full, frequent, bounding, but somewhat compressible, and a skin frequently soft and moist, with pain in the back and limbs, resemble so nearly the first symptoms of yellow fever, that an imperfect examination of the disease might lead to the most serious results. A close inspection, however, of the symptoms, will soon unravel the difficulty. It will be found that the pain over the eyes is owing to an inflamed condition of the mucous membrane, lining the frontal sinuses, and that this inflammation follows the membrane through the nares and throat, passing from thence into the trachea and lungs and through the esophagus into the stomach. It is found on questioning the patient, that the voice is evidently altered, that a glairy fluid distils from the nose, and that the patient, in most instances, every now and then coughs. All

x In acute catarrh moreover in fact in all forms of catarrh, there is almost constantly present from the very invasion, if not before a manifest bilious suffusion on the acromion & tongue, with bitter taste in the mouth, nausea &c, together with more or less complication of bronchitic inflammation.

these are quite different from yellow fever. Arejula considers "dry nostrils" as one of the symptoms of the disease. x

Intoxication.—The stupor, insensibility and comatose condition in which persons labouring under intoxication are usually found, together with the spirituous odour generally perceived in the breath, are sufficient to prevent the physician from being misled by the redness of the eye and flushed countenance. Besides which, as the stupor goes off the patient evidently improves in proportion, and the vomiting is followed by relief. The nature of the discharges from the stomach will also throw light on the cause of his complaint.

Asthma.—I have been induced to put asthma in the list, because I have observed, by the careless and very erroneous manner in which authors have spoken of the respiration, many would suppose that this function was as seriously impaired in yellow fever, as in asthma or pleurisy: and one writer, Dr. Pascalis, I observe by a description of this disease, which he has published in one of the public prints, has led us to infer that the *anhelation* throughout the disease is so great that it very nearly resembles the condition of a patient labouring under asthma. Nothing is so well calculated to mislead those who have never seen the disease as remarks of this kind. It is true, I have myself spoken of this *anhelation*, and compared it to what is observed in asthma; but it must be remembered that it is by no means, properly speaking, one of the characteristic symptoms of the disease—but the last laborious efforts of respiration, which indicate the near approach of death, and which never appear until 24 or 36 hours before that event happens.—Moreover it is not uncommon in other diseases, though it is unusually frequent in this disorder, owing no doubt prima-

that

notice

rily to the same cause as the sighing, and which I have attempted to explain in the chapter, on the Pathology of the disease.

There is nothing of this anhelation seen in all the first and second stages, and throughout the greater part of the last stage of yellow fever.

CHAPTER V.

AUTOPSIIC APPEARANCES.

Owing to the dread with which the living world look upon the body of a person who has perished of yellow fever, and the common, but erroneous notion, that it is a putrid offensive mass, ready to drop to pieces by its own corruption, the sick have been in almost every instance, not only abandoned during life by their relatives and friends, but after death wantonly hurried to their graves, almost before the last spark of life was extinguished; sent off as it were "before their time," in violation of the solemn rites of burial or ties of kindred. Though all nearly that have died have been in private families, this has not protected their remains.

Hence the difficulties which were opposed to the strong desire evinced by different members of the profession to make autopsic examinations.

The following interesting account therefore of the appearances in this disease after death, and for which I am indebted to the particular kindness of Drs. C. C. and E. S. Blatchley, will be highly acceptable.

"Ansel Keith, who died of yellow fever August 21st, 1822, on the fifth day of the disease, was examined by us

* { In the limited contributions we have been enabled to observe, so far as
to that most important department, the morbid changes of structure &c
the fluids in this disease, it is curious to note, that in two out of
the very few post mortem inspections obtained, the extraordinary
& most diagnostic fact (since ^{satisfactorily} established) presented itself
of a stomach filled with the matter of black vomit,
where there had been no ejection of that fluid during life.

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about two hours after his decease. Extravasations of a livid
colour were noticed in the lips, ears, blistered surfaces,
scrotum, &c. The cellular membrane, the stomach, the
liver and its substance, the mesentery, dura mater, apex of
the heart, pleura, peritoneum, and internal membranes ge-
nerally, were tinged with yellow. The blood in the heart
was fluid; the lungs were very brown or black; the liver
was unusually tender, and seemed small; the omentum and
dura mater appeared a little congested; the glands of the
mesentery were somewhat enlarged; the spleen was natu-
ral; the bladder was nearly empty, the patient having
made no water for thirty-six hours before his death. The
gall bladder was neither empty nor full. The patient had
* had no black vomiting, but the stomach was found to con-
tain about a pint of the matter of black vomit. The villous
coat of the stomach was lined with a coat of black matter or
bloody extravasation, and its texture was so very tender
that it was easily removed.* The brain and spinal medulla
looked quite natural; they were without marks of inflam-
mation, but seemed slightly congested externally.

“ Another patient examined was so similar to the above
that it is needless to repeat particulars.”

I have been politely furnished also with an account of the
autopsic examinations made by Dr. Harrison of the Marine
Hospital at Staten-Island, of the cases which occurred
there during the last summer, and which will throw addi-
tional light on this subject, and supply, in some measure,
the want of experience in the cases of the present year.

* M. Bally observes, that the gangrenous state of the stomach has
been too much exaggerated, and says, that where it does exist it is
almost always confined to the mucous membrane, and rarely extended
over a great surface.

“There was no appearance of active inflammation on opening the abdomen, but only a slight blush over the surface of the internal membranes generally. The internal coat of the stomach was extremely tender and easily abraded, particularly in those places where there were observed small livid spots. The gall bladder generally contained the usual quantity of bile, sometimes a little inspissated, but resembling *in no way whatever the matter of black vomit*. In one case nearly *two quarts* of the matter of black vomit was found in the stomach, and in distinct masses in the intestinal tube, especially in the colon. But there had been in this case no black vomiting.”

In a communication on the late fever, with which Dr. Francis has favoured me, I have been gratified to find a notice of two cases of dissections, which fell under the observation of Dr. A. D. Wilson of this city, which also I here insert.

“I have not myself, says Dr. F. made any post mortem examinations of persons dead of yellow fever, and can hence only communicate to you what I have heard from those who have. Yet, what little is known, in this way, goes to confirm the pathological fact, that the stomach is primarily the seat of irritation, and that the ravages of the disorder are most conspicuous in this organ. The cases, nevertheless, which Dr. A. D. Wilson has sent me, give also evidence, that the pestilence occasionally induces morbid changes in the hepatic viscus. I enclose you Dr. Wilson’s note.

November 10, 1822.

SIR,

I enclose you a brief account of the appearances I noticed in the dissection of two persons who died of the late yellow fever. The cases exhibited the disease throughout in a very formidable manner. They were both male subjects, and about thirty years of age.

* These two cases of Dr Wilson are to be taken particularly
the first with great caution. He was then a mere youth
& just graduated & never had before seen yellow fever. He is
erratic in his views & is now an ultra-homoeopathist. J

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CASE I.

Mr. A—— had been ill of the characteristic symptoms of yellow fever, which terminated with black vomit of a tinder-like appearance. He died on the fourth day. The external surface of the body was of a deep yellow hue.— The whole internal surface of the stomach was in a state of gangrene and sphacelus. The omentum exhibited a state of violent inflammation, which in some places had terminated in almost its entire destruction. The liver was of the ordinary size, and presented slight appearances of incipient decomposition. Something like a crepitus was observable upon making an incision into it, and a fluid of a frothy appearance and of a brownish red colour escaped. The resistance made to the pressure of the fingers was very trifling. The small intestines were also in many parts highly vascular.

CASE II.

Mr. B—— died on the fifth day of his illness: his symptoms were violent from the commencement of the second day. He had not black vomit; but suffered much from præcordial anxiety, and great tenderness of the abdomen.

The appearances in this case were much the same as in the preceding one. Though the disease was of longer standing, the abrasion of the inner coat of the stomach was not so great; no morbid change of the brain itself was perceived. The membranes of the brain and the peritoneal investures were tinged with a deep yellow colour.

“ I remain, your's,

A. D. WILSON.”

* To PROF. FRANCIS.

CHAPTER VI.

PATHOLOGY.

THOUGH no disease is better characterized than yellow fever, when fairly and fully developed, and none more difficult to distinguish than its milder and more evanescent forms, it will not be disputed, that those causes which influence all other diseases subject this also, to slight modifications. Such are the climate or situation in which it occurs, the vicissitudes of the weather and the character and condition of those who are the subjects of it. However varied, or combined, may be these different influences, the type of the disease always so far retains its original character, that no one who is in reality conversant with its symptoms, can ever be led to confound them with those of other fevers.

The yellow fever of the present year, according to the testimony of practitioners who have had an opportunity of comparing it with the epidemic of former years, has not assumed any appearances materially different from those which have always been observed to accompany this disease. The last cases were as well defined as the first. The organs of voluntary motion, the glandular and lymphatic systems, and the thoracic, as well as all the abdominal viscera, except

x [It is fact ~~to~~ there be any primary gastric irritation in the invasion of first or febrile stadium of yell. f., this ~~is~~ irritation seems suppressed or absorbed in the diffused febrile reaction! Whereas in labors remittents & intermittents, we all know the familiar fact that the accession of the hot stage or exacerbations

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almost always (especially in intermittents) brings on i.e. excites the stomach and lungs, have as usual been generally exempt from affection.

in action
in vomiting
of bile &
aggravates the
gastric difficulty

Except in bilious temperaments and in foreigners of full habits unaccustomed to the warmth of the climate, the hepatic viscera have been but little affected. If the season had not been unusually temperate, or had the summer heats been as excessive as we have sometimes experienced them, there can be no doubt but the disease would have been much more inflammatory, and consequently more frequently ushered in with bilious evacuations. In the few instances in which they did occur, they seemed to depend entirely on the excitement attendant upon the invasion or first stage of the disease, or the peculiarity of the habit or temperament; unlike bilious fever to which the disease has been compared, disappearing entirely after the first or second day.

x The circulating system, was for the most part, in the first stage of the disease considerably agitated, and the pulse, in several instances, hard and inflammatory. This excitement in the beginning of the disease, is the reaction opposed to the deleterious influence and first effects of the poison upon the nervous system; for the heart and arteries soon after seemed to have lost their momentum, and the disease passed abruptly into the stage of collapse. That there was, generally, less disposition to black vomit and other hæmorrhages than was manifested in previous years, was owing perhaps, to the mildness of the season, as there can be no doubt that the heat of the weather by rarefying the blood and augmenting its impetus, increases the natural tendency to hæmorrhage which characterizes this disease. ^

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Hence, also, the reason why the eye, though for the most part affected with acute pain, was less than ordinarily injected with red blood; a symptom which has been thought so characteristic of the complaint.

(Hence black vomit is more common in hot climates.)

The hæmorrhage, from the gums and tongue was most frequent. That from the nose was next most common, and it was observed that the patient who had this hæmorrhage, had a constant propensity to pick his nose. This was particularly the case in Fowler, mentioned in Chapter II. This peculiarity is adverted to, also, by Sir James Fellowes, in his account of the yellow fever at Malaga in 1804.* The hæmorrhage next most common was that from the stomach, commonly called *black vomit*. The hæmorrhage from the ears and eyes was observed in but one or two instances. I saw a slight hæmorrhage from the eyes and also bleeding from blistered and excoriated surfaces.

Though the disease was for the most part unattended with any inordinate excitement, in the beginning of the attack or excessive hæmorrhage in its termination, it was, notwithstanding, as fatal as in any former year. Does not this prove, that this disease expends its force chiefly on the nervous system, without the necessity of supposing with Moseley, Bancroft and others, that it is an ardent fever, or that its fatality is at all dependent upon any particular derangement of the circulation,† much less upon any ~~material~~ ^{putrescent} change in the condition of the blood, as Hillary has supposed. I do not believe with Hillary, or Lining, that the blood is putrid; but there is much reason to think that it is in a much more dissolved or limpid condition than in

* Reports on the Pestilential Disorder of Andalusia, p. 203.

† The vulgar opinion, and one that is encouraged also by those who deny the specific character of yellow fever, is that the patient often *bleeds to death*; whereas the hæmorrhage is never, or very rarely, considerable enough even to hasten this event. Sir James Fellowes mentions a case of epistaxis in this disease, where the exhaustion produced by the bleeding is thought to have accelerated the patient's death.

health or in most other diseases, which accounts, to a certain extent, for the engorged state of the capillaries, the petechial extravasations, the tendency to hæmorrhage before, and the livid discolorations immediately after death; perhaps, also, for the compressibility of the pulse. The engorged state of the capillaries, the petechiæ and the tendency to hæmorrhage are likewise attributable to a preternatural dilatation of the extreme vessels. The blood, also, when drawn, was observed to coagulate less readily than in other diseases.

Towne, one of the oldest writers on yellow fever, [London 1726,] and whose bold, original and accurate account of this disease is drawn in colours which will never fade, and which stand unrivalled even in the present times, also remarked this condition of the blood. He says [p. 26.] that there is too great a division of its constituent parts, and [p. 45.] that it is rarefied to an exceeding degree.

some Hillary, also remarks that by the dissolution of the blood in yellow fever, and its diffusion into the small vessels, the momentum of the circulating fluids is diminished, and the pulse retarded. This condition of the blood resembles, perhaps, in ~~a less~~ degree, that which is produced in persons who die from the bite of venomous animals,* or who have been killed by the electric fluid, to the operation of which, as well as to that of the bite of venomous animals, the poison of yellow fever may possibly bear some analogy. Warren, Lind, and Dr. Bruce of Barbadoes, also observed that the blood was remarkably dissolved. The words of the last author are, "Colorem exhibit floridum, rutilum et quasi rarefactum crassamento vix cohærente sero luteo croceo."

* See Moseley on Tropical Diseases, p. 29.

Physick and Cathrall, have also observed, that the blood found in the heart after death was fluid, and similar to that of persons who had been hung or struck by lightning. In corroboration of this remark, a singular fact, and of which mention, I believe, is no where made in any of the histories of yellow fever, has been noticed by Dr. Walker of this city. In the more malignant cases of the disease, and especially towards the crisis, he has found that the sudden occurrence of a thunder storm, has greatly aggravated the disorder. The first flash of lightning has sometimes, even in sleep caused the sweat to pour out profusely upon the surface; while in others it has waked the patient, with fright, brought on the black vomiting, and shortly after ended in death. Dr. Walters, has also made a similar observation. This militates against the hypothesis which ascribes ~~disease to~~ the origin of the deficiency of electric matter in the atmosphere. *disease to a*

As the season advanced the disease became as usual less fatal, though in conformity with what has been remarked before, it attacked a much greater number of persons than in the beginning of the season. Hence during September, the cases of recovery gained very fast upon the number of deaths, so that the proportion of the latter to the sick became as one to two, while in the latter part of July, when the disease began, and during all the month of August, the proportion of deaths to the cases was much greater. Whereas in the month of October, and particularly about the middle of the month, just before the termination of the epidemic, and when the cool weather began to set in, though the number of cases now greatly diminished, the disease again became as fatal, or indeed more so, than at its commencement; the proportion of deaths being to the proportion of sick as *three to four*! Thus, on October 17th, when the citizens had began to flatter themselves from the *w/*

cold weather of the two preceding days, and the small number reported, that they were speedily to return to their homes, the report suddenly swelled to *nine* cases, the following day to *six*, and the next to *ten*, while nearly all who had been reported sick a few days previous, were now reported dead. This dampened again very much the public feelings, but it was what always has occurred under similar circumstances in previous years. A sudden change of the weather checking the perspiration, and driving the fluids into the interior, by preventing the poison which had been lying perhaps for some time dormant in the system, from being carried out, concentrated, perhaps, its force, and thus developed the disease in those who were before apparently well, while it proved for the same reason fatal to those who were sick.

	No. of cases.	Deaths.	Proportion.
July 10th to August 1st,	- 15	- 7	- +1—2
August 1st to Sept. 1st,	- 95	- 58	- +1—2
Sept. 1st to Oct. 1st.] -	- 211	- 109	- 1—2
Oct 1st to Nov. 5th -	- 93	- 69	- 3—4

The eleven deaths that occurred of persons who removed to villages in the country, are not included here.

We may be said to have this year seen yellow fever in its most simple and unadulterated form, which has thus placed it in our power to determine the real position which it occupies in the system and the ruling tissues that sustain the brunt of the disease. If the experience of the present year ought to have any weight, it has been in our opinion, clearly established, that yellow fever is fundamentally and *primarily* a disorder of the nervous system.* From the regular

* Jackson has made a species of yellow fever, in which he says, "symptoms of nervous affection are more obvious than symptoms of putrescency; and in which yellowness and black vomiting are rare

period of time which, like other contagious diseases, it usually requires for the poison to operate after exposure, it is nevertheless probable that the fluids may serve as the *medium* of its introduction into the system. It seems probable that like most contagious diseases, it is first inhaled through the nose and mouth into the lungs. Some think it innocuous to the system in its natural state, but that it becomes deleterious on being decomposed by the secreting vessels at the sentient extremities of the arteries, where in its now altered state it begins to show its effects first on the nervous system. I cannot think this opinion true, for the affection of the eye, forehead, and tongue in the first stage, and the epistaxis afterwards, obviously lead to the inference that these symptoms are rather to be attributed to direct absorption of the poison on its passage through the mouth and nose, than to its influence upon those parts after being changed by the action of the fluids. The affection of the stomach as well as the hæmorrhagic tendency in the extreme vessels arrive at a much later period, and therefore perhaps show that the poison produces these effects indirectly, by passing first into the circulation; thus proving also, if my first assumption be correct, that the *materies morbi* is not altered in its passage through the blood. Apparently the pathology of the disease changes, for the nerves first bear the onus of the disorder, and then towards the close, the vessels and their fluids, as manifested by the general tendency to hæmorrhage, the dissolved condition of the blood and

occurrences." But the number of cases of black vomiting, and of yellowness in the fever of the present year, and as we have seen the almost universal absence of typhoid symptoms, show that the necessary connection which he supposes between black vomiting, yellowness, and a putrescent condition of the body has, in reality, no foundation.

entire absence of pain in those parts which were affected in the beginning. We have seen that in a great number of fatal cases there has not been the slightest hæmorrhage from the stomach, in many others none or very little, from the external passages, and in but very few instances an inordinate quantity or vitiated condition of the bile and other secretions; that the excretions, as the sweat, saliva, breath, urinary and alvine evacuations, unlike typhus fever to which it has been compared, have all been, for the most part, untainted with any peculiar or offensive odour, and most usually unchanged in their character; in fine, that the chylopoietic and assistant chylopoietic viscera have often performed their offices with a precision and regularity which, to those who have heretofore thought the fluids or their vessels, the nidus of the disorder, has appeared almost miraculous.

What furthermore corroborates the view we have taken of the state of the fluids, is the fact, that the blistered surfaces, though engorged and red with blood in the last stage of the disease, rarely sphacelate or become gangrenous. Dr. Rush also noticed this, and adduces several other powerful objections against the supposed putrescency of the fluids in yellow fever. “The smell emitted from persons affected by this disease, was far from being of a putrid nature; and if this had been the case, it would not have proved the existence of putrefaction in the blood; for a putrid smell is often discharged from the lungs, and from the pores in sweat, which is wholly unconnected with a putrid, or perhaps any other morbid state of the blood. There are plants which discharge an odour which conveys to the nose a sensation like that of putrefaction; and yet these plants exist at the same time, in a state of the most healthy vegetation; nor does the early putrid smell of a body which perishes with this fever prove a putrid change to have taken place in the

blood before death. All animals which die suddenly, and without loss of blood, are disposed to a speedy putrefaction. This has long been remarked in animals that have been killed after a chase or by lightning. The poisonous air *samiel*, which is described by Chardin, produces when it destroys life, instant putrefaction. The bodies of men who have died by violent passions, or after strong convulsions, or even after great muscular exertion, putrify in a few hours after death." [Medical Inquiries and Observations, vol. iii. p. 70.] He furthermore adds, that in yellow fever "putrefaction did not take place sooner after death than is common in any other febrile disease under equal circumstances of heat and air." Ib. p. 71.

That a morbid irritability of the stomach was always present, and that it invariably increased as the disease advanced, without, however, at any time excessive retching or vomiting, was obvious to all. But does not the highly organized condition of the stomach and the vast supply of nervous energy which it receives, together with the frequent absence of hæmorrhage, prove that this irritability was more a *nervous* than an *inflammatory* affection. Does it not prove, and do not also the regularity of the abdominal functions generally, show that yellow fever has no more to do with gastritis than with remittent fever or with hepatitis or enteritis? If the irritability of the stomach was a pure inflammatory affection, and a symptom of gastritis, surely this ought to be greatest on the first day of the disease, for it is then only that the arterial excitement exists, and not come on afterwards when the vascular system has lost its force, and the relaxed capillaries are pouring out drops of blood and sweat.

Besides, it is the character of gastritis, enteritis, and all other inflammations of highly organized membranes, to be

accompanied with excruciating pain, and a tense pulse, and to terminate speedily, within a few hours from the attack, in gangrene or sphacelus. To me it would seem impossible, that any practitioner, who has had opportunities of observing the yellow fever of the present year, could venture to confound its symptoms with those of a remittent or intermittent. It has borne not the slightest resemblance to either of those autumnal fevers, neither in its beginning, its progress, nor termination. It has been of the pure continued type of one paroxysm, terminating in a state of collapse; but never attended with, nor passing into remissions, and exacerbations, either regular or irregular. Instead of beginning or going off in a remittent or intermittent, its invasion and convalescence have both been as strongly characterized, and as totally different from those of remittents and intermittents, as the symptoms of the disease itself.

We will here make one single remark, to show how little dependence is to be put upon the deductions of Dr. Bancroft, the great authority on domestic origin, and non-contagion, to prove that yellow fever, is no other than a higher grade of intermittent, remittent, and bilious fever, and that they run into and out of each other, with a suppleness which is almost inconceivable, and depending entirely upon circumstances. He quotes Mr. Lea, surgeon of the 26th regiment at Gibraltar, as having had ample experience in the yellow fever, which occurred there in 1814, and as being therefore entitled to the highest confidence. Now it appears that Mr. Lea had under his care three hundred and fourteen cases, enough to be sure to afford any man of common apprehension a clear and accurate conception of the nature of the disease. But what is incredible. Mr. Lea lost out of this large number only TWENTY cases! We are indeed therefore compelled to believe with Mr. Lea, that the

disease which *he* saw could not have been other than what he terms it, a "bilious remittent." So also Mr. Weld, surgeon to the 67th regiment, and likewise quoted by Bancroft. He had one hundred and twenty-seven cases, and lost but TWENTY-SEVEN.*

If the nervous tissue be that on which the poison chiefly expends its force, the brain, as Jackson also has thought, must have a great share in the disease, though in this climate it does not perhaps bear so much the burden of its violence as the other portions of the nervous system.

The frequent occurrence in this disease of a particular species of mental derangement to which we have alluded, as also the pain in the back, loins and legs, the sighing and lassitude, and hiccup, and the slow depressed pulse more especially seen in convalescence, together with the peculiar location of the pain about the back, loins, forehead, eyebrows and eyes, the occasional constipation of the bowels, and frequent suppression of urine, as also the occasional dilatation of the pupil, and the constant affection, and sometimes partial paralysis of the tongue, and above all, the gastric irritation, go very far in support of the opinion, by no means novel or original, that yellow fever is, in fact, a disease of the nerves.† Does not this opinion also account for

* Sequel to Bancroft's Essay on Yellow Fever. London. 1817. p. 16, 17.

† The pain on the superciliary ridge, and the pain and redness of the eyeballs, the suffusion of tears, and occasional dilatation of the pupil, and frequent tendency to epiptaxis, which distinguish this disease, may be explained perhaps by the connexion between the extreme branches of the supra-orbital and nasal nerves, with the ophthalmic ganglion, these nerves and the ganglion being the divisions of the ophthalmic or first branch of the fifth pair. Perhaps the connexion of these with

a

across

the exemption of the organs of voluntary motion and the vascular tissue of the lungs, liver, spleen, and kidneys, from any particular irritation or inflammatory action, these organs being comparatively destitute of nerves when contrasted with the coats of the stomach?

Does not also the black or dark colour of the substance of the lungs, frequently found after death, show that their nerves have been partially paralyzed, and that the decarbonization of the blood was imperfectly performed? The same as is seen also in autopsic examinations of those who die from the bite of certain venomous animals, and to the poison of which that of yellow fever may be analogous?

And lastly, does not this explain also the remarkable symptom of *sighing* in this disease, and which in all probability is an involuntary effort in the respiratory organs, to

the olfactory nerves ought to lead to the belief that the poison of the disease attacks the system through the organ of smell. Has not also the paralysis of the tongue, and the peculiar inflammation of its papillæ, some connexion with the affection of the organ of sight, by means of the inferior maxillary nerve, which, like the ophthalmic nerve is also a branch of the fifth pair, and gives off the lingual or gustatory nerve to the muscles and point of the tongue. The extraordinary affection of the cheeks, lips, and jaws, in the case of Cadwell, detailed in Ch. I. may be also explained perhaps by the intimate connexion between the small branches of the inferior maxillary, and of the gustatory nerve, which supply the sublingual gland, buccinator muscle, lips, and other parts of the cheek. Does not also the connexion between the reflected branch of the superior maxillary or second division of this same fifth pair, and the filaments of the sixth pair or abducentes, with the great sympathetic, and through that, by means of its ganglia and the cervical branches, with the par vagum and phrenic nerves, serve to explain why the affection of the head is linked with those more striking phenomena of the disease, which act in so peculiar a manner upon the circulation, the respiration, and the functions of the stomach.

remedy the disordered condition of their functions, and, like the slow measured pulse of convalescence, the dilated pupils, the suppression of urine, and the passive hæmorrhages attributable to the sedative operation of the poison?

[I fully believe with you that the first impression of the malarious virus is upon the motive or contractile power of the soft solids. Hence the stunning effect of this poison in weakening the cohesion of their fibres. Hence the dilated injected capillaries of the conjunctiva & of the nares, mouth & tongue; & doubtless also at this first stage (if they could be inspected) of the same capillaries upon the mucous membrane of the ~~stomach~~ oesophagus & stomach & those of the air passages, bronchi &c. The subsequent dissolution of the blood, the liquefaction as it were of its fibrine & comminution of its red particles into a granular or pulverized condition, are all results of the same narcotic & acrid poison. — At a later period this deleterious action is still more developed in the exudation of blood & black vomit through the now patulous mouths of the capillary excretories, many of which no doubt are ruptured by their engorgement, whence follows the extravasations, the subcutaneous yellow livid & green & black discolorations &c.

The distribution of the pneumo-gastric account satisfactorily for the close, immediate & early community of sympathy between the lungs & stomach, & between them & the ~~external~~ globe of the eye, nares, tongue, hearing, parotid &c. & the source of that great pair of nerves, in the brain points out the track of its lesion through the encephalon to the cerebro-spinal column & thence to the ganglionic distributions to the liver, kidneys, calves &c. &c. &c.]

CHAPTER VII.

TREATMENT.

THE mode of treating the disease, very generally baffled all the efforts that were made to combat it; so much so, that ungenerous imputations were too often thrown, not only upon the profession, but upon the science of medicine itself, by the ignorant and the prejudiced, who seemed to assume on this occasion the prerogative of boldly entering the lists of disputation, and so far as regarded the speculations which they put forth, of taking the management of the disease into their own hands. The fear of infection, or contagion, however, lurked at the bottom of their calumnies, and there were very few persons, except the members of the profession itself, and I regret to be obliged to say, not all of them, who did not scrupulously avoid approaching the infected part of the town, or the chambers of the sick.

We must also except from this remark some four or five of our citizens, who, animated by a pure benevolence, and without the expectation of reward or desire of notoriety, generously risked their lives in administering consolation to those sick persons who continued in the infected district. Among this number, Mr. ANDREW GLOVER was particularly

pre-eminent, by his philanthropic and assiduous attentions to the sick, and the intrepid exposure of his person in the most infected parts of the city. Of the medical gentlemen who more especially signalized themselves in these humane services, I should do injustice to the public as well as to my own feelings, did I not make honourable mention of Drs. C. W. EDDY and J. W. FRANCIS.

It cannot be denied, however, that so little is known of the mode of curing this disease, that the subject was as heretofore left entirely open for experiment and adventure, and each practitioner thought himself justified in pursuing whatever course his own judgment or ingenuity suggested.

However humiliating it may be to our pride, we are constrained to admit, that recovery depended more frequently on the vigor of the constitution of the patient, or the less degree of intensity in the poison, than on the skill or prescriptions of the physician.

As most of the cases occurred among the labouring poor, from their being employed in the district, or obstinately continuing to reside there after it was abandoned, and as the constitutions of these people are usually, more or less impaired by fatigue and exposure, and by the intemperate use of ardent liquors, to which that description of the community in this country are so much addicted; and as the disease, also, was most ripe in the hottest months of the year, when the system of every person is more or less relaxed and unable to sustain depletion, *Venesection* was had recourse to but in very few instances. There is no doubt, however, that it would have proved an invaluable resource, and particularly in the form of topical bleeding by leeches or cupping, had the physician been called in time, in the invasion or incipient stage, where the system was labouring under high excitement from the reaction of the blood-vessels

and where the constitution of the patient and his mode of life would have sanctioned the employment of this remedy.

In a case attended by Dr. E. S. Blatchley, the pulse previous to evacuations though only fifty-five, was strong, full, and laboured, as in cases of asphyxia from inspiring carbonic acid gas. This shows, perhaps, that the poison of yellow fever, though it usually acts at first as an irritant, is in its nature of a narcotic quality, and operates primarily on the nervous system. That this was the true pathology of the disease was furthermore corroborated by the fact that the pulse in this case, a few hours after bleeding, and when the palsied vessels were unincumbered of their burden, rose to sixty-five, and gradually in the succeeding days to seventy beats in a minute. The patient recovered.

In another case which came under my observation, bleeding was performed on the third day, to the amount of eight ounces, but the disease proved fatal. The utmost caution should be observed in the use of the lancet. If common rumour be correct, one or two individuals who bled their patients profusely after the third and fourth days, must be put down as chargeable with their death. "For the truth of this observation I appeal to all, (says Dr. Warren, of Barbadoes,) who have been conversant in the business of medicine here during this reigning constitution, who I am persuaded will readily own, that taking away blood in a large quantity, or often, and especially after the first day, has always aggravated the disorder, and exasperated all the symptoms, and laid a sure foundation for inevitable ruin." p. 30.

The violence with which the disease is always ushered in under the influence of a high temperature, and the consequent danger of the organs breaking down under the impetus of the shock, explains why bleeding has been found so

* [I must now since residing in the West Indies, entirely modify this paragraph, the only one in my work that I would erase in toto. The entonic or acute febrile symptoms alluded to, are seen only in the Ardent Inflammatory Fever of the tropics in the robust northern new comers & which disease generally ends in death in 70 to 80 hours by the violent momentum of the blood, breaking down in spite of enormous venesections arteriotomy &c, in rupture of the blood vessels of the brain, lungs, stomach

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much more serviceable in the tropics* than in Spain or in the northern latitudes of the American continent.†

The remedies, however, which seemed most to be depended upon, and which, to use the emphatic language of Jackson, did most, perhaps, towards "changing the genius of the disorder," were active doses of calomel in the beginning, followed by saline, alkaline, and emollient cathartics, frequently repeated in the course of the disease, together with strict attention to the skin by frictions, stimulating embrocations, warm ablutions, and mild tepid drinks, so as to withdraw the excitement and fluids to the surface and to the bowels; and by keeping these important passages of the system open, give every opportunity for the disease to escape.

The early application of blisters to the epigastrium, chest, back of the neck and extremities, in order to anticipate by counter-irritation upon the surface, the dangerous affection of the stomach which almost constantly supervened as the disease advanced, was in many instances found advantageous. Too often, however, fomentations, rubefacients, sinapisms, and other temporizing measures were trusted to as substitutes, while the more efficacious mode of freely blistering was timidly withheld until it was too late to do good; the blood having retired from the surface to the internal parts of the body, and the irritation of the stomach advanced

* " 'Tis true indeed, (says Dr. Warren, of Barbadoes,) that common fevers in these hot and sun-burnt parts of the globe, do generally make a much greater progress than in colder climates, and consequently require large and speedy evacuations at the beginning." p. 31.

† Vid. Jackson on fevers.—Also, the late Reports of the French Physicians sent to investigate the fever of 1821 at Barcelona.—Vide also Sir James Fellowes, p. 467, &c.

This is the Ardent Infl. Fever, above

so far, and the tone of the circulation become so much impaired, that no benefit could be derived from this application. Sir James Fellowes thinks that sinapisms of mustard, vinegar and soft bread to the feet were preferable to blisters.—[p. 407, 8.]

Dr. Perkins found anodynes extremely serviceable in calming the irritability of the stomach. Dr. Harrison also, at the Marine Hospital, has used opiates in protracted cases with great benefit. Dr. Francis found them do harm.

In most cases the bowels after the excitement of the first stage had subsided, were not particularly inactive, nor were the repeated evacuations which the medicines procured usually followed by a sensible change or mitigation of the disorder. It seemed in some cases as if this mode of depletion did not, in any respect, alter the character of the complaint.

The same may be observed of the sudorific plan; for many cases proved fatal, in which the discharge from the skin was free and copious during the whole progress of their illness.

Diuretics might, perhaps, have had a beneficial effect upon the disease, could the most powerful of that class of medicines have been retained on the stomach; for it was observed, that in many cases, there was often for several days a great diminution, and in some, as was afterwards proved by autopsic inspection, an actual suppression or suspension of the urinary secretions. We are inclined to believe, however, that those diuretics more especially should be selected, which would have a tendency to overcome the partial paralysis which seems to exist in the nerves of the kidneys, rather than those which are directed more particularly to the vascular functions of those organs.*

* *Tinct. muriatis ferri*, for example, and which is of such signal benefit in the torpid state of the secretory functions of the kidneys so often met with in the last stage of typhus.

Dr. Francis, guided by the same reasoning, in a case accompanied with a dangerous suppression of urine, found the use of ether highly advantageous. It was from similar pathological views that some writer has ingeniously proposed to produce a metastasis of the disease by creating an artificial dysentery with injections of cantharides. I have already mentioned, that in a remarkable case where the disease, through neglect, had been left to pursue in a great measure its own course, the accidental occurrence of the catamenia and dysenteric symptoms, probably gave a favourable turn to her complaint. In a strongly marked case, attended by Dr. Hosack, a dysentery which supervened towards the crisis was, he informed me, in his opinion the means of saving the life of the patient. The frequent and alarming suppression of urine in this disease seems to have suggested also to Towne the use of diuretics, [p. 34 of work on the Diseases of the West Indies.] The effect of cantharides upon the bladder, as a diuretic and irritant is another motive with Towne for recommending the use of blisters. But then it was under the erroneous belief that there was a redundancy of bile in this disease, and that the increased discharge of urine might help to carry off the inordinate secretion of this fluid.

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When the formidable and appalling affection of the stomach which had been apparently slumbering in the first days of the disease, and which the physician had in vain endeavoured to parry, now began to develop itself; it became necessary to abandon this important point of the system, and to seek some other place for attacking the disease. At this late period, however, it was impossible to make any particular impression upon the complaint, either through the medium of the skin or by means of enemata. The attention of the physician was therefore turned, as a primary step,

towards the restoration of the stomach, and to endeavour to overcome the nausea, hiccup, eructations and gastric irritability, by absorbents, anti-emetics and emollient drinks ; all of which, however, proved in most cases to be an unavailing and hopeless attempt. Besides lime water and milk, porter, beer, the effervescing draught of Riverius, &c. several physicians employed, also, stimulating drinks, such as ordinary punch, lemonade, pyroligneous acid, in the form of lemonade, essence of spruce, and in some instances pulverized charcoal. The charcoal was used at the suggestion of several recommendations, which appeared at the time in the public prints, on the erroneous supposition, I presume, that yellow fever was a putrid disease which required antiseptics ; but it proved of no service. In one fatal case, I particularly recollect the irritating properties of this crude and mineral-like substance aggravated the gastric irritation, and renewed the vomiting. Two patients whom I saw, one under the use of the *pyroligneous* acid,* and the other of the *spruce*,† have both recovered ; but how far their recovery is to be attributed to these remedies it is not, perhaps, possible to say until we have had more ample experience.

By some physicians it has been with great plausibility maintained that the vomiting is a symptom of debility rather than of excessive action, and that the stimulating plan begun early in the second stage of the disease has, by producing a new, healthy, and more powerful excitement, entirely subdued the morbid irritability of the stomach, and re-established the tone of this organ.

I ought not to omit to mention that several cases recovered after the alarming symptom of *black vomiting*. Of

* Attended by Drs. Van Arsdale and Walters.

† Attended by Drs. Miner and Walters.

these four fell under my own observation. One occurred in the case of a black woman at the Marine Hospital. Two were patients of Dr. Walker, one an Irishman, the other a boy, who was a native. The fourth was Cadwell, whose extraordinary case is detailed in Chapter II.

Sir Joseph Gilpin observes, that "a repetition of purgative injections, and the patient's refraining for some hours (should his strength admit of it,) from swallowing either medicine or food, has a good effect" in calming the stomach.*

Although the experience of the present year has not thrown any new light upon the successful treatment of the disease, it has nevertheless served to point out to us some of the rocks that we ought to shun. The pernicious effects of tartar emetic, in every stage of the complaint, has, we are bold to say, been fairly tested and established. It had already been condemned by the almost unanimous sentiment of the profession, which did not, however, deter a number of physicians, some of whom were, perhaps, governed also by an erroneous pathology of the disease,† from practically determining its properties under their own immediate observation. It has in almost every instance of which we have heard of its employment, been attended with disastrous

* Report on the Fever of Gibraltar, 1813.—Medico-Chirurgical Transactions, London. vol. 5. p. 324.

† This erroneous pathology was not new even in the infancy of this disease. "For the unsuccessfulness of the common practice (says Dr. Warren, as long ago as 1741) there may be several more immediate causes, very justly assigned. The first is either mistaking this malignant disease for a common inflammatory fever, and treating it as such, even when evident signs have been discovered of an uncommon malignity; or the being inadvertently over-swayed by the vulgar opinions that these sort of fevers are truly *bilious*."—p. 27.

consequences. The eloquent imprecation of Moseley against this dangerous medicine, cannot be too often repeated, and should serve as a solemn admonition to those to whose lot it may hereafter fall to treat this disease. "How often have I seen and lamented the effects of emetic tartar, given to remove the supposed cause of the treacherous symptom of vomiting! Even in slight degrees of fever in the West Indies, in young plethoric subjects, newly arrived, the stomach has been sometimes destroyed by it. Instead of removing the irritating sickness of this fever, or exciting diaphoresis, a spasm has been produced in the stomach, incessant vomiting and inflammation; the vessels of the thorax and head have been stifled with blood; and the patient has vomited away his life."* To which may be subjoined the emphatic censure of Dr. Bruce, of Barbadoes: "*Qua re emetica minime exhibeantur, nisi perpetuam vomitionem inducere velis et gangrænam.*"†

It has been asserted that the yellow fever which proved so fatal in the late cruise of the U. S. ship *Macedonian*, in the W. Indies, was successfully treated by the use of *arsenic*. The lamentable death of the amiable and accomplished surgeon of that vessel,‡ who is said to have employed this remedy, has put it perhaps for ever out of our power to come to an actual knowledge of the facts on this subject.

Don Tadeo Lafuente, a Spanish physician of Algesiras, speaks very highly of the use of bark in powder in considerable quantities, both as a preventive and curative remedy in the yellow fever of Spain. He began very early in the

* Moseley on Tropical Diseases, p. 434.

† See Lind, on the Diseases incidental to Europeans in hot climates, p. 236.

‡ Dr. John Cadell, of this city.

disease, and gave usually about *eight* ounces in forty-eight hours, and some patients took as much as *twenty* ounces in a few days. This practice was generally disapproved of by the other Spanish physicians.*

I shall conclude this chapter with an extract from the communication of Dr. Francis, already referred to. "You must have observed, says Dr. Francis, that in the methods of treatment in the yellow fever pursued by physicians, (without noticing the absurd and ridiculous practice of the vulgar,) that there was almost the same discrepancy as in the views entertained as to the characteristics of the disease. It would be uncandid, however, not to admit that our therapeutical indications are yet to be established, as the best pathological principles have contributed but little to our means of cure. Nevertheless, if the remedial process in the yellow fever be liable to the charge of inconsistency and absurdity, enough is ascertained to justify us in proscribing certain measures adopted by some with the same confidence that we would enforce others.

"Blood-letting cannot be enumerated among our curative means. I wish to be understood as speaking generally. Under particular circumstances the loss of a few ounces of blood from the arm, I have known in two cases, to prove serviceable. The extraction of blood by the application of leeches, or of cupping glasses to the head, has also afforded relief, and better prepared the patient for the administration of other remedies. In those cases in which the system is oppressed by general fulness of the sanguineous vessels or local congestion of the brain, this mode of relief is perhaps always to be preferred. In several instances I am convinced that venesection accelerated the fatal period.

* See Sir James Fellowes, p. 316. et seq.

“I cannot conceive upon what principle the use of emetics was ever had recourse to. Fortunately this practice was very limited. I have understood it to prove almost uniformly destructive. I saw one instance in which the patient withstood the shock of a dose of antimony. I have been informed of another instance in which an emetic given on the second day of the disease, was immediately followed by black vomit, which ceased but with the extinction of life. To use the language of Towne, on another occasion, the physician who prescribes emetics in yellow fever, ‘signs the death warrant of his patient when he writes his prescription.’

“The Epsom salts and the milder evacuants had the advantage of the drastic purgatives.

“Mercury was considered, by some physicians, as conspicuous among the curative means in the treatment of the yellow fever of the late season; while, by a few others, this powerful article of the materia medica was had recourse to but in small quantity in certain conditions of the system, and then chiefly so as to effect the end secured by a mild cathartic. My own opinion of the remedial powers of this medicine was in accordance with this latter view of its action. Many cases of the disease occurred in which all attempts at exciting salivation proved ineffectual. The disease triumphantly pursued its formidable course, and terminated its disastrous career, frequently before the least change could be perceived to have been wrought upon the salivary glands by mercurials; and even when the mercurial exhalations of the mouth gave evidence that the system was under the influence of this agent, the safety of the patient did not, thereby, appear to be secured. Nothing could be more untenable than the speculations upon which the administration of mercury was occasionally supported; that the hepatic viscus was primarily affected, and that the leading phenomena

of the complaint were ascribable to bilious disorganization. The number of deaths in the late fever was unquestionably augmented by this preposterous practice. In a striking case of the disorder, under my care, in which the debilitating influence of extreme gastric distress and violent black vomiting, with scarcely any intermission for three days, gave little prospect of the continuance of life beyond a few hours, the blue pill was obtrusively suggested, in order to excite a new action, and "move the bile," as if not a moment's interval were to be allowed to the sufferings of the patient from the commencement of the disease to its final catastrophe. In short, the violence of the disorder, great and alarming as it was in some cases, not unfrequently fell short in the celerity of its morbid consequences when compared to the therapeutical treatment of some prescribers.

"The diuretic remedies to which I gave the preference were a compound of one or two grains of calomel with a few grains of nitre, or the sweet spirits of nitre, in mild diluent drinks. Squills I avoided, fearful of the nausea they sometimes produce.

"In almost every stage of the disease I have employed blisters. Their timely application to the epigastric region I consider among our most powerful means of relief. Applied to the extremities even in the advanced stage of the disorder, they are calculated to produce a salutary diversion of morbid action. However malignant the symptoms, I have never witnessed mortification as a result of the sore created by a blister.

"Perhaps the most important indication which claims the attention of the physician, is to relax the cutaneous surface, and induce active diaphoresis: after the ordinary evacuations, the compound powder of *ipêcacuanha*, in moderate doses, ought not to be overlooked. I was guarded in the use of opiates, and had no cause to regret my caution.

"In one case I had reason to attribute the death of the patient, on the third day of his illness, to a large dose of laudanum, given with a view, as I learned, to diminish the stricture of the chest.—The saturated tincture of hops appeared to me to mitigate for a while the gastric anguish in some instances.

"In another patient, a draft of cold water renewed the black vomit, which had been suspended for thirty hours.

"I have arrested the black vomit by porter and lime water.

"Although the stomach throughout seems to be the primary seat of this disease, yet I have been induced to believe that the pyloric portion, is at times, more especially that part upon which the noxious poison delights to prey. This conclusion I have drawn from the circumstance that the manner in which the sufferer ejects the contents of the stomach is often precisely similar to that which characterizes vomiting in stricture of the pylorus. I have not had an opportunity of confirming this conjecture by any examination of the subject after death."*

* MS. communication to the author.

[I am now disposed, after witnessing the extraordinary cures in the West Indies, by the domestic practice (as in my own case at Havana 1830) of leaving the stomach in a perfect state of repose, as suggested by Sir Joseph Gilpin, & attending exclusively to the skin & enemas, that calomel, & every other internal medicament by the mouth, & even drinks except demulcent in the smallest quantities, will have to be abandoned. Moderate topical bleeding by leeches to the temples or epigastrium may be serviceable early, in a few instances. Constant ablutions of tepid dilute white rum (the aguardiente of the country) with slices of limes thrown into it, & mild enemata every 30 hours, & a tablespoonful of tepid barley water sweetened, every 2 hours, constitute the therapeutics of the fatal W. India milder, by which so many lives are saved.

CHAPTER VIII.

PREVENTION AND PURIFICATION.

WHEN the yellow fever broke out in this city in 1791, after *forty* years exemption from the pestilence, every physician then practicing, with the exception of two or three of the oldest members of the profession, were utter strangers to the disease. Experience, however, in vain unfolded her pages before them. Instead of studying the character of this new visitor with laborious and patient attention, they began first to search for evidence to prove its domestic origin, and that it was indigenous to the soil, as much so as the ordinary remittent and intermittent fevers which prevailed in every part of the country; that it was not a contagious disease, and could not be imported; and that all measures of precaution, and especially the system of quarantine restrictions were a useless and degrading imposition. The influence which these pernicious doctrines have had upon the minds of our public authorities make their authors accountable for the lives of thousands of innocent beings.

At length, in the year 1819, it was determined by the Board of Health of that year to discard the temporizing system which the Boards of preceding years, infected by the

dangerous doctrines which prevailed in their time, and led astray by their official advisers, had too long pursued. An entire new system was put into force. It was resolved, although the disease might be introduced, to endeavour at least to stop its mortality and mitigate its horrors. The melancholy catalogue of deaths in almost all the preceding years stood like a written monument, which, while it quickened their apprehension to danger, strung their nerves with fresh courage. The disease was looked upon as a contagious pestilence, and the part of the city where it was introduced, immediately and totally cleared of its inhabitants, and those who would not remove of their own accord, turned out of their houses by force. What was the result? About 150 cases of yellow fever happened, and 50 deaths. Compare this with the mortality of other years, and especially of 1791 and 1798, when the mass of the population remained at their homes, taught by their physicians to believe that the disease was some ordinary *bilious* fever, which would soon pass away; or that the whole atmosphere for miles into the interior, was so tainted that it would be folly to run from it. I am persuaded that had not the Board of Health of the present year thought themselves placed in the disagreeable dilemma of being obliged to wait the imprimatur of their official adviser, before they could have recourse to precautionary measures, the city would have been saved millions of dollars and many valuable lives, besides being secured from the ignominious and undeserved imputation of giving birth to an odious and frightful pestilence. As it is, the Board of Health deserve great praise for the energetic measures which they put into execution, when they were convinced that the disease was actually in the city. They were satisfied from the experience of 1819, that when the disease is once introduced, there is no safety

but in flight, and that all that can be done is to disperse the inhabitants, and to remove the sick with the utmost expedition into the pure air of the country, and to erect an insuperable barrier between the infected and uninfected parts of the city. Accordingly they forthwith began to depopulate and barricade that part of the city where the disease was introduced, stopping up all the streets and lanes which ran into this section of the town. But such were the prejudices of the community against this novel procedure, first introduced in 1819, and such the fallacious hopes that the disease would not continue to spread, that the Board were under the necessity of adopting this measure with the greatest caution ; by which means the disease kept the start of the barricades that had been interposed, until the general panic which seized all the lower part of the city about the first of September, caused the inhabitants to abandon their homes *en masse*, and served to put an entire stop to the progress of the disorder, except among those few who wilfully exposed themselves by remaining in their houses, or by going too far down into the most infected streets.

“ The sole object of precautionary measures, (say the Spanish physicians in their Report already quoted,) is not to prevent the introduction of a contagion, or to smother it in its origin ; they ought also to attempt to limit its progress and dispute with it every inch of ground, in order to lessen the number of victims. Ten persons sick with the fever may infect one or another individual, in spite of the measures that are taken to prevent it ; but if the intercourse with them be unrestrained, they will produce as many more, or double the number of infected ; and the foci being successively multiplied, it will at length become general. In the year 1814, the yellow fever appeared at Cadiz, at a time when there was within its precincts a great expedition destined for America, and when many of its inhabitants had

never had it. The Conde de Abisbal, then governor and captain-general of the Province, established a Lazaretto, without the walls, and ordered, under severe penalties, that every person who should be taken sick with the disease should be carried to it, which was done with one hundred and fourteen persons : it is very probable that some would remain secretly in their houses, but being obliged on account of their disobedience, to refrain from intercourse with other persons, the consequences were so beneficial, that the fever diminished instead of increasing, till at length the cold weather came, and the troops and inhabitants were saved."

When the air in various places in the lower part of the city had now become contaminated from the numbers who had fallen sick of yellow fever in such neighbourhoods, and when almost every street, as high as Fulton-street in the uninfected part of the city, was depopulated, and an effectual stop, therefore, put to the propagation of the disease, propositions were made to the Board of Health, recommending different modes of purifying the infected air. It would have been better, perhaps, to have called the attention of the Board of Health to this subject at an earlier period, and before the inhabitants had gone, for then the utility of these experiments could have been fairly tested. The propositions differed according to the different views entertained by their authors of the origin of the disease. The believers in domestic origin clinging with obstinate tenacity to their exploded hypothesis, proposed some of them to cover over the streets with an impermeable matter, which would shut in the noxious exhalations, supposed by them to be issuing out of the earth, and to be the cause of the disease. Others, of the same way of thinking, proposed to purify the cellars, privies, gutters, sinks, sewers, and grave yards. I lament to be obliged to add that many of these recommendations, by the puerile and ludicrous suggestions they contained, reflected

Dr. Alexander H. Stevens, a surgeon, actually wrote to our
board of Health (& his letter was published!) that it would be
advisable to seal up hermetically the crevices between the
laving stones of the streets, in order to exclude all poisonous
terrene emanations that might generate Yellow Fever! 553

Account of the Yellow Fever.

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(See p 296 infra)

no little discredit on the profession. We have the more
reason to deprecate such indiscretion, because the great body
of the profession, though innocent, are obliged to participate
in the obloquy which ought of right to attach itself to those
only who, by their conduct, make themselves deserving of it. *

Some* suggested the propriety of using the acid fumiga-
tions of Morveau and Smyth. Others† recommended
spreading lime, ashes, bark, or other alkaline and absorbent
substances over the surface of the streets. This mode, (for
what reasons it is impossible for us to say.) was preferred to
that of acid fumigations. It is now universally conceded,
however, that in making this experiment, the public moneys
have been uselessly expended, without producing the least
benefit. The progress of the disease towards the north had
already been arrested by the desertion of the lower part of
the city before these substances began to be scattered
through the streets, and the contagion continued to spread
through Lombardy and Cheapside-streets, though the lime
was applied, and that most of the inhabitants moved away
immediately after the first cases occurred there. Beside
which, a number of persons employed in carting those sub-
stances took the disease and died.

I cannot, however, understand how any of those methods
could have possibly eradicated the disease. So long as
there were subjects to generate the contagion, and others
ready to receive it, so long would the disease necessarily
spread. If the whole soil, for many feet in depth, could
be turned into unslaked lime, it might for a single day,
perhaps, deprive the air of some of its moisture, and thus

* Dr. Hosack, Mr. Griscom, &c.

† Dr. Akerly, &c.

render it a more difficult medium of transmission to the contagious emanations from the sick. The prevalence of the disease, however, in the most arid state of the atmosphere, shows that the propagation of the poison does not absolutely depend upon an abundant supply of moisture in that element. Human effluvia, as it is a compound of animal exhalations, very naturally forms, as we have seen, the most ready conductor of the contagion of the disease, which is itself a specific emanation from the body. This renders it probable that this contagion is communicated through the breath.

organic living
germ or

It was observed in Spain, that in those infected towns where the inhabitants were unwilling to refrain from attending mass, more persons always fell sick on the days immediately succeeding those on which that religious service was performed.*

This contagion thus associates most easily with those matters which it more or less resembles; but how far it assimilates such matters to itself is another question. In as much as it is of a gaseous nature, and therefore possessed of great mobility; its volume, as happens in the experiments of mixing certain known gases, may, in the opinion of some, become much enlarged when it comes into contact with human effluvia. I very much doubt, however, from the facts which are related in the first chapter, whether this union increases its virulence; for as these substances must be more or less analogous, the association is most probably a simple union. Certain it is, that after all the methods that have been employed of disinfecting the air, the admixture of pure air, next to frost, seems to be the most power-

* See the Report of the Physicians of Cadiz to the Spanish government; also the work of Sir James Fellowes, *passim*.

ful antidote with which we are acquainted. Hence the importance of ventilation with pure air, which, when effectually performed, is equally salutary in the chambers of the sick in arresting the propagation of the disease, as a storm or violent tornado would be in the streets and lanes of a city. Does not this affinity of the contagion of yellow fever to human effluvia prove that it is an exhalation or excretion from the *living body*, not an emanation from *dead matter* in a state of putrefaction, nor the product of vegetable or animal decomposition? It is an offence against all chemical laws, and mere sophistry, to pretend to get over this difficulty in the way of the theory of domestic origin, by saying that the exhalations from the living body are in a state of putrescency at the very moment they are given off. We see that the pure chemical element of the atmosphere seems to be of a nature directly opposite to the gaseous and contagious matter of this disease; for when they are mixed, they produce a new substance, which is totally innocuous. Is it not most probable that this mixture is something more than the ordinary mixture of one gas with another; something different, also, from mere *dilution*, the term commonly used to express the association? Is it not more probable that it is a chemical union, and that a new compound is formed, and the contagion decomposed and precipitated. The importance of ventilation and admission of pure air, are strikingly illustrated in what takes place in removing the sick of yellow fever into the country. The contagion is rarely communicated, unless in a very crowded apartment, and under extraordinary circumstances, accidentally favouring the accumulation of human effluvia, and the retention of the virus about the person of the patient; whereby a state of things is brought about, which resembles very nearly what occurs so frequently in cities; thus accounting, in the most simple manner, for the reason why the disease is so much more readily propa-

gated in cities than in villages or country towns. Cases of contagion, however, do now and then happen in the pure air of the country, as well as in the best ventilated and most elevated, spacious, and cleanly streets of cities. Where this occurs in a pure country air, the person who takes the disease has, in general, been peculiarly predisposed, or come into immediate contact with the sick, and of course with the contagious exhalation emitting from his body. For the constant admission of new masses of pure air must successively destroy the contagion as it is given out, and therefore very much contract the radius of communication. Where these cases of contagion have appeared in high and spacious streets, as this year in Broadway, they arose from the circumstance of that part of this street becoming infected which was in the immediate neighbourhood, and adjoining, as it were, the part of the city where the virus of the disease had accumulated to a prodigious amount, and had become, therefore, of great intensity.

It is probable that frost, also, acts by decomposing the unknown elements of this destructive virus, and which, from their losing their affinities at the point of congelation, are obviously in union with a certain portion of water when in their gaseous or natural state. May not these facts, in regard to the probable chemical action of atmospheric air, or a freezing temperature upon this mysterious substance, help to throw some light upon its real nature? But can we from this ever hope to discover any artificial combination or substance which will as effectually destroy the contagion or arrest its progress as frost or pure air? We will allow it is possible that in the brilliant march of chemical philosophy, something may be discovered which will actually do, to a certain extent, what nature herself now does with her grand laboratory of the elements. But is it probable that there ever will be found out a method of furnishing

a this artificial antidote in sufficient quantity? We can hardly imagine that we shall ever become possessed of this means. It may serve to check the progress of the disease, which itself would be an incalculable blessing, but then its power would be circumscribed. It could have but little avail, perhaps, when applied over the extensive surface of a wide street, and still less when used to disinfect ~~the~~ the whole city. We cannot expect to cope with such powerful means, as nature herself shows us she is obliged to use before she can subject this pestilence to her dominion.

a As we cannot command the changes of heat and cold, but must wait patiently the arrival of the frost, when the disease is once introduced, and as ventilation cannot be carried into effect in cities, but under great disadvantages, we should be particularly careful to make our streets wide and regular, and to leave as many open spaces and squares as possible, and those of large dimensions,* for those small parks which are to be met with here and there in modern cities are more ornamental than useful, as may be illustrated by the fact of persons taking the disease in the vicinity of them, and also of grave-yards, which are of the same nature. All these spaces, however, are serviceable to a certain degree; and Dr. Rush has very properly included grave yards among them, as being excellent reservoirs of pure air. There is no doubt that the spacious cemetery of St. Paul's church, and also the Park, had, this year, considerable influence in staying the march of the disease towards the north, though the desertion of the city, the only certain and secure dependence, did much more. Yellow fever, though it does sometimes, in order to apprise us of its power, show itself, as we have seen, even on mountains or in cities built on high rocks where men had thought themselves secure, yet this has been favoured generally by the circumstance of the

* Vide Hosack on Contagion.

population of such places being too compact and crowded, and the streets, for the most part, extremely narrow and confined, and deprived of ventilation. This was always the case in the south of Europe, where this fact has been repeatedly noticed, although it appeared perfectly mysterious and miraculous to the believers in domestic origin, because in these dry and elevated places, they could not find a stagnant collection of water to generate the vegetable or marsh miasmata which they aver to be the cause of the disease. Yellow fever will, when introduced into cities and towns, constructed like those we meet with in the south of Europe, always spread. Nay, it would, under such circumstances, be propagated on the top of the Andes or Alps, did not that region of perpetual snow form an eternal barrier against the introduction of the contagion.

Although the imperfection of medical science places the cure of this disease too often beyond our control, and that our means of counteracting its progress are limited, a wise Providence has indemnified us for these losses, by putting into our hands an effectual method of totally preventing the recurrence of the disease, by shutting out its introduction from abroad. It is left for us to carry into execution what our own judgment must now teach us is the only resort that is left.

As I firmly believe the source of the disease can only be cut off by a rigorous code of quarantine restrictions, so am I persuaded that that which is now in operation is totally inefficient. We must not depend merely upon civil restraints and tribunals. Our quarantine ought to be, as in other countries, (as in Marseilles, for example, the model of all great maritime cities in similar latitudes,) an institution essentially military. The execution of its provisions should be vested in a military and naval armament, but under the direction of medical officers of high respectability, and of the most responsible character.

Our health laws, which are now perhaps of too general an application, and in this respect too severe, ought to be limited more particularly to the West India ports and islands, against which they should be made more rigid than at present. If the direct intercourse between the city of New-York and the West Indies were entirely prohibited during the months of June, July, August September and October, the temporary embarrassment which our commercial relations with that part of the world might experience would, in our judgment, be far more than counterbalanced by the exemption of this city from the irreparable disasters and distress which always follow the introduction of yellow fever.

The dangers to which the health of the city is exposed by the admission of Havanna, Port au Prince, and other West-India vessels, into our ports during the warm weather, may be conceived, not only from the disastrous event of the past season, but by what occurs here every year. Scarcely a week passes over from the first of July to the first of November but from *two* to *four*, or sometimes more patients, ill of yellow fever, arrive among the passengers and crews of the vessels that are constantly entering the harbour during that period from sickly ports in the West-Indies. [See the weekly reports of the Health Officer to the Board of Health, *passim*.]

In one year the sick arrived in such numbers that they amounted at length to several *hundred*, so that the Health Officer was obliged to encamp them in tents.

It is true that the disease has not generally spread from the sick to the persons employed in the quarantine ground, nor to the adjoining settlement immediately outside the walls of the establishment; because the communication between the sick and well has been interdicted as much as possible, and that the sick have arrived successively and been carefully separated from each other, so that they were

placed under the same circumstances as in the pure air of the country, particularly so at this place, as its situation fronting the bay, narrows, and ocean, opens it to free ventilation from every point of the compass.

[1822]

There are several melancholy exceptions, however, to this remark, and one that occurred during the last autumn, owing to a dreadful storm, which drove a very considerable number of infected vessels which were lying at anchor, upon the shores of the quarantine ground.*

But when we consider that during all the warm season there has been every year a constant intercourse between the village adjoining the quarantine ground and the city, by persons passing in packet boats, and by lighters, transporting cargoes of West-India vessels into the very warehouses of the city—that during the last few years this intercourse has been doubled, by the increase of the West-India trade, and by the daily passage of steam-boats, for the accommodation of passengers, is it not almost miraculous, that until this year the disease never has been communicated through this channel?

Does not also a system, which is so lame and defective in its provisions as ours is known to be, seem more like a burlesque upon the principle of quarantine restrictions than a serious effort to prevent the introduction of the disease from without?

I have no doubt but that a supply of pure and wholesome water into the city, and the erection of permanent fountains in different parts of it, as in the cities of all warm climates, would have a most salutary effect upon the public health. A strict attention also to the cleanliness of the streets, and to the correction or removal of nuisances of every kind,

Insert this -

* See New-York Medical and Physical Journal. This invaluable document is from Dr Joseph R Bayley M Health Officer.

particularly during the warm season, would render the atmosphere more pure, and therefore secure us from those diseases which filth and animal and vegetable putrefaction are sometimes known to produce. But in carrying these measures into execution, we ought to be careful that our attention is not diverted from what I have endeavoured, and I believe successfully, to show, is the only sure and efficient mode of preventing the reappearance of the pestilence.

All the schemes, however, that may be devised, will have but a partial effect, so long as the country is unprovided with a national code of quarantine laws. Unless one general system of this kind be adopted by all the sea ports of the union—unless an unbroken line of lazarettoes be established along the whole coast, to guard against the pestilence at every point, we never can hope to be entirely secure. What will avail the most efficient system of quarantine laws, established here and there in a few cities on the coast, if all the intermediate and adjoining towns, with whom a constant intercourse is going on freely, admit vessels coming from infected places? The whole of our maritime towns must act in concert; otherwise the attempts to carry into full effect quarantine restrictions in any particular place will always be liable to be foiled.*

There is one mode of prevention, or rather of meliorating the evils of pestilence which falls more immediately within our province, and to which the public attention ought to be in a particular manner directed, in as much as no specific or definitive provisions on this subject have hitherto been made. I mean the establishment of *Fever or Lazaretto† Hospitals* placed on eligible sites at a proper distance from the city, and exclusively designed for the reception of patients ill of yellow fever, or other pestilential diseases.

* To Dr. Hosack belongs the honour of having first recommended a national system of quarantine. [See his Discourse on Medical Police.]

† After the manner of European cities.

The believers in domestic origin and in importation and contagion will all agree in the propriety of creating institutions of this nature ; for no one will deny that the accumulation of a great number of sick, either in the infected or uninfected parts of the town, must necessarily render the air of such places better fitted to generate and propagate the disease.

The Marine Hospital at Staten Island* is the only place which has been opened for the reception of the sick. But besides being intended for other objects than the accomodation of persons ill of yellow fever, it is entirely at too great a distance from the city. The sick, who have been transported there, are obliged to be carried in boats across the bay ; in consequence of which, from the exposure and fatigue to which they are subjected, they have rarely been benefited by the removal.

We had occasion of bestowing upon Dr. Hosack praise which we think him fully entitled to for having first agitated the great subject of a national system of quarantine. To the same gentleman are we also indebted for having first distinctly brought before the notice of his fellow citizens the proposition of establishing hospitals for the exclusive accomodation of persons ill of yellow fever, or other pestilential diseases. I cannot do better than serve myself with his language :

* The late Dr. De Witt, Vice President of the College of Physicians and Surgeons, a man whose indifference to fame caused his splendid talents and his attainments to be unappreciated at the time at which he lived. has the honour and merit of having devised the plan of this beautiful building ; surpassed by few in Europe, and by none in this country : he was then Health Officer of the port. He fell a victim to yellow fever, taken on board a vessel he visited the succeeding year ; making the *fifth* out of *seven* Health Officers, who have perished at that place in the same manner since its establishment.

"Under the conviction" says Dr. H. "of the benefits to be derived from a permanent establishment to receive the sick poor, and to separate them from the well, and thereby to arrest the progress of infection, I early in the past season [1820.] called the attention of the Board of Health to this subject, and recommended, upon the first appearance of typhus fever in our city, the instantaneous removal of the sick, either to Bellevue, or some other suitable place to be provided; but such removal, owing to the want of accommodation, to the extent desired, proved impracticable. I then earnestly urged upon the Board the necessity of some permanent provision being made on that subject, commensurate with the increasing population of this city.

"A committee was accordingly appointed to make the necessary inquiries, relative to the expediency of such an establishment, and to ascertain the site most proper for such an institution. A spot of ground, connected with the public property at Bellevue, was found to possess every advantage that can be derived as it regards air, water, and other means of accommodation. By several members of that committee such an institution was deemed of great utility, and they concurred in the opinion that the plan proposed ought to be carried into effect without delay; while by other members it was considered to involve an expense altogether inexpedient during the present depression of the times. But when the Board of Health and the Common Council shall be convinced that the sufferings of the poor will be alleviated, and many valuable lives preserved to their families and to the community; that by arresting the progress of contagion, the inhabitants will be secured from the further diffusion of an infectious disease, they cannot but unite in their approbation of such an establishment. When it is also taken into consideration that an abundant quarry of excellent building stone, the property of the Corporation, is on the premises;

that mechanics of every description that can be required are to be found in the Penitentiary, perfectly competent, under the direction of a skillful architect, to erect the plain unadorned structure that is contemplated, and, thus make some return to the state for their maintenance; and, consequently, that the chief expense to be incurred will be for lime and timber, I cannot but indulge the belief that the Corporation will take the necessary measures to carry the plan proposed into operation, in time to meet the exigencies of the ensuing year."

If, as I believe, the recurrence of this pestilence can only be prevented by the institution of a rigorous and well-organized system of quarantine; so is the conviction equally strong upon my mind, that the code at present in force is totally inadequate for the purposes for which it was intended. We must take as our model the sound policy of Marseilles, and other southern cities of Europe, which, like ourselves, have no doubt suffered dearly in their day by the combined influence of ignorance and chicanery.

It was to Dr. Hosack, who has exerted himself with so much ability, perseverance and success, to prove the foreign origin, and specific and contagious nature of this disease, to whom the honour, as we have said, is due of having first pointed out to his countrymen the importance of establishing a national and universal system of quarantine.*

Though the recommendation of Dr. Hosack has now died away, and Congress have not thought proper to make it the subject of their deliberations, the time will doubtless come when not only this city, but the country at large, will have reason to respect his memory for the deep interest he took in their welfare, at this early period of our history,

* See his *Discourse on Medical Police.*

and the many valuable lessons which he has left in his works on the subject of promoting and preserving the public health. While we are on this subject, I will take the liberty of suggesting some improvements in regard to the mode of organizing a Board of Health.

I am firmly persuaded that the care of the health of the city ought to be committed, as at present, to some of our more distinguished citizens, who have an interest at stake in the city, and whose consideration in society gives to them a weight and responsibility of character. Were it exclusively made up of medical gentlemen, there is too much reason to fear that their different opinions might lead, as too often happens, to interminable disputes, and to most disastrous consequences. There should be, however, a sufficient number of medical gentlemen attached to the Board to serve as advisers ; to be ready at all times to inform the Board of the true state of the health of the city ; and to recommend the most effectual means of guarding against the introduction of pestilence. They should be persons of liberal education, or at least those whose natural and uncultivated powers of understanding were so strong and so clear, that ~~they~~ ^{there} might serve as a substitute for this deficiency. They should have seen much practice. and especially have become familiarly acquainted with the various forms of fever before they presumed to offer themselves as candidates for this situation.

It is difficult to say of how large a number the medical department of the Board of Health ought to consist. They should, at least, be a minority to the citizens who are not physicians, and who constitute the other part. I am of opinion with his honour the Mayor, in his late proposed revision of the health laws, that the health officer and the commissioner ought to be appointed by the State, and the rest of the medical department by the Board of Health itself. It

is the opinion of Dr. Walters, and I have heard none which I more approve of than his, that the physicians to be appointed by the Board ought to consist of *five resident Physicians*, and that the city ought to be divided into *five districts*, apportioning one district to each Resident Physician. These Physicians should have equal powers in the Board, and when a suspicious case occurs in any part of the town, the Board should immediately cause a consultation of the whole number.

The past season has convinced us that it is placing too much responsibility on one person, and paying too dear a price to make the welfare of 120,000 individuals dependent upon *his* mere opinion. We would have little to fear from procrastination, or theories concerning the bilious nature of this disease, if five respectable, experienced practitioners of liberal opinions and high sentiments of honour, were placed in that Board, to determine what was yellow fever, whence it originated, and where it first appeared in our city.

CHAPTER IX.

IMMUNITY AND PREDISPOSITION.

It has been stated, on the high authority of Dr. Pym, Arejula, Sir James Fellowes, and Sir Joseph Gilpin, that the yellow fever, as it has appeared in Andalusia, and at Gibraltar, has never been known to attack the same person twice. It is impossible to call in question the testimony of the gentlemen who have made this declaration, and especially the multiplied proofs with which they have accompanied it, derived from their extensive experience and close observation of the disease. In the tropics it is well known to be the popular and universal belief; and in Spain it was also averred, that this idea had already become prevalent among the people before any investigations had been undertaken to test its truth. These afford strong concurrent evidence in its favour. The manner in which this subject was first brought before the notice of the public will be best understood by the following extract of a letter from Doctor J. W. Francis, of this city, to Dr. Hosack, dated London, June 16th, 1816.

Dr. Francis has the merit of having made the earliest communication of this intelligence to his brother physicians in America, and of attracting their attention to this striking peculiarity.

“ But I have to solicit your attention to another important circumstance, made known in the volumes of Dr. Pym and Sir James Fellowes, and to communicate which this letter has been written. Dr. Pym, who had the advantage of seeing the disease not only in Europe but in the West-Indies, contends, that the Bulam fever attacks the *human frame but once*; and supports this position by the strongest proof. I will not do injustice to his statements by attempting to abridge them. Irrefragable evidence is advanced by Dr. Pym, that the Gibraltar, West-India, or Bulam fever, (the malignant pestilential fever of Chisholm,) are the same disease. In a subsequent essay, Dr. Pym has enlarged on the subject of the disease affecting the human body but once.—I must be indulged in one or two extracts.

“ ‘ At Gibraltar, during the prevalence of the disease in the years 1810, 1813, 1814, there was no well authenticated instance of a second attack: every person escaped it, who had had it at any former period: and this fact is now so well established there, that among the quarantine regulations against the introduction of the disease this year, (1815) *all the troops who have not passed it are encamped, while those who have passed it are doing the duty of the town.* At Cadiz, Carthagena, and Malaga, the fact of persons not being liable to a second attack of this disease, is considered to be as firmly established as it is in the small-pox.”

“ ‘ Two more proofs of the Bulam fever not attacking a second time, were in the 70th and 55th regiments. The first suffered severely from the disease in the West-Indies, in the year 1794, and returned to that climate from Europe in the year 1800, filled up with new officers, with the exception of six, viz. Col. Dunbar, Major Elliot, Captains Johnstone, Lawrence, Hutchinson, and Boat, who had had the fever at a former period in the West-Indies, and who now escaped it, although the corps buried ten of the newly appointed officers in a very short time.”

“ ‘Upon a moderate computation, there were *one hundred and fifty* officers (civil and military) at Gibraltar, who had not had the disease before, and twenty-five who had passed it in the West-Indies ; and making an allowance for one or two doubtful cases, where the disease was so mild as not to confine the patient to the bed, one hundred and forty-five at least out of the one hundred and fifty were attacked by it, while every individual of the twenty-five who had it before escaped it ; proof positive that the Gibraltar, West-India, or Bulam fever, are the same disease, and that the human frame is not liable to be attacked by it a second time, even after a lapse of ten years.’ *Appendix to Dr. Pym’s Observations.*

“ This same peculiarity marked the pestilential fever of Spain. According to Sir James Fellowes, it never has been known to attack the same person a second time in that country. ‘ This fact,’ says Sir James, ‘ which was first observed by the native practitioners, has now been confirmed by the experience of several years, and by the concurrent testimony of all the surviving inhabitants of those places where the disorder had most prevailed.’ *Introduction, p. xxiii.*

“ I have dwelt so long on the performances of Sir James Fellowes and Dr. Pym, as almost to be deterred from referring to any other authority ; yet I cannot forbear making a short extract from an account of the epidemic fever which occurred at Gibraltar, in the years 1804, 1810, and 1813, and for which the public are indebted principally to Dr. Gilpin, one of the inspectors of the hospitals. The paper throughout is one of singular merit, and eminently calculated to do away the doubts of the sceptical, and strengthen the faith of the wavering. It is gratifying to the philanthropist to read the answer given by Dr. Gilpin to the eighteenth query, addressed to him by the Medical Board of the army.

“ The points embraced in this query involved the consideration of several matters, to wit : were many of the attendants of the sick in private houses and hospitals attacked with the same disease, and where this did not happen, were there any circumstances evident, that might have rendered such persons unsusceptible of the contagion ; such as their age, previously having had a like disorder, particular precautions, &c. ?

“ ‘ In private houses, in most cases,’ replies Dr. Gilpin, ‘ the attendants were attacked. There were undoubtedly many exceptions in the hospitals ; but it was to be accounted for, as, generally speaking, the attendants were persons who had had the disease previously, either in the West-Indies or in Spain, or here, in 1804. At the commencement of the disease last year, it was calculated that there were about five thousand persons within the walls who had previously passed through it ; and after careful inquiry, there does not appear to be one well authenticated case of a person’s having received the infection a second time. I heard, indeed, of three or four ; but as the nature of the previous fever could not be exactly known, these exceptions have but little weight in so momentous a question. The exemption from a second attack, I am credibly informed, is firmly believed in Spain. At Cadiz, last year, though the fever put on the very worst symptoms, and destroyed the patient frequently in forty-eight hours, the deaths did not exceed, in a population of upwards of seventy thousand, fifty a day ; and these were chiefly strangers. The Spaniards are so fully convinced they cannot receive the infection a second time, that having passed the disease is matter of great rejoicing among them : a medical certificate of the fact is a sufficient passport into an infected town, which they enter without the smallest apprehension.’ Consult the Transactions of that active and

distinguished association, the Medical and Chirurgical Society of London, vol. 5, for more ample details.

“The immunity of the constitution from a second attack of yellow fever is a peculiarity so strikingly characteristic of most disorders of an acknowledged specific nature, and of such great practical interest both in a social and political point of view, that it is extraordinary it should have met with so little notice before Professor Arejula made mention of it in the year 1806. “The yellow fever at Andalusia,” says Arejula, (I avail myself of the translation of his account in *Sir James Fellowes’ Reports*, p. 67.) “attacks persons but once in their lives, and it is of great importance to the physician to know this, in order to form his prognosis and his plan of cure, as well as for the individual who may have passed through this disorder, that both of them being assured of this fact, may step forward without fear to the relief of their fellow creatures who may hereafter be afflicted with so dreadful a malady.” Dr. Pym, however, enjoys the reputation of being the first English physician who promulgated this principle. I have not the sources of information at hand to enable me to determine how many of the writers on the malignant fever, as it has prevailed in our country, have entertained this opinion, though I well recollect Dr. Lining to have been one; as may be seen in his account of the fever in Charleston, published more than sixty years ago, in the *Edinburgh Physical and Literary Essays*, volume second. In the interesting correspondence on the yellow fever which was maintained a short time anterior to this period by Dr. John Mitchell, of Virginia, and Lieut. Gov. Colden, of New-York, nothing is alluded to from which we might infer their knowledge of this law of the disorder. See the *American Medical and Philosophical Register*, vols. 1st and 4th. In

the Facts and Observations of the College of Physicians of Philadelphia, on the Nature and Origin of the pestilential fever, after establishing the identity of the yellow fever which existed in that city in 1793, 1797, and 1798 with the West-India pestilence, the College state, that it is a circumstance that deserves particular attention, that "very few, if any, of the Creole French in this city, [Philadelphia,] suffered from the contagious malignant fever which prevailed here in 1793, 1797, and 1798, though the disease was introduced into their families; and children born in this country of Creole parents, died with it last autumn, while the parents and the children born in the West-Indies were entirely exempt from it." We look in vain, if my memory serves me for any thing of the same sort in the Additional Facts and Observations, a subsequent publication of the College of Philadelphia.

"In the Sketch of the Malignant Contagious Fever as it appeared in the same city in 1793, Dr. Cathrall observes, "it does not appear to affect the same person twice. Although careful inquiry," adds he, "has been made by several of my medical friends and myself, it only appears that some of the patients had a slight relapse of fever, but without any of the distinguishing symptoms of the disease, and very soon recovered." It is much to be regretted, that the several histories of this disease published by that able medical analyst, the late Dr. Rush, should have been so confused and unsatisfactory on so momentous a matter. In his account of the bilious yellow fever of 1793, you will, nevertheless, find that the refugees from the French West-Indies "universally escaped the disorder," though this was not the case with the natives of France who had been settled in the city. On the other hand, Dr. Currie, of Philadelphia, in his Treatise on the Synochus Icterodes, states, that several instances occurred of the disease affecting the same individual a se-

cond time, and under circumstances so unequivocal that it could not be fairly ascribed to a relapse. This assertion, you will see, is not strongly made, and may be deemed rather matter of opinion than matter of fact.

Rich^d "Dr. Currie also tells us, that the French West-Indians, particularly those from St. Domingo, almost to a man, escaped the disorder, though they made use of no precaution for the purpose, 'while those from France were as liable to it as the Philadelphians.' Nothing in relation to the security from a second attack of the disease is advanced by the late Professor ^{Ba}yley, in his excellent volume on the Epidemic Fever of New-York in 1795; though in the Collection of Papers published by Mr. Webster, this writer on the epidemic of New-York, of the same year, alleges that he knew not a decided instance of an individual labouring under a second seizure.——But at present I am not duly prepared to enlarge on this point, by reference to other American authorities.

"Dr. Pym has referred me to a passage in Sauvages on this disease, in which it is asserted, that it operates upon the constitution but once. *Typhus icterodes* contagiosus est. Albos tantum, maxime peregrinos ex regionibus frigidis advenas, Indos, Hybridos, mulatros omnes, exceptis infantibus, una tantum vice afficit: nigri vero ab eo morbo nonquam afficiuntur." See Nosologia Methodica, tom. i. p. 316, of the quarto edition of 1768. We must here bear in recollection, that Sauvages has depended mainly on Lining, as authority for this peculiarity. Does your own extensive experience in the malignant epidemic of New-York agree with the opinion that the human constitution is invulnerable to a second attack of yellow fever, corresponding in this respect with small pox, and other specific disorders?

See the original

In answer to this question, which has frequently been put to me by practitioners of medicine in England, I have uniformly ventured to assert that it holds good as a general fact. Those who have once had the disease are certainly *less susceptible* of its influence a *second* time.

“ Permit me now to make known to you the important results of the recent deliberations of two of the most distinguished medical associations of this kingdom. The decisions of the Royal College of Physicians of London and of the Army Medical Board are at length brought to a close. These two learned bodies, alike distinguished for scientific attainment and practical knowledge, have been for a considerable time past devoted to a consideration of all the facts connected with the nature and character of the yellow fever, particularly as it has of late years appeared in Spain. The Royal College have pronounced that the yellow fever is a highly contagious disease, which decision they have reported to the Lords of the Privy Council. With respect to its attacking the human frame but once, they say they think it *extremely probable*, but that upon a point of such importance they cannot venture to give a decided opinion. The Army Medical Board, at the head of which presides Sir James M^cGregor, have also given it as their opinion, that the yellow fever is in its nature contagious; and they further add their conviction, that the fever of Spain is not only strictly contagious, but like other disorders of a specific character, it affects the human frame but once. I have been kindly favoured with an abstract of these proceedings, and I herewith enclose an extract from the official report on Dr. Pym’s publication made by the Army Medical Board. The operation of climate, soil, and other local causes, in adding virulence to febrile contagion, may be considered almost an

axiom in physics ; and the necessity of a strict adherence to your improved system of quarantine laws, and all municipal regulations for the purpose of domestic cleanliness, cannot be too strongly enforced. On this subject the Royal College and the Army Medical Board are united in opinion.

(COPY.)

EXTRACT FROM THE REPORT UPON DR. PYM'S PUBLICATION
BY THE ARMY MEDICAL BOARD.

Army Medical Board Office, 6th May, 1816.

" It is due to Dr. Pym to state, that we consider him to have been the first English medical man who promulgated the opinion, that the disease in question (the Bulam fever) is capable of attacking the human frame but once ; and if that opinion be correct, which we believe it to be, it is certainly an important fact, and led Dr. Pym to employ those persons as attendants on the sick, who had undergone the disease, and therefore were not likely to be affected by the contagion of it, and thus probably saved many lives. Under these impressions, we beg leave to recommend the industry and research displayed by Dr. Pym, in his book, to Lord Palmerstone's favourable consideration.

" Signed,

" J. M'GREGOR,

" W. FRANKLIN,

" W. SOMERVILLE."

" The advocates for the unity of disease will, I believe, find it insuperably difficult to reconcile with their theory the facts which I have thus hastily communicated to you ; while the fundamental principle, that there is a radical dif-

ference between remitting fever and yellow fever, between fevers depending upon marsh miasms as their source, and those that take their rise from human contagion; in short, that yellow fever is a distinct idiopathic disease, acquires additional support. It may not therefore be of disservice to make known the purport of this letter. The doctrine maintaining that different fevers are of one common origin, is in reality so unfounded in fact and so pernicious in its consequences, that the sooner it is discarded the better will it be for the interest of science and humanity."

The immunity of the human constitution from a second attack of yellow fever, which subject has occupied the special deliberations of the Army Medical Board of Great Britain, and the seasonable communication of their deliberations to the physicians of this country, have been the means of exciting our practitioners to this interesting fact. Since the appearance of Dr. Francis' *Observations on Febrile Contagion*, in a pamphlet form, in 1816, to the present day, additional light has been thrown on this subject, and we believe, many medical men, who have witnessed the ravages of yellow fever in different parts of the United States, concur in opinion that the pestilence rarely or never afflicts the same individual a second time. In the MS. communication of Dr. Francis, concerning the late fever of New-York, to which I have more than once already referred, speaking on this point, I find the following language:—

"I hope," says Dr. F. "you will pay due attention to the question, whether the same individual is afflicted a second time with yellow fever. Since I have addressed this query to the medical practitioners of this country, the almost uniform reply is, that the constitution is rarely subjected to the action of a second illness from the disorder. Several of the most experienced physicians of our city affirm it, as their

belief, that the constitution is invulnerable to a second attack of the disease. The late Dr. Richard S. Kissam was conspicuous in this number. His Excellency Governor De Witt Clinton, who was president of the New-York Board of Health during the prevalence of the disease in this city, in 1805, and who had ample opportunities of acquiring a knowledge of the peculiarities of the fever, assures me, that no case, so far as he learned, came to the cognizance of the Board of the same person being twice under the influence of yellow fever. Dr. Walters, who has been practically conversant with yellow fever since 1798, is of a similar opinion.

"Dr. Hosack, who has recently paid much attention to this peculiarity of the yellow fever, states, that the system is rarely or never liable to become twice afflicted by it, and his correspondence with several eminent physicians, in different sections of the union, corroborates the correctness of this belief. I shall observe, in conclusion, that Dr. Rogers, the President of the Medical Society of New-Orleans, a gentleman, who since the year 1804, has witnessed the ravages of yellow fever in that city, gives me the strongest assurances, that the human constitution enjoys perfect immunity from a second attack of the disorder. He has never seen an individual sick of the complaint a second time. But I forbear to enlarge on this head."

There is another species of immunity which is said to belong particularly to the natives of those latitudes to which yellow fever is indigenous. This differs from the kind of which we have been speaking, because it gives to the constitution an exemption from even a first attack of yellow fever. The other is acquired; this is congenital; but the former is said to be a more perfect protection to the system than the latter: for if we are to believe the observations made in Spain, those who have once had the disease, as in other con-

tagious diseases, are ever after exempt from it ; but those who owe their escape from it to their birth-place, are known to lose this immunity by living a few years in a cold latitude.

With regard to this *immunity from birth-place*, it is now almost reduced to a certainty that it does not strictly belong to the inhabitants of any part of the territory of the United States, even to those parts of our continent which are nearest to the tropics. There is, however, a certain degree of insusceptibility to this disease, which the natives of the United States possess, derivable, no doubt, from this cause, and existing in a more and more perfect state the nearer they reach to the equator. But this does not amount to that positive and absolute immunity to which we have reference, and which is possessed in so eminent and remarkable a degree by the natives of those places where the causes which generate this disease are known to exist. Hence it happens that although those who have migrated to the United States from the northern and higher latitudes of Europe, constitute but a minimum of the population of any of our sea-ports, they have, notwithstanding, always been peculiarly obnoxious to yellow fever, even though they may have resided here several years, as is shown by the epidemic of the late season.

The disease spread over the lower part of the city where the wealthiest portion of the inhabitants reside, almost all of whom are natives, and where there are very few foreigners ; for this description of persons being chiefly Irish and poor, dwell almost exclusively in the suburbs and upper parts of the town. Yet, as we shall soon see, nearly one half the deaths were foreigners. The same has been observed when yellow fever has prevailed in any of our cities. These facts show that the unsusceptibility to yellow fever growing out of birth-place belongs, in a certain degree, also, to the na-

tives of the continent of North America, as well as to those who inhabit its islands in the Carribean sea.

That some of us do not possess this immunity in a higher degree seems strange, when we recollect that Pensacola is in $30^{\circ} 30'$ north latitude, New-Orleans and St. Augustine in $29^{\circ} 58'$, and Havanna in the island of Cuba, $23^{\circ} 12'$, which is only a little more than *six degrees* farther south than the two last mentioned sea ports of the United States. But that this peculiar difference between the islands of the West-Indies as well as the towns on the continent within the tropics, (such as Vera Cruz, Carthagená, &c.) and the sea ports of the United States, does actually exist, every year, almost, furnishes strong and positive proof; and particularly in what occurred this very season at the little town of Pensacola. Though the greatest number who perished of the yellow fever which recently made such dreadful havoc in this small town, were emigrants from the northern states; the old residents and natives also, such as the Spaniards and French, and even the Creek Indians themselves, who are the aborigines of the soil, as well as a considerable number of Negroes fell victims to the disease! The epidemic broke out on the 25th of July, about ten days after the arrival of a vessel from Havanna, that came directly up to within a few feet of the town, and landed a cargo of damaged fruit. There were then one thousand inhabitants. Six hundred fled a few days after into the woods, leaving about three hundred Spaniards, French, Negroes and Indians, and one hundred Americans, Irish and English. Of these there perished up to the 1st of October:*

* See letter of Mr. Barber, of Pensacola, dated Pensacola, Sept. 20, 1822, published in the New-York papers.

200 whites,	} 100 American and Irish,	} Adults and
	} 100 French & Spaniards,	} children.
50 Negroes,	} 50 Negroes,	} Adults and
30 Indians,	} 30 Creek Indians.	} children.
<hr/> 280	<hr/> 280	

It is remarkable that from Oct. 1st to Oct. 26th, out of the three hundred of all descriptions then remaining in town, *that* there were one hundred and twenty who had died, nearly all of whom were children of Creole (i. e. native) parents, and who on that account, from being natives of the town, had been considered safe!

From facts like these, we are constrained to believe that yellow fever is indigenous to no part of the territory of the United States, and that it has never appeared in any of our cities without having been brought there from some West-India port.

For this repugnance in our organization to become so modified, *by our climate* as to acquire a perfect immunity from the disease, is strong presumptive proof that yellow fever cannot be a native production of our soil or *climate*.

To return to the subject of *immunity from a second attack*. It is conjectured that out of more than four hundred cases of yellow fever which have occurred this season, none have had the disease before. One half, at least, were foreigners from England, Ireland, Germany, or France, or persons from more northern parts of the United States, and who had never had yellow fever. Of the remaining half, no instance has come to my knowledge, of the disease having attacked the same person twice.

From a review of the whole controversy on this subject, we are led to believe that an immunity from a second at-

*country
external to
the hopes.*

tack does belong to yellow fever as well as to most other contagious diseases : but under this modification, which will, we think, express the terms of the law in an unexceptionable manner/

Those who have passed through yellow fever once, very rarely take it a second time, especially if they continue to reside in the country where they first had the disease.

The fact was first stated very nearly in the same language, by Dr. Mc Arthur, late physician to the Naval Hospital at Deal, in his Report on this subject to the Commissioners for the service of transports, and sick and wounded seamen, &c. "I have reason to conclude, (says this physician.) from my own experience, that it rarely attacks the human frame more than once, so long as the objects of its attacks continue in the country, or do not commit irregularities." [Bancroft's Sequel, p. 55.]

The total number of deaths of yellow fever in the city, recorded on the books of the City Inspector, Dr. Cumming, during the summer and autumn of 1822, was one hundred and sixty four.

They were from the following countries and states :

<i>Foreigners.</i>		<i>Americans.</i>	
Ireland,	- 32	New-York,	- 58
England,	- 26	Connecticut,	- 14
Germany,	- 9	Massachusetts,	- 7
Scotland,	- 3	New-Jersey,	- 7
France,	- 2	Pennsylvania,	- 1
Holland,	- 2	Maryland,	- 1
	—	Rhode-Island,	- 1
		Nova Scotia,	- 1
Total,	74		—
	90	Total,	90
Deaths,	164		

Of the ninety Americans, the following came from latitudes much higher north than that of the city of New-York. Thus from

Connecticut,	-	-	14
Massachusetts,	-	-	7
Rhode-Island,	-	-	1
Nova-Scotia,	-	-	1
			23

These of course were much more predisposed to the disease than the natives of the city. It was observed also in the yellow fever of Cadiz in 1810, that those Spaniards who had fled from the northern parts of Spain to take refuge in that city from the French armies, were more obnoxious to the disease than the natives of Cadiz.*

Out of the whole number of deaths, in New-York, during the late epidemic,

5 were between 1 and 10 years of age.

17	-	-	10	20
40	-	-	20	30
40	-	-	30	40
36	-	-	40	50
15	-	-	50	60
8	-	-	60	70
2	-	-	80	90

Of which six only were coloured persons, of whom three were blacks and three mulattoes. There were fifty-nine females. The number of females was therefore to that of males a little more than one to three.

Out of the whole number of females, it is worthy of remark, that twenty-three were foreigners, and eleven from the

* See Sir James Fellowes, p. 219.

more northern parts of the United States, making the *ratio of susceptibility* between those of northern constitutions and those who are acclimated, hold nearly true in respect to females also, as well as to both sexes, when included together.

Of the whole number of deaths, *two thirds* it appears were between the ages of twenty and fifty; and of the remainder nearly as many under twenty as over fifty. There were more than three times as many between ten and twenty as between one and ten; and nearly twice as many between fifty and sixty as between sixty and ninety. It is a little remarkable that very nearly the same numbers died between twenty and thirty, between thirty and forty, and between forty and fifty.

A number of blacks, who had been employed as watchmen, or to take furniture and goods out of the infected parts of the town, were thus particularly exposed to the disease long after the original inhabitants of the district had deserted it. Dr. Lining says he never knew an instance of a black taking the yellow fever at Charleston. There were much fewer of the night watch who took the disease than of those who were employed also on the day watch. Dr. Rush attributes it to habitual exposure to the cool night air. There were also five or six Germans took sick, who continued constantly to work in a sugar-house in Liberty-street, near Nassau-street, long after that neighbourhood had become infected—they lived in the upper parts of the town, and several of them died. This circumstance excited a good deal of remark. It was no doubt rendered more fatal in this building from the peculiar predisposition which all foreigners have to this disease. Their occupation also by exposing them to an intense heat in confined apartments, may have contributed, perhaps, to render them more liable to the

disorder. Deveze remarks, that blacksmiths, bakers, &c. are, on that account, particularly subject to take this complaint. Sir James Fellowes, speaking of the yellow fever in Spain says, that those who were obliged to remain long near the fire, as cooks, &c. were very liable to the disease.

The disease, as usual, prevailed most among the poorer classes—first, because they either wantonly, or from necessity, exposed themselves to it more than the rich—and secondly, because the small apartments in which they usually live, rendered impure by human effluvia, became a more ready medium of contagion. At least one half, and perhaps two thirds, were labourers and mechanics; but no particular occupation appeared to be more obnoxious to this disease than another. Its fatality seems to have been regulated more by the condition of life than by the occupation or temperament. For we find it proved remarkably fatal where the air must have been from necessity impure and surcharged with human effluvia, as in *boarding houses*, and as was remarked, in previous years, in small sailor taverns and similar houses, usually resorted to by the poor. In two respectable boarding houses in Broadway, the mother and her daughter, in each, took the disease, out of which number three died. Out of three respectable boarding houses also in Courtlandt-street, in two of them the ~~ladies~~ who kept them died, besides six other persons belonging to the houses. In two small sailor boarding houses in Water-street, (see Chap. I.) there were five taken down with yellow fever, four of whom died.

females

There were scarcely any persons of consequence, and very few of the wealthier part of the inhabitants who fell victims to it, with the exception perhaps of five or six, who unnecessarily exposed themselves, by remaining too long in the infected district, though it was in their power to escape.

When it is considered, that this city counts upwards of 10 or 12,000 coloured persons among its inhabitants, and that the greater part of them remained, no doubt, in town, at the time the yellow fever prevailed, and were as much or more exposed to the chances of taking the disease as others, it must be confessed, that the disproportion in the number of them who died, to that of the whites, was very great; showing, what was long since pronounced to be true, but lately attempted for certain purposes to be controverted, that this description of persons do, in reality, possess a much higher degree of insusceptibility to the disease than whites. Contrary, however, to the positive assertion of Rush, I must say, that some of the most malignant cases of this disease, and particularly those in which there was most appalling hæmorrhage, have been among this small number of blacks who died.

[All the cases among the colored people were natives - At least four fifths if not six sevenths of all our colored population are natives & almost all black, there being but a small proportion mulattoes. - Scarcely any of the whole colored population ~~that~~ are natives of places farther south & such as are were born in our southern or slave holding states. From the West Indies there were not altogether perhaps a dozen natives of that region resident in the city.

The above chapter may be judiciously enlarged by adding the published list of the names, ages, birth place &c of all the cases.

also by inserting valuable documents from the minutes of our Board of Health for a number of years. See also our late Mayor Stephen Allen interesting brochure. He was mayor during the yellow fever 1822 & ex off. Treasr of B.

Board of Health

x These rarely occur now since the water of the Croton river was introduced 1842. This water being of a steady & moderate temperature

CHAPTER X.

WEATHER.

By noticing the highest range of the thermometer during the summer and autumnal months, it is found that there has been at no time those excessively hot days, which have usually been observed to occur in July or August. This is corroborated by the fact, as we shall see in the chapter on deaths which succeeds this, that there have been but very few deaths from drinking cold water, of which there are every year a considerable number during the prevalence of extreme hot weather, as is shown by the list of mortality for 1820, and by the preceding years. x The thermometer on such occasions has usually exceeded 98° and 100 . But this year the thermometer was at 2, P. M. during all June only six times above 90° and then but two or three degrees higher than that point. In July, at the same hour, it exceeded 90 on ten occasions, and only four times before the first cases of yellow fever sickened. In August it was only seven times over 90° at 2 P. M. but it never during all the summer exceeded 96, and did not reach as high as that point except on one day, which was the 20th of July, at 2, P. M. In September, the mercury on five days rose as high as 90° ; but in October it did not reach as high as 80° except on three occasions;

on one of which, viz. the 20th, it attained at 2 P. M. 84° . Nor was there at any time those sudden depressions of the thermometer which occasionally happen; for during all the summer, the quicksilver did not fall below 60° , and never as low as that, excepting one day, viz. the 14th of June, at 9 P. M. During September, also, it did not fall below 60° , except on five days, at 7 A. M. on one of which, viz. the 18th, it was as low as 54° . In October, however, towards the latter part of the month, it sank as low as 37° on the 23d, on which day, ice was for the first time found in the immediate vicinity of the city. On the 26th, the day on which the Board of Health adjourned, the mercury fell to 36° at 7 A. M. From that day to the 4th of November, there happened thirteen deaths of yellow fever.* From the 23d of October to November 1st, it was asserted in the public prints, that ice had been several times seen in the city. Of this, however, there was no substantial proof, which is confirmed by the fact that the quicksilver did not, at any time of this month, fall to the freezing point: The thermometer which we have used as our standard is kept at the New-York Hospital, which is considered to be one of the most open and elevated places in the city, the air having free admission to it from all quarters, and the building being surrounded with a large enclosure, at the distance, on every side of it, of more than one hundred or one hundred and fifty feet from the buildings of the city. Ice, however, may have nevertheless formed in some of the

* When the first part of this work was printed off, the report of deaths from yellow fever had not been entirely completed. Hence instead of ten additional cases having occurred after the Board adjourned, I should have stated the number at thirteen.

more sheltered places of the town. If it did freeze, it was probably on the north-west or shaded side of the city upon the Hudson. It could not have formed on the East River or south-eastern and sunny side of the city; for the cases that occurred between October 26th and November 4th, after the Board of Health adjourned, were in this part. Otherwise we shall be obliged to admit that yellow fever may, to a certain extent, go on to prevail after freezing weather. I did not myself ascertain the existence of frost in the city until early in the morning of Nov. 5th, when the ground in shaded places was covered with it, and continued so for some time after the sun had risen.

That a general frost had not occurred in the city until this date, is furthermore confirmed by the fact, that the very last case of yellow fever that happened died on the day before, to wit, Nov. 4th.

Cases. Deaths.

From July 10th to August 1st, there occurred	15	7
August 1st to September 1st, -	95	58
September 1st to October 1st, -	211	109
October 1st to November 5th, -	93	69

July was mild, and for the most part clear, but the air was unusually humid compared with the preceding month. The average of the thermometer at 2 P. M. was very nearly 88°, and in June, at the same hour, only 83°.

The yellow fever may be said to have begun to be propagated about the 15th of July, that is five days after the first three cases sickened. Notwithstanding the humidity of this month, and that the atmosphere, though not particularly calm, was at no time disturbed by violent gusts or storms, and that the inhabitants in the neighbourhood where the disease began, from being still unaware of the introduction of this pestilence, had not abandoned their homes, still the

disease at first seemed to have made but little progress, for during all the remaining half of the month, there did not occur but *fifteen* cases !

Conformable as the state of the elements seemed to be with the hypothesis of domestic origin, the disease was too stubborn to acknowledge its authority, but sternly obeyed its own laws. But if a long continuance of hot, dry, clear weather also, would generate the disease, why did it not break out in June ? There was certainly heat enough in that month. But June must be reserved, I presume, in order that the preparatory concoction which the elements require, might have full time to be matured. The average heat in August also, was 86° at 2 P. M. nearly the same as that of July, but there occurred only *ninety-five* cases, a proportion four times as great as in July, but yet not a very extraordinary number, considering that the mass of the population in the lower part of the city still remained there, and that the temperature of the air seemed to be favourable to the propagation of the disease. The season indeed seems to have given the theory of domestic origin a fair trial. First, a dry hot month, which could produce nothing, then a hot and very moist month which produced but very little ; and lastly, a dry hot month again when the proportion of cases was only quadrupled. But in September there was much more wind than during all the summer, though no violent commotion of the air, and the average heat at 2 P. M. was 81° only, being two degrees less than that of June. There was also a medium quantum of moisture, compared with the three preceding summer months. This state of things, that is, a moderately high heat and moderate degree of humidity in the air, seems to have been most favourable for the propagation of the disease, for in this month, though

nearly all the lower part of the city below Fulton-street was deserted as early as the first of the month, yet more than *two hundred and eleven* cases occurred, being more than twice the number of what had occurred in the previous month. How are these discrepancies to be reconciled with the hypothesis of domestic origin? Will it be said that in July there was a good deal of electrical matter in the air, and that this counterpoised the deleterious influence of an excessive humidity. But in June the temperature was nearly the same as in September, and there was not only a great deficiency of moisture in the atmosphere, but much less thunder and lightning than usual, which, however, was also the case in September. In September the cause which produced the disease seemed to have been more active than at any other time, though less mortal than in the succeeding month.

When the thermometer began to fall towards the middle of autumn, the disease, as usual, became in correspondence more circumscribed in its limits, but more fatal; for in October there were ninety-three cases, the same number as in August, lacking only one, but the proportion of deaths to the cases increased, and became as three to four.

Upon the whole, it would seem from the meteorological phenomena of the present season, that this disease sets at defiance the ordinary vicissitudes of the atmosphere. Neither its progress nor its origin seem to depend, as many would have us believe, upon any definable state or condition of the elements. Nor have those sudden and extreme changes of the weather which sometimes characterize the seasons, any more to do with the production of yellow fever than the usual train of atmospheric phenomena. If we can repose confidence in one of the oldest and best writers on

this subject, this fact holds true also in the West-Indies, which we are generally accustomed to consider as the birth-place of this disease. "Neither the alteration of the weather or winds, nor the different seasons of the year, have ever of themselves been able to produce this contagious disease among us. Many years (I may safely say seven or eight or more successively,) have, to my certain knowledge, passed over, when the sultry heats and long intolerable droughts of some, the almost incessant rains of others, or the tempestuous weather of many, and that from uncommon points of the compass too, must surely, in some degree or other, have given rise to such an epidemical malignity, if it could possibly be derived from such causes; and yet no footsteps of the fever did appear all that time."*

It would be almost useless to enter into a comparison of the state of the weather this season with what was observed in previous epidemics, for it brings us out to the very same results. Taking September as our criterion, all that we can positively affirm is, that the *propagation*, in other words, the contagion of yellow fever, appears to be favoured by a steady range of temperature, somewhere at or a little above 80°; and perhaps also by a moderate share of humidity in the air. But whether a deficiency of *electric matter* in the atmosphere, which Dr. Shecut, of Charleston, avers, gives rise to the *generation* of the disease, has any thing to do with facilitating or retarding its progress, I cannot pretend to say. The contagion this year seems, in truth, to have been multiplied with much greater rapidity during the month in which there was scarcely any thunder or lightning observed

[September]

* Treatise concerning the Malignant Fever in Barbadoes, by Henry Warren, M. D. London, 1741.

than in August, when there was a good deal noticed, or in July, when there was a still more frequent recurrence of electrical phenomena, and when the number of cases, though the propagation of the disease seemed to have been apparently favoured by other circumstances, was unusually small. May not this increase of cases in September be owing also, in some measure, to the fact, that this is always one of the most sickly months of the year, and that the alternations of chilly evenings and hot days, which so peculiarly characterize this month, must predispose the body to disease, and render it of course more susceptible to morbid influences of every kind, and therefore more vulnerable to the poison of yellow fever, as well as to all other causes of disease?

The tables of which we have availed ourselves in the foregoing observations, are kept by Dr. R. Pennell, and by him published in the New-York Medical and Physical Journal, edited by Drs. Francis and Beck. As they are drawn up with uncommon care and accuracy, and are intimately connected with the subject under consideration, I have thought it not irrelevant to insert the months alluded to entire, together with those of May and November.

METEOROLOGICAL OBSERVATIONS

FOR MAY, 1822.

Made at the New-York Hospital, by RICHARD PENNELL, M. D.

	Barometer.						Thermo- meter.			Winds.			Rain. Gauge.	Weather.
	7 A M	2 P M	9 P M	7 A M	2 P M	9 P M	7 A M	2 P M	9 P M	7 A M	2 P M	9 P M		
1	30 10	30 08	30 06	62 84	70		sw	sw	sw					variable
2	30 06	30 06	30 20	61 88	75		se	sw	sw					cloudy
3	30 25	30 25	30 25	63 75	66		ne	ne	ne					variable
4	30 25	30 25	30 03	58 55	52		ne	ne	ne			— .74		cloudy
5	29 70	29 70	29 78	50 55	47		ne	nw	nw					do.
6	29 88	29 96	29 96	46 72	54		w	w	w					clear
7	30 00	30 00	30 00	54 74	64		w	nw	nw					variable
8	29 96	30 00	30 18	60 76	62		nw	nw	nw					cloudy
9	30 20	30 26	30 26	56 71	58		nw	nw	nw					do.
10	30 35	30 27	30 27	54 70	58		ne	sw	w					clear
11	30 27	30 27	30 34	56 75	59		w	sw	sw					do
12	30 45	30 47	30 47	55 74	57		sw	sw	sw					do
13	30 47	30 47	30 44	58 75	62		sw	sw	sw					do
14	30 40	30 38	30 32	61 78	61		sw	s	s					do
15	30 16	30 10	30 22	60 75	68		s	s	n			— .18		cloudy
16	30 24	30 24	30 28	62 72	64		n	sw	sw			— .05		do
17	30 35	30 35	30 35	58 68	66		sw	s	s					do
18	30 30	30 26	30 22	62 78	68		s	sw	nw			— .28		do
19	30 20	30 22	30 26	64 80	72		s	s	sw					variable
20	30 30	30 30	30 30	63 75	66		s	s	s					cloudy
21	30 30	30 24	30 16	64 70	64		s	s	s			— .05		do
22	30 06	29 96	29 90	66 85	75		s	w	w			— .20		do
23	30 00	30 08	30 08	70 80	68		sw	sw	sw					do
24	30 22	30 26	30 36	64 75	66		ne	nw	nw					variable
25	30 60	30 60	30 60	60 69	65		sw	sw	sw					clear
26	30 60	30 50	30 46	58 75	60		se	se	sw			— .10		cloudy
27	30 34	30 34	30 26	66 69	62		sw	sw	sw			— .05		do
28	30 12	30 12	30 12	64 85	70		sw	sw	sw					clear
29	30 08	30 12	30 20	72 80	75		sw	se	se					variable
30	30 29	30 29	30 29	66 73	70		se	se	ne			— .07		cloudy
31	30 28	30 28	30 28	62 78	70		ne	s				— .02		do

The quantity of rain which fell in May, is 1 inch and 74-100ths.

On the 8th, a few drops of rain from a passing cloud. 16, at 7 P. M. lightning, with very loud thunder, and a small quantity of rain; 18th, moderate showers; at 7 P. M. thunder. On the 22d, 10 P. M. a gust of wind from the S. W. thunder, &c. The sun was obscured on the 4th, 18th, and 30th. Fog on the mornings of the 7th, 14th, and 15th.

METEOROLOGICAL OBSERVATIONS

FOR JUNE, 1822.

Made at the New-York Hospital, by RICHARD PENNELL, M. D.

Barometer.			Thermo- meter.			Winds.			Rain Gauge.	Hygro- meter.*	Weather.
7 A M	2 P M	9 P M	7 A M	2 P M	9 P M	7 A M	2 P M	9 P M			
1	30 20	30 20	30 16	68 84	70	s	s	s		772	cloudy
2	30 10	30 10	30 10	73 90	79	se	sw	sw		784	do
3	30 10	30 10	30 10	77 88	74	nw	sw	sw		720	clear
4	30 10	30 10	30 18	70 91	65	sw	sw	ne	— .24	760	cloudy
5	30 29	30 32	30 30	61 74	64	ne	se	se		648	do
6	30 32	30 30	30 30	64 73	64	ne	ne	ne		643	do
7	30 27	30 18	30 08	65 74	68	sw	sw	sw		643	variable
8	29 90	29 90	30 04	71 85	74	sw	sw	sw		620	cloudy
9	30 04	30 04	30 04	70 89	75	nw	sw	sw		595	clear
10	30 06	30 06	30 06	70 93	75	w	w	w		572	do
11	30 00	30 00	30 00	73 88	72	w	sw	sw	— .15	600	variable
12	29 97	29 97	30 10	73 93	73	n	n	n		584	clear
13	30 25	30 30	30 34	65 80	70	n	s	s		580	do
14	30 48	30 48	30 50	65 70	60	se	se	se		575	cloudy
15	30 50	30 50	30 25	65 85	75	se	sw	sw		584	do
16	30 02	30 00	30 00	70 89	72	sw	sw	nw		572	clear
17	30 00	30 00	30 00	70 88	72	nw	nw	nw		573	cloudy
18	30 00	30 00	30 00	64 72	64	nw	nw	sw		573	do
19	30 12	30 12	30 12	62 80	64	sw	sw	sw		586	clear
20	30 18	29 94	29 94	64 65	64	sw	se	se	1. 01	608	cloudy
21	29 94	29 90	29 90	64 80	70	s	s	s		616	do
22	29 90	30 00	30 08	70 85	72	nw	w	w		600	clear
23	30 18	30 18	30 18	70 84	71	w	sw	sw		594	do
24	30 18	30 18	30 18	72 85	75	sw	sw	sw	— .22	634	cloudy
25	30 18	30 18	30 18	70 74	67	ne	sw	sw	— .19	660	do
26	30 18	30 10	30 10	68 81	68	e	e	e	— .04	704	do
27	30 18	30 20	30 20	65 84	72	ne	ne	sw		690	variable
28	30 20	30 20	30 20	64 88	75	sw	sw	sw		626	clear
29	30 20	30 20	30 20	72 92	78	sw	sw	sw		628	do
30	30 20	30 20	30 20	75 92	78	sw	sw	sw		639	cloudy

The quantity of rain which fell this month is 1 inch and 85-100th.

At the commencement of this month the atmosphere was very humid, and the mornings foggy; there was but little thunder and rain. On the 2d and 21st, there fell a small quantity of rain from Nimbus, passing over. The sun was obscured on the 20th and 25th, and the greatest part of the 1st and 8th; the sky generally was clear at night; those days on which there was but little wind the heat was very oppressive, especially on the 10th and 11th. Vespertine lightning on the 2d, 16th and 30th.

* This is a very neat instrument, invented by Capt. Kater, in which the space between extreme moisture and extreme dryness is divided into 1200 equal parts.

METEOROLOGICAL OBSERVATIONS

FOR JULY, 1822.

Made at the New-York Hospital, by RICHARD PENNELL, M. D.

	Barometer.						Thermo- meter.			Winds.			Rain Gauge.	Hygro- meter.	Weather.
	7 A M		2 P M		9 P M		7 A M	2 P M	9 P M	7 A M	2 P M	9 P M			
1	30	18	30	18	30	18	78	94	73	sw	sw	s	— .16	653	cloudy
2	30	18	30	12	30	10	75	87	71	s	sw	sw	1. 63	685	do
3	30	08	30	00	30	00	76	87	76	sw	sw	s		700	do
4	30	00	30	08	30	18	76	93	75	s	s	s		686	do
5	30	20	30	24	30	20	75	88	76	s	s	s		694	do
6	30	20	30	20	30	20	77	87	75	s	s	s	1. 84	720	do
7	30	20	30	10	30	10	78	92	75	n	s	s	— .18	736	do
8	30	04	29	94	29	90	75	92	74	sw	sw	sw		748	do
9	29	90	30	04	30	18	76	85	76	nw	nw	nw		660	clear
10	30	33	30	33	30	30	73	91	80	nw	sw	sw		653	do
11	30	30	30	22	30	16	77	85	76	sw	sw	sw		650	variable
12	30	08	30	08	30	08	75	86	74	sw	sw	nw	— .34	710	cloudy
13	30	10	30	10	30	00	76	84	72	nw	nw	nw	— .67	726	do
14	30	00	30	00	30	00	72	88	78	sw	sw	sw		732	variable
15	29	96	29	98	30	06	78	87	72	sw	w	w	— .11	730	cloudy
16	30	10	30	18	30	24	72	88	76	w	nw	nw		700	variable
17	30	30	30	30	30	30	70	87	77	nw	nw	sw		660	clear
18	30	30	30	30	30	30	75	92	79	sw	sw	n	— .06	663	variable
19	30	30	30	26	30	20	76	92	78	n	s	s		665	do
20	30	18	30	10	30	10	79	96	78	sw	sw	sw	— .04	656	cloudy
21	30	18	30	18	30	18	79	90	78	sw	sw	sw		645	clear
22	30	10	30	06	30	00	76	85	78	w	w	sw		645	do
23	30	00	30	00	30	00	76	90	76	sw	sw	sw	— .28	675	do
24	30	00	30	00	30	00	78	88	71	sw	n	n		655	cloudy
25	29	94	29	98	30	00	72	82	76	w	w	w		665	do
26	30	08	30	20	30	26	68	80	70	w	nw	nw		630	clear
27	30	28	30	28	30	28	65	81	73	nw	nw	nw	— .32	645	clear
28	30	20	30	12	30	12	70	88	75	s	s	nw	— .03	670	cloudy
29	30	10	30	26	30	26	73	83	73	nw	n	n		650	clear
30	30	40	30	40	30	40	70	85	74	n	e	e		634	do
31	30	47	30	47	30	40	71	87	70	e	e	e		650	do

The quantity of rain which fell this month, is 5 inches 66-100ths.

This month was remarkable for its unusual humidity, and its numerous and heavy falls of rain. We were visited by thunder, lightning, and rain on the 1st, 2d, 6th, 7th, 18th, 20th, 24th, and 28th. Vespertine lightning on the 3d, 7th, and 28th. The sun was totally obscured on the 6th. The rain on the 27th fell in the night.

METEOROLOGICAL OBSERVATIONS

FOR AUGUST, 1822.

Made at the New-York Hospital, by RICHARD PENNELL, M. D.

	Barometer.			Thermo- meter.			Winds.			Rain Gauge.	Hygro- meter.	Weather.
	7 A M	2 P M	9 P M	7 A M	2 P M	9 P M	7 A M	2 P M	9 P M			
1	30 40	30 40	30 38	70 84	72		e	e	sw		656	clear
2	33 30	30 22	30 20	71 87	73		sw	sw	sw	— .27	670	cloudy
3	30 16	30 16	30 10	75 89	76		sw	s	s		705	do
4	30 03	30 00	29 80	76 94	74		s	s	nw	— .42	698	do
5	29 90	30 06	30 10	74 80	70		nw	nw	nw		665	clear
6	30 10	30 22	30 28	64 78	67		ne	ne	ne		647	do
7	30 38	30 40	30 40	67 75	68		e	se	se		643	do
8	30 47	30 47	30 47	64 82	72		se	ne	ne		638	do
9	30 47	30 40	30 40	72 86	70		sw	s	s		645	do
10	30 40	30 40	30 34	72 88	72			s	s		650	do
11	30 30	30 30	30 30	72 92	74		sw	sw	sw		645	do
12	30 30	28 30	23 74	90 79			sw	sw	sw		648	do
13	30 23	30 20	30 20	75 89	79		sw	sw	sw		652	do
14	30 32	30 32	30 22	70 85	70		nw	nw	nw		670	cloudy
15	30 10	30 00	30 00	74 92	75		s	s	s	— .02	662	do
16	30 17	30 17	30 17	70 90	76		nw	sw	sw		650	clear
17	30 17	30 17	30 17	74 91	78		sw	sw	sw		664	do
18	30 20	30 20	30 20	70 86	74		ne	ne	ne		680	cloudy
19	30 15	30 15	30 00	72 85	75		se	s	s	— .17	700	do
20	30 00	30 00	30 00	77 94	76		s	s	s		660	do
21	30 00	30 00	30 00	75 88	75		nw	nw	nw		660	do
22	30 08	30 10	30 18	73 85	74		e	e	e	— .17	660	variable
23	30 25	30 25	30 25	65 80	71		e	ne	ne		672	cloudy
24	30 25	30 25	30 25	69 80	75		se	se	s	— .03	670	do
25	30 36	30 36	30 36	66 85	74		s	ne	se		660	clear
26	30 36	30 36	30 30	70 84	70		se	se	se		660	do
27	30 30	30 30	30 20	68 78	68		ne	ne	ne		656	do
28	30 16	30 16	30 16	67 80	70		ne	ne	ne		660	cloudy
29	30 20	30 20	30 20	72 88	73		ne	ne	ne		660	clear
30	30 40	30 40	30 40	64 81	69		ne	ne	ne		656	cloudy
31	30 40	30 40	30 40	65 82	70		ne	ne	ne		656	do

The quantity of rain which fell this month is 1 inch and 8-100ths.

This month attracts our notice for the number of devastating tornadoes that happened in different parts of the United States; its arid atmosphere, clear starry nights, and moderate rains. 4th. Clear morning, wind S.; at 3 P. M. wind changed to N. W.; it soon began to blow tremendously; the dust ascended in large quantities, so as to obscure some parts of the city; it laid prostrate a number of trees, and did considerable damage; it was accompanied with loud thunder, lightning and rain, which lasted until half past 4 P. M. We had likewise thunder, &c. on the 15th and 22d. A beautiful double rainbow was seen in the south on the 15th, at 7 P. M. Vespertine lightning on the 4th, 15th, 19th, and 20th. On the nights of the 9th and 10th I observed a number of shooting meteors.

METEOROLOGICAL OBSERVATIONS

FOR SEPTEMBER, 1822.

Made at the New-York Hospital, by RICHARD PENNELL, M. D.

	Barometer.					Thermo- meter.			Winds.					Rain Gauge.	Hygrometer.	Weather.
	7		2		9	7	2	9	7	2	9	7	2			
	A	M	P	M	P	AM	PM	PM	A	M	P	M	P			
1	30	37	30	30	30	22	70	85	74	se	se	se	—	.08	685	variable
2	30	10	30	04	30	00	76	81	70	s	s	nw	—	.90	724	cloudy
3	29	90	30	00	30	00	69	87	74	sw	sw	sw			704	variable
4	30	08	30	20	30	20	66	82	67	sw	sw	sw			684	clear
5	30	26	30	26	30	26	62	81	69	sw	sw	sw			656	do
6	30	26	30	26	30	26	65	82	71	ne	sw	sw			645	do
7	30	26	30	26	30	15	68	88	76	sw	sw	sw			636	do
8	30	15	30	15	30	15	70	88	75	nw	sw	s			638	cloudy
9	30	10	30	10	30	22	72	85	76	sw	s	s			672	do
10	30	20	30	20	30	20	70	90	76	s	s	sw	—	.01	690	clear
11	30	14	30	14	30	14	75	94	78	sw	sw	sw			687	cloudy
12	30	27	30	27	30	27	76	91	77	sw	sw	sw			660	clear
13	30	27	30	27	30	27	78	94	79	sw	sw	nw			684	clear
14	30	27	30	20	30	20	72	84	72	sw	se	sw	—	.31	695	cloudy
15	30	14	30	14	30	00	74	90	74	sw	sw	nw			670	clear
16	29	90	29	90	30	10	72	82	69	sw	nw	nw			638	do
17	30	30	30	44	30	56	60	68	60	nw	nw	sw			622	do
18	30	64	30	60	30	52	54	71	62	nw	sw	sw			619	do
19	30	38	30	38	30	30	64	79	68	s	sw	nw	—	.38	660	cloudy
20	30	00	30	00	30	00	69	75	69	se	nw	nw	1	.62	680	do
21	29	90	30	00	30	12	65	72	62	sw	sw	nw			650	clear
22	30	36	30	36	30	40	58	70	62	nw	nw	nw			645	do
23	30	57	30	57	30	57	55	70	60	nw	nw	nw			642	do
24	30	50	30	50	30	50	58	73	62	nne	ne	sw			648	do
25	30	44	30	44	30	44	59	74	68	cal.	sw	sw			650	do
26	30	44	30	30	30	30	64	75	73	sw	sw	sw	—	.07	718	cloudy
27	30	30	30	16	30	16	70	77	74	sw	s	s			800	do
28	30	16	30	16	30	00	73	83	75	s	se	se	—	.03	832	do
29	30	00	30	00	30	00	73	78	72	s	se	se			834	do
30	30	00	30	00	30	12	68	77	70	nw	nw	nw			750	clear

The quantity of rain in this month, amounted to 3 inches and 40—100ths.

The thermometrical range for September was considerably higher than for the same month in the preceding year; it was unusually moist, especially towards the latter part. Very thick fogs and light winds, on the mornings of the 3d, 9th, 24th, and 26th. The autumnal equinox made its appearance at 10 P. M. on the 19th, and continued until the evening of the 20th. The sun was obscured the greatest part of the 14th, and completely so on the 20th, 26th, and 27th. The thermometer, placed in the sun, on the 6th, at 2 P. M. stood at 106°. Thunder, lightning, and rain, on the 2d and 14th. Vespertine lightning on the 11th and 13th. The rain on the 1st, 10th, and 19th, fell in the night.

METEOROLOGICAL OBSERVATIONS

FOR OCTOBER, 1822.

Made at the New-York Hospital, by RICHARD PENNELL, M. D.

	Barometer.			Thermo- meter.			Winds.			Rain Gauge.	Hygrometer.	Weather.
	7	2	9	7	2	9	7	2	9			
	A M	P M	P M	A M	P M	P M	A M	P M	P M			
1	30 27	30 27	30 27	58 65	56		nw	nw	nw		710	clear
2	30 30	30 30	30 46	53 58	54		nw	ne	ne		696	cloudy
3	30 47	30 40	30 36	51 62	55		ne	ne	ne		690	variable
4	30 30	30 30	30 30	54 72	62		ne	ne	ne		687	clear
5	30 30	30 30	30 30	58 73	63		ne	ne	ne		693	do
6	30 30	30 30	30 30	59 73	61		ne	se	se		710	do
7	30 25	30 19	30 10	65 78	68		se	se	se		724	cloudy
8	30 08	30 08	30 08	65 80	65		nw	nw	nw	— .07	730	clear
9	30 20	30 20	30 18	65 73	63		nw	sw	sw		730	do
10	30 15	30 15	30 10	67 75	70		sw	sw	sw	— .11	735	cloudy
11	30 04	30 00	30 00	70 78	72		sw	sw	sw	— .03	780	do
12	30 00	30 00	30 15	65 74	61		sw	sw	sw		825	do
13	30 25	30 24	30 30	64 74	58		sw	sw	sw		770	clear
14	30 35	30 45	30 45	51 66	56		ne	ne	ne		732	cloudy
15	30 45	30 45	30 45	49 63	54		nw	nw	nw		686	clear
16	30 45	30 40	30 33	52 70	62		se	w	w		672	cloudy
17	30 22	30 20	30 20	56 73	62		w	w	sw		682	clear
18	30 20	30 14	30 10	59 78	67		sw	sw	sw		687	cloudy
19	30 10	30 00	30 00	63 83	70		sw	sw	sw		725	do
20	30 00	29 97	29 86	71 81	72		sw	sw	sw	— .02	732	do
21	29 75	30 00	30 20	71 68	62		s	nw	nw		686	do
22	30 26	30 34	30 40	52 75	49		nw	nw	nw		680	clear
23	30 40	30 40	30 40	37 58	45		n	n	n		657	do
24	30 40	30 34	30 22	43 54	44		n	n	n		632	cloudy
25	30 20	30 30	30 36	40 54	42		ne	ne	ne		623	do
26	30 40	30 40	30 40	36 54	46		ne	ne	ne		622	clear
27	30 35	30 18	30 04	42 49	46		ne	ne	ne	1. 42	640	cloudy
28	29 68	29 60	29 60	49 55	46		ne	nw	nw	— .67	655	do
29	29 60	29 80	29 87	45 54	45		w	w	w		650	do
30	29 95	29 90	30 03	41 54	48		w	w	w		650	clear
31	30 05	30 00	30 00	42 68	56		sw	sw	sw		650	do

The quantity of rain which fell this month, is 2 inches and 32—100ths.

The weather of the month of October, was, for the most part, pleasant and dry. The nights were generally clear and starry. On the mornings of the 4th and 18th, there were heavy dews, with light winds. The sun was obscured on the 2d, 11th, 14th, 27th, and 28th. On the 22d there was ice at the villages of Bloomingdale and Hoboken, a few miles from this city, but the thermometer, it will be seen, stood at 37° on the same morning, in a S. E. exposure, at 7 o'clock. The rain, on the 8th, fell a short time before sunrise.

METEOROLOGICAL OBSERVATIONS

FOR NOVEMBER, 1822.

Made at the New-York Hospital, by RICHARD PENNELL, M. D.

	Barometer.						Thermo- meter.			Winds.			Rain Gauge.	Hygrometer.	Weather.
	7		2		9	7	2	9	7	2	9				
	A	M	P	M								AM			
1	29	90	29	94	30	05	44	51	44	nw	nw	w		644	cloudy
2	30	05	30	05	30	00	38	54	46	w	w	w		638	variable
3	30	00	30	18	30	34	44	61	45	w	w	n		635	clear
4	30	44	30	44	30	34	36	60	43	n	n	n		630	do
5	30	44	30	44	30	38	35	58	48	n	n	n		632	do
6	30	30	30	28	30	28	44	59	51	nw	nw	nw		645	cloudy
7	30	28	30	22	30	16	49	59	56	nw	sw	sw	— .66	682	do
8	30	04	30	18	30	34	56	75	60	sw	sw	sw	— .13	695	do
9	30	48	30	50	30	56	44	51	45	ne	ne	ne		687	do
10	30	67	30	67	30	64	40	50	49	ne	ne	ne		690	do
11	30	50	30	46	30	32	48	61	56	ne	ne	ne		710	do
12	30	30	30	30	30	30	51	60	58	se	se	se		758	do
13	30	30	30	18	30	08	56	49	48	ne	ne	ne	2.80	758	do
14	30	00	29	82	29	98	48	51	42	ne	nw	nw	— .57	763	do
15	30	24	30	36	30	42	37	58	46	nw	nw	sw		746	clear
16	30	48	30	48	30	48	42	61	50	sw	sw	sw		734	do
17	30	48	30	48	80	40	41	64	42	sw	sw	sw		728	do
18	30	36	30	36	30	29	45	51	47	ne	ne	ne	— .78	742	cloudy
19	30	29	30	29	30	34	45	54	47	nw	nw	nw		741	variable
20	30	34	30	30	30	26	44	58	50	nw	nw	nw		741	cloudy
21	30	20	30	20	30	14	50	61	55	sw	sw	sw		741	do
22	30	00	29	84	29	70	46	47	44	n	ne	ne	1.94	746	do
23	29	60	29	98	30	08	44	57	44	w	w	w		735	do
24	30	20	30	38	30	56	40	46	40	nw	nw	nw		716	variable
25	30	56	30	30	30	26	35	59	44	nw	sw	sw		727	do
26	30	26	30	26	30	26	36	44	39	nw	nw	nw	— .20	710	do
27	30	26	30	26	30	26	34	45	40	nw	w	w		705	clear
28	30	16	29	90	29	98	40	53	50	s	s	s	— .36	736	cloudy
29	30	00	30	00	29	95	47	58	45	w	w	w	— .10	765	do
30	29	90	29	84	29	84	56	69	61	s	s	s	— .31	774	do

The quantity of rain which fell this month was unusually great, being 7 inches and 85—100ths.

The 8th was very sultry, with vespertine lightning, and rain, at 9 P. M. The grass and house-tops were white with hoar frost on the mornings of the 4th, 5th, and 17th. On the 18th, moderate rain all day, with lightning in the S. W. at 7 P. M. The sun was partially obscured on the 29th and 30th, and totally on the 7th, 10th, 11th, 13th, 14th, 18th, 21st, and 22d. On the 26th the sun was overclouded a short time after it had risen; rain soon commenced, intermingled with large flakes of snow, which instantly melted when they came in contact with the earth: it continued until 11 A. M. when a clear afternoon and a starry night succeeded.

CHAPTER XI.

DISEASES.

As the weather during the present year has not been characterized by any extraordinary vicissitudes of temperature, or humidity, different from what has been observed in previous years, so neither have the diseases indigenous to this climate been distinguished by any unusual phenomena. The general, as well as local affections, incidental to the different seasons, have each reigned in their turn precisely after the manner of preceding years when no yellow fever existed, and without becoming at any time epidemic, or assuming other than the ordinary type and symptoms which always accompany them.* The inclement seasons of winter and spring have, as usual, brought with them de-

* "During the tyranny of this fever," says Dr. Warren of Barbadoes, speaking of the malignant fever, which occurred there between 1733, and 1738, "common sporadic distempers appeared now and then as usual, such as anginas, peripneumonias, asthmas, pleurisies, rheumatisms, colds, coughs, diarrhoeas, dysenteries, &c, which, however, were not so general as to deserve the name of epidemics, nor did they seem to have any relation to the predominant constitution of the year." p. 69.

x June is our most beautiful & at the same time
healthiest month.

fluxions upon the chest in the form of consumptions, catarrhs, croup, pleurisies, &c. which may be considered the predominant, and most fatal diseases of the climate.

So great is the determination upon the chest, produced by the severe, unsteady cold of winter, and the chilly, rainy months of our long spring, that its effects are seen in the diseases of all the succeeding months of the year. Thus contradictory as it may seem, consumptions continue to preponderate even during the summer and autumnal months; and it is not unusual to find the diseases of other organs, as well as all the different forms of febrile complaints, which are natives of this latitude, at times more or less complicated with pulmonic symptoms. 2

The summer is acknowledged to be our most healthy season; the very season, however, in which yellow fever usually makes its appearance, as if to fill up a space in the catalogue of diseases which would otherwise be incomplete. This of itself shows that there can be no morbid condition of the atmosphere, naturally existing at that period of the year, and is, therefore a strong, presumptive argument in favour of the foreign origin of this disease. — The only disease which may be said to prevail during summer, is the cholera infantum, (Febris Remittens Infantilis of modern authors,) which carries off great numbers of children under the ages of two and three years: towards the close of summer, and during the first two months of autumn, defluxions upon the bowels in the form of dysenteries, diarrhoeas, &c. become the reigning diseases, but rarely or never epidemical; after which there is a truce of one month, during November, which is usually considered a very healthy month. The revulsion upon the bowels now changes again to that upon the

In this exception we ought perhaps to include our admired & beautiful month of October with its cloudless skies, changing hues of the foliage &c. x

chest, and the diseases succeeded each other in the same routine as before. The contagion of measles, seems to be more readily propagated during the spring, and that of whooping cough during summer.

COMPARATIVE VIEW OF DEATHS

From prevailing diseases, for June, July, August, September, and October, 1820, 1821, and 1822.

1820.	1821.	1822.	
79	63	23 fr.	fever,
12	13	11	bilious fever,
13	12	13	bilious remittent,
none	none	none	hectic fever,
5	3	1	inflammatory fever,
none	4	6	intermittent fever,
4	3	3	puerperal fever,
15	21	17	remittent fever,
3	1	1	scarlet fever,
85	57	51	typhus fever,
none	3	none	malignant fever,
17	6	6	apoplexy,
2	none	none	catarrh,
30	11	16	cholera morbus,
269	284	233	consumption
106	81	71	convulsions,
31	35	45	diarrhœa,
51	54	32	dropsy,
10	10	13	dropsy in the chest,
72	74	48	dropsy in the head,
216	122	83	dysentery,
167	110	111	infantile flux,

1820	1821	1822	
6	6	2	fr. hæmorrhage,
1	2	6	hæmoptysis,
37	46	34	hives,
1	1	none	inflammation of the bladder,
38	25	34	inflammation of the bowels,
11	15	9	inflammation of the brain,
37	37	29	inflammation of the chest,
12	17	18	inflammation of the liver,
4	3	4	inflammation of the stomach,
9	7	5	jaundice,
21	34	13	marasmus,
45	16	none	measles,
2	none	none	menorrhagia,
14	6	6	peripneumony,
5	2	1	pleurisy,
2	1	2	pneumonia typhodes,
2	7	6	quinsy,
1	1	1	schirrus of the liver,
1	5	11	sore throat,
14	15	11	sprue,
54	44	43	tabes mesenterica,
1	none	none	vomiting of blood,
14	53	10	whooping cough,
12	6	10	worms,

These include all the diseases, with the exception of cases of old age, still-born children, and a few casualties and surgical cases. It is remarkable to see how the numbers, with few exceptions, correspond for each year, showing most conclusively, that there was this year, no more than in previous years any epidemic constitution of the atmosphere, *the two* ~~neither~~ before, during, nor after the prevalence of the yellow

fever. The deaths, from different diseases, were not particularly affected this year by the removal of the inhabitants, for they merely changed their residence from one part of the city to another, and not a great many more went into the country than usually go during the hot weather. I have not enumerated, in the list of diseases, for 1822, those from yellow fever.

Several deaths, reported under the name of different local and general disorders have been ascertained to have been cases of yellow fever, which must be therefore deducted from the amount of those diseases as set down in the table. The City Inspector, Dr. Cuming, has politely favoured me with the list of these cases, which, as it leads to some curious inferences touching the pathological and nosological views entertained concerning this disease, deserves to be inserted here as a precious morceau of medical history :—

3 deaths from yellow fever were reported			
under the name of fever,			
3	-	-	bilious fever,
2	-	-	remittent fever,
1	-	-	inflammatory fever,
1	-	-	liver complaint,
1	-	-	inflammation of the brain,
1	-	-	inflammation of the stomach,
1	-	-	inflammatory bilious fever,
1	-	-	insanity.
—			

Tt. 14

We look in vain, in the general list of diseases, for those local and general affections with which yellow fever, if we are to believe the romantic doctrines of some writers, is

said to inosculate so freely, some of which are averred before the appearance of this disease to have become epidemical, and to be, as it were, the forerunners, or *avant-couriers*, of this fatal malady. No unusual affections of this kind were observed to prevail either before, at, or after the time at which this foreign disease was brought into the city; no peculiar gastritic, enteritic, hepatic, or cerebral disorders; no bilious fevers or influenzas, no quinsies, sore throats, scarlatinas, hæmorrhages, or carbuncles. It was with a view particularly of upholding the hypothesis of domestic origin that yellow fever has been so often engrafted upon the indigenous disorders of this latitude. For if it could be proved that there was a strong analogy and close affiliation between any of the reigning and ordinary diseases of the seasons, and yellow fever, very few would doubt that all were alike natural to the soil. Hence, those who have pushed this doctrine to its farthest extent have always been scrupulously tenacious of this point, and particularly careful to place it in the foreground of the argument.

The total amount of deaths from April to December of 1822, also shows, when compared with the deaths in the corresponding months of 1821 and 1820, that the present year has been throughout an uncommonly healthy year, which is corroborated also by the universal health which, with the exception of the yellow fever of Pensacola and New-Orleans, existed in every part of the Union, as well as by the fact that the products of the earth have never been of superior quality nor more abundant in quantity. The crops of grass in some parts of the state were injured by the drought in June.

Total of deaths for six months.

	1820.		1821.		1822.
May, -	214	-	257	-	237
June, -	204	-	223	-	235
July, -	374	-	331	-	318
August, -	503	-	456	-	370
September,	439	-	360	-	328
October,	342	-	323	-	306
Total,	2076		1950		1794*

* Exclusive of Yellow Fever, and without taking into view the increase of population.

x a living organic germ or seminium (See
Copleand)

CHAPTER XII.

CONCLUSION.

THE facts and arguments adduced in the foregoing pages go to prove the truth of the following propositions, which may be taken in some sort as an analysis or summary of the work.

1. Yellow fever is a *contagious* disease, propagated in no other way than by means of a peculiar poison generated in the human body, and transmitted from one individual to another, either by direct and immediate contact, or through the medium of the air or fomites.* Because we have di-

* We will here take occasion to remark, that many have been led to doubt the contagious nature of yellow fever, because they do not clearly understand the distinction between direct and indirect contagion. *Direct contagion* takes place where the disease is communicated from the sick person to the relations, physician, nurses, or other attendants, either through the medium of the air in the chamber of the patient, or by personal contact. *Indirect contagion* is where a person takes the disease either from fomites, or from the open atmosphere, which has become tainted or infected, in other words, charged with the contagious matter of the disease in the immediate vicinity of houses, neighbourhoods, or streets where numbers of persons have previously fallen sick of the disease. But it is as much *contagion* in the one case as in the other, whether it be taken directly and fresh from the breath

* Though the word contagion has now this extended meaning,
I prefer your division of infection & contagion, &
your word infections for all communicable pestilential
diseases, by means of a specific living organic germ
or seminum. 278

Account of the Yellow Fever.

rect and absolute proof of its contagiousness: because, moreover, no other theory than that of the contagious nature of the disease can rationally and satisfactorily account for its origin, progress, and propagation; and that all the attempts that have been undertaken to explain its phenomena on other principles, have led to endless absurdities and contradictions.

2. Yellow fever is not a native disease of this latitude, but a specific, idiopathic, and peculiar disease of foreign origin; because it occurs here but very seldom; because it is always confined exclusively to our sea-ports, and bears no analogy whatever to those of our diseases, which all acknowledge to be indigenous; because, moreover, the inhabitants born in this latitude, are frequently the subjects of it, which is contrary to what has been observed in the tropics where yellow fever is known to be indigenous; and lastly, because when the disease has appeared in this city, it has always been directly traced to some vessel or vessels coming from Havana or other ports where yellow fever was prevailing before such vessel or vessels sailed.

3. Yellow fever cannot be produced by what is termed an epidemic, or previous pestilential and morbid constitution of the atmosphere. Because if such constitution of the air existed, it would be diffused over all the city, whereby those living in such atmosphere, and prepared to take the disease, would fall sick at or nearly about the same time in streets

*in New York
for example,*

and other exhalations of the patient, or from the same unaltered poison as it is found, mingled with the air or entangled in fomites. It is in both cases the very same material, derived from the very same source, to wit, the human body, and the disease produced by either is precisely, and in all respects, the same disease.



remote from each other ; whereas in yellow fever, the cases occur in regular succession, spreading like all other contagious fevers, from those individuals who are first attacked, to those who have connection with them, or with the houses in which they sickened, and thus gradually multiplying itself from house to house and from street to street, in an increased ratio in every direction, wherever there are subjects for it to act upon ; so that there is often a space of four months between the first and last cases, or between the period at which it was introduced to that at which it has reached any considerable distance from the point where it set out. Because, moreover, neither the weather nor diseases before, during, or after the prevalence of yellow fever, have differed in any respect whatever from the weather and diseases, which prevailed in the corresponding months in other years, when no yellow fever existed. But on the contrary, with the exception of yellow fever, the season has, in some years, been less sickly and more mild and serene when yellow fever has prevailed, than in other years when it did not prevail.

4. The origin of yellow fever in this or any other latitude, cannot be ascribed to animal and vegetable putrefaction, whether in the form of marsh miasmata, exhalations from manufactories, ware-houses, or grave-yards, or from sinks, sewers, cistpools, gutters, decayed wharves, or new-made grounds ; nor to decomposition of any kind whatever ; as is abundantly proved, not only by the pointed experience of the present year, which is totally adverse to this theory ; but also, as we have seen, by the overwhelming testimony of the highest medical authorities, among whom may be enumerated, Warren, (of Barbadoes,) Chisholm, Stewart, (of Grenada,) Blane, Hosack, Pym, Fellowes, Gilpin, Bally, Pariset, Arejula, and the physicians of Cadiz in their late Report to the Spanish government, &c.

5. Yellow fever cannot have been generated in the filthy holds and decayed cargoes of shipping lying at our wharves, otherwise the disease when it has appeared, would have been sometimes traced not only to West-India vessels, but also to those coming from northern latitudes, as from the Baltic, from the German ocean, from England, Ireland, &c. and particularly to those vessels which so frequently arrive from Germany and Ireland, crowded with emigrants, where, from the great number of persons, (amounting sometimes to four or five hundred in one vessel,) who are confined together in a small space, great quantities of filth must necessarily collect, and the air become extremely foul and unhealthy. But although typhus fever has frequently broke out on board these vessels during their voyage, and continued to prevail up to their arrival in port, *Yellow fever* has never, in any instance, been traced to such sources.*

* This is confirmed by the "Statement of Facts" concerning the fever of Banker-street in 1820, by Drs. HOSACK, P. S. TOWNSEND, and J. BAYLEY, *Commissioners of Health*. "A high grade of typhus, attended with bilious symptoms, has oftentimes occurred in this as well as other countries, at the same season of the year at which this disease prevailed; and a very remarkable instance of it took place in the year 1801, when many vessels, unusually crowded with passengers, arrived at this port from Ireland during the summer and autumn. Out of at least seven hundred and fifty patients who were admitted into the Marine Hospital, almost all of whom were sick of this disease, nearly three hundred died, besides a great number who perished on their passage. The disease, which was simply typhus, on board the ships which first arrived, became, as the vessels progressively arrived later and later in the season, (from the same ports, chiefly from Belfast,) combined with bilious symptoms, which acquired more and more intensity as the season advanced."—p. 9.

6. Yellow Fever is more readily introduced and propagated in cities of temperate latitudes, when the air remains steadily within a certain range of temperature, somewhere about 80° of Fahrenheit's thermometer.

7. That yellow fever may have the power of becoming epidemic, from those whom it first attacks, the contagious matter must be accumulated to a certain amount, and circumscribed to a confined and crowded neighbourhood, the atmosphere of which is more or less charged with human effluvia.

8. Human effluvia are the most powerful conductors of the contagion of yellow fever.*

* The following facts, in addition to those in the body of this work, strikingly illustrate this law :

"It was remarked as a curious fact," says Sir James Fellowes, in his account of the yellow fever of Gibraltar in 1804, "that the Jews who were very numerous in Gibraltar, and who it was thought would have been more predisposed to disease, from their habits and mode of life, were not generally attacked by the prevailing disorder, until after the 18th of September, the day of atonement, on which the Hebrew nation meet together in the synagogues.

"On the 19th, four Jews were reported to have died, but it was not ascertained how long they had been ill. The Feast of the Tabernacles took place on the 15th or 16th of September ; and it is customary at this time for the friends and acquaintance to meet at each other's houses and to enter the synagogue. Previous to this, the Jews had cautiously kept to their own families at home, and not one of them was said to have been ill of the prevailing disorder, until after the feast alluded to, when there was rejoicing, and permission given for the admission of strangers amongst them.

"This assemblage of the Jews, and the communication which followed evidently facilitated the propagation of the malady, and afterwards occasioned such a mortality, that between seven and eight hun-

9. The radius of communication is increased in a direct ratio to the quantity of the contagious matter emitted from the sick within given limits.

10. Though the disease (as during the present year,) may be sometimes rapidly propagated solely by the force and intensity of its specific contagion,* without being sensibly modified in its direction or fatality, either by the width, elevation, narrowness, declivities, windings, cleanliness or filth of streets, or by the ordinary humidity or movements of the atmosphere, yet as a general rule, it is usually most mortal and most readily propagated in confined, low, narrow and sheltered streets, where the population is most dense, because in such places the air is stagnant, and the morbid as well as healthy effluvia emitted from the body are more concentrated, and therefore more virulent.†

dred fell victims to its fury."—*Fellowes on the Pestilential Disorder of Andalusia*, p. 108-9.

It has also been generally observed in Spain, that in those towns where yellow fever prevailed, and where the people did not refrain from attending mass, and going in processions, that greater numbers always fell sick a few days after the performance of those religious ceremonies.—*Vide* Report of the Physicians of Cadiz to the Spanish Government, 1822.

In the late epidemic, the churches of this city, and which are chiefly in the infected district, were all closed soon after the beginning of September, immediately after the time at which we have said a panic fortunately seized the people and depopulated all that part of New York south of Fulton-street.

* Proved by such evidence as it is impossible to invalidate in the novel and highly important facts already quoted from the able report of the physicians of Cadiz to the Spanish government.—*See Chapter I. supra.*

† ~~That~~ animal and vegetable putrefaction have nothing to do with

to show that

11. Violent commotions of the atmosphere, whether in the form of wind, thunder-gusts, or storms, by washing away, diluting, decomposing or dispersing the poison, always check the progress of the disease.

12. A calm, stagnant, and at the same time moist state of the air, when long continued, favours the accumulation of contagious matter, and the propagation of the disease.*

13. The sudden depression of the thermometer for several days during summer, or the gradual approach of the cool weather of autumn, has always diminished the number of cases, but rendered the disease more mortal in those who were sick; while it developed the contagion in those in whom it would, perhaps, have otherwise lain dormant.

14. The occurrence of black frost destroys the contagion, and totally extinguishes the disease.

[ice]

15. Extreme heat by volatilizing, or decomposing the

the generation of this disease, I refer the reader to the facts detailed in this work, and to the overwhelming evidence produced by that learned and distinguished ornament of the profession, Dr. Chisholm, and also by Dr. Stewart, in *Hosack on Contagion*, p. 60. note E.

* "It has also been remarked of the plague, as well as of yellow fever, that the infection spreads most rapidly when the atmosphere was not only heated and loaded with moisture, but when it was least agitated by wind or thunder-storms. During those calms, when the air may be said to be relatively at rest, it has been uniformly remarked that the contagion of the yellow fever has multiplied itself most extensively, as was always very apparent by the greater number that were seized within five or six days after such close weather had been observed; all which circumstances certainly conspire to promote the fermentative process that has been contended for."—*Hosack on Contagion*, p. 39.

matter of contagion, and thus rendering it inert, has, also, always been observed to arrest the progress of the disease.*

16. Though the contagious principle of yellow fever is of a subtile, gaseous rarefiable nature, it has a strong affinity for porous, spongy or bibulous substances in the form of what is termed *fomites*; in which state the virus is found to be highly concentrated and malignant.†

* Hence, as was first remarked by Sir Gilbert Blane, the febrile contagion of yellow fever, like that of typhus, rarely becomes epidemic in the tropics. That of the plague is so volatile, that it has never been found either in the East or West Indies. Typhus, which seems to come next to it in this property, is less frequently epidemic in the tropics than yellow fever. Hence too, M. Gerardin has been induced to make two species of yellow fever: 1st. Non-contagious, indigenous, sporadic, tropical yellow fever. 2d. Contagious, imported, epidemic yellow fever of temperate latitudes. [*Memoires sur la Fièvre Jaune par M. Gerardin*, Paris, 1820. p. 49-63.]

† Hence the reason why the contagion is so frequently imported under this form. In respect to its affinity for those substances, it resembles the contagious matter of dysentery, which from the attraction it has for solid matters, or from its being, according to Sir Gilbert Blane, more gross and less volatile, is most usually found associated with the excretions, and therefore more contagious in hot climates than fevers. We may thus explain, also, why the contagion of yellow fever, when introduced or afterwards generated by the sick, seems to adhere with so much tenacity, and for so great a length of time, to the apartments of those buildings in which many cases of the disease have occurred; and to the stone pavements, wooden and stone stoops, and brick and stone walls of houses, and wooden fences of yards, in streets that have become infected from the great mortality that has occurred in them. So strong is this affinity between the contagion of yellow fever and solid substances

17. Those who have passed through yellow fever once, very rarely take it a second time, especially if they continue to reside in the country where they first had the disease.

that many streets and neighbourhoods have remained infected through all the vicissitudes of the weather, and the occurrence of storms of rain and thunder gusts, until the arrival of frost, though it would have been thought that these commotions in the atmosphere would have either blown or washed away the poison. Dr. Rush, in his account of the yellow fever of Philadelphia in 1793, says, that there was a great mortality, observed in wooden houses, owing probably, he supposes, to the small size of those houses, their want of cleanliness, and to the miasmata becoming more accumulated by adhering to the wood. As the buildings in that part of New-York where the disease this year prevailed are almost without exception of brick, there was no means of determining whether the contagion has a stronger affinity for wood or for mineral substances. When the disease occurred in wooden houses there was great mortality; but their apartments were always smaller; and from the rent being cheaper always than that of brick houses, they were crowded with tenants, and those generally of the lowest description of persons.

Perhaps this affinity may be assisted, also, by ~~this~~ animal poison, which the disease throws off, being of a ponderable nature. If that be true, it must always occupy the lower stratum of the atmosphere, and never rise to any considerable height. It is not very probable from the circumstance of its great specific gravity and affinity for solid substances, that it enters into a *chemical combination* with the atmosphere; but this union is probably only a state of *mixture*. If it were in the simplest state of chemical combination with the air, that of *solution* for example, it holds to reason that the disease would become much more rapidly spread through it than we find that it is. The radius of contagion, in this case, would soon be extended to an interminable distance; and the disease, instead of *creeping along slowly*, from house to house,

the

* For evidence of the extraordinary tenacity with which the secreted virus adheres to porous substances see the case related supra in Dr. Brayley's letter to Dr. Hosack &c.

18. Gradual and habitual exposure to the contagion of yellow fever, the habit of breathing impure air,* certain periods of life, the feminine sex, African extraction, self possession, &c. ; all impart to a certain degree an immunity or exemption from an attack of the disease.

19. On the other hand, the indulgence of the venereal appetite, the sanguine temperament, the constitution of a high northern latitude, particular occupations, and the state of pregnancy in women, strongly predispose the system to be acted upon by the contagion of yellow fever.

and from street to street, employing several months to perform its tour through a space of one or two square miles, would most probably infect a space of quadruple dimensions, in one tenth of the time. But the contagion being, according to our supposition, of a ponderable nature, and only in a state of mixture with the atmosphere, remains in or near the place where it was first generated by the bodies of the sick. Hence no house or neighbourhood became infected, unless a number of cases of yellow fever had previously occurred there. *The march of the disease always preceded that of the infected atmosphere, which was its effect, not its cause.* When I use the word *creeping*, as applicable to this disease, I do it metaphorically, and must not be understood to imply that the cause of the malady is either an *insect* or an *animalcule*, possessing life and locomotion; an opinion which many persons, during the late epidemic have maintained, with more ingenuity, however, than success.

* See the works of Blane, Hosack, &c. This proposition is strikingly proved by its inverse; for several remarkable instances occurred during the late epidemic, of persons who came out of the *pure* air of the country, and from bravado went through one or two infected streets; but in a few days after paid for their unpardonable folly with the loss of their lives.

20. The air does not in general become universally infected neither in particular streets nor in particular sections of the city, except in those cities or towns which are built unusually compact, and crowded with population; but that part of the atmosphere only becomes infected which immediately surrounds particular houses or neighbourhoods, where many persons have been taken sick of the disease, and in a direct ratio to the number of cases which had previously occurred, and the circumscribed space they occupied.

21. The air continues infected in any given place a longer or shorter time, *ceteribus paribus*, in proportion to the quantity of contagious matter which has been generated.

22. Yellow fever, like other contagious diseases, possesses a peculiar, determinate and constant type, in its invasion, ~~existence~~ and decline.*

duration

23. The *period of reception*,† or that at which the contagion is received, is most usually between the first and third days of the disease. Because it appears that during this interval the contagion is given off more abundantly than at any other time.‡

* Vid. the late work on the subject, by Professor Brera, of Padua, 1819.

† I have made use of this word to express what has hitherto been alluded to under a circumlocution.

‡ In this it is the reverse of the contagion of small pox. Sir James Fellowes is of opinion, that the contagion is given off most abundantly in the latter periods of the disease. It is most reasonable to believe, however, that the contagion has less intensity, and is in a much more natural state when it is beginning to act upon the system in the first stage than afterwards. It is at least certain, from the cases detail-

24. The *period of development*, or that required for the contagion to take effect,* after being received is for the most part from three to six days.

25. The *period of duration* is most usually from three to seven days †

ed in Chap. I. that it is emitted from the body at the very moment almost when the disease is beginning to be developed. It is presumable that in the second and third stages, the contagious property of the disease has undergone a considerable change, and become much weakened; for it must be allowed that at that time a considerable modification has taken place in the phenomena and aspect of the disease. The concluding stages may be considered, with more propriety, as the effect or consequences wrought upon the body by the poison, not its direct and legitimate operation. This subject has lately elicited the notice of Baron Larrey. He says the virus of yellow fever is more fugacious and subtle than that of any other contagious disease. "It lasts but a moment at the highest point of the disease, and then loses the power of transmitting itself." But he does not say at what time of the disease this takes place.

* This period is usually known under the name of the interval between exposure and the formation of the disease, but we have endeavoured to make the language on this subject more precise, and conformable with what precedes and follows it.

† Out of 106 deaths,

8 died on the 3d day			
22	-	-	4th
18	-	-	5th
31	-	-	6th
12	-	-	7th
6	-	-	8th
5	-	-	9th
2	-	-	10th
1	-	-	11th
1	-	-	13th.

26. The periods of reception, development, and duration, are retarded or accelerated in a direct ratio to the quantity of contagious matter taken into the system.

27. The period of reception, development and duration do not necessarily observe any precise or determinate relations to each other, but vary in the same individual according to adventitious circumstances, arising from predisposition, state of the atmosphere, treatment, &c.

28. The fatality of the disease varies from one sixth to two thirds of those who are taken sick of the disease, amounting most usually to one third or one half.

29. The only effectual barrier against the introduction of the yellow fever is a rigorous system of quarantine, directed more especially against West India ports. The restrictions at present in force being by the frequent occurrence of yellow fever, proved totally inadequate to accomplish the purposes for which they were enacted, ought, therefore, to be entirely revised and remodified, or abrogated and replaced by such as will fulfil this object.

30. When yellow fever, however, ~~be~~ at any time unfortunately introduced, the only means which are placed in our power to prevent its spreading is, to depopulate as speedily and as thoroughly as possible, not only the infected neighbourhoods and streets, but all the adjoining and surround-

Two thirds it appears died on the 4th, 5th and 6th days. As many as six-sevenths of the whole number died between the 3d and 7th days. The greatest number, it appears, died on the 6th day, and more than two thirds of the whole number of deaths were previous to this period. If this table may serve as a guide, the disease must be stated as having terminated more frequently on the 6th day than on any other day considered separately. There was one case in which death was protracted to the 13th day. Arejula saw a similar case.

ing streets where the disease has not yet appeared ; to remove the sick into the pure air of the country, and to interdict in the most absolute manner all communication whatever between that part of the city which has been deserted, and those parts which continue healthy ; because by clearing out the population to a considerable distance, and in all directions beyond the places that are infected, a natural *cordon* is thrown around the disease, which completely interrupts its progress, and cuts off the means of its propagating itself to the healthy parts of the city.

31. The contagious nature of yellow fever, especially among the crowded population of cities, proves the necessity of removing the sick into the purer air of the country, and the necessity, therefore, of establishing what are called Fever Hospitals or Lazarettoes, where they may be comfortably accommodated, and placed in a situation in which there is no longer any danger of their communicating the disease.

x {See H Journal referred to}

APPENDIX.

No. I.

Statement of Dr. JOSEPH BAYLEY, the Health Officer, in relation to the Introduction and Origin of the Yellow Fever of New-York, in 1822.

[Extracted from a letter addressed to the HON. STEPHEN ALLEN, Esq. President of the Board of Health, and published in the New-York Medical and Physical Journal, Vol. I.]

“ It is well known to our inhabitants, that as often as we have been visited by that awful calamity, it has never commenced at the same place, and never has it begun in the interior of our city. It has commenced its ravages as early as June, and as late as September, in seasons nowise remarkable for their peculiarity ; while we have some years escaped the pestilence, when the combined action of heat and moisture has been excessive ; which causes are universally admitted to give increased activity to the decomposition of putrescent substances. In the present year we have witnessed its spreading over the highest, cleanest, and most airy part of our city, and far from the spot where it commenced.

“ As it does not appear that the vessels above referred to, or the local causes that existed in Rector-street, afford a satisfactory explanation of the origin of the late pestilence, I beg leave to call your attention to another foreign source, that has hitherto received too little attention, but which, on close investigation, will probably appear more adequate to its production than either of the foregoing. It has been so repeatedly proved that

x
Wholesale
Importers

vessels from sickly ports have given rise to the yellow fever, where no local causes existed for its production, that even those who believe in its domestic origin admit that it may be imported. If, then, pestilential air escapes from a vessel at the wharf, while the cargo is discharging, may not the cargo of such vessel, immediately transported in lighters, under particular circumstances, retain a portion of pestilential air, and the cause of disease be conveyed to the city in this manner? The following statement of the transportation of cargoes from sickly Havanna vessels, or which sailed from that port when yellow fever prevailed there, has been carefully compiled from the records kept by the revenue officer at quarantine.

See Chap. I
supra.]

June	14	3	lighter loads from the brig Rapid,	363	boxes of sugar.
	15	2	do. do.	189	do.
	28	1	do. brig Spanish Soldier,	77	do.
	29	1	do. do.	100	do.
July	1	2	do. brigs Span. Soldier & Abeona	177	do.
	2	3	do. brigs S. Soldier, Abeona, and		
			Ambuscade,	260	do.
	3	3	do. do. do. do.	181	do.
	5	4	do. do. do. do.	216	do.
	6	5	do. do. do. do.	334	do.
	8	4	do. do. do. do. } and ship Eliza Jane, }	317	do.
	9	1	do. do.	106	do.
Aug.	5	1	do. brig Packet,	70	do.
	6	1	do. do.	70	do.
	7	2	do. do.	145	do.
	8	1	do. do.	75	do.
				34	2730

“ From the above particulars it appears that 2730 boxes of sugar were transported in thirty-four lighters from several sickly Havanna vessels, (and those not sickly were navigated by persons who had made frequent voyages to that port,) be-

x { At the Quarantine Establishment 5 miles South of the city - This establishment, is on a bold acclivity upon the shore of Staten Island & faces the harbor, narrows & ocean. A healthier or more airy place exists no where.

tween the fourteenth of June and eighth of August, and landed at the wharves, within the limits of one hundred and twenty yards on each side of Rector-street : but the circumstance to which our attention ought chiefly to be directed, is the important fact, that more than two-thirds of the whole quantity, amounting to 1918 boxes, the entire cargoes of the three brigs Spanish Soldier, Abeona, and Ambuscade, and part of the cargo of the ship Eliza Jane, were conveyed in twenty-four lighters, between the twenty eighth of June and ninth of July ; and even nineteen of the twenty-four in the short period of six days, from the second to the eighth of August. The lighters were generally loaded before noon, at which time the weather was frequently calm, consequently the infected air adhering to those boxes could not have been completely driven off in passing them from the hold of the vessel to the hold of the lighter. The heat of the weather in the shade at Staten-Island, between the twenty-eighth of June and ninth of July, was above eighty degrees at 2 P. M., and upwards of seventy-seven at eight A. M. and six P. M. ; and for the whole period between eight A. M. and six P. M. the average was more than seventy-eight degrees. It has been erroneously stated in some of the public prints that it was my opinion that the pestilence had been conveyed in boxes of sugar. I never entertained such an idea ; but I conceived it possible that infected air, shut up in the hold of a vessel during a West-India passage, would as readily pervade, and be retained in the spongy texture of rough pine boards, of which those boxes are made, as the more dense structure of smooth oak planks, of which vessels are built ; and that several lighters, loaded with such cargoes, being landed daily at or near one place, would probably convey as much pestilential air as a single vessel discharging at the wharf, and which has been known to produce the disease. In the instance before us we have the cargoes of three vessels discharging at the same time, and near the same place.

“ It may be asked, if the cargoes from sickly vessels, or from

[in]

[At the Quay
= quarantine
ground]

sickly ports, have not been brought to other parts of our city where no evil has been produced from them; and if the pestilence can be conveyed in that manner, how could such places be exempt from it? To answer this question, I have ascer-

* The cargoes of the following vessels from Havanna were discharged at other parts of the city than at or near Rector-street:

At Old-slip.

June 20	1	lighter load from schooner Retrieve, 60 boxes of sugar, 50 bags of pimento.			
22	2	do. from schoon. Retrieve, 172 hhds. do. and 50 bags of coffee.	do.	20	
28	1	do. from schoon. Cerena, 30	do.	26 hhds.	do.
29	1	do. do.		35	do.
July 1	1	do. do.		35	do.

At Fulton-street wharf.

June 21	1	do. from the brig Venus	256 hhds. Molasses.		
22					
24					
25					

At Stephens' wharf.

June 27	2	do. from the schr. Virginia Packet 135 boxes of sugr.			
28	2	do. do. do.	191	do.	
29	1	do. do. do.	82	do.	

Between Old and Coffee-House-slips.

July 12	1	do. each day, sch. Kennebeck Trader, 200 hhds. and barrels do.	do.	115	
13					
16					

Near Old-slip.

18	1	do. brig Fame,	108	do.	
19	1	do. do.	47	do.	
20	2	do. do.	140	do.	
22	1	do. do.	106	do.	
23	2	do. do.	141	do.	
Aug. 1	1	do. brig Packet,	84	do.	
5	1	do. do.	67	do.	

—
27

1565 boxes—497 hhds.

tained the amount of produce from Havanna, which has been landed at all parts of the city, other than was discharged near Rector-street, and find by the revenue officer's reports, that 1518 boxes of sugar, and 361 hogsheads and 107 barrels of molasses and sugar, have been transported in twenty-seven lighters, between the twentieth of June and the eighth of August; (after which time no cargo was brought here from sickly vessels, except such as was purified by washing the casks, &c.)

“ But the greatest number of lighter loads, landed at or near one place in six successive days, did not exceed seven, which occurred only in a single instance. From the eighteenth to the twenty-third of July these lighters conveyed the cargo of the brig *Fame*, on board of which vessel no person had been sick during the voyage; whereas nineteen lighter loads, from three vessels, were discharged in the same number of days, near Rector-street, from the second to the eighth of July. This, in my opinion, is an obvious difference; for a small quantity of pestilential air may be inoperative by mixing with a large portion of atmospheric air, while a greater quantity, existing in a more concentrated state, proves fatal. The fever which took place at the quarantine ground in 1821, when many vessels were there driven on shore, is an example directly in point: it was evident that the foul air issuing from those vessels at the same time contaminated the pure atmosphere of the country, which occurrence never before happened from a small number at the wharf. Other circumstances, that might make a difference between the cargoes which were landed at Rector-street and other places, could have been ascertained, when the vessels arrived here, if I had been aware that any such particulars would have been of any practical use: such as the place where the vessel laid in the harbour, as some positions being healthier

[in the west end]

The crews of those vessels, except the brig *Venus*, were healthy during the voyage: that brig lost one man, June 7. Dr. Morrel, a passenger on board, it is said, died of bilious, and not yellow fever.

than others ; and whether the cargo came immediately from the country, or had been stored in a sickly part of the city. It is a well authenticated fact, that vessels coming from Havanna, loaded with molasses, are healthier than those loaded with dry sugar, although the bilge water of the former is much more offensive than that of the latter : the reason of this difference in the healthiness of their crews is attributed to the circumstance that the first are loaded at a village called the ~~Regulars~~, situated on the opposite side of the bay to the city of Havanna, where it is generally healthy.

Reglas

The following extract from the same letter relates to the experiments made by Dr. BAYLEY, to ascertain the temperature of the earth.

“ Many persons who believe in the local origin of the yellow fever in our city, attribute it to the gas arising from the decomposition of animal and vegetable matters generated at some depth below the surface of the earth. It was readily perceived by those persons, that if they ascribed it to the putrefactive process, which takes place on the surface, then its effects would be felt much earlier in the season, than at the last of August or first of September, at which period the pestilence has often begun ; for the heat of the weather was as great and often greater during the two preceding months, than it was when the disease commenced ; consequently, the noxious gases produced from such decomposition must have been diffused in the atmosphere a much longer period, before its evil consequences are experienced, than facts will warrant us in allowing. But to account for the continuance of the disease in autumn from this cause was a difficulty of still greater magnitude, as the evolution of gases from the decomposition of putrescent substances on the surface would be checked or prevented by cool weather.

Since then the gases from the decomposition of animal and vegetable substances on the surface of the ground, do not satis-

factorily explain the origin and continuance of yellow fever, we were induced to examine into the more plausible theory, that the noxious gases which are said to give rise to it, were produced at some depth below the surface of the ground, which would better explain why the disease did not appear until the sun had been long acting on the earth, and imparted its heat to it, and why it continued after cool nights had checked decomposition on the surface. For this purpose we made a number of experiments between the 18th of September and 26th of October, by burying the thermometer in the earth from three inches to seven feet, and letting it remain there from six to twelve hours. In thirty experiments made on different days at or near sunrise, the thermometer, lying on the ground, stood at some point between 35 and 72 degrees, and when taken out of the ground after being buried twelve hours at various depths, from three inches to seven feet, it ranged between 44 and 67 degrees. To the depth of nine inches, the temperature of the earth was altered by alternate changes of atmospheric heat, but very little variation was observed in the thermometer when buried between one foot and seven feet, although the change was considerable on the surface of the ground. For instance, when the thermometer, lying on the ground, was at 52 degrees on the 24th, and 64 degrees on the 27th of September, it was 64 degrees one foot below the surface on both those days. Also, on the 5th, 9th, and 11th of October, when the instrument was laid on the ground, it was 51, 54, and 69 degrees, but when it was dug up from the depth of four feet the same days, and at the same time, it was 64 degrees each day.

“ In twenty two experiments made in the same manner, between one and three o'clock, P. M. the thermometer, laid on the ground in the sun, ranged from 76 to 91 degrees, but when buried for six hours in the earth at various depths, as between three and twelve inches, it varied from 56 to 76 degrees, according as it was placed near to or at a distance from the surface; for instance, on the 18th, 21st, and 23d of September, the ther-

They
Thermometer
 mometer laid on the surface of the ground, in the sun, was 84, 90, and 90 degrees at one o'clock, P. M. but after being buried six hours, and the sun acting all the time on the same spot, when the instruments were taken up at one o'clock on the same days, from the depth of three inches, stood at 74, and at the depth of six inches at 70. But when placed below the depth of one foot, it was as little affected by the heat of the sun as when buried in the shade, for it stood at 68 and 64 degrees, at various depths between one foot and seven feet, while the instrument laid on the same ground in the sun varied between 80 and 91 degrees. From those experiments made in ground not materially different from that which I saw dug up at the foot of Rector street, it appears that the earth a foot below the surface, in the latter part of September and in October, varies very little in its temperature when the sun-beams have been acting upon it for seven hours, or when it is shaded by twelve hours night, the heat being about 64 degrees.* This is a much lower temperature than I have ever heard would give origin to the cause of yellow fever; the heat of the earth one foot below the surface not being more than 64 degrees in September and October, we must therefore infer, that the continuance of the disease in autumn by the extraction of gases from the depth of several feet in the earth, is not a more satisfactory explanation of the cause of it, than that of the noxious gases emitted from the surface of the ground. We are not prepared to adopt this theory of the origin of yellow fever, unless adequate fermenting masses, producing internal

* On the 24th and 25th of September two thermometers, which had been buried for twelve hours, to the depth of nine, twelve, fifteen, and eighteen inches, when taken up at sunrise, stood at 63 and 64 degrees, although the instrument lying on the surface was 52 and 50 degrees. But when the thermometers were buried at similar depths, for seven hours on the same days, the sun acting on the same ground all the time, they stood at 63 and 64 degrees at 2 P. M. although the instrument laid in the sun on the same place was 80 and 85 degrees.

heat, and sending off pestiferous gases, are proved to exist constantly in the neighbourhood where pestilence prevails.

“ I have thus presented to you a plain statement of facts, upon which I have formed my opinion of the introduction of the cause of the late pestilence, and offered a few observations connected with the subject, which I have been induced to do from a persuasion that they may be of some practical utility, and contribute to the improvement of our quarantine system.

“ With great respect,

Your most obedient

and very humble servant,

JOSEPH BAYLEY.”

No. II.

*Statement of Dr. WALTERS in relation to the first cases of Yellow
Fever in this city.*

[Extracted from a letter addressed to the President of the Board of Health dated Dec. 17, 1822.]

“ On the evening of Thursday, the 11th of July, 1822, I visited Mr. Reder's daughters, Amanda and Caroline, the former aged eleven, and the latter nine years. I found them both labouring under the general symptoms of a violent fever. Their mother informed me that they had sickened on the preceding evening. Mr. Reder resides in a neat, airy, brick house; two stories high, situated at the west end of, and fronting Rector-street, one door from Washington-street. This spot, in common with all the west side of the city, was always, until the present season, justly considered remarkably healthy, and, indeed, its local advantages in favour of health are certainly very great, as it lies entirely open to the cooling and ventilating operation of the southerly and westerly winds which prevail nine-tenths of the time during our summer months.

“ Friday the 12th.—I found my patients without any abatement of fever.

“ Saturday the 13th was a rainy day, and being myself indisposed, I therefore did not visit them.

“ Sunday the 14th.—I saw them at 10 o'clock in the morning, and found that all their feverish excitement had entirely subsided; their eyes, necks, and breasts had become tinged with yellow, and Caroline had black vomit. At this juncture it was not easy for one who had marked the symptoms from their commencement with fever to their present malignant change, to be mistaken with respect to the nature of the disease; I therefore, in a guarded and private manner, expressed my opinion to a few of my friends, for at this time I did not mean to give the alarm, in anticipation of the measures of the Board of Health, nor even to name the disease to the public.

“ Monday the 15th.—I found Amanda much as on the 14th, but Caroline appeared to be fast approaching to the fatal termination of her malady. After visiting my patients on this morning, I called on Mr. Waldron B. Post, with whom I had some business. He resides in Greenwich near Rector-street; I informed him that the yellow fever had appeared in his neighbourhood, and that the safety of himself and family required his attention to the circumstance; which I believe he immediately did, by looking out without delay for a place of retreat. Towards evening on this day, in a walk down Vesey-street, I met with Doctors Hosack and Francis; I informed them that yellow fever had broken out in Rector-street. Dr. Hosack inquired, whether I had reported it to the Board of Health. I answered in the negative: he replied, ‘ If I knew it to be yellow fever, I would report it as such.’

“ Tuesday the 16th.—On the morning of this day I found Amanda convalescing, and Caroline growing worse; but John, an interesting youth of seventeen years of age, had sickened during the preceding night; from the violence of the first symptoms I judged that his case would in its course become highly malignant. On my way from Rector-street, in Broad-

(attend to)

way I met Dr. Daniel W. Kissam, in company with a gentleman with whom I was unacquainted. I informed them that yellow fever had made its appearance in Rector-street. I now proceeded directly to the City Hall, where I reported the cases nearly in the words of the following conversation, which took place between his honour the Mayor and myself :

“ ‘ Sir, there are three cases of fever under my charge, which I think demand the attention of the Board of Health.’

“ ‘ What are the names of the persons sick, and where are they to be found ?’

“ ‘ They are the children of Mr. Reder, who lives in Rector-street, next door to the corner of Washington-street.’

“ ‘ What kind or description of fever do you think they have ?’

“ ‘ I think it such a fever as our soil and climate are not calculated to produce ; a fever depending on the introduction of foreign poison for its origin, and exotic in our country, and such a fever as is likely to do great injury, if it be allowed to spread ; and I wish the Resident Physician may be requested to examine the patients, and name the disease ; and I further wish, that neither Dr. Hicks, nor any of the assistants of the Board, be permitted to visit them at present ; if, however, you think it would be agreeable to the Resident Physician, I will wait on him, and introduce him to the patients.’

“ The Mayor replied, ‘ I will write him a note to that effect, and request him to await your call at his own house at four o’clock this afternoon.’

“ Agreeably to the above arrangement, I called, in company with Dr. W. Miner, on the Resident Physician at four o’clock, when the following conversation took place between us :

“ ‘ Doctor, your patients in Rector-street have bilious fever.’

“ ‘ Have you seen them, Doctor ?’

“ ‘ Yes, after receiving notice from the Mayor this morning, I happened to be in that part of the city, and I thought it more convenient to visit them before dinner.’

“ ‘ Well, I am glad you found the disease nothing worse. I fear, however, it will give you some trouble before you have done with it.’ ”

“ After some other observations on the subject of our difference of opinion, I left the Doctor, not at all offended at his having visited my patients at an earlier hour than had been suggested to him by the Mayor.”

“ Wednesday the 17th.—On this day Caroline died, and John grew worse. The Board met at 2 o'clock, when the Resident Physician stated, ‘ that he had no report to make.’ He had, to be sure, visited my patients in Rector-street, and found them ill with *bilious*, but not yellow fever. Finding the Board about to take no measures on the subject, and that, of course, not only my friends, but also the public in the neighbourhood of the disease, would be exposed to the danger of a spreading pestilence, I resolved at once to throw off the caution which I had hitherto observed, and state, to every inquirer, my opinion on the whole matter. I accordingly lost no time in declaring to every member of the Board, with whom I was acquainted, and to all its assistants, that the disease in question was positively YELLOW FEVER. Among the members thus informed, were his Honour the Mayor, Aldermen Fairlie and Hall, Doctor Dyckman, the Health Commissioner, General Morton, the Clerk of the Board, and the Assistants, Doctors Cutter and Hicks, and Captain Mills. Three days after this, Alderman Taylor, of the eighth ward, with whom I was unacquainted at the time, learned my opinion of the disease, in a conversation which he commenced in the Mayor’s office, as follows : ‘ Doctor, we think it very strange that you should tell your friends that there is yellow fever in Rector-street, when you have not reported it as such to the Board.’ My reply was, ‘ I mentioned the existence of this fever to the Mayor, on last Tuesday morning, in such terms as, I thought, might call the attention of the Board to it ; but, in that report, for particular reasons, I purposely omitted the use of the word *yellow* ; but I now tell

you, that it is positively the yellow fever, and, knowing it to be such, I consider it my duty to inform my friends of the fact, that they may be enabled to take care of themselves in time. I am aware that the Resident Physician is of a different opinion, but it is immaterial to me, as an individual, what either he, or the Board, may call the disease.' 'We think very highly of Doctor Quackenbos; he was very correct in the year 1819.' 'As a man, I think very highly of him too; but my conduct in this affair must be governed altogether by my own opinion of the nature of the fever in question.'

"Thursday and Friday the 18th and 19th.—John's symptoms progressed from bad to worse, until Saturday the 20th, when black vomiting began. On the morning of this day the Resident Physician visited him, in company with Doctor Manley, who started a new opinion of the nature of the disease, by calling it 'Savannah fever,' which, by the by, is a species of bilious fever that is never communicated from vessels or goods to our shores, so as to become located, and to affect the inhabitants. But, by some means or other, it happened that Doctor Manley was employed to attend John, with me, as consulting physician. We saw him together at 12 o'clock, and I observed the Doctor began to think his morning opinion not tenable; and at his evening visit, he stood perfectly corrected; for, as we left Mr. Reder's house, we met Mr. Noah, the editor of the National Advocate, at the corner of Rector and Greenwich streets, who made some inquiry of us touching the nature of the fever in the neighbourhood; to which Doctor Manley replied in these words: 'If I was obliged to give an opinion of this disease, under oath, I should say it is yellow fever;' and to an observation of Mr. Noah, 'We are in danger here, if that is the case,' I answered, 'Yes; while standing on these paving stones, you may consider yourself as knee-deep in pestilence.' On Monday the 22d, John died. The only family, besides that of Mr. Reder, living in Rector,

[ie from
Savannah
in Georgia
one of our
southernmost
states]

between Washington and Greenwich streets was that of Mr. De Lange. This man I advised to leave the neighbourhood, which he did on the 22d, but not early enough to escape suffering, as one of his sons had the disease severely, after retiring to Long-Island. A few days after this time, the Board met with closed doors, in the small room adjoining the Mayor's office. I happened to be in the hall at the time, and was invited into the room before the assembled Board. The Recorder expressed a wish to hear what I had to say on the subject which had called them together. I stated, that 'I had been compelled, by the symptoms of the disease in Rector-street, to consider it precisely that variety of yellow fever which overran this city in the year 1798.'

"During my attendance on Mr. Reder's children, after much inquiry, whether any other person had sickened in the neighbourhood, I learned that Andrew Thomas, a young Scotsman, had been sent sick, on or about the 11th, from the south-west corner of Washington and Rector streets, to the New-York Hospital, where he died on the 16th. I mentioned these circumstances to the Mayor, who caused inquiry to be made, from which it was clearly shown, that Mr. Thomas did die of strongly marked yellow fever in that Institution, without greatly disturbing the quiet of its managers.

"As the Board seemed to feel itself bound to consider all information, not derived from the Resident Physician, incorrect or unofficial, it of course continued to act in an undecided and hesitating manner, until the 5th of August, when the alarming progress of the disease forced that officer to acknowledge its true character. Dr. John Neilson, to be sure, after a little disputation with the Board about that unmeaning word *bilious*, did, on the 31st of July, report two cases of this disease as yellow fever, the symptoms of which he well described in a letter to the Board on the following day. His report, however, as it did not come from the right source, like the declarations which for two weeks previous I had daily made on the

* This gentl (Dr. Walters now deceased) was one of our ablest & most experienced practitioners - a man of great natural sagacity & shrewdness - prompt & emphatic in speech & action. Dr. Manly has grown old in his absurd heresies - He is a fanatic in domestic origin & sticks to it but says no more. Dr. Quackenbush was an illiterate or Appendix. at least obtuse. 305

same subject, was insufficient and unavailing towards influencing the decisions of that assembly.

"The number of cases continued to increase daily until the 9th of August, when the Resident Physician seemed to think that the public mind demanded some little explanation, in order to enable it to account, in the most reasonable manner, for what was going on. This explanation he made in the following words: 'From the above facts it appears evident, that the cause or causes, which at first were only sufficient to produce bilious fever, have now become so concentrated as to create yellow fever.' This puzzling and unaccountable concentration of the cause or causes of this disease, if it really took place, was certainly a manœuvre calculated to mislead the most discerning. We have, however, good reason to doubt the fact, as the number of deaths before the announced concentration of the cause or causes was fully equal to what happened afterwards, in proportion to the number who really had the disease."—*N. Y. Med. & Phys. Journal, Vol. I.*

man of no account whatever & obtained the vote of Resident Physician by party favor!

No. III.

BOARD OF HEALTH.

New-York, Aug. 9, 1822.

The following Report was received from the Resident Physician :—

"The RESIDENT PHYSICIAN reports Mr. — Milespaugh sick with yellow fever, at the corner of Sullivan and Houston-streets. This case appears to be mild. He sickened on the evening of the 5th inst. and had been employed as a labourer in a store at the corner of Washington and Carlisle-streets.

The Resident Physician also reports Miss Roberts sick with yellow fever, at No. — Lumber-street, directly in the rear of Trinity church. She is attended by Dr. Boyd; from whom the following statements were obtained this morning, in relation to others. Dr. Boyd was called to see Miss Machett,

who sickened with fever on the morning of the 7th inst. at the corner of Lumber and Rector-streets. She went yesterday to Newark. Dr. Boyd was also called to see Miss Kayler, who sickened with fever on the night of the 7th instant, in Rector, next to the corner of Greenwich-street, towards Lumber-street. She went yesterday to Harlaem. Dr. Boyd was called this morning to see Miss Myers, who sickened last night with fever in Lumber-street, third door south of Rector-street. She is about to leave the city. Dr. Boyd states that all these persons are attacked in a similar manner, *which leaves no doubt their disease is YELLOW FEVER. From the above facts, it appears evident that the cause or causes which at first were only sufficient to produce bilious fever, have now become concentrated ; and as the disease is now progressing towards Broadway, I suggest and recommend the propriety of enlarging the present enclosed limits, so as to include Grace and Trinity churches, thereby preventing any collection of persons in those places.*

NICH'S I. QUACKENBOS.

No. IV.

Yellow Fever in Cheapside-street.

Statement of Dr. WALTERS, relative to the Yellow Fever in Cheapside street.

[Extracted from the letter already quoted, and published in the New-York Medical and Physical Journal, vol. I.]

“ On or about the 7th of August, Mr. Samuel Ward, who resided in Lumber-street, within the infected part of the city, sickened with yellow fever, and was reported as such, by Doctor Perkins, to the Board of Health. Here he lay ten days very ill. During this time, his father's family, who lived at No. 20 Cheapside-street, manifested on this occasion the most laudable anxiety for his welfare. He was not only visited daily, or oftener, by his father and mother, but his brother, a dumb boy, fif-

teen years of age, and a sister of thirteen, were constantly with him, as nurses or assistants. They slept at his house every night until the 17th, when it was thought that he had so far recovered as to enable him safely to leave Lumber-street, which he did, and went to his father's house, from whence he set out for the country the next day. He brought with him from Lumber-street a quantity of clothing, which, however, was said to have been washed there ; that is, washed in pestilence, and dried in the poison of pestilence. About five days after he was gone, his brother and sister above-mentioned, who had returned with him to their father's house, both sickened with fever. The sister's case was not very severe ; but the brother was extremely ill, and as he could not speak, he expressed his sense of pain by laying his hand on his head, his back, and stomach. On the fourth and fifth day of his disease he was taken with profuse bleeding from the nose : after this, they both gradually recovered. Now, there is not in my mind any manner of doubt, but that both these children had yellow fever. A few days after this, another daughter of the elder Mr. Ward was taken ill. Doctor Boyd was called in, who, no doubt very correctly, reported it yellow fever : and in a few days more, the elder Mr. Ward and another son were seized with the same fever, both of whom died. Mr Ward's house, and its immediate vicinity, may now be fairly considered a second infected district, located only about sixty or seventy feet from No. 4 Lombardy-street."

Remarks.—Dr. Walters' statement throws additional light on this subject, but differs from that of mine, [p. 46, Chap. I. *supra*,] in some minute and inconsiderable circumstances, which, however, do in no way invalidate the inferences that both of us have made. It seems, according to the information received by Dr. Walters, that a sister and brother [a dumb boy] of Samuel Ward slept at his residence for several nights successively, and constantly nursed and attended him, and also that Samuel was not brought up on the 16th, as I have stated, but on the day after, at which time he was nearly *recovered* from his illness.

The next day he went into the country. It is also said, but not positively affirmed, that his clothes, instead of being brought up to Cheapside-street dirty, were washed in Lumber-street before he left there. The sister and brother mentioned must have fallen sick about the 23d or 24th. *They also, therefore, and not Samuel only, from whom they had taken the disease, were the source of it in Cheapside street* ; showing that the mischief was on a much larger scale than I had imagined. About the 6th or 8th day of the illness of these two children, i. e. from the 30th to the 2d of October, must have been the time at which Mrs. Ward and Fanny (*which last had not been down into Lumber-street,*) took the disease. We have described Fanny's appearance, and she had no doubt had the yellow fever. She was sick from eight to ten days. Her father, Nathaniel, took it from her, as he fell sick the 15th or 16th. I believe there was no case between them. The one spoken of by Dr. Walters, as reported by Dr. Boyd, must have been Hannah, who fell sick two or three days after her father, having taken the disease from him.

It was with much difficulty that Dr. Walters and myself have been enabled to ferret out the facts which relate to the introduction of yellow fever into that street ; the Ward family being unusually taciturn, and somewhat refractory in an affair in which they knew well their conduct was deeply implicated, and had been severely, and, as it proved, justly censured. The circumstances, however, are now all brought to light, or a sufficient number of them to prove, in the most conclusive manner, that this disease may be transplanted from one part of the city to another quite remote, and there form a new focus of propagation. The cases of the Wards are not only highly interesting as the source of the disease in Cheapside-street, but as being one of the most powerful examples of direct and unequivocal contagion that has, perhaps, occurred in the city. While the different members of the family were successively falling sick, and at the determinate periods of time usual between the re-

ception and development of the contagion of yellow fever, the outward air was pure, wholesome and uninfected. The remonstrance of the highly respectable inhabitants of Cheapside-street, as well as the evidence of those who visited that place at the time, indisputably establishes this fact. There were no sewers in this clean and secluded street, nor sinks and cist-pools in the spacious and beautiful yard of Ward's house to generate the disease. It was by contagion alone that it spread through the house. Enough of the poison was generated in this single building to have infected a much larger space than it did, had not the timely arrival of cool weather suspended its progress.

The following is the remonstrance presented to the Board of Health, Aug. 15th, by the inhabitants of Cheapside-street, against the removal of Ward from Lumber-street into that street. This clear and energetic appeal reflects great praise on their foresight and prudence, and on the just views which they took of the nature of the complaint.

"We whose names are hereunto subscribed feel ourselves most lamentably aggrieved in having an unfortunate sufferer with the yellow fever brought from an infected neighbourhood, direct into the middle of Cheapside-street, where, at present, nothing but health prevails; for from this circumstance, we may expect nothing short of being driven from our homes, with the loss, probably, of some of our dearest relatives. We therefore earnestly request your immediate investigation of this business; and if found as herein represented, we trust and hope a removal may be ordered without delay, or we shall be of an opinion, that instead of correcting and regulating this unfortunate malady, it will be instrumental of circulating its dreadful effects throughout the city; for nothing can possibly tend to this object more than suffering various parts of your city to be planted with the disease, by placing the infected with the healthy." [Signed by Messrs. Corgan, Messenger, &c.]

Yellow Fever in Lombardy-street.

By the following extract we learn, that the Board of Health, of New-Orleans, held a meeting on the third September, 1822.

“ BOARD OF HEALTH,

“ *New-Orleans, September 4, 1822.*

“ At a meeting of the Board on Tuesday, the third of September, 1822, the following address was adopted and ordered to be published :

“ It becomes the duty of the Board of Health to state to the public, that five cases of fever have lately occurred, in which all the symptoms which are usually exhibited in the yellow fever, were observed. It is hoped, from the favourable state of the weather that the disorder will not spread, as it has not occurred except in persons who had undergone great exposure to fatigue, and had been much exposed to the sun. The precautions taken to render more strict the measures adopted to prevent all communication between this city and the places abroad, and in the vicinity where the disease prevails, will check its progress. This hope is more confidently indulged from the circumstances of no new cases having been reported to the Board as having originated within the last two days. With the exceptions noticed above, the city never has been more healthy, and it is believed that the mortality during the last three months has not much exceeded that which took place during the three months preceding them.

“ I certify the foregoing to be a true copy from the minutes.

H. K. GADON, Secretary.”

This is altogether a very curious and suspicious looking document. We cannot but admire how cautiously it is worded, and how very scrupulously the Board have avoided touching upon the terra firma of dates and names, determined to leave us in the dark, among the rocks and quicksands of a jesuitical

phraseology, the precise meaning of which it is impossible to interpret.

They tell us the cases *lately* occurred, but when or where, or who they were, is left for us to guess. They say these cases had all been much exposed to *fatigue* and the *sun*. This is the old story that has been rung in our ears ever since the preposterous hypothesis of domestic origin first bewildered our American physicians. It lets us immediately into the secret of what kind of materials the New-Orleans Board of Health is composed, and shows us that we must be extremely careful how we make up our opinions from any statements of facts, documents or addresses, coming from such a quarter. If the disease developed, as they say it did, all the usual symptoms of yellow fever, it was yellow fever—it was that, and no other disease. What need then was there to say that it occurred only in such as had been greatly exposed to the sun and fatigue? Do they mean that this exposure was a predisposing, exciting, or real and original cause of the disease? Were the sun and the fatigue the actual cause of the disease, or was it produced by that specific cause alone which produces yellow fever?

Were these cases to be understood as exceptions to the disease, and yet bearing all its characters? This disingenuousness, to call it by no worse name, is unworthy of a solemn deliberative council appointed to so important and responsible a station as that of the guardianship of the public health.

A few lines farther on they have accidentally let fall a word which seems to call in question what is stated in the beginning. They speak, at first, of only five cases, but now they speak of the *vicinity where the disease prevails*. How long had the disease prevailed? One, two, or eight or ten weeks? And how many had died of it? These are questions to which we fear no answers will ever be given.

Again; near the conclusion it is fondly hoped the disease will be arrested, among other reasons, because no *new cases had been* reported to the Board *as having originated within the last two days*. Now, as far as our limited observation goes, cases are

rarely or never reported to Boards of Health until they have existed at least three or four days ; and I should, therefore, not think it strange at all that no new cases had been reported, which had originated within the last two days. At that very time, however, the Board in all likelihood, may have known of the existence of twenty cases that had originated within the last three or four days ! For from the manner in which they mention the five cases in the beginning of their address, we are induced to believe that they were the most malignant cases only.

Our physicians here are not so much in a hurry in reporting, for experience has taught them that the cases which they had too often precipitately believed to be yellow fever, afterwards turned out to be other diseases. This, therefore, was a false foundation to build their hopes upon, and they should never have attempted to lead astray the public feelings and expectations by what they must have known at the time to be an unmeaning quibble.

After this impartial analysis of the component parts of the address, no person, I think, will deny that the Board evidently attempted to conceal from the public the true state of things then existing at New-Orleans.

Does not conduct like this authorize us in doubting the whole of their statement ? May we not conceive that where a Board like this existed, yellow fever might have been prevailing for weeks, nay, for months, without their deeming it worth while to notice it ? Is it probable that such a Board would have been induced to go into a sitting for a public address, without some very urgent cause ? Is it not probable, indeed, that the disease at the time at which this address was made was desolating the city to an alarming extent ? For we remember well that the next arrivals almost to those which brought the account of this meeting, brought also disastrous tidings of the progress of the pestilence. The general impression here is, from information derived from various sources, and which may be fully relied on, that the yel

low fever broke out in New-Orleans as early as the beginning or middle of July. In this city it was prevailing one month before our Board of Health publicly announced it, although they were constantly on the alert, to give intimation of its introduction, whenever that should occur. They had met for this purpose privately for many days before. In New-Orleans, where both the citizens and Board of Health have ever shown so much reluctance and unwillingness to acknowledge the existence of the disease, is it not extremely probable that as has often happened heretofore, it might have been prevailing for more than two months even before they took official notice of it?

The disease had probably been progressing slowly, until just before the termination of August, when, having got fairly into the city, it suddenly spread, as it is wont to do, after existing some time, and multiplied to so alarming a degree, that the Board was compelled to make an official publication, as a feeble effort to calm the fears of the people.

But arguments on this subject are quite superfluous, since we have the facts to show that the disease actually prevailed in New-Orleans at least for more than a month anterior to the meeting of the Board of Health.

"The second grand division of causes," says Dr. Walters, in the letter already alluded to "which were likely to originate the late fever in Rector-street, comes next to be examined. These, all of foreign origin, are to be sought after in suspicious vessels, which were permitted to come to the wharves in that vicinity, or in goods landed there from vessels known to be infected. The officers of the quarantine establishment for this city, have designated, as four-day vessels, a certain class, which are always to be regarded as suspicious, because, owing to a defect in the law, they are privileged to carry pestilence wherever they go; thus jeopardizing the lives of thousands, and rendering all other quarantine regulations useless. To prove the above allegation, it is only necessary to state a few facts, First, it is well known, that the different

x This is a very important fact in reference to the place where according to Dr Bayley & myself the disease commenced in our city. Doubtless there were several other such suppressed cases which took sick there. Appendix.

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Boards of Health of the cities and towns on our seaboard are, five times out of six, among the last public bodies which come to the knowledge of pestilence in their respective districts. Hence, in almost every case where a pestilential fever appears in any city, from one to two months elapse before its Board of Health become officially informed of it. During this period the public authorities of the place continue to issue clean bills of health to every vessel sailing from it. One of these vessels, though infected with the poison of yellow fever, may have arrived at this port with a healthy crew, or one or two of her hands may have sickened or died on her passage, and the officers, as it is always their interest so to do, may disguise or conceal the real character of the disease. This vessel, on her arrival here, is liable to be stopped only four days at the quarantine ground, to undergo the too often useless operation of white-washing. She is then permitted, by law, to come to our wharves, with a strong probability in favour of her kindling pestilence wherever she touches. Cases of the above description are by no means of rare occurrence; it is, however, unnecessary to mention more than one or two. The ship Asia sailed from New Orleans some time in the month of August last, and arrived here on the 18th of September. She left three of her crew sick with yellow fever, in the hospital of that city; yet, strange as it may appear, she brought a clean bill of health, signed by the proper authorities of the place. And, during the first three weeks of the late fever in this city, it is well known that vessels sailed daily from this port with clean bills of health; one of these, the ship Illinois, however, which left Rector-street wharf, on the 16th of July, did lose a passenger by yellow fever."

x Mr. Ludlow Morton, who was one of the crew of the Asia, arrived at this port some short time after the Superior, and informed me that he was one of the persons who had had the disease, and whom the ship was obliged to leave behind. He had been ill sixteen days before the ship sailed, which was on or about the last of Aug. Consequently he must have taken the dis-

case somewhere about the middle or towards the beginning of August Dr. Flood informed him, he says, that the disease had been prevailing for a month before he was taken ill.

It is for these reasons that we believe the yellow fever to have existed at New Orleans at the time the ship *Superior* sailed. The following statement, communicated to me by a Mr. Banta, together with that of Dr. Walters, accompanying it, and especially the circumstance of the destruction of the mattress upon which Carey was lying, and which Mrs. Snow never would have directed to be done without some good cause ; and also Capt. Snow's opinion, who must have known something about its history, are sufficient, in my judgment, to show that through the instrumentality of Carey, the contagion of yellow fever was brought into his mother's house. The current opinion is that he had the disease in New Orleans. That the mattress belonged to some person who had died of it is conclusively established by Dr. Walters' statement, and that person most probably was some friend of Carey in New Orleans ; for we shall see by what follows that Carey called this, as well as the chest, his own property ; but said that they had belonged to a person who had died of yellow fever. Consequently he knew how this property had now come into his possession, and was therefore, no doubt, acquainted with all the circumstances of this mysterious affair.

BANTA'S STATEMENT.

I called upon Banta about the middle of November 1822, and the following is an accurate transcript of the statement made by him to me, of all the particulars and circumstances with which he was acquainted, relating to the sickness in the family of Mrs. Carey, and the probable source of it.

He says he is a labouring man by profession, and that his wife goes out to wash and to do days work.*

* The house in which they live is a small wooden building on the north side of, and adjoining that in which Mrs. Carey and Mrs. Snow died.

On the eighth day of September, 1822, he says he was called upon late at night by Mrs. Snow, to go down town after Doctor Webb, and to request him to come up there and see Carey, (Mrs Snow's brother,) who was taken with *epileptic fits*, to which he had long been subject. Banta's wife and himself both went in the house the same night to assist him. The Doctor also came, and in the course of prescribing for Carey, the latter spoke of a vial of medicine which he had in his chest. Banta went down into the kitchen where the chest was, and took the vial out. The chest was filled with *dirty* clothes, such as bed and body linen, consisting of sheets, pillow-cases, &c. It was the same chest that had been brought to the house some days before. Carey had arrived at this port from New Orleans August 18th, in the ship Superior, to the crew of which vessel he belonged [This ship brought a *clean bill of health*, dated July 27th, 1822. She had been quarantined for six days after that period.] The mattress upon which Carey was lying was extremely filthy and offensive, and had been brought to the house with the chest. Mrs. Snow told me I had better take it out of the house and destroy it. Another bed was procured for him, and I destroyed the mattress that very night before twelve o'clock. The next morning (Monday, Sept. 9th,) Mrs. Carey took sick, and in the evening of the same day, Mrs. Snow. Mrs. Snow continued to be attended by Banta's wife and himself. On Saturday, the fourteenth of September, Mrs. Carey died; and on the next evening, Sunday the fifteenth, Mrs. Snow. That Sunday afternoon, and before Mrs. Snow's death, and after Mrs. Carey had died, Mrs. Snow lying at the time on the first floor, where Mrs. Carey also had lain, and the weather being very warm, the people in the street, principally the neighbours, having heard of the sickness in the house, collected around it in considerable numbers, and gazed in the windows, which were at the time hoisted. There were as many as twenty or thirty persons collected before the house. After the death of Mrs. Carey and Mrs. Snow, the people began to move

(says Banta)

out of the street. The disease, however, never extended beyond that section of it included between Catharine and Market-streets, in which distance there are about forty houses, each of which was occupied upon an average, by five persons, amounting altogether to about one hundred and twenty inhabitants. About forty or fifty of these persons moved away. Captain Snow, the husband of Mrs. Snow, was persuaded that the source of his wife's disease was connected with the mattress and effects brought into the house.

DR. WALTERS' STATEMENT.

No. I. (COPY.)

Jonathan Darrow, cartman, No. 5 Jefferson-street, in the city of New York, being duly sworn, deposeth and saith :

That on or about the second day of September, in the present year, he was requested by a young man, at or near the New Market, at the bottom of Catharine street, in the city aforesaid, to take up and put on his cart, two chests, a bed, a hammock, and a bundle of clothes, tied up in a blanket. This young man had with him a sailor, as from his dress he appeared to be, who appeared to own a part of the things aforesaid. The young man first mentioned, after the articles were put on the cart, got on himself with them, he then requested this deponent to drive to number four Lombardy-street, which request was complied with. While on the way thither, a conversation took place between this deponent and the said young man, in which the latter observed, "a part of these things now on the cart does not belong to me, but they did belong to a young man who lately died of yellow fever," or words to that effect. And this deponent further says, that he drove his cart to the house, number four in Lombardy street, where he delivered that part of the goods, to wit, one chest, one bed, and the blanket containing the clothes, which the young man above mentioned had charge of, to an old woman and a young woman, who both received the goods, and placed them in the entry of the house number four Lombardy street. And this deponent further saith, that he then drove into Bancker-street, about half way between Catharine and Market streets, where he deliver

ed the remaining part of the goods, to wit, one chest and a hammock. And further this deponent saith not.

(Signed) JONATHAN DARROW.

Sworn before me, this 18th day of December, 1822.

(Signed) HARRIS SCOVELL,
Assistant Justice.

No. II. (COPY.)

We, whose names are hereunto subscribed, hereby certify, that we saw, during the first week of September, in the present year several different times, a chest on which was placed a bundle of clothes, or bedding, as they appeared to be, tied up in a blanket, as we believe, standing in the entry of the house number four in Lombardy-street.

Given under our hands, the 18th day of December, 1822.

(Signed) WILLIAM H. MOTT,
FRANCIS SCHRODER,
ELEBRED POLHAMUS.

No. III. (COPY.)

I, Sarah Potter, residing at number twenty-three Lombardy street, hereby certify,

That I was employed by the late Mistress Cary and the late Mistress Snow, on Tuesday, the third day of September, in the present year, to wash some bedding and clothes, which I was informed had, or did belong to some person who had been sick, and that I accordingly did wash one rose blanket, one bed quilt, one pair of socks, one handkerchief, one waistcoat, and three shirts, and that the shirts were very offensive and very yellow. And that, while I was washing the said clothes, the late George Washington Mott came near to the washing tub, and inquired of me whether I took in washing.

Given under my hand, this 8th day of December, 1822.

(Signed) SARAH POTTER.

“ On two occasions, it seems that infected clothes or bedding may be peculiarly mischievous, viz. when they are first opened

in a warm atmosphere, after having been long closely packed up ; and again, when they are put into warm water, for the purpose of washing. The profuse vapour of warm water seizes the matter of infection with the utmost avidity, and conveys it, in its most active state, to the noses, mouths, and lungs of the bystanders. This fact was shown in a very striking manner ; for, at the time the clothes referred to in document No. 3, were washing, George Washington Mott, having that day come to the city, was, with Mrs. Carey and Mrs. Snow, standing by the tub : they all sickened with yellow fever on the same day, and all died within a few hours of each other. The infection in Lombardy and Cheapside-streets reached to Catherine-street ; thus taking possession of three principal avenues which lead to the wharves and the New Market, from the upper part of the city : and to this second infected district, no doubt, we may justly charge some cases of fever which occurred to the eastward and northward of it, and which were not at the time fairly traced : a case in point was that of Mr. D. Rogers. There were, however, three or four cases that fell under my own observation, which were reported to the Board of Health as yellow fever, in the upper part of the city ; about which I shall not speak, unless I was disposed to trace a drunken frolick, or something as unlike yellow fever as drunkenness, to the infected district.

“ I shall conclude with the case of yellow fever that follows, and which was among the most mischievous that occurred in the upper part of the city, during the late autumn, causing more alarm, and consequently more unnecessary removals than any other. This was owing to two reasons ; first, the supposition of it being impossible to trace it to the infected district ; second, it being ascribed to a broken sink in the neighbourhood, a thing which too often happens in like cases. The subject of the case here alluded to, was Mr. Scott, who resided at 122 Bancker-street, by trade a tailor. He had received his work for months by the job from Messrs. Pierson and Jacobs, whose store is at the corner of Maiden-lane and Nassau-streets. For wages or

work he went there two or three times a week during August, and until the 10th of September, on which day the store was closed on account of the alarming progress of the fever in the neighbourhood, as several cases had already occurred at the noted sugar house a few yards distant, which terminated fatally. On this day, the 10th of September, he settled with his employers, but was detained there much longer than usual, owing to some difficulty in his accounts. After receiving his wages, as he stated, on his return home he went through Maiden lane to Broadway, merely to witness the desolation of that part of the city. Six days after this, to wit; on the 16th of the same month he sickened of yellow fever, and died on the 23d. Another journeyman employed by the same firm, who was at the store on the same day, sickened about the same time that Scott did, and was reported to the Board as a case of yellow fever, but recovered. Mr. Pierson, one of the partners of that firm, however, soon after this took the disease, and it proved fatal.”*

The ship Superior was released from quarantine on the 24th or 25th of August, and a day or two after came up to Brooklyn, a village on Long-Island, on the opposite side the East-River, and about three quarters of a mile distant from the city. She lay consequently directly opposite to the foot of Catharine-street, and part of the town where Mrs. Carey lived. It is therefore highly probable that the things which the Cartman took from the wharf, at the foot of Catharine-street, had been brought there from the ship opposite. Dr. Walters informs me, that the cartman observed a small boat near where the articles lay, and that the sailors in it appeared to be acquainted with the transaction, and were most probably the persons who had just landed the things spoken of.

The following statement tends to confirm what has been said, and also accords with that of the cartman, as to the time the

* Letter of Dr. Walters, in the New-York Medical and Physical Journal

chest and other articles were brought to the house. It was made to me on the same day as that of Banta, by a respectable coloured woman, who lives in a small one-story wooden building on the south side of, and adjoining the house in which Mrs. Carey and Mrs. Snow died. It may be remarked by the way as a circumstance somewhat curious, that almost every other house in which cases of yellow fever occurred in this street are two-story wooden buildings, while this in which the disease broke out is a spacious three-story brick building, and the only one in that part of the street where the disease prevailed! We would ask those who when cases of yellow fever have been reported in certain houses were in the habit of searching in the yard or cellar for some sink or cist pool, or other local nuisance, in which of the two kinds of houses in Lombardy-street it is probable the yellow fever would have originated if it had been owing to domestic sources?

E. CLYNTON'S STATEMENT.

Ellender Clynton, a respectable black woman, aged about sixty-five, and brought up with Mr. Richard Lawrence of Flushing, on Long-Island, has been living during the past year in a small *one story wooden building*, adjoining the *three story brick house* No. 4 Lombardy-street, and in which the disease broke out. Early on the Monday morning of the day, on which Mrs. Carey sickened, that is September 9th, 1822, Mrs. Carey came into Ellender's room to borrow some coals—she complained of feeling very unwell. Ellender then asked her what was the matter? Mrs. Carey said she had been washing some clothes which her son had brought up with him to the house when he came from the ship. Ellender told her it was no wonder, for she thought when she saw Mrs. Carey hanging up the clothes in the yard to dry that it might make her sick. She had seen Mrs. Carey's son come to the house some days before, about the beginning of the week, with a sailor's chest and a large bundle of clothes tied up in a blanket, which she under-

stood came from a ship. The clothes which Mrs. Carey washed Ellender says were those which Carey brought to the house when he first arrived in port, and consisted of three or four pieces, chiefly *shirts*. Ellender did not go into the house after Mrs. Carey sickened, being afraid of taking the disease.

The cartman who brought the things did not know, it seems, who the young man was that hired him at the dock and rode with him to the house to which the things were taken. But by Ellender's statement we learn the important fact, that it was *Mrs. Carey's son*. With him, therefore, rests the true secret of this affair; but whether any measures will ever be taken, or inducements offered to have it divulged, is more than we can say. As it was Carey himself who was on the cart, he has made known enough for our purpose, inasmuch as he has confessed that the articles brought to his mother's, to wit, the mattress, chest, &c. had belonged to a person who had died of yellow fever. With the rest of the story we have nothing to do. We have proved that the matter of contagion was brought into Lombardy-street before the yellow fever prevailed there.

It appears that Carey's *own* things were not brought from the ship until about the *twelfth* of September, that is three days after his mother and sister sickened.

No. VI.

Proofs of the inefficacy of our present Quarantine Laws.

From the following table some idea may be formed of the active and extensive intercourse maintained between this port and the West-Indies, and especially with those islands and towns where yellow fever most usually prevails. It fully justifies what we have said on this subject under the head of prevention and purification. No one certainly can feel more real gratification than myself, in beholding our country prosper in all the varied pursuits which engage the bold, persevering, and enterprising genius of her citizens. But when the lives of some hundred thousand individuals are placed in jeopardy to gratify

* This Table is made out from by me from the
 Official documents (Ms) of the Board of
 Health, being the reports made to the
 Board by Dr Bayley the Health Officer

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the cupidity of an inconsiderable portion of the community, I cannot hesitate to withhold my assent to any measure, the object of which is to perpetuate this unnatural condition of things. There are, doubtless, those in whom avarice would obliterate every noble feeling; but I trust and believe, that there are very few of the mercantile community whose philanthropy as well as patriotism would not induce them to make large sacrifices of their own private interests rather than bear the imputation of doing any thing that might be detrimental to the public welfare. I am therefore satisfied in my own mind, that when propositions come to be advanced before our legislative tribunals to remodel and perfect the quarantine system none will go farther than such persons towards rendering it as complete and efficient as possible. They will see at once the glaring inconsistency, the monstrous absurdity, and the wrong done to the public, in expending enormous sums of money to maintain this mummary and mockery of a quarantine, which, instead of barring the door against the pestilence, serves, as a depot to receive and foster it.

List of Vessels arrived at New-York, during the summer and autumn of 1822, from West-India ports where Yellow Fever usually prevails.

HAVANNA.

Arrived,	Quarantined
June 11th. Brig Rapid—1 died of yellow fever, May 31st,	30 days.
16th. Schooner Retrieve—none sick,	do.
18th. Brig Venus—1 died of bilious fever June 7th, on the passage,	do.
22d. Brig Aspasia—2 were sick on the passage	do.
23d. Schooner Virginia Packet—none,	do.
25th. Serena—none,	do.

Arrived	Quarantined
June 25th. Brig <i>Spanish Soldier</i> —1 died on shore at Havanna, probably of yellow fever—1 died on the passage June 17th, of yellow fever [passenger,]	30 days.
28th. — Abeona—none,	do.
— — Ambuscade—none,	do.
July 1st. Ship <i>Eliza Jane</i> —1 died of yellow fever on shore at Havannah, June 10th, [mate]—1 died June 18th, of yellow fever on the passage,	do.
2d. Brig <i>Nancy</i> —1 sick in Havanna,	do.
— Schooner <i>Lively Hope</i> —none,	do.
8th. U. S. Brig <i>Enterprize</i> —10 sick. "This vessel," says Dr. Bayley, in his weekly report to the Board of Health, "arrived here the 8th inst. 24 days from Havanna, (where she remained three days off the Moro Castle and about one mile from the city,) via Charleston. At the latter place she remained eight days. Lieutenant Coxe was taken ill the day after she arrived at that port, and died on the 1st of July. Ten persons [of the crew] were sick of malignant fever when she arrived here on the 8th and twelve have since been taken ill. Those persons who died have all had that fatal symptom, the black vomit."	do.
July 9th. Schooner <i>Kennebeck Trader</i> —none,	do.
12th. ——— Tartar—1 died of yellow fever on board on the 10th, [seaman,]	do.
— ——— Pirate—none,	do.
13th. Brig <i>Fair American</i> —1 sick [seaman] left at Havanna,	do.
15th. — Fame—none,	do.

Arrived,	Quarantined
July 15th. Sloop Wave—none,	30 days.
——Steam Ship Robert Fulton—1 sick of fever, left at Charleston,	do.
27th. Brig Francis—1 died on shore at Ha- vanna, [seaman,]	do.
29th. ——— Packet—none,	do.
Aug. 3d. Brig Betsey—none,	do.
15th. ——— Lucy Ann—4 died of yellow fever, 3 on shore at Havanna, 1 on the 10th on the passage,	to 1st of Oct.
20th. H. B. M. Brig Dotterel-- none,	30 days.
—— Schooner Three Sisters---1 died of yel- low fever at Havanna [seaman,]	do.
21st. ——— New-Orleans---none,	do.
31st. ——— Dolphin—2 sick of fever at Havanna, [captain and a seaman,]	do.
Sept. 2d. ——— Huntress—none,	do.
12th. Ship Thomas Wilson—none,	do.
14th. Brig Factor—3 died of yellow fever [crew] 1 died Aug. 22d, on shore at Ha- vanna, 2 on the passage, Sept. 6, and Sept. 8th,—1 sick of yellow fever arrived convalescent, [passenger,]	do.
20th. ——— American—4 sick, captain and 3 of the crew at Havanna.	do.
28th. ——— Neptune's Barge—none,	do.
Oct. 3d. ——— Packet—4 died of yellow fever, 1st and 2d mates and one seaman on shore at Havanna, and a new first mate on the passage, Sept. 21st,	do.
8th. ——— Abeona—none,	do.
15th. ——— Fair American—none,	do.
17th. Schooner Neptune—none,	do.
—— Richard—3 died of yellow fever before sailing,	do.

In the space of 128 days arrived 38 vessels, in which 57 were sick, of whom 44 had yellow fever, of which 21 died.

MATANZAS [*Cuba.*]

Arrived,	Quarantined
June 11th. Brig Agenoria—none sick,	4 days.
— Ship Shamrock—none,	do.
18th. Brig Emma, —	do.
24th. — Margaret, —	do.
July 1st. — Helicon—2 sick, arrived with yellow fever, a third had yellow fever on passage,	30 days.
7th. — Mary—1 sick at Matanzas [seaman,]	do.
15th. — Planter—none,	do.
30th. Schooner St. Stephens—none,	do.
Aug. 2d. Brig Radius—none,	do.
7th. Schooner Planet—none,	do.
Sept. 3d. Brig Betsey—none,	do.
20th. — Prize—none,	10
Oct. 8th. — Castor—none,	7

In the space of 119 days arrived 13 vessels, in which 4 were sick, of which 3 had yellow fever.

ST. JAGO DE CUBA.

June 14th. Sch'r Industry—none sick,	30 days.
30th. Brig Georgiana—2 died of yellow fever on shore there, [seamen,]	do.
Sept. 19th. — Traveller---1 died of yellow fever,	20
Oct. 20th, — Mermaidn---none,	6

In the space of 127 days arrived 4 vessels, of which 3 of the crews died of yellow fever before sailing.

PORT-AU-PRINCE, [*Hispaniola.*]

June 21st. Brig John, London---none sick,	9 days.
July 7th. Sch'r Nile.	do. 30

Arrived,	Quarantined.
July 17th. Sch'r Ariadne---2 sick with fever ; one on passage, the other at Port-au- Prince, - - - - -	30 days
Aug. 4th. Brig Buck---2 died of yellow fever ; one on passage July 13th ; the other at Port-au-Prince, [seamen,] -	do.
15th. Sch'r Combine---2 died of yellow fever on shore at Port-au-Prince, [seamen,]	do.
— Brig Vorwartz---2 died do. do.	do.
— — Harmony - -none,	do.
20th, Sch'r Atlanta---none,	do.
— Sloop Active --none. Went through the Sound.	
Sep. 13th. Sch'r William Henry—1 sick [seaman,] on passage. - - - - -	18
28th. Brig John, London---none. Went thro' the Sound.	
Oct. 12th. Sch'r Nile --none. - - -	5
13th. Brig Francis Jarvis---none, -	do.
<i>In the space of 118 days, arrived 13 vessels, in which 9 were sick, of whom 6 had yellow fever, and all died.</i>	

VERA CRUZ.

July 17th. Ship Victory----12 sick while there, [seamen,] and 2 died there [mates] 8th and 18th of June, -	30 days.
27th. Brig John----1 sick with fever there [seaman] - - - - -	do.
28th, Sch'r Swan----4 sick there with fever,	do.
<i>In the space of 11 days, arrived 3 vessels, in which 19 were sick with fever at that port, of whom 2 died.</i>	

RECAPITULATION.

<i>Arrivals from.</i>	<i>No. of vessels.</i>	<i>No. of sick.</i>	<i>Sick of yellow fever.</i>	<i>Died of yellow fever.</i>
Havanna,	38	- 57	- 44	- 21
Matanzas,	13	- 4	- 3	-
St. Jago de Cuba,	4	- 3	- 3	- 3
Port-au Prince,	13	- 9	- 6	- 6
Vera Cruz,	3	- 19	- —	- 2
Total,	71	92	56	32*

In addition to this, it may be observed, that the intercourse kept up between the different ports of the Union, or what is called the coasting trade, is incessant, especially during the warm weather, and between this city and New-Orleans, Pensacola, St. Augustine, and other towns in the southernmost part of our territory, and which, from their proximity to the West-Indies, are almost every year afflicted with the visitation of yellow fever. We have this year seen what distress it has occasioned at Pensacola and at New-Orleans.

We perceive by this table that vessels often arrive here from sickly ports, and that the first intimation we have of the disease prevailing in such places, is the death of some of the crews during the passage. Vessels from the same ports, and which sailed and arrived perhaps some three or four days previous, are permitted, after the short detention of *four days* at quarantine, to go up to the city, on the presumption that such ports were healthy. So that pestilence may have been carried in cargo loads to our wharves and into our houses, before the Health Officer can be aware of its introduction, and when it is too late to repair the disaster. For, by the letter of Dr. Bayley, in Chap. I. p. 92, 3, we learn, that although none may have

* This is exclusive of the deaths of the crew of the U. S. brig Enterprize.

died or been sick on board such vessels, and that although the vessels may have been in a perfectly clean condition, with no taint in any part of them perceptible to the senses, yet if yellow fever prevailed in the ports whence they sailed, the air of their holds may come surcharged with the contagious poison of this malady.

Notwithstanding, therefore, the Health Officer has good grounds to be suspicious of all vessels arriving from such ports, it would be considered a very harsh measure on his part, and would, no doubt, excite much clamour, if he undertook to throw so great an obstruction in the way of the West-India trade as to use the discretionary power with which he is invested* of detaining these vessels *thirty* or more days.

Such are the loose ideas entertained by many, of the nature of quarantine laws, and such the leniency and inefficiency of our present code, that I have no doubt if these indulgencies were not granted, the Health Officer, however meritorious he might seem in the eyes of those who are aware of the absolute necessity of a fixed and unyielding line of conduct in those who hold these responsible situations, would be thought little better than a despot.

What happened this year in regard to the port of Matanzas, is in point. Between June 11th and 24th, *four vessels* arrived here from that place. On July 1st, that is, *six days* only after the last arrival, came the brig Helicon, on board of which came also two cases of *yellow fever*; and a third had had the disease on the passage. The four first vessels were quarantined but *four days*, and *then went up to the wharf in the city*. It was on this account that the disease was attributed by some to the ship Shamrock, which arrived from Matanzas on the 11th of June, and hauled into the wharf very near the foot of Rector-street.

* Health Laws, sect. 3. p. 11. 1820.

There can be no doubt that the four vessels which arrived before the Helicon, at least those that arrived only a few days before her, were perfectly well apprised of the state of the public health at Matanzas before they sailed.

Thus, besides the danger to be apprehended from vessels which may in this manner illicitly introduce the poison of yellow fever directly into the city, we never can possibly feel ourselves secure while we are maintaining, under the name of a quarantine, and at the distance of but ~~six or seven~~ miles from the city, an institution which, did it not seem too much like trifling with a subject too serious for ridicule, might be said to be intended rather to prolong the existence of this deplorable malady than to contribute to its extinction.

When we compare the large proportion of the deaths from yellow fever of the vessels from sickly West-India ports, to the number of cases of that disease, it is evident there can be no mistake as to the name and character of the complaint. And when in connexion with this, we look at the total number of vessels, and consider that there were as many as *seventy-one* arrivals from *yellow fever ports*; that these arrivals all took place in the short space of *one hundred and thirty days*, in the hottest season of the year, that *near one hundred* persons were sick of the crews and passengers of these vessels, *much more than half* of whom had yellow fever; and that the length of the voyage was not usually much more than from *twelve* to *twenty* days; those who confess themselves unable to resist the evidences in favour of importation, will be ready to acknowledge, that here are abundant sources for the introduction of yellow fever.

No. VII.

Sickness in the Sugar-House in Liberty-street.

I have already said, under the head of Immunity and Predisposition, that the sickness of the Germans was owing, doubtless, to their continuing to frequent this building long after the neigh-

bourhood, from the number of persons who had fallen sick in the vicinity of that building, was well known to be infected; and that the predisposition of a foreign constitution had also probably contributed to their illness. By a reference to Chap. I. and to the reports made to the Board of Health, it is found, that cases had already occurred in that vicinity, in William-street, and also in Broadway north of Liberty-street, as early as the latter part of August.

To become better assured, however, of what I believed to be the true explanation of this sickness, I addressed a letter, containing several queries, to B. B. Seaman, Esq. one of the proprietors of that establishment, who in his answer, dated January 1st, 1823, politely furnished me with a minute and very satisfactory detail of all the circumstances connected with the cases which had occurred there.

This statement corroborates, in every respect, what I had asserted. It appears that the house was not actually closed, nor did the Germans cease to go there until October second. Mr. Seaman says they avoided, as much as possible, in their routes to and from the sugar-house, those places that were considered infected. They were, however, in the midst of it; besides which, their high susceptibility to the disease would have rendered them the subjects of it if only a partial stream of the poison had been wafted from a distance to the building, while, to a native, perhaps, it might have proved perfectly harmless.

I shall insert the answers of Mr. Seaman at full length, though I do so without his permission; being fully persuaded, that he will excuse the liberty I have taken from my unwillingness to withhold from the public the interesting information which they convey.

The fact related of Martin Hauser, in the 10th answer, is particularly worthy of remembrance, being the longest period [fourteen days] from the reception to the development of the contagion that occurred. In two other cases the poison lay

dormant *ten* days, and periods somewhat longer than fourteen days have been observed occasionally, but very seldom, by Arejula and others in Spain.

“ SIR,

“ In reply to your first query, which will also be an answer to the second, I assure you that we had not, for a long time previous, or during the continuance of the fever which prevailed this last season, any sugars from the Island of Cuba, excepting such as had forfeited their right to a drawback of the duties; they must, of course, have been at least one year in the country.

3 “ The sugar-house has never been closed in any former season, but was always kept in full operation.

4th. “ Nor has there ever before occurred a case of fever in it.

5th. “ Germans, almost exclusively, have been employed in our business.

6th. “ Our men who have families lodge at home, in the upper wards of the city, above an east and west line intersecting Chatham-street, at the commencement of the Bowery. The single men reside in the building attached to the sugar-house, and also adjoining to the yard of the New Dutch Church.

7th. “ The men, both married and single, continued their regular habits until the 21st September, with the exception of three, (one of whom, Martin Hauser, is mentioned in my 10th answer) who left the sugar house entirely on the 9th day of September, and did not return until the fever disappeared. After the 21st September, the single men discontinued lodging at the sugar house, but occasionally worked there in the interval between the 21st September and 2d October, when they ceased to go there altogether. It ought to be mentioned here, that the boiler, or foreman, continued to live there until the first day of October, and one of the men during the whole season, both of whom continued healthy.

8th “ The men in their routes to and from the sugar-house

avoided, as much as possible, what was considered at the time the infected parts of the city.

9th. " The first case which occurred among our men was Lear Bush, on the evening of the second September. He ate a hearty supper, of a very indigestible nature, laid himself down on a bench level with the sill of an open window adjoining to, and also level with the surface of the church yard, where he slept until morning. When he awoke he complained of violent pains in every part of his body, and removed to a lodging house in Mott street, where he died on the 9th of September.

10th. " Christopher Fisher was next taken sick, on the 7th of September, while at work in the sugar house. He returned to his family in Forsyth street in the evening, and laid for some time very ill, but recovered. Martin Hauser, (one of the three men referred to in my seventh answer) left the sugar-house entirely on the 9th September, and took lodgings in Stuyvesant's lane : he was reported as a case in September, at least fourteen days after his removal, (during which time he assured me he had not been below Canal-street) and died on the fifth day. Herman Hartman worked at the sugar-house until the first of October, went at evening to his boarding-house as usual, but was out that night very late, and returned intoxicated and wet, having been exposed no doubt in that state to the effects of a severe storm : he was taken down the next day, and died on the seventh. Lawrence Wendenman, the last man who was taken sick, had left the sugar-house on the 21st with the rest ; he returned to work seven days afterwards, and early in October was taken down ; he died on the ninth day.

11th. " With most of these cases I was personally intimate, and during the whole time of their sickness was in the habit of visiting them at least twice a day, and remaining some time in the same room with them, assisting occasionally in removing them : neither I, nor their constant attendants, were ever affected in the least by the disorder.

12th. " Our men are certainly exposed to a considerable degree of heat in the performance of their labour, but it has

always been supposed by them, as well as ourselves, that it rendered them less susceptible of infection, and I think we will be borne out in this opinion by medical authority, who generally (I believe) think that constant and profuse perspiration is one of the most effectual safeguards against fever. I am satisfied in my own mind on this subject, and believe that if we had kept the house in full operation, and consequently the men in the same regular habits, to which the discipline of the house subjects them, we should have saved one or more of the single men.

13th. "In reply to your last query, I have to refer you, in part, to my last answer, and to add, that we have had repeated visits of examination, from the proper authorities, who were always satisfied from the healthy appearance of the men, that there could be nothing injurious to health in their occupation, and that every attention was paid to cleanliness consistent with the nature of so large an establishment. The steam arising from the sugar, when boiling, is the only thing about the manufactory which can possibly offend the neighbourhood. But this steam, although it may be offensive when met in such large quantities, is, I believe, frequently used to purify the air of a sick room.

"I am, your obedient servant,"

"B. B. SEAMAN."

DR. TOWNSEND.

New-York, January 1, 1823.

NO. VIII.

Burial Grounds.

Letter of Professor JOHN W. FRANCIS, addressed to the Author.

New-York, December 24, 1822.

"DEAR SIR,

"In answer to your query, 'What agency, in your opinion, had the Trinity Church yard in the origin of the late yellow

fever ; and were you at any time during the prevalence of that disease sensible of noxious exhalations arising thence ? I deem it my duty to state :

“ From a candid and impartial examination of all the facts which I have been enabled to collect, I am convinced that the late yellow fever arose from causes in nowise connected with public burial grounds. The evidence on this head is ample ; and as I am persuaded you will be able to put the matter in its true light, at least so far as concerns the church yard, I shall not here enlarge.

“ As to the second part of your query, a regard to truth induces me to give an opinion in opposition to what has been repeatedly asserted the past season. During the prevalence of the late fever I had frequent occasion to visit parts of the city in the neighbourhood of the cemetery of Trinity Church, and of other places of public interment. On no occasion did I experience any perceptible effect in those situations. This opinion will perhaps have the greater weight when I add, that these visits were often made at a period when the fever was at its height ; during the hottest weather of the summer, at different times of night, and of day, and in all the varieties of wind and temperature. I know that what I have advanced differs from the speculation of many respectable persons ; but I am emboldened to affirm it, because the observations I have made are the deductions of personal experience, and I suspect the contrary opinion has been too hastily adopted. Moreover, I am strengthened in my sentiments by the testimony of others, who had every opportunity of correct information.

“ The farce got up in Trinity Church yard, during the prevalence of the fever, is now better understood, and I shall dismiss it without comment. Yet one cannot but regret, that among those who gave it countenance were several of the public authorities of our city.

“ I am not aware that any apprehensions have ever been entertained by the intelligent of the deleterious consequences of burial grounds in the large cities of Europe, and the theory

which attributes yellow fever to such source in our own country is equally novel and false.

“I remain your’s,

JOHN W. FRANCIS.”

DR. TOWNSEND.

No. IX.

Additional facts in support of Contagion.

CASES OF THE BAILIES IN CHEAPSIDE-STREET.

The death of the two females by the name of Bailie, who went out of the uninfected parts of the city to take care of their sister in Cheapside-street has already been alluded to in the first chapter, as a marked instance of the contagious nature of yellow fever, and of the peculiar susceptibility of a northern constitution.

The particulars relating to their sickness, and which the desertion of the city rendered it impracticable to procure at the time I visited Cheapside-street, I have since had the satisfaction of receiving from Mr. Scott, with whom it will be remembered, Catharine, the first of the three cases that sickened, lived.

She was an Irish girl of robust, sanguine temperament, and fourteen years of age, of very regular habits, and, unlike most other persons of this description, rarely left the house, or manifested any disposition to ramble about the city. She was taken ill Sunday, Sept. 15th, about noon. Ward’s house is about fifteen yards from that of Mr. Scott’s, but Mr. S. says she had no communication whatever with the family. As so much sickness, however, had already occurred at Ward’s before Catharine was taken ill, and as her system, from her short residence in this country, [being, as we have before said, but seventeen months from Ireland,] must have been highly predisposed to the disease, there can be scarcely a doubt that if she had merely passed the house, the degree to which the air

x An estimable man & good practitioner but rather non-
= infectionist. He is now Prof^r of Theory & Practice in the
College of Phys & Surg^y in this city for some years. T

Appendix.

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without must have necessarily been infected, was all sufficient to have created the disease in her, although others more habituated to breathe the morbid effluvia of sick chambers, and who were natives and long resident in the city, might, as we have seen in numerous parallel instances, remain for hours in such an atmosphere with perfect impunity. Mr. Scott cannot positively affirm that Catharine was not a few days before her illness near the house of Ward. As the pump stands near it, however, there is every reason to believe that in going to fetch water she must have been much exposed to take the disease. Mr. Scott is of opinion that she took the complaint in another way. It appears that next door south of Mr. Scott's house, there stands a small back two story building, which fronts upon the rear of his yard, and the windows of which open upon it, not to exceed *twenty* feet distance from the cistern. On the Monday previous to Catharine's being taken sick, i. e. the 9th of September, a painter by the name of Williams, died in the front upper or second story room of this building. Dr. Joseph M. Smith informed me that from the representations which had been made of Williams' symptoms, there was every reason to believe that it was a genuine case of yellow fever. No one, however, could precisely tell the manner in which he had received it, though the current opinion is that he had been employed in painting the cabin-work of an Havana vessel, or had been visiting infected parts of the city. That he had been down into the lower infected district is not denied. A few days before he sickened he told of his intention to go there to do some work, and said in justification that in hard times like these it was necessary for poor folks to run some risk. I have the documents in my possession which prove these facts, but I have not thought it necessary to insert them. The day of his death the *bedding* upon which he had died was hung out of the window of his chamber. It so happened that nearly all that day Catharine was constantly employed in washing at the

cistern, and of course was directly exposed to the effluvia that must have been exhaling from the chamber as well as from the bedding. Just *six* days after this exposure Catharine sickened.

If Williams died of yellow fever, though not a reported case, Catharine then had, in all likelihood, taken in from this source some of the seeds of the poison, enough, perhaps, to have generated the disease in her person. She may also have received more or less of it from having approached too near Ward's house.

Mrs. Bailie, sister-in-law to Catharine, came to see her on the 18th of September, and again, it is said, on Friday; but did not stay with her constantly. Eliza, however, the sister of Catharine, and who had arrived from Ireland at the same time with her, came to see her on Monday the 16th, and remained with her day and night until her death. Catharine died Saturday morning early, Sept. 21st. Mrs. Bailie and Eliza took sick in Orchard street on the 24th following, and both died at the Marine Hospital; Mrs. Bailie on the 29th, and Eliza on the 30th. It is somewhat remarkable that Eliza and Mrs. Bailie should both have sickened on the very same day, although Eliza was exposed to the contagion during the first, second and third days of Catharine's illness, and Mrs. Bailie not until the fourth; and it is also still more surprising that the disease in Mrs. Bailie, who had been several years in this country, and whose susceptibility would have been thought much less than that of Eliza's, should have evinced higher marks of malignity, and been also of much shorter duration. These anomalies, though apparently irreconcilable, were doubtless owing to circumstances which, in the present imperfect state of our knowledge of the laws of this disease, our senses are incapable of taking cognizance. It is obvious that Mrs. Bailie did not receive the contagion from Catharine until the conclusion of the third day, or beginning of the fourth day of her illness.

CASES OF YELLOW FEVER ON BROOKLYN HEIGHTS.

The following is a copy of a deposition made at my request, by Mr. Thomas Baiseley, an old inhabitant of Brooklyn, whose veracity is unimpeached. His verbal declaration would have been sufficient, but the severe etiquette of controversy obliges me to adopt this form, for the narrative of the facts I have adduced.

“ Brooklyn, King’s County, state of New-York, ss.

“ Thomas Baiseley, of Brooklyn, being duly sworn, deposeth and saith, that on or about the ninth of August, 1822, John Davis, coachsmith, of New-York, who lived in Washington-street, hired, and a few days after removed into the upper part of the house occupied by this deponent, in Poplar-street, Brooklyn. That the said Davis removed from the city to Brooklyn in consequence of the fever which prevailed in the part where he had resided. That on or about the first day of September he, the said Davis, went into the most infected part of the city, to wit, in Washington-street near Rector-street, for the purpose, as this deponent believeth, of procuring his tools of trade.

“ This deponent further saith, that on the tenth day of September following, being Tuesday, the said Davis sickened of yellow fever, in the apartment which he had hired of this deponent, and that the said Davis died, and was buried the thirteenth day of September. That on the sixteenth day of September, Samuel Isaacs, coachsmith, who lived and boarded with Davis, and had helped to lay out Davis, also sickened of yellow fever; was removed to quarantine on the twenty-third, and died on the twenty-fifth. Isaacs had accompanied Davis in his visit to Washington street. This deponent further saith, that ~~Mr.~~ Davis told his, the deponent’s wife, that her husband, Davis, had passed blood by stool during his the said Davis’ illness.

Mrs.

“ This deponent further saith, that after Davis died, the bedding upon which he died lay out in the yard for several days exposed to the sun, and that no care was taken to avoid it by any persons living in deponent's house. That on the eighteenth of September, the son of this deponent, Nicholas Baiseley sickened of yellow fever, and died the twenty-fourth following. That the said Nicholas had black vomit. but that he had not been in the room where Davis lay during his sickness, and no nearer to him than in the entry on the same floor with the room in which said Davis was lying sick. This deponent further declareth, that the room in which Davis was sick opens into the entry where Nicholas had been.

“ This deponent also saith, that his daughter Antoinette took sick of yellow fever on Thursday the nineteenth day of September, and died on Monday the twenty-third day of September. That Nicholas, for the last ten days previous to his taking sick had not been in the city of New-York except in that part of the city with which intercourse from the town of Brooklyn was constantly maintained, to wit, the foot of Fulton-street, on the East-River, and no where else, to which place the horse ferry-boat continued to ply from Brooklyn during all the epidemic. That Antoinette had not been in the city of New-York since the fourth day of July, which was previous to the existence of yellow fever there. But that she had during the illness of Davis been in his room, and where he was lying ill with yellow fever for the space of about one quarter of an hour; and that after Davis died she had slept, as his wife informs him, and as he believes with Mrs. Davis, on the same bedding upon which he, the said Davis, lay during his illness.

“ This deponent also saith, that he hath heard a strange report, that his daughter took her disease from a chest in the room in which she was accustomed to sleep; but that there could be no manner of foundation for any such belief, because the chest had never been opened since June, and that Isaacs and Nicholas

had often slept in the same room with it, as well as several other persons ; and lastly, because it contained only some books of a Mr. Levi Dyer, of Norfolk, together, as the said Dyer said, with some clothing of his wife, who had, according to the said Dyer, died in Norfolk, as far back as the year 1821, in the month of November ; but not of yellow fever. This deponent saith, that the said Dyer was an Englishman, and that the said chest was brought to deponent's house, then in James-street, Brooklyn, about the twelfth day of December, 1821. This deponent saith, that from the time Davis moved into deponent's house, to wit, a few days after he had hired the apartments of deponent, Antoinette ceased to sleep in the room where the chest was, as the room was one of the apartments hired by Davis ; and that Isaacs and Davis' son slept there with the chest until it was removed. This deponent further saith, that in consequence of the rumour about the trunk it was ordered to be buried by the Board of Health of this town, and was buried just before the death of Antoinette.

“ Furthermore, this deponent declareth, that the wives of his two sons, to wit, Nancy, wife of John, and Sarah, wife of David Baiseley, also were taken sick of yellow fever. That Nancy was much frightened, and only went into the entry, but not into the adjoining room where Davis lay, and that said Nancy a few days after had the disease very severely, and that Doctors Ball and Wendell declared her complaint to be the genuine old yellow fever. That Sarah, wife of David, frequently visited and sat up with Nicholas just when he was about getting black vomit, and took sick the day before he died of yellow fever ; and that neither Nancy nor Sarah lived in deponent's house ; that Nancy had not been in the city in six weeks, nor Sarah all summer.

“ This deponent also saith, that his wife also took sick of yellow fever, on or about the sixteenth of September, and was seriously ill for three days. This deponent further saith that Antoinette was eleven, and Nicholas Baiseley twenty-two years of

age, and that he, the said deponent, fully and firmly believes that the sickness in his house was occasioned by Davis.

“ THOMAS BAISELEY.

“ Sworn to the seventeenth day of January, in the year eighteen hundred and twenty-three.

WILLIAM FURMAN, Judge.”

By this highly important document we learn :

1st. That Davis took sick on or about the tenth day after exposure in the city.

2d. That Isaacs who had been at the same time with Davis near Rector-street, did not take sick until sixteen days after exposure.

3d. That Isaacs boarded and lived in the house with Davis before and during his, Davis' illness, and helped to lay him out.

4th. That Nicholas Baiseley had not been in any infected part of the city previous to his illness.

5th. That Antoinette, Nancy, Sarah, and Mrs. Baisley, all of whom had yellow fever, had not been in the city within the last six weeks previous to their illness.

That Davis took his disease in the city is obvious ; Isaacs must have taken his from Davis, for the interval between the time of his exposure and falling sick was too great to suppose that he had received it from the same source as Davis, whereas the interval between the time of Davis and Isaacs' falling sick is precisely in accordance with the usual period required for the development of the contagion, viz. from three to six days.

It has also been almost invariably observed, that persons who have been exposed to the contagion of yellow fever if they take the disease, fall sick, *cæteris paribus*, very near, or at the same time with each other, as is proved by innumerable recorded facts. Among other sources of information on this point I refer the reader to Dr. Bayley's account of the yellow fever at the quarantine ground, in 1821, published in the first volume of the New-York Medical and Physical Journal.

x { A plateau in fact of great beauty & a mile square abruptly rising from the water's edge of our harbor ^{near} 100 ~~hundred~~ feet, directly facing or opposite to the Battery or southernmost point of our city, from which it is not more than a mile distant.

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In the case of Nicholas there is no ambiguity. To show that it would be extremely improbable to suppose that he visited any infected part of the city before he sickened, I may mention a circumstance related to me by his mother. When he heard that Davis had died up stairs he declared to his mother, with much emphasis and anxiety, "I would not, on any account have had this thing happen, for now we shall all be sick."

If the cases of Isaacs and Nicholas in the opinion of rigid partisans of domestic origin, be thought to admit of doubt, that of Antoinette, though it were an unsupported and isolated case, is one of the most lucid and triumphant proofs of contagion that could have possibly happened, and one that, as far as my information goes, has never been openly or seriously contested. Many would have wished to let this subject sleep. I was well aware of its importance, in illustration of the opinions which I have espoused in this work, and therefore took some pains to procure the details of what had happened in Mr. Baiseley's house, and was not a little surprised to find that a number of other, equally convincing proofs of contagion, had occurred in the same family, but the details of which had hitherto been cautiously withheld from the public.

These are the wife and daughters-in-law of Mr. Baiseley, to whom may be added Mr. Baiseley himself, who was slightly indisposed about the same time. But as none of these died, no doubt many will indulge in the common scepticism, that the disease could not have been yellow fever. For Nancy's case we have the authority of Drs. Ball and Wendell, her physicians; and it is equally probable the disease of the rest was the same. To Davis, therefore, all these cases are directly or indirectly traceable; for as to the rumour about the chest, the part of the deposition relating to that must, it seems to me, convince every person, that it was a most ridiculous and improbable tale.

In conclusion, it may be observed, that the house of Mr. Baiseley is situated in the suburbs of Brooklyn, on a remarkably elevated platform, known by the name of Brooklyn Heights, and at the distance of about one quarter of a mile from the bay,

x

and seventy-five feet above the level of the water. The Heights terminate at the bay by a sandy abrupt steep descent or bluff. This fine table land, exposed to the winds from every quarter, overlooks the city and harbour, and is chiefly occupied by villas, and boarding houses, to which, during the summer merchants retire from the dust and warmth of the city to refresh themselves—to breathe a pure air, and to enjoy the superb prospect which it commands.

Mr. Baiseley's house is a small two-story wooden building, the rooms of the ordinary dimensions, and corresponding to the size of the house—consequently, they are small, and the ceilings low, but uncommonly clean and comfortably furnished. The entry is very narrow. The room in which Davis was sick is probably twelve feet square. The small size of the apartments, and the large number of its occupants, no doubt favoured the spread of the disease. Brooklyn Heights is universally esteemed, both at Brooklyn and in this city, one of the healthiest and most agreeable spots in the vicinity of New-York. The town of Brooklyn is below, and on the side of the hill, and some of its low streets which run parallel and near to the water are narrow and dirty. But while Brooklyn Heights, where the houses are mostly separate and wide apart, with pretty gardens, engendered such mortality from the disease in the family in which it was introduced, the town of Brooklyn itself, well known from what has occurred in previous years, to possess no peculiar exemption from yellow fever, and where the houses are compact and conjoined as in a city entirely escaped, with the exception of two or three cases who had been into the infected district of New-York.

As Davis and his family moved so long back as the ninth of August, and of course carried their household effects at the same time to Brooklyn, the disease which he brought into the house of Mr. Baiseley was not brought in these articles. The clothes he had on also in his visit to Rector-street could not have been more imbued with *contagious matter* than those of Isaacs, who

[to the East]

* [yet this solemn statement sworn to by Baiseley in presence of Dr H. M. Francis (brother of Dr F.) & myself, was boldly controverted by Messrs Ball & Wendell old, hardened & ignorant non-imfectionists. Baiseley was then milkman & these two honorable gentlemen taking advantage of his poverty &

was with him in the very same atmosphere. If the disease had been brought in this shape, the inhabitants of the house never would have fallen sick in succession, at least Isaacs, who had his full share without calling upon Davis, would not have been so extremely backward in getting the disease as to wait very respectfully until Davis had gone through his sickness before he himself began to complain. He would not have needed the stimulus of Davis' disease to put him into action. If Isaacs, unluckily for the believers in domestic origin, had not been with Davis, to be as a standing evidence against the misrepresentations which this affair might hereafter give rise to, great stress would have been laid upon what is denominated personal infection. Now they are held at bay by this fact, and do not know what to advance. In short, the communication of the disease from Davis's person, not from his clothes nor tools, to Isaacs, Nicholas, and Antoinette, and the three Mistresses Baiseley, is just as clear and obvious as if Davis had flown from Rector-street to Baiseley's house, without a particle of clothes on his back.

Proofs of Contagion at New-Orleans. †

To the examples already given it may not be irrelevant to subjoin in this place a few facts, noticed during the prevalence of the yellow fever at New-Orleans, in 1820, also facts in relation to fomites in 1809 and 1817. I am indebted for this communication to Professor Hosack, who received it from a gentleman of that city, recently in New-York :

" It is well known to nearly all the inhabitants of La Fourche, that in the year 1809, captain Edward D. Turner and his wife, who resided at Point Houmas Plantation, lost their lives by opening a trunk of clothes, which had been sent from New-Orleans during the prevalence of yellow fever ; that they immediately sickened, and died with black vomit, as did also the negro nurse who attended them. In 1817, a trunk of dry goods or clothes, were forwarded to the Choctaw agent, who caught the same disease by unpacking that trunk, and died in

† This account is from a New Orleans gentleman of the highest respectability

dependence, actually made him swear to a considerable amount. I will send you shortly my subsequent account of that of Dr H. M. Francis both before our meeting and after, & also my statement to the public in it. I am giving both in answer to Ball & Wendell. You will find I have not spared them & that both of them stand convicted by me & my signature, both as persons utterly destitute of truth & honor - S. J. 1821

the same manner. This circumstance, as well as his name, is well known to Mr Flower, of Orleans.

“ During the present season, (1820) a Miss Oudin, daughter of the watchmaker, who had lately arrived from France, and resided with a Miss Vignon, whose father lives near the Catholic Church, caught the yellow fever, and was sedulously attended night and day by her friend till given over by her physician, when, to avoid the distressing scene of her decease, Miss Vignon retired to the school of Mr. La Fort, up the coast. which, till that moment, enjoyed perfect health. Miss Vignon, a Creole, was not affected with the disease, and it did not occur to Mr. or Madame La Fort, that she could communicate it by means of her clothes, &c. Mark the result !—she who had been the bed-fellow of Miss Oudin also slept with one or both of the Misses Gloverys, nieces of Madame La Fort, who both took the fever and died of its worst symptoms ! Fortunately, the medical attendant on that institution is one of those liberal practitioners, who so far from seeking to persuade others that this disease is not infectious, (and thereby being the means of its circulation) enforces every possible precaution ; and at his instance the pupils were immediately dispersed to places of security ; one orphan boy, John Rouve, of Bayou Sarah, only excepted ; and he, having no place of refuge, fell a victim to the black vomit. Not one of those who left the seminary at the first alarm took the disease.

“ If you are acquainted with that part of the upper suburbs called the Num’s Point, (a little below Rousseau’s plantation,) you must have remarked its high and healthy situation, elevated several feet above the level of the city, at a great distance from the swamp and all stagnant water. There the inhabitants enjoyed the state of health to be expected from the purity of their atmosphere, entirely insulated from that of the city, till the following circumstances spread amongst them desolation and death. Next door to Robin de Logny’s there is a very inferior kind of boarding house, kept by a man of the name of Marsh, who it seems went to town in quest of *sick boarders*, and having

found one (Gilfillan, of the state of Pennsylvania) with the yellow fever, he brought him to his house in a carriage, regardless of the safety of the other inmates. On the second or third day after his removal Gilfillan died, next a Mrs. Jones of Virginia, then Mr. Crane, Madame and Mr. Granville, all of Ohio; a young child of Mrs. Howell; and lastly, one of Marsh's own children, all died with black vomit. A Mrs. Dodderidge, and a mulatto woman likewise had the yellow fever; the former was saved by being removed to a female hospital, and the latter recovered. Marsh, his wife, and Mrs. Howell, who had the disease last year, appear to be the only persons in that house who did not take the infection.

“ There is a long red building opposite to Madame Nandrand's, the property of John Mornay, which is divided into six tenements, and is usually occupied by as many families. In this building there were the following persons: Madame Odrigues, a creole; Mr. and Mrs. Schofield; Mrs. Hill and her daughter, the widow Jones, both of which families had several children; Mr. Rodgers, chairmaker, and his wife; besides these there lodged at Mrs. Hill's a Mr. Nappen, a carpenter; and at Madame Odrigues, John Smith, a mason. The fever was first brought amongst them by Nappen, who caught it in the city, and died at Mrs. Hill's; a negro woman caught it of him, and recovered; next Mrs. Jones, who also attended Nappen, caught it and died; next Mrs. Hill, whose body being taken to the grave by John Smith, he complained of the unusually offensive smell, and sickened and died also. All these were marked cases of yellow fever, and terminated in *black vomit*. Two younger children of Mrs. Hill's, and two of Mrs. Jones' also had the disease, but recovered. In the same building Mr. Rodgers and his wife, both had the yellow fever, the latter died. Mr. and Mrs. Schofield likewise had it. Within gun shot of the same spot, in the kitchen of John Mornay's former abode, lives an honest German, usually called ‘Dutch Joseph.’ This man being on board a German vessel in the river, infected with

yellow fever, found an acquaintance extremely sick, and was induced by compassion to bring him to his own dwelling, where the man shortly died of that disorder having first communicated it to Joseph's own wife and a young girl, both of whom also died; and but for the attention of Dr. Forsyth, and the introduction of Guyton Morveau's fumigation, it is probable the whole household would have perished.

"The above facts are not only confirmed by eye-witnesses among the survivors, but by Dr. Forsyth himself, who attended most of the above patients, and who has very properly taken notes of the circumstances, under the most solemn conviction, that the above numerous cases of fever originated in the contagion communicated by the three individuals respectively stated

"In the mean time there are families within view of the three last described houses, and one consisting of a dozen persons, unseasoned to the atmosphere of the city in the sickly months, who have remained exceedingly healthy and perfectly secure from malignant diseases, by vigilantly guarding against any communication with the sick.

"Having thus detailed to you the manner of the yellow fever being introduced by four infected individuals, into as many different habitations, all of these situated in a pure atmosphere, free from every predisposing cause of disease, and shown, that including the *four* first cases, about *thirty* persons have caught the infection; of whom not less than eighteen have died, I beg you to reflect on the probable consequences of four similar cases being introduced among the dense population of any city in the union; and whether thousands would not have fallen victims, unless effectual measures were adopted to interpose a barrier between the sick and the sound.

"There were one or two other striking instances of contagion that occurred below the city. An Irishman who went from town to General Wilkinson's plantation, fell sick shortly after his arrival, and died with the black vomit. He was attended

x You will perceive that 3 of the 30 cases were
~~fatal~~ & that one only of them died. This proves
 what I maintain that at New Orleans so near the
 Tropics as $29^{\circ}30'$, the Constitution is still northern & does
 not lose its susceptibility; even the negro's having
 no ~~absolute~~ Appendix. immunity, 349 This certainly
 less predisposition than the white, especially than the
 by a man who had not been to town during the season; he also
 caught the disease and died. The yellow fever was likewise
 taken to Mr. Fleckner's plantation by a white man from town,
 who there died; also the negro nurse who attended him, and
 the nurse of that negro also.

“ Mr. Livingston's overseer, who had not been near the city, visited one of those sick white men, [whether at the General's or Mr. Fleckner's, I do not exactly know,] and he also took the disease, and died with black vomit.”

No. X.

State of the Weather for thirty four years during summer and autumn from the year 1789 inclusive, to August, 1822.

The abstracts which follow are made out from the tables of the late W.^m Laight, Esq. to which I have alluded in the preface. It is believed that they are the only tables of the weather extant in the city, as it has not until very lately been the practice either in private life or in our public institutions to pay that attention to this subject which its importance merits. Our colleges, hospitals, and other public establishments, many of which have been formed for more than half a century have nevertheless, as far as I have been enabled to learn, totally neglected this very interesting department of physical science.

The tables of Mr. Laight before the year 1800 were kept during the warm weather at his seat at Corlaer's Hook, and since that period successively in Greenwich and Courtlandt streets, and in Robinson street, (now Park Place.) Though Corlaer's Hook is in the environs of the city, it is situated on the east and warmest side of the Island, while Greenwich, Courtlandt and Robinson streets, are on the north-west or opposite side, and by their proximity to the Hudson and spacious dimensions constantly exposed to cool and refreshing breezes. The difference, therefore, in the degree of heat in the two places must have been quite immaterial.

It is a common consideration that our best considerable inoculation
with variolæ (smallpox) will, I fear, be at Roxford in
1843 or our Hudson river 100 miles north of New York, by attending this disease.
X. I am to go up from our quarantine (my official report upon which I
will send you) just about the same proportion of deaths it has occurred in
the village of neighbourhood of Hudson, viz about 20 to 22 of the former to

I hope in the
year to publish
the details in
myself, as I have
than all previous
they are rich.

In confined narrow streets, shut out from ventilation, the heat may have been somewhat higher than in the wide airy streets of that part of the city, where the thermometer of Mr. Laight was suspended. This does not, however, affect the relative changes of the thermometer, nor invalidate in the least respect the inferences that may be deduced from them. Besides which it must be borne in mind, that the discrepancies of thermometers are more frequently owing to some difference of construction, or to the quality of the quicksilver, than to the situations in which they are exposed. This is very forcibly exemplified in the extraordinary disagreement between the thermometer of the New-York hospital and that of Mr. Laight. According to the tables at the New-York Hospital, and which we have used in the chapter on the weather for the year 1822, the quicksilver must have ranged several degrees higher than in Mr. Laight's thermometer. Mr. Laight's tables for that year are wanting after the month of July ; but it is obvious, from comparing the months of June and July of Mr. Laight's tables with the same months in Dr. Pennell's tables, and with the previous years of Mr. Laight's tables, that this difference is not to be taken as absolute, but merely relative.

What renders the table of Mr. Laight still more perfect is, that the same instrument has been used during the whole time.

The hours at which the heat was taken are between 7 and 8 of the morning, between 2 and 3 of the afternoon, and between 8 and 11 in the evening. Our averages are made out for the middle period.

There are some trifling omissions which will be found noted in the abstracts in which they occur.

In calculating the averages, and also the sums of the averages, I have taken particular care to accompany the integers with the decimals, so that their accuracy may be fully depended upon.

In Table I. it was inconvenient to annex the fractional parts to the averages, but they enter into all the succeeding tables. In this table I have added one to the integers, where the decimal was over .70.

The quantity of rain was not taken, but the rains and showers noticed in a very particular manner, sufficiently so to enable any person to judge of the degree of humidity in the air. were

The thermometer used is that of Fahrenheit.

{ I consider these
Tables a William Lought Esq (now deceased) & of one
of the oldest & respectable of our New York families,
as the most precious meteorological treasure, in
fact the only one, we have, whereby the entire
superstructure of those chimeras which endeavour
to prove the domestic origin of yellow fever outside
of the tropics, from any climatic phenomena, will
be forever demolished in all future time. Mr
Lought was a highly educated gentleman & had
no purposes or theory to maintain. He & his
family like all other old New Yorkers who
know our city & the character of our climate,
always looked upon the vomits as no other
than a foreign West India Pestilence & so
spoke of it always as our law^{do} & every one of
common sense does. These Tables are a brief
but plain unvarnished tale. Their great
value is still further advanced by the fact
that they embrace the whole of that
interesting period from 1790 to 1822, during
which the pestilence made such frequent
& dreadful havoc at New York, Philadelphia
&c, under the delusions of the Rushian school.
Previous to 1790 it had not been known in
our country for near half a century. SSS

August.	89	90	91	92	93	94	95	96	97	98	99	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22†
Av. heat.	77	75	78	78	80	78	79	76	80	77	77	77	77	79	77	80	75	77	76	75	76	77	74	79	77	76	76	75	79	76	79	77	—	
Ht. elev.	88	85	89	90	87	90	91	85	—	89	85	85	85	87	87	88	86	84	89	85	87	88	83	87	85	84	86	84	85	91	90	86	—	
Lt. elev.	61	64	64	62	63	65	63	58	—	66	62	62	65	62	62	64	60	60	58	63	56	62	62	58	56	59	50	52	62	58	63	61	—	
Rain.	10	7	5	6	4	3	10	6	14	7	9	11	17	15	6	7	8	9	16	3	10	12	6	10	7	6	9	7	10	7	8	10	2	
Thunder.	2	1	1	—	—	—	—	3	1	3	—	—	1	5	1	1	2	—	2	—	—	2	—	1	—	—	—	—	—	—	—	—	—	—

Sept.	89	90	91	92	93	94	95	96	97	98	99	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22†
Av. heat.	70	68	67	67	72	73	72	70	—	71	69	69	75	71	70	73	74	69	69	71	69	71	71	77	72	70	69	64	70	97	72	72	—	
Ht. elev.	78	79	78	79	84	85	—	82	—	80	83	80	86	84	78	—	86	80	77	84	78	80	84	79	86	85	84	—	82	81	86	85	83	—
Lt. elev.	54	54	53	42	55	51	—	50	—	50	59	52	45	50	51	—	45	51	47	40	50	50	45	47	50	45	41	43	44	51	43	48	—	
Rain.	3	5	11	5	2	6	—	5	—	4	10	9	7	9	7	—	7	17	5	8	2	7	2	6	7	7	—	9	7	6	4	6	—	
Thunder.	—	—	—	—	—	—	—	2	—	2	—	1	1	2	—	—	1	2	1	1	—	—	—	—	—	—	—	—	—	—	—	—	—	

October.	89	90	91	92	93	94	95	96	97	98	99	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22†
Av. heat.	53	56	56	60	58	56	—	59	—	61	58	61	63	64	60	57	65	59	60	58	64	57	63	57	57	59	58	60	55	55	57	61	59	—
Ht. elev.	62	71	72	68	73	66	—	—	—	68	70	74	71	76	—	69	62	76	75	70	83	79	79	72	66	72	70	66	70	67	76	72	72	—
Lt. elev.	37	39	38	38	32	41	—	—	—	30	34	45	40	40	—	42	32	38	34	33	40	31	34	35	33	35	33	40	31	32	31	31	35	—
Rain.	4	5	2	7	1	4	—	2	—	5	6	8	4	6	6	—	5	3	2	6	11	6	7	8	8	3	6	6	8	3	3	8	4	—
Thunder.	—	—	—	—	—	—	—	—	—	—	—	3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

† By collating the monthly averages of the Lought and Pennell Tables for 1822, as far as the former extend, it is found that the mean difference of their thermometers was 8.43, which sum deducted from the averages of August, September and October respectively, in Dr. Pennell's tables indicates what would have been the averages for those months in that year in Mr. Lought's tables, had observations been made. The succeeding calculations do not, however, embrace these averages.

TABLE II.

Average heats of June, for 31 years	74.07 for 33 years	74.04
July,	78.50	78.44
Aug.	77.36	77.43
Sept.	70.38	
Oct.	58.89	

Sum of the Average Heats of June, July, August, September
and October, for 31 years, 359.20

Sum of the Average Heats of June, July, and August, for
thirty-three years, 229.91

Sum of the Average Heats of June,
July and Aug. (that is 92 days.)

Sum of the Average Heats of June,
July, Aug. Sept. and Oct. (that is
153 days.)

1789,	231.44	354.72
1790,	222.37	347.01
*1791,	233.85	357.50
1792,	228.58	355.72
1793,	235.82	365.84
1794,	230.02 for 90 days	359.45 for 142 days.
*1795,	232.78 do.	
*1796,	223.94 for July Aug. and Sept.	
	282.89 for July, Aug. Sept. and Oct.	
1797,	236.63 for 63 days.	wanting.
*1798,	232.32	364.37
*1799,	228.72	356.29
1800,	230.26 for 84 days	361.10 for 145 days.
*1801,	231.07	369.12
1802,	228.63 for 91 days.	363.80 for 152 days.
*1803,	234.76	365.22 for 146 days.
1804,	227.64	357.83 for 147 days.
*1805,	236.77	366.53
1806,	231.89	361.10
1807,	230.14	359.28
1808,	229.06	358.53

1809,	221.67	355.74
1810,	225.07	352.73
1811,	231.44	365.89
1812,	224.91	349.36
1813,	226.12 for June, Aug. and Sept.	
	283.05 for June, Aug. Sept. and Oct.	
1814,	227.91	357.34
1815,	230.34	357.54
1816,	219.71	344.26
1817,	222.96	348.36
1818,	231.76	359.56
*1819,	236.07	367.78
1820,	235.09	364.71
1821,	227.98	361.01
*1822,	153.52 for June and July.	

TABLE III.

Sum of the average Heats for June, July, Aug. Sept. and Oct. (that is 153 days) in seven years, when yellow fever prevailed.

Sum of the average Heats for June, July, Aug. Sept. and Oct. (that is 153 days) in seven years when yellow fever did not prevail.

1791,	357.50	1793,	365.84
1798,	364.37	1800,	361.10 for 145 days.
1799,	356.29	1802,	363.80 for 152 days.
1801,	369.12	1806,	361.10
1803,	365.22 for 146 ds.	1811,	365.89
1805,	366.53	1820,	364.71
1819,	367.78	1821,	361.01
	<hr/>		<hr/>
	2546.81		2542.45
	2543.45		<hr/>
	<hr/>		
Excess,	3.36		
	<hr/>		

VARIATION.

369.12

356.29

 12.83

VARIATION.

365.89

361.01

 4.88

TABLE IV.

Sum of the Average Heats for June, July
and Aug. (that is 92 days) for eight
years when yellow fever prevailed.

1791, 233.85

1795, 232.78 for 90 days.

1798, 232.32

1799, 228.72

1801, 231.07

1803, 234.76

1805, 236.77

1819, 236.07

 1866.34

VARIATION

236.77

228.72

 8.05

Sum of the Average Heats for June, July
and Aug. (that is 92 days) for eight
years, in which there was no yellow
fever.

1789, 231.44

1793, 235.82

1806, 231.89

1807, 230.14

1811, 231.44

1815, 230.34

1818, 231.76

1820, 235.09

 1857.92

1866.34

VARIATION.

235.82

230.14

 5.68

Exception favor of the former - 8.42

TABLE V.

Sum of the Average Heats for June, July and Aug. of the years in which yellow fever appeared in the immediate vicinity of New-York.

1804,	227.64	yellow fever at the Wallabout.
1809,	221.67	yellow fever at Brooklyn.
1811,	231.44	yellow fever at Amboy.
<hr/>		
	680.75	

Sum of the Average Heats of three of the warmest years, in New-York, in which there was no yellow fever, viz. 1793, 1806, and 1820.

is 702.80

680.75

Excess

22.05

in favor of the latter

Sum of the Average Heats for June, July and Aug. in eight years, in which yellow fever prevailed in New-York, or in its immediate vicinity.

1791,	233.85
1795,	232.78
1798,	232.32
1799,	228.72
1801,	231.07
*1804,	227.64
†1809,	221.67
‡1811,	231.44
<hr/>	
	1839.49
<hr/>	

Sum of the Average Heats for June, July and Aug. in eight years, in which yellow fever did not prevail in New-York, nor in its vicinity.

1793,	235.82
1794,	230.02
1797,	236.63
1800,	230.26
1806,	231.89
1807,	230.14
1818,	231.76
1820,	235.09
<hr/>	
	1861.61
<hr/>	
	1839.49
<hr/>	

Excess,

22.12

in favor of the latter

VARIATION.

233.85
221.67
<hr/>
12.18
<hr/>

VARIATION.

236.63
230.02
<hr/>
6.61
<hr/>

* At the Wallabout.

† Brooklyn.

‡ Amboy.

TABLE VI.

AGGREGATE VARIATION OF THE THERMOMETER FOR JUNE,
JULY AND AUGUST, FOR 34 YEARS.

Year 1789	90	91	92	93	94	95	96	97	98	99	00	01	02	03	04	05
82°	67	76	86	80	67	72	00	00	73	78	70	64	76	82	65	00
Year 1806	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22
00°	34	96	87	92	84	74	00	85	75	105	90	82	127	83	76	00

TABLE VII.

SHOWING THE RELATIVE DEGREES OF TEMPERATURE AND HUMIDITY IN
THE DIFFERENT MONTHS.

	May.	June.	July	August.	September.	October.
1789, wet	hot dry	warm dry	warm v. wet	warm drv		
90, dry	cold wet	cool dry	cold wet	cold wet		
91, dry	hot dry	hot dry	hot dry	hot dry		
92, dry	cold wet	cool wet	hot dry	cold dry		
93, dry	hot dry	v. hot dry	v. hot dry	hot v. dry		
94, wet	cool v. wet	warm dry	hot dry	hot dry		
95, moist	cool dry	hot dry	v. hot wet	hot		
96, wet	cool v. dry	cool v. dry	cold dry	warm dry		warm dry
97, wet	v. hot moist	v. hot dry	cool wet	cool dry		
98, v. dry	warm moist	cool moist	v. hot moist	hot moist		
99, dry	cool moist	warm v. dry	warm v. dry	cold wet		
1800, moist	cold dry	hot dry	warm moist	cold v. dry		
1, dry	warm v. dry	hot v. dry	warm wet	v. hot dry		v. hot dry
2, moist	cool dry	cool dry	warm moist	hot dry		
3, dry	hot dry	v. hot dry	v. hot dry	warm v. dry		
4, wet	cool moist	cool moist	warm moist	hot dry		
5, v. wet	warm dry	v. hot dry	v. hot dry	v. hot moist		
6, dry	v. hot dry	hot dry	cold wet	cool wet		warm dry
7, moist	cool moist	v. hot dry	warm v. wet	cool dry		
8, v. wet	hot dry	warm moist	cool dry	hot dry		
9, v. wet	cold wet	v. cold moist	cold moist	cool dry		
10, v. dry	cool moist	v. cold moist	cool wet	hot dry		
11, moist	hot dry	v. hot dry	warm dry	hot dry		
12, moist	cool moist	cool moist	v. cold moist	v. cold moist		
13, wet	hot wet		v. hot dry	v. hot dry		
14, moist	cool dry	cool dry	warm dry	warm moist		
15, moist	cool dry	v. hot dry	cool moist	cool moist		
16, moist	v. cold dry	v. cold dry	cool dry	v. cold wet		
17, dry	v. cold wet	v. cold moist	cool wet	warm dry		
18, wet	v. hot dry	hot wet	v. cold moist	cool dry		
19, wet	v. hot dry	v. hot dry	v. hot dry	v. hot dry		
20, wet	v. hot dry	v. hot dry	v. hot moist	v. hot dry		
21, wet	cool dry	cold dry	hot dry	v. hot dry		hot dry
22, dry	warm dry	hot moist				

The letter *v* denotes *very*.

In order to express the relative degrees of temperature, the average heat of each month, for the whole number of years collectively, was used as a standard, and compared with the monthly averages of each year separately.

* Most of these commentaries as you will note, are
based on Mr. Laight's columns & remarks. J

REMARKS ON PARTICULAR YEARS ACCOMPANYING THE
PRECEDING TABLES

1791.—The Spring of this year was remarkably pleasant. *June*. On the 25th there was a very severe gust of wind, which lasted about 5 minutes, and covered the whole city with dust, so that persons could not see across the street. This was according to the appearance of the table a clear, dry and warm month. *July*. A dry, clear and hot month. *August*. Dry and warm. Gusts and heavy thunder on the 26th. The yellow fever which broke out this year near Peck-slip, the middle of the month, was the first that had occurred since 1762.* It terminated, according to Dr. Addoms, about the middle of October, which corresponds with the table for this month, as snow is mentioned to have occurred as early as the 18th, on which day the thermometer was at its lowest elevation, viz. 38 degrees at 8 A. M. 38 degrees at 2 P. M. and 40 at 8 P. M. The middle of August was cooler than the rest, for the thermometer was above or at 80 only on the first ten and last 7 days. *September*. Cool wet weather this month, yet the fever went on.

1793.—*June*. Clear, dry and warm. Though the average temperature of this month is above the medium, it was quite cool and unpleasant from the 26th of May to the 6th of the month. A very heavy gust was observed on the 20th, P. M. *July*. A very heavy rain on the 6th. Clear, dry and exceedingly hot month. *August*. Heavy gale and rain on the 25th. The yellow fever broke out this month in Philadelphia, and proved fatal to more than 4000 of the inhabitants. Weather of this month very dry and excessively hot. *September*. An extremely dry and very warm September. *October*. A light snow on the 28th; thermometer 35, 37, 36 degrees at 8, 2, 8 hours. The fever at Philadelphia ceased a few days after.

1794.—More rain fell from the 23d to the 29th of May than had ever been remembered in the same space of time. *June*.

* See Dissertation on this fever by Dr. J. S. Addoms, p. 7. Also Hosack on Contagion, p. 38

Am/pm/TM

A cool month, and incessant rains from the 23d of May to the 12th of June, which did much damage in New-Jersey by carrying away bridges, dams, &c. and drowning cattle.

July and August. Strong gale on the 12th of July, and heavy rain on the 19th; July nor August neither of them wet, mostly clear and warm. *September.* Yellow fever appears in *New-Haven* and *Baltimore*. Some of the crew of a ship from *Antigua*, and also some persons who worked on board of her, are said to have died during this month of a severe and *putrid* fever, the poison disseminated from which may have been dispersed by the heavy gale and rain on the 20th. This month was not particularly moist. The weather was evidently prepared for the reception of the yellow fever. *October.* Heavy gale and rain on the 20th, 24th and 25th, with the wind easterly. *November.* Snow on the 14th.

1796.—*June.* Moderate, clear and dry. Very heavy rain on the 10th. *July.* The last thirteen days of June and first ten days of this month, making *twenty-five days*, were *excessively dry*, and those in July very warm. There was no rain in all this period except one little shower on the 8th of July. On the 12th very hot, and a heavy gust and shower at 2 P. M. From the 12th to the 20th moderate, and some apprehensions of *yellow fever* near Whitehall-slip. From the 20th to the end of the month moderate, with much rain and some thunder. No traces of the fever discovered. *August.* A moderate dry month. Heavy squall and thunder gust on the 1st. Thunder again on the 9th and 29th. Pleasant and moderate weather during the whole month. *Very dry* from the 16th to the 24th. In *this interval*, about the 21st or 22d, the *yellow fever* again appears; the thermometer at 2 P. M. being from 70 to 80 degrees. On the 24th it abates. A thunder gust and rain on the 29th; and rain and fresh breezes on the 30th and 31st. The rains in the latter part of July may have checked the disease, but the drought brought it out again. *September.* Remarkably tempestuous, but moderate and extremely dry throughout the month. On the 14th, at night, a

[adjoining the
Battery on
the East River]

x { You perceive that after heavy drenching rains, a drought appears to bring out that equilibrium of humidity which is most favorable to the development & propagation of the pestilence. The same rule probably applies to drenching rains succeeding a long drought. ^{Appendix.} 361

heavy gust and showers, accompanied with more and severer thunder and lightning than had been observed in three years. Yellow fever, however, continued to prevail, though at a lingering pace, during the whole month! There were fresh gales on the 1st, 7th, 8th, 17th, 18th, 19th, 20th; on the 22d, with a gust and thunder; fresh breezes on the 23d and 26th, and much rain on the 28th. These violent commotions of the atmosphere counterbalanced, in some measure, but could not overpower, the morbid influence [of the heat and drought.

October. Moderate, clear and pleasant month as usual; strong gales on the 2d and 3d from the N. E. and the fever disappears about the 7th or 8th; the thermometer in the interval between the gales and termination of the sickness never having been lower than 48 degrees, which it was on the first, and which is the lowest elevation of this month, except on the 18th, when it was 40 degrees at 8, A. M. Therefore a frost may have occurred on the night of the first. A strong gale again on the 18th, with rain, which probably helped to ventilate the city, and to clear it of the poison. It was subdued during all September by the stormy state of the weather, and received a severe shock from the gales of the 2d and 3d of this month. November. Moderate month, and very dry. Strong gales and heavy squalls on the 1st and 6th, after which there was an Indian summer, and no rain to the 24th, the month terminating in blustering cold weather.

1798.—There had been scarcely a shower from the 11th of April to the 23d of May, making a drought of 52 days! June. Calm 23d and 30th. A warm month without much rain.—July. Moist and warm. Heavy gust from the N. W. on the 3d, with rain; also on the 8th, and on the 29th, when there was thunder; heavy showers and thunder also on the 25th. Calm 15th and 30th. The thermometer on the nine last days from 80 to 89 degrees at 2 P. M. August. Very hot month, and mostly clear, but considerable rain, which fell at intervals. A heavy shower on the 13th; and on the 14th an extraordinary

riety heavy rain for three hours. On both occasions there was thunder and lightning; heavy rain also on the 15th and 28th, and on the 22d, when it was accompanied with thunder. About and after the 15th, the heat was very oppressive, and the air extremely humid. The yellow fever broke out on the 20th. On the 26th and 27th it was most fatal in Pearl-street, between Beekman [now Fulton,] and Burling-slips, and on Golden-hill, and in Cliff-street, [then very narrow.] The disease was attributed by some to tainted beef and pork in pickle; by others to the sewer in Burling-slip. A remarkable number of calms, viz. on the 6th, 12th, 17th, 18th, 28th, and 31st, which, all, except the first, must have assisted very much the progress of the disease. The great heat of the last days of July continued through most of this month. From the 4th to the 14th, the thermometer at 2, P. M. ranged from 81 to 89 degrees. On the 14th and 15th it was below 80 degrees. On the following seven days from 80 to 83 degrees; on the 23d 72, on the 24th 75; on the 25th 85, on the 26th 88, and on the 27th 81. *September.* Clear on the third. The fever had abated so much that only one new case was reported, owing, perhaps to a sudden reduction of the thermometer on the 28th August, the heat between that and the 3d September ranging between 78 and 64 degrees; and on the fourth, in the middle of the day, it rose again to 80 degrees. Very distressing accounts, however, continued to arrive from Philadelphia. On the 4th, very heavy rain and thunder early in the morning, which had no effect on the progress of the fever; for on the 10th, there were twenty five deaths; on the 13th 42 died; on the 14th, 28. Early on the morning of the 19th there was a heavy rain, and next day 54 deaths. On the 21st, in the morning, a heavy rain and thunder, *which does not seem to have at all suspended this dreadful distemper*. For on the 27th, fifty deaths were reported, and on the 28th, 46! On the 28th also, there was a strong breeze from the N. W. and a gale all next night from the same point of the compass. Calm on the

24th. *October.* Clear, very warm and dry. On the 2d, a very heavy dew. Up to the 5th the deaths were about 30 a day. On that day they were 24, the next 22, the next 10. On the 9th, 14; and on the 11th, 12. This decrease was caused, perhaps, by the rains and gales in the last days of the preceding month. On the next five days, however, the deaths, amounted to 15, 22, 12, 16, 24. On the 17th, there was a very thick fog and calm; and on the 18th, a very heavy dew and fresh breeze, on which day there were 13 deaths. The next day, the 19th, a fresh gale all night, and also on the succeeding day, when there were 10 deaths; but on the 22d, the gradual approach of the cool weather of autumn, together with the gales of the 19th and 20th, began to take effect, for on that day eight deaths were reported, and but four only on the 23d; the thermometer being, on the latter day, as high as 62, 60, 56 degrees, at 8, 3, 8 hours; having been once only as low as 50 degrees in all the previous part of the month, viz. on the 13th, at 8, A. M. On the 24th, there were fresh gales all night, and nine deaths; and on the four succeeding days the deaths were 6, 10, 9, 7. On the 28th, the thermometer was 52, 54, 50 degrees; and on the next day it sank suddenly to 40, 42, 36 degrees, which produced a frost that night, the first that had occurred. On the 30th, five died, and the thermometer stood at 30, 36, 34 degrees. And on the 31st, 34, 38, 34 degrees—Calm, 2d, 10th, 16th, 23th. *November.* Though September and October had both been warm, there was snow on the first of this month, and three deaths; the mercury standing 32, 34, 34, degrees at 8, 2, 8 hours. On the 2d, 11 deaths, and the thermometer at 34, 42, 40 degrees. On the 3d, 7 deaths, and the thermometer 38, 40, 36 degrees. On the 4th, there died only four, and the thermometer stood at 36, 43, 40 degrees. The fever here terminated. If we suppose the frost to have actually occurred on the 29th, the day on which the epidemic afterwards ceased, throws some light on the period required for the development of the disease; for those who died after the frost,

* [You perceive that as early as 1799 the inhabitants
fatally deceived in former years began already to
think for themselves, & common sense pointed
out to them to fly & disperse into the pure air
of the country - in which the non-infectionists with
all their ³⁶⁴ ~~courage~~ ^{Appendix.} & false theories were not slow to follow.

in other words between the 30th of October and the 5th day of
November, must have received the contagion before the 30th.

Presuming that those who died on the 4th received the disease
on the 29th, it places the period of development precisely at
from five to six days, which agrees in a most remarkable man-
ner with the united experience of the most approved writers.
Calm on the 15th.

1799.—June. Moderate and moist as usual. Very heavy
thunder on the 18th, followed by rain in the evening. Heavy
rain and thunder on the 22d, early; and a very heavy gust at
5, P. M. on the 26th. Calm on the 11th, 12th, and 24th.—

July. Warm and exceedingly dry month. Rain twice only,
viz. very heavy gust with rain on the 13th, and a shower and
gust also on the 26th. On the third there were rumours of
yellow fever at Philadelphia. Calms frequent, viz. on the 15th,
17th, 24th, 28th, 30th. August. Moderate, clear and very

dry. The rains in this month were mostly showers, and the
weather was, for the most part, pleasant and clear. From the
5th to the 16th, the thermometer at 3, P. M. was constantly
between 80 and 85 degrees. On the 15th there were appear-
ances of yellow fever, which produced so much alarm that one
third of the inhabitants had removed before the 27th of the
month, although it was thought on that day to have totally dis-
appeared. The previous year was too recent to be forgotten,

x and it is not to be wondered at that this panic should have
seized them, when they had lately learned by so many melan-
choly lessons, the danger of procrastination. The pestilence was
only smothered, and this apparent occultation of the disease was
produced probably by the tempestuous weather, which occur-
red between the 16th and the 21st, for we find in that period
there was a constant succession of strong gales, which for those
days sank the mercury to 73, 70, 69, 67, and 66 degrees.
As late as the last days of the month, one of the most
eminent physicians of this city declared it the most healthy
August he had ever remembered, confirming what has been

[i.e. exclusive of yellow fever cases]

repeatedly remarked, that yellow fever is totally unconnected with what is termed a pestilential condition of the atmosphere. *Calm* on the 10th. *September* appears to have been a cold wet month. The yellow fever at length made its appearance, for it is now stated to have increased on the fourth, and that *ten* persons died of it daily from the first to the tenth of this month. From the 11th to the 20th there were generally from 13 to 8 and 6 deaths daily. On the 20th there was a heavy gale at night, and rain, but it produced no effect on the progress of the malady, for, from that date to the end of the month there were daily from 16 to 10, and 9 deaths: the thermometer being constantly above 50 degrees. *October*. The average heat for this month was not great. From the 1st to the 18th the deaths varied from 8 to 7, 4, 3, 2; and on the 18th only *one* died. Up to the 17th the thermometer was constantly above 50 degrees, and from that to 70 degrees, except on the 16th, at 8, P. M. when it was 49 degrees. On the 17th, it stood 36, 46, 40 degrees. On the 18th, 34, 52, 45 degrees; on which date, [probably the night previous,] there was a *frost*, and afterwards no more yellow fever. Though the mercury on the 19th rose again, and averaged 56 degrees at 3, P. M. for the remainder of the month; not sinking below 40 degrees, except at 8, A. M. on the 24th; yet no more cases occurred. About the 26th, there was a general movement of the citizens to their homes. *Calm* on the 2d. *November*. The weather, most of the month, was what in this country is called an Indian summer, being most usually characterized by a hazy atmosphere and a mild temperature, and occurring generally at this time of the year, though occasionally in winter. The thermometer ranged from 35 to 45 degrees. "The sun," says Mr. Laight, "was seldom visible, and the air extremely humid."

1801 — *June*. Clear, moderate and extremely dry. On the 16th, there were refreshing showers, lightning and thunder. Towards the close of the month very hot. No calms noticed. *July*.---The weather was hot and continued uncommonly dry

* [Voluntarily standing this low range, the favorable combination
or equilibrium of heat & humidity, had been doubtless
brought about in the atmosphere, just previous to the
appearance of the disease, by the alternations of excessive
droughts, rains &c.]

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throughout this month. There had been no rain worth speak-
ing of since the 6th of May, to the 21st of July, making a
drought of *seventy-five days*! Very heavy gust and shower on
the 3d and 16th. A fresh gale on the 11th and steady rain on
the 21st. No calms noticed. *August* Compared with July,
was a very wet month. The first eight days were exceedingly
pleasant. Rain on the 9th at night; thunder and lightning and
heavy showers on the 10th, and heavy rains on the 12th and
15th. Dr. Richard Bagley, Health Officer, died at the quarantine
of yellow fever on the 17th; showing that the seeds of the
disease had, *as usual*, reached there, though they had not yet
been transplanted into the city. *September*. This appears
again to have been generally a very dry month, *which is as un-
usual for September as for June*. It was also clear, and the hot-
test September of the whole 34 years. There was a *thunder
gust* on the 1st; and the first ten days of the month were very
humid and the heat oppressive, but the city to all appearance
remained healthy. This humidity of the air was owing, I pre-
sume, to the previous rains in August. About the 20th and 21st,
rumours were heard of yellow fever, owing to one or two sudden
deaths. Total eclipse of the moon on the 22d. *The last four
days of the month were very cool, the thermometer having sunk on
the 27th from 68 and 78 and 86 degrees, which it had been all
the month, down to 45 degrees, between which and 64 it ranged,
during the remaining days.* It was so cool that fire was agree-
able. No calms noticed. *October*. Clear and dry as usual,
and very warm for this month. The thermometer had not
been low enough in the last of September to produce a frost,
for between the 1st and 6th, a number of persons actually died
of yellow fever between the Coffee House and Fly Market Slips,
and the disease continued to prevail more or less during this
month. The thermometer from the 1st to the 8th of the month
ranged between 54 and 70 degrees. On the 8th, Dr Til-
lary reported 35 deaths of yellow fever since the 1st. This
sudden mortality was occasioned, without doubt, by the succes-

See note p.
361 above

See note p.
361 above

of October

East River

This was the mule-headed ignorant physician or
rather surgeon who persisted in manufacturing the
West India pestilence out of the dock mud at
on wharves.

x [I recollect Dr James Tillary well. He was a
Scotch gentleman & an able physician & remarkably
conversant with yell fever, upon which subject he was
abundant in his opinions. Dr Hosack my preceptor thought
a great deal of him & no one was a better judge than
Dr H of the practical ability of a physician. I

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sion of cold days in the last of September, the sick having taken
the disease before, when the heat was high. On the same day of
this report [the 8th] the thermometer fell again to 44, 56, 48,
degrees, at 8, 3, 8, hours, and continued to range as low as
between ~~that~~ and 65 degrees from the 7th to the 12th; in which
interval the mortality consequently again increased; for we find
that 23 persons who had probably taken the disease during the
first seven warm days of the month, now suddenly died, owing
to the change on the 8th. On the 13th, there was another sud-
den change, the thermometer rising to 67, 70, 65 degrees,
between which and 58 degrees it continued to range until
the 18th, with a very humid atmosphere. The five days
of cool weather previous to the 13th, had again suspended
the progress of the disease, for we now hear of no more
cases until the 24th, when 3 deaths were reported, who
had doubtless taken the disease between the 13th and
18th, when the heat was high. The thermometer from the 18th
to this date, [24th,] had sunk to 60, 50, 48, and 46 degrees, &c.
and on the 24th stood 50, 60, 54 degrees, on which day the
first ice is mentioned to have occurred, probably during a sud-
den change in that or the preceding cold nights. On the 26th,
one died and none afterwards, though the weather during the days
which immediately succeeded the Frost, were warm and excessively
dry. November. The month came in with an Indian summer,
and on the 7th there was a hard frost.

those points

1803.—June. Clear, warm, dry. Hail storm and gust on the
1st P. M. The hail stones were two inches in circumference.
Hail and rain on the 14th, with lightning, which struck a house
in Pine-street. From the 23d to the 26th very hot. July. Ge-
nerally clear, and very hot. Heavy showers and rains on the
2d, 14th, 16th, 18th, 23d, 26th, and 29th, but of short duration,
and no thunder except once, on the 18th, when it was heard at
a distance. A sickness among the cats prevailed about the 27th.
Between the 28th and 31st rumours of the yellow fever. About
this time several vessels having sick on board were ordered from

x [Here again you make the same excessive proposition
in the fatality of the disease in the first 30 or 40 cases
reported - that is nearly two thirds of the cases. S.

the *Coffee-House slip* to the quarantine ground. A Mr. Chandler, who had removed from the Coffee-House slip to Mr. Shay's, opposite, died on the 30th, after two days illness. The thermometer had been 15 times in the month between 80 and 89 degrees; and on the last three days was also above 80 degrees. On the 12th, the thermometer stood at 85 degrees at 3 P. M. and on the 13th and 14th, at 89 degrees; and, for the following six days from 87 to 81 degrees; the next two days a little below, the next three a little above 80 degrees, and the next three again a little below 80 degrees, which brings it to the 29th.

August. Dry, hot, and no thunder scarcely during the whole of the month. On the 1st, a number of persons are stated to have died of yellow fever about the Coffee-House-slip. On the 6th, the Mayor reports that 33 have been sick of a *malignant bilious fever*, of which *sixteen* had died, and nine remained sick. On the 8th the fever increased. A day or two after the Mayor issued a proclamation, recommending the inhabitants of the S. E. section of the town to remove as expeditiously as possible. On the first six days of the month the thermometer was between 80 and 87 degrees at 3 P. M. From the 8th to the 13th there were 3 and 4 deaths daily. On the 13th a violent gust and heavy shower, with some thunder at night. There were four deaths that day, but the thunder gust had no effect upon the fever for, on the 17th, the deaths increased to 9, 8, and 7, and continued so until the 26th, when they decreased, without however the intervention of any particular change of temperature or other phenomenon to cause this diminution, and too long after the thunder gust to be attributed to that. On the 15th, the Health Officer reports 44 persons sent from the city to the Marine Hospital, of which 21 had died. On the 19th, the New-York and United States Banks removed to Greenwich, and on the 24th the Merchants' Bank. Dr. Ledyard, the Health Officer, died at quarantine about the end of the month.

September. Moderate, and very dry month, and complaints of drought all over the state, and great part of the United States. The deaths increased again

* The Wallabout is a small bay on the Long Island shore opposite to the Eastern extremity of our city. It was then & is now on many a yard. There were few houses there then & Brooklyn city was a mile west of it - New Appendix. They unite. 369 There was no population for the disease to spread among.

on the 1st to 8, and continued through the month, from 15 to 12 11, 9, 7, 6, 3, &c. daily. Very dry. The Manhattan Bank moves on the 2d, and the Custom House, &c. both to Greenwich.

A gust on the 15th, and another on the 26th, both with rain, but they produced no diminution whatever in the number of deaths.

October. Warm. The thermometer was once as low as 48 degrees, and at another time at 45 degrees, between the 1st and 18th. At all the other hours it was above 50 and 60 degrees.

In this interval there were two or three rains, and the deaths, averaged daily from 18, to 7, and 6. On the 17th there was a gale all night, and on the 18th, at 6 A. M. the quicksilver was as low as 37 degrees. Very probably, therefore, a frost had occurred the night previous, for the thermometer rose again next day above 50 and 40 degrees, and continued from that to 60 and 65 degrees up to the end of the month, while the deaths, on the contrary, which were 10 on the 21st, diminished the day after to 6, 4, 3, 2, and 1 daily. The fever had received its death blow from the change of the weather on the 18th, and expired with the month, when the Health Committee adjourned. There were in all 1639 cases, and 606 deaths, during the epidemic. It is strange, that many persons had begun to move in as early as the 14th, and that as early as the 20th and 21st, the houses, almost all over the city, were opened for airing, and the inhabitants ~~of which~~ removed into them a day or two afterwards. *that* *5*

November. The last deaths of yellow fever recorded are four on the 1st of this month. The Banks moved in the next day, On the 7th the thermometer fell to 40 degrees, and on the succeeding days to 35, 35, 33, 27, 27, degrees.

1804.—June. During all the summer of this year there was scarcely any thunder. About the last of this month some persons were taken sick and died at the Wallabout of yellow fever. The thermometer on the last 12 days of the month was, at 3 P. M. not once higher than 79 degrees, being on those days at that hour 75, 67, 67, 68, 71, 72, 80, 74, 79, 75, 74, and 68 degrees, the

x [We believe this is the earliest prevalence of yellow fever in any year - The cases may have come from the Quarantine ground. But for the heat continuing so moderate, & the summer being so soon cut short by frost & snow, the disease doubtless would have spread. 370

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weather most of the time rainy, misty, or clouded, and the winds easterly. No remarkable phenomena in this month. The weather was moderate and moist. *July and August.* Moderately warm and moist. *September.* Though the heat of this month was considerable, there was black frost at Hellgate, a few miles from the city, on the 30th. The weather was generally dry and clear. *October.* As early as the 26th snow an inch deep; the thermometer being 45, 44, degrees. x

1805.—*June.* Warm, dry, and clear. *July.* The thermometer this month indicated an unusually steady range of high heat, being at 3 P. M. almost constantly between 80 and 86 degrees. The weather clear and dry. Heavy showers, with thunder, on the 6th and 23d. About the 18th, a person who is said to have had yellow fever, was removed from Maiden-lane to quarantine, where he died. Denied by Dr. Hosack and others to be yellow fever. About the last of the month intercourse was interdicted with *Providence* and *Hew-Haven*, in consequence of yellow fever having appeared in those places; and a person was removed about this time from No. 127 Water-street, sick with yellow fever, to quarantine, having previously been on board a vessel at that place. *August.* Dry, clear, and very hot. Showers with thunder on the 3d and 8th. Gust, with rain, on the 13th; and showers on the 28th and 31st. One death of malignant fever is mentioned on the 24th, and another on the 31st. About the 29th, the yellow fever appears at *Philadelphia*. Thermometer almost constantly above 80 degrees. *September.* Remarkably hot and moderately moist; and hottest September, except two, of the 34 years. The Health Committee reported on the 6th, that between that day and the 2d there had been ten cases of malignant fever, five doubtful, and four deaths! It prevailed in Front and Water-streets, between Wall-street and the Fly Market. The thermometer from the 19th to the 28th of August had been from 80 to 88 degrees at half past 2 P. M. From thence to the 5th of this month between 75 and 78 degrees, the winds chiefly southerly, and the weather

Fly market one of the most ancient, long since removed, was on the East river at the foot of the present Maiden Lane - T

dull, rainy, and cloudy. The deaths for the remainder of the month of this fever varied from 16 to 13, 11, 9, 7, 8, 2, 1, &c. daily. There were heavy showers on the 3d, and on the 26th, when there was thunder. A heavy gale on the 28th from the N. E. when the thermometer ~~sunk~~ on that day, as well as on the two succeeding days, as low as 45 and 55 degrees. *October.* Came in warm again, and the thermometer continued above 40 degrees to the 25th, when it fell to 35 degrees, and the deaths, which had been daily all the month from 14 to 7, 4, 3, &c. now suddenly ceased. On the 25th the Board of Health adjourned, announcing that the exiled inhabitants might now return. On the 28th and 29th the inhabitants returned to town.

1806.—*June.* Clear, dry, and very hot month. The average heat, for this month, was *unusually high*, and the *range very steady*, being the hottest in all the 34 years. There was one heavy gale the 21st, and a heavy shower on the 25th, but no extraordinary rains or tempestuous weather nor thunder to disturb the atmosphere, the heated condition of which ought to have produced yellow fever, if caloric alone, as some assert, has that power. The believers in domestic origin, as in previous years, anticipating that the spark might probably be kindled, as the door they knew was open and the fuel ready to receive it, put in circulation, about the 21st, rumours of yellow fever; but this visiter was now too familiar to the inhabitants to be mistaken, and the false alarm created by it soon died away. The great eclipse of $11\frac{1}{2}$ digits of the sun took place on the 16th. There had been but about two inches of rain in May. *July.* Dry, clear, and hot month. The temperature continued high through this month, and no unusual phenomena occurred. No thunder is mentioned. There were heavy showers on the 18th, 22d, and 28th. No yellow fever. *August.* The rains in this month were remarkably heavy on the 2d, 5th, 12th, 15th, 23d, and 24th. A gust on the 8th, and heavy gale on the 24th. This wet weather must have occasioned the reduction of the average temperature, for we find it

near *three* degrees less than June! *September*. Moist and moderate. One case of *malignant fever* is mentioned on the 6th. *October*. All this and the preceding month the quicksilver kept steadily at a high range, and would have greatly favoured the spread of yellow fever had it been previously introduced in June or July, the weather of which months seemed to be in a condition so peculiarly well adapted to receive the poison.

1807.—*June* and *July*. June moist and moderate. July very hot and dry. The only occurrences mentioned are two or three heavy showers in each of these months. Not a rumour of yellow fever. *August*. The rains of this month reduced the temperature three degrees below that of July, and may, like the August of 1806, have thus saved the city from the horrors of pestilence. Heavy showers on the 3d, and on the 7th, with thunder; on the 8th, with hail and thunder; also on the 29th and 31st. Heavy gale on the 13th. "If heat, moisture, and filthy streets," says Mr. Laight, "produce yellow fever, we shall certainly have it this season." The influenza reigned throughout the forepart of the month; but if the poison of yellow fever had been introduced in that interval, it would, as on other occasions, have taken the mastery of this and all other diseases. *September*. Dry, cool month. Heavy shower on the 7th, also on the 4th, with thunder. Heavy gale on the 15th. Towards the latter part of the month news received of the yellow fever at *Charleston* and *Savannah*. *November*. Snow on the 1st.

1808.—*June*. Warm, clear and dry. Heavy thunder; shower on the 7th, during which several houses were struck with lightning. *July*. What is remarkable in this month, the heat was more variable than generally observed, and rose to 92 degrees on the 2d at 3 P. M., higher than had been known since 1788, though the average heat for the month is rather less than usual. The day previous it was 91 degrees. ~~There was~~ considerable rain fell during the month, mostly in showers, as usual at this season. Heavy showers on the 2d and 26th; and

< { Malignant Fever is one of the mischievous shifts or subterfuges of the non-infectionists, to conceal their ignorance & get to maintain their adhesion under this unmeaning & un-medical phrase, to their obsolete & absurd & crude dreams about domestic origin. Like Intermittent & Shingles Fever &c equally bandied about for similar purposes by the self-sufficient

Appendix. Ignorant physicians in Southern cities, ^{they are} ~~to~~ now by the universally a heavy gale and rain all night on the 8th. The latter part of the month rainy, close, and quite cool. August, September, October. November. One or two heavy showers in August and September, and a heavy gale in September. Snow on the 15th of November. 373 Concealed specific or general character of yellow fever, consigned to their merited denunciation

1811.—June, July, and August. June was warm and dry; July, hot and dry; August, moderate and dry. Notwithstanding the thermometer was during July three times above 90, at 3 P. M. viz 92 on the 4th, 91 on the 5th, and 92 on the 6th, the average, as in 1800 and 1808, is less for this month than in some years when the highest elevation was much less. In the week ending on the 19th, there had been 17 deaths from drinking cold water. September. Warm and dry. In this month a comet appeared, and the sun on the 17th was $10\frac{1}{2}$ digits eclipsed; a very heavy gust on the 25th.

1819.—June Clear dry and hot following a wet May. July. A comet appears about the 1st of the month. Heavy gust on the 11th. A very hot dry month. August. Hot and dry. On the 1st the quicksilver rose to 91 degrees at 3 P. M.; on the 2d, to 90 degrees, and continued five or six degrees above 80 for 12 days afterwards, except on the 5th, when it was 79 degrees. In the week ending on the 7th, there were three deaths from drinking cold water. Repeated showers and rain during the remainder of the month. About the 19th, news of yellow fever at Baltimore. The thermometer 15 times above 80 degrees in this month. September. Except 1801 and 1805 the hottest September of the 34 years, and very dry. On the 5th, the Board of Health reported malignant fever at Old-Slip, and recommended the part of the city on the East River, between that slip and Coffee-House slip to be abandoned. For the first nine days of this month the thermometer was above 81 degrees, and about the 10th or 11th, Dr. Dewitt, the Health Officer, died of yellow fever at Quarantine. Owing to the vigilance of the Board of Health, in clearing the infected district of its inhabitants and

and promptly fencing it in, but few cases occurred, and these at intervals from 7 to 4 and 2, on a day. A remarkably high tide on the 21st, which filled most of the cellars near the East River and in that part of the city where the disease prevailed; but the number of cases was not diminished by this event, and continued as before. The high steady heat of the three summer months, and of September was particularly favourable to the introduction of yellow fever; but the energetic measures adopted by the Board of Health, and dry state of the air in all this period prevented the spread of the disease. *October*, Moderate. The cases continued to occur in the same manner up to the 9th, when there was a heavy gale during the night; between which and the 16th, 3 or 4 died, which were the last cases, the fever having disappeared on the 17th. The communication between the healthy and unhealthy parts of the city having been entirely intercepted, there were no subjects for the poison to act upon, in consequence of which its ~~genera-~~ ^{propagation} ~~tion~~ ceased to go on; that which remained in the vicinity of the houses where cases had occurred, having been probably blown away by the gale of the 9th. The aurora borealis was very strong on the 13th. On the 18th the Coffee House was reopened, and the Insurance Companies, merchants, brokers, &c. returned to Wall-street. On the 22d, the Mayor proclaimed the city free of pestilence. The thermometer on the 14th had sunk below 40 degrees, and stood at 35, 55, 49 degrees, at 7, 3, 10 hours, so that there was in all probability a frost that night, though not mentioned.

1820.—A wet May. *June*. Hot, dry and clear. Heavy showers on the 9th. *July*. Heavy showers on the 14th, and heavy rain during the day on the 29th; appears to have been a dry and extremely hot month. To show that the range was very steady and remarkably high, it is sufficient to mention that the heat was twenty two days of the month from 80 to 89 degrees, viz. the first thirteen days, also from the 16th to the 21st, from the 24th to the 29th, and on the 31st. This and the pre-

vious month also, was very hot and dry, but with some showers. Why was not yellow fever generated? *August*. Hot and moist. There were a very considerable number of showers in the fore part of this month, which was the cause, perhaps, why its temperature was lower than that of July. There were heavy showers on the 5th. Thunder was observed on the 10th at night, and on the 12th there was very severe thunder and lightning, with a gust and shower. On the 2d news had been received of yellow fever in *Philadelphia*. About the 17th a Mr. King, who had just arrived from that city, took sick and was sent to quarantine, where he died with black vomit.* The next day the Mayor issued a proclamation interdicting intercourse with *Philadelphia*. In the week ending on the 19th, seven deaths from *drinking cold water*, though the thermometer in the previous 7 days had been but twice above 80 degrees. They had died probably at or immediately after the termination of the previous week, for on the 12th the heat was 90 degrees, and the three preceding days above 80 degrees. There were an unusual number of calms noticed in the month, viz. on the 1st, 4th, 9th, 20th, and 21st. Thus in counting up the alleged local atmospheric sources of this disease we have a calm stagnant state of the air, a high steady range of temperature, and a moderate share of humidity immediately succeeding to two remarkably hot and dry months, and withal the disease existing next door to us, yet the combined influence of these united causes unable to set the disease in motion here. Leaving all arguments out of the question, what more direct and convincing proof could be required, that this disease is not the product of any particular condition of the atmosphere. *September*. Clear dry and warm. On the 12th, heavy rain for several hours. About the 25th news received of the yellow fever prevailing

* A fact to which I can testify myself, as I saw him at quarantine a few hours before his death, the author being at that time *Health Commissioner*.

[There never was a more perfectly developed case of black vomit - that peculiar involuntary spitting out of the liquid from the stomach every few minutes - Rushing restlessness, jactitation, muttering, moaning & heaving in the intervals, the mahogany yellow bloated face, hemorrhage from the tongue & gums, &c. - And this too to be imported & by land from Philadelphia the great school of non-infection and non-importation! Its character also denied &

x [As usual - for as they are resolved ~~there~~ in that southern portion of an country to stigmatize on climate with its production, they become uneasy & desperate if the summer threatens to go over without it. So they are determined to have it no less bolens & so throw open 376 the doors & Appendix. laugh all quarantine to scorn.]

x at New-Orleans and Savannah. Ten and a half digits of the moon eclipsed on the 21st. November. On the 12th, snow four inches deep, and a heavy gale from the N. E.

1821.—The May was, as usual, wet. June. Heavy showers on the 20th; weather moderate and generally dry. July. This was a cooler July than usual, though not wet. About the 6th, accounts of the yellow fever at Baltimore. Considerable rain on the 20th, and heavy showers on the 23d, 24th and 25th; in the last of which a woman was killed by lightning in Duane-street. August. Clear, and very hot and dry. Seven digits of the sun eclipsed on the 27th. September. Clear, dry and warm. A great gale on the 3d, from 5 to 7 P. M., which blew down several chimneys, dismasted vessels, and damaged the wharves: wind at 8, 3, 10 hours S. S. E.; and the thermometer at 75, 75, 72. November. Snow on the 19th.

1822.—The May was clear and dry. June. A dry month diminished very much the crops of hay. Heavy showers on the 20th and 24th. The mercury did not ascend to 80, at 3 P. M. but five times, viz. on the 2d, 4th, 10th, 29th, and 30th; weather warm, clear, and dry. July. Moist and hot.

The following were the winds and thermometer for the first fifteen days of July:

	Winds.			Weather.			Heat.			
	8	3	10	8	3	10	8	3	10	
	A	M	P	A	M	P	A	M	P	
1	sw	s	s	clear	cloudy	clear	74°	82°	70°	shower from 6 to 8 P. M.
2	ne	s	s	clear	clear	rain	73	80	71	heavy rain from 6 P. M.
3	s	s	ne	clear	clear	clear	73	81	75	to 1 A. M.
4	s	s	s	clear	clear	clear	75	81	75	
5	s	se	se	clear	clear	cloudy	75	82	75	
6	sw	s	s	cloudy	clear	rain	75	80	75	rain from 6 to 11 P. M.
7	w	s	s	clear	clear	cloudy	72	82	76	heavy.
8	sw	sw	sw	cloudy	clear	clear	75	84	79	muggy weather.
9	nw	n	n	clear	clear	clear	70	78	73	cool and pleasant.
10	s	s	s	clear	clear	clear	72	82	77	
11	s	s	s	clear	clear	cloudy	76	81	73	
12	s	s	sw	cloudy	show'r	clear	76	72	74	shower from 2 to 3 P. M.
13	sw	s	s	clear	rain	rain	74	72	70	heavy rain.
14	s	sw	sw	clear	clear	clear	73	81	76	
15	s	s	n	clear	cloudy	clear	74	80	73	light showers.

It is remarkable, that the range of the thermometer should have been so uniform and exact between the 2d and 9th; the very interval, we remember, in which Dr. Bayley remarks that nineteen lighter loads of boxes of sugar were discharged out of the twenty-four brought up from the quarantine to the wharves at Rector-street, between the 28th of June and 9th of July.

Joseph R

The facts contained in the preceding pages lead to the following conclusions :

1. That the appearance of yellow fever is usually preceded by, but does not essentially depend upon, a high steady range of atmospheric heat. See Table V. also Table II., years 1793 and 1820, in which the mass of heat, during the summer, was greater than in any of the years in which yellow fever prevailed, excepting two. See also Remarks on the year 1809, when the yellow fever prevailed in Brooklyn, opposite the city, and when the mass of heat for the summer months was *less than that of the whole thirty-four years*, excepting the cold summer of 1816, when the spots appeared upon the sun, and when the mass of heat for the same months was only $1^{\circ} 96$ less.

2. That the propagation of the disease, on the contrary, though it is favoured by, does not by any means require an elevated range of temperature, but when introduced may go on to spread more or less, and independently of the variations of the thermometer, provided such variations do not include the point of congelation. See Remarks on September, 1791, September, 1799, October, 1803, September and October, 1805.

3. That the propagation of the disease is notwithstanding more retarded by a reduction of temperature, than by any other atmospheric influence. See the Remarks in those years in which yellow fever prevailed, *passim*, and particularly October, 1796, September, 1798, and the month of October of the years 1798, 9, 1801, 3.

4. That a succession of heavy rains, for several days, may check, but rarely or never puts an end to yellow fever; and that their power in retarding the progress of this malady de-

* [We acknowledge the importance of having a certain humidity
also quiescence in the atmosphere, as favouring elements
especially for the rapid multiplication of the disease, as
you perceive throughout this work - but a very high &
dry temperature (unlike Otague) undoubtedly would appear
to be ³⁷⁸ most favorable in Appendix. preparing the system or in
rendering it most combustible for receiving the first germs
pend more on the reduction which they effect in the tempera-
ture of the air, than in washing away or diluting the poison sus-
pended in it. See Remarks, *passim*. introduced J

5. That, on the contrary, rainy, wet, and particularly moist
weather, preceding, and especially when following a long
drought, or associated with a high temperature, may, by fur-
nishing the atmosphere with a convenient medium to disseminate
the poison, have a pernicious tendency, and favour the propa-
gation as well as introduction of yellow fever. See Remarks,
and Table VI., August, 1795, August and September, 1798,
August, 1801, September, 1805.

6. That the introduction or propagation of yellow fever does
not depend essentially upon the quantity of electric fluid in the
atmosphere, but that the recurrence of thunder gusts or thun-
der showers may have, to a certain degree, a salutary influence
in purifying or dispersing the air in which the poison is diffused.
See Remarks on August and September, 1796, June, July, Au-
gust, and September, 1798, July and August, 1803, Summer of
1804, and Table I. *passim*.

7. That a succession of heavy gales, by ventilating infected
places, and supplying them with renovated masses of pure and
fresh air, has a more powerful influence than any other modi-
fying cause, except frost, in suspending the progress, and total-
ly dispersing or destroying the poison of yellow fever. See
Remarks, October, 1798, August, 1799.

8. That an unusually dry state of the atmosphere, especially
when accompanied by a high degree of heat, favours, more
than any other known circumstance, the introduction of yel-
low fever. See Table VI., years 1791, 1796, 1803, 1805,
1811, and 1819, where the seasons were throughout uncom-
monly dry, though differing greatly in the degree of tempera-
ture. x

9. That although certain conditions of the atmosphere seem
to be more favourable than others to the introduction and pro-
pagation of yellow fever, yet that those years in which yellow

fever appeared in this city, or in its immediate vicinity, have exhibited as great, and frequently a much greater variety and diversity of combination in their meteorological phenomena, and differed as much, and often much more, from each other, than those years in which the disease did not prevail. See Tables II. III. IV. V. VI. VII., and particularly the year 1796, as compared with the other years referred to in the preceding proposition; and also the references in proposition 6th. In Tables III. IV. V. and VI., it will be seen that the variation is generally much greater in yellow fever years, and in Table VI., that this variation in 1819 exceeds, by a great number of degrees, the aggregate variation of the same months in any year. In Table III. and IV. it will be seen that the aggregate heat for a given number of months and years in which yellow fever prevailed, sometimes exceeded, by eight degrees, the mass of heat for the same number of months and years in which this disease did not prevail. But if we include, as we ought to, and have done in this comparison, the years in which this disease prevailed in the immediate vicinity of New-York, the excess amounts to 22 degrees on the other side! *Vide* Table V.

We thus see that in whatever point of view we examine the phenomena of the atmosphere, whether in relation to its heat, its moisture, or its electricity, they are in every respect at war with, and totally irreconcilable to, the hypothesis of domestic origin.

We have not leisure, at present, to extend our work to another article, in order to see how far astrology or astronomy may be interested in this inquiry. So little, however, is known of the influence of celestial bodies, and their revolutions, upon human diseases, that until further data on this subject are brought to light, speculations which affect to account for the origin of yellow fever from such causes neither merit nor require refutation.

No. XI.

Letter of Dr. FRANCIS on the Yellow Fever of St. Augustine in 1821.

New-York, December 31st, 1822.

Dear Sir.—I send you an account, which I some time since promised, of the malignant fever which devastated St. Augustine. You may confide in its accuracy, as it rests upon the testimony of several competent and disinterested witnesses, among whom I may particularly mention Judge Andrews, Mr. Delespine, and Colonel Forbes. Colonel Forbes is the author of the work entitled “Sketches of the Floridas,” and was the chief magistrate of St. Augustine at the time the yellow fever prevailed there.

St. Augustine, prior to the late fever, had been remarkable for the salubrity of its climate and the health of its inhabitants. There is, I believe, but a solitary instance of its having at any time before the late calamity, been subjected to the ravages of a pestilential disorder. When in the possession of the British, with a garrison of four thousand men, scarcely a death was known to occur in the year among them. This was doubtless to be accounted for chiefly from the circumstance that the population of the place was composed, almost exclusively, of Spaniards and natives of the tropics, who are less susceptible to the disease; for frequent communication must necessarily have existed between Havana and this port. The diseases which ordinarily occur there are few in number, and in no respect characterized by symptoms of malignancy.

Nothing especially worthy of notice occurred in the weather or ordinary diseases of St. Augustine, in the season of 1821. About the beginning of September of that year, some cases of a disorder of an unusual character made their appearance; but shortly after they became more frequent, and excited more general alarm. The disease was at its height from the first to the

x [We differ entirely with Prof. Francis as you will see in this work, on the point of prostration. The nervous system & centres appear it is here prostrated or struck as it were with the depressing effects of the poison, but certainly the motive voluntary organs, exhibit Appendix. a retention 381 of muscular power, especially seen in those "walking cases" fifteenth of October, during which period the greatest mortality prevailed. Towards the close of December, the fever ceased.

The disorder attacked, in an especial manner, persons of a full and robust constitution; and, without a single exception, was confined to new comers from higher latitudes. The emigrants from the northern parts of the United States were those particularly who were subjected to its influence. It is stated, that not a single individual from the West Indies, or native of the country, nor any one who had previously suffered from yellow fever, became its victim. This immunity of the constitution from a second attack was manifested in several striking instances.

The fever was strongly characterized by all the prominent symptoms of the yellow fever as it has occurred in the sea ports of the northern states. It was marked with great prostration of the muscular system and disturbance of the intellectual powers: in a majority of cases it invaded suddenly, and generally terminated fatally within the third, fourth, or fifth day from the attack. Sometimes death took place on the second day; very rarely was the disease protracted to the sixth. The peculiar yellow suffusion of the surface, and injected state of the vessels of the eye, as they are exhibited in yellow fever, were often observed; and that præcordial anxiety, so uniformly noticed in the same complaint, was found to occur in a large majority of the cases of the fever of St. Augustine. In many instances the black vomit terminated the sufferings of the patient.

Forty or fifty deaths occurred among the newly arrived emigrants before the alarm became general. Eleven deaths was the greatest number that happened in any one day. This mortality took place in October.

Of the inhabitants of St. Augustine, about two hundred were exposed to the influence of the disease. Of this aggregate, one hundred and forty were attacked, of which one hundred and thirty-two died. In these deaths are included three blacks. The fever also afflicted the troops in garrison: forty deaths took

which is one of the most peculiar features of the disease
SSJ

x

- See notes above

place in a body of one hundred and twenty soldiers. The total number of deaths from this malignant fever, was consequently one hundred and seventy-two.

In the treatment of this disorder blood-letting, which was had recourse to in a few cases, upon the commencement of the pestilence, invariably proved fatal. Calomel, when it could be prescribed so as to affect the general system, and produce its peculiar action upon the mouth and gums, was serviceable : but this salutary action was very rarely brought about, the patient yielding to the poison of the disease before any evidence of mercurial excitation could be induced. Moreover, several instances were noticed, where, although the salivary glands became affected by mercury, the disorder triumphantly pursued its course. The early application of blisters to the epigastric region was a practice that was generally adopted : there was reason to believe it advantageous ; it occasionally mitigated the præcordial distress and laboured respiration of the sufferer, and no bad effects followed from the blistered surface. The oil of turpentine was internally prescribed, and it was thought with benefit, in a few cases of deep gastric irritation. The black vomiting was scarcely ever controlled : in one case of the disease charcoal was given, and the patient recovered. But it must be admitted that the best efforts of the healing art in the fever of St. Augustine proved too generally unavailing. Of four physicians who attempted to relieve the sick three died.

There is every reason to believe that the disease was introduced into St. Augustine from Havana, and the grounds of this belief rest upon the following circumstances :

The Schooner Florida, Capt. Johnson, was employed as a cartel to transport to Havana certain citizens of St. Augustine, who were desirous of leaving that place after its cession to the United States. She made a passage to Havana in the month of August ; the yellow fever prevailing at the time at that place with great mortality. The disorder was in-

roduced on board : a number of her crew beside the captain took the disease, several of whom died. Upon her return to St. Augustine a quantity of clothing was sent on shore in order to be cleaned. This labour was performed in the house of an Irish family of the name of Develin, which consisted of a woman who washed the clothing, her husband, and five children. They all took the disease, and four died. Two other persons in the same dwelling also took the fever, and died in the same house. These were the first cases of the disorder, and until this occurrence, not the least evidence of the hazardous condition of the place had come to the knowledge of the inhabitants. The schooner *Alexander*, Capt. Rogers, which had sailed in company with the *Florida*, on a similar mission, returned also at the same time. Her crew contracted the fever at Havana, and all of them, five in number, including the captain, died on the passage. She was brought into St. Augustine by two Spanish sailors who were passengers. The clothing of the *Alexander* was ordered by the city council to be destroyed, but was secretly conveyed on shore. A mattress which was thrown overboard was picked up in the river and taken to Judge Fitch's, whose residence was distant in the country. Unknowingly he slept on it. He took sick, and in rapid succession his wife and three children, all of whom had the fever in a malignant form, and ended their lives with black vomit.

These were the sources of the pestilence, whence it extended itself throughout the city.

Believe me to be your's, &c.

JOHN W. FRANCIS.

DR. TOWNSEND.

ERRATA.

- Page 19, for the words from 5 to 10 two story dwellings, &c. read *from 4 to 6 two story dwellings, generally of wood, on the south side of the street, and two only on the north side.* For the words not more than three or four houses, &c. read *not more than two or three houses, &c.* For the words being chiefly occupied by the yards, &c. read *being on the north side of the street chiefly occupied by the yard of the corner house, &c.*
- 20, for the words about 180, &c. read *80 houses.*
- 23, 3d line from the bottom, for Eliza Ann, read *Eliza Jane.*
- 27, for three or four months, read *seven weeks.*
- , for the words They all sickened July 10th, read *They all sickened July 10th and 11th.* For the words falling sick on the same day, read *falling sick within thirty-six hours of each other,* and for the words, up to the day before that on which they all sickened, read *up to the day before that on which the Reders sickened.*
- 39, for up to November 1st, read *up to November 5th.*
- 40, for 10 after the Board, read *13, &c.*
- 45, for the yellow fever had already begun, read *The yellow fever, it is stated, had already begun.*
- 53, for from 60 to 100 (note) read *from 40 to 100.*
- 97, for the effect was to show, read *the object was to show.*
- 104, for out of 10 cases, read *out of 19 cases.*
- 106, for this street, read *these streets.*
- 131, for the only persons who recovered in the house, read *the only persons who remained in the house.*
- 152, for general organs, read *genital organs.*
- 153, for out of seven thousand deaths, read *out of 43000 cases and 7000 deaths, &c.*
- 219, for after forty years, &c. read *after twenty-nine years, &c.*
- 275, for December read *November,*
- 287, for less intensity, read *most intensity.* note †

Haltin

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