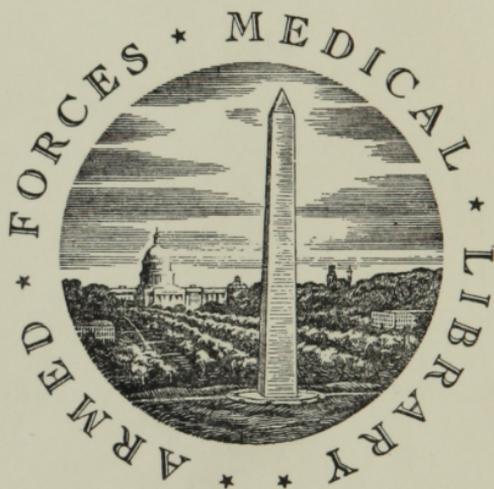


UNITED STATES OF AMERICA



FOUNDED 1836

WASHINGTON, D.C.

Original

A

TREATISE

ON

MALIGNANT FEVER;

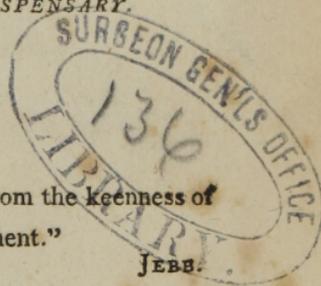
WITH AN ATTEMPT TO PROVE ITS

NON-CONTAGIOUS NATURE.

BY STUBBINS FFIRTH, S. H. S. M. P.

A NATIVE OF SALEM, NEW JERSEY,

HOUSE SURGEON OF THE PHILADELPHIA DISPENSARY.



“ The interests of truth have nothing to apprehend from the keenness of
“ investigation, and the utmost severity of human judgment.”

PHILADELPHIA:

PRINTED FOR THE AUTHOR,

BY E. GRAVES, NO. 40, N. FOURTH-STREET.

.....
1804.

THE UNIVERSITY OF CHICAGO

PHYSICS DEPARTMENT

PHYSICS 309

LECTURE NOTES

BY

ROBERT H. COHEN

AND

DAVID J. WILSON

1963

CHICAGO, ILLINOIS

UNIVERSITY OF CHICAGO PRESS

1963

PHYSICS 309

LECTURE NOTES

BY

ROBERT H. COHEN

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DAVID J. WILSON

1963

AN
INAUGURAL DISSERTATION

ON
MALIGNANT FEVER;

WITH AN ATTEMPT TO PROVE ITS

NON-CONTAGIOUS NATURE,

FROM REASON, OBSERVATION, AND EXPERIMENT:

SUBMITTED TO THE EXAMINATION OF

THE REV. JOHN ANDREWS, PROVOST PRO TEMPORE,

THE

TRUSTEES AND MEDICAL PROFESSORS

OF

THE UNIVERSITY OF PENNSYLVANIA;

AND DEFENDED BEFORE THEM ON THE

SIXTH OF JUNE, 1804,

FOR THE DEGREE OF

DOCTOR OF MEDICINE.

400075

Doctor J Stuart with the
wishes of his sincere & most
obliged friend the
Author

TO CASPAR WISTAR, M. D.

ADJUNCT PROFESSOR OF ANATOMY, SURGERY,

AND MIDWIFERY,

IN THE UNIVERSITY OF PENNSYLVANIA.

DEAR SIR,

WHETHER I behold you in the light of a medical luminary, or of my friend and patron, I think you entitled to this, the first fruits of a medical education, commenced under your care, prosecuted under your patronage, and completed by your auspices. Receive then, Sir, this dedication as a small tribute of gratitude, friendship and esteem, from your sincere, very much obliged friend, and former pupil,

S. FFIRTH.

THE UNIVERSITY OF CHICAGO

PHYSICS DEPARTMENT

CHICAGO, ILL.

LETTER FROM THE PHYSICS DEPARTMENT
TO THE FACULTY OF THE UNIVERSITY OF CHICAGO
RE: THE PROCEEDINGS OF THE FACULTY MEETING
HELD AT CHICAGO, ILL., ON THE 15TH DAY OF
MAY, 1928.

WHEREAS I behold you in the light of
a true scholar, and as such, I
trust you will understand the
importance of the work of the
department, and the need of
a more complete and up-to-date
equipment.

It is the policy of the department
to acquire the best and most
modern apparatus, and to
maintain it in the most
efficient manner possible.
To this end, it is necessary
to secure the services of
a competent and experienced
physicist, who will be
able to advise the department
as to the best method of
procuring the necessary
equipment, and to see
that the same is properly
installed and maintained.

It is the hope of the department
that you will be able to
assist in the selection of
the best possible
equipment, and that you
will be able to see that
the same is properly
installed and maintained.
Very truly yours,
[Signature]

TO THE
INHABITANTS OF PHILADELPHIA.

FELLOW CITIZENS,

YOU who have felt, who have seen, and who have trembled at the dire progress of a malignant epidemic, spreading its baneful influence, its rapid progress, and its march characterized by disorder, dismay, desolation and death; who, by your fear and forebodings, have accelerated the advances thereof, hastened its termination, and added force to its malignancy, can alone judge whether this work, which is intended to obviate those evils, be worthy of your patronage. To you I commit it; if you think it worthy thereof, (as on the basis of its own merit let it stand,) cherish it; but if not, let it immediately descend to the tomb of oblivion, which ultimately awaits all the productions of man.

With sentiments of high consideration,

I remain your fellow citizen,

S. FFIRTH.

PREFACE.

PREFACES in general are mere peace offerings to the public, in which the authors declare their motives for publishing, and their reasons for demanding or soliciting a share of the attention of a generous community : but as it is unnecessary to trouble the public with my motives, and as my reasons would not affect the usefulness or duration of this work, I shall decline giving any. I am sorry it has been out of my power to withhold this for a few years from the public, that by so doing I might render it more worthy of their attention ; but the laws of the University not permitting this, it has been ushered into the world in its present imperfect condition.

The object of the following pages will be.....first, to give a chronological history of the malignant fever ; to shew that it is an endemic of the country, and has affected the aborigines before their intercourse with the whites ; to mention also the different years in which it has been epidemic, accompanied with a history of the weather, and diseases preceding the malignant fever of 1802, and particularly the epidemic of that year : after which it was my intention to have treated in the same manner of the weather and diseases of the year 1803 ; but understanding that my learned, ingenious friend and fellow graduate, Mr. Shaw, writes upon this subject, I have not touched upon it, but left it entirely to him. I have afterwards given a description of the disease, accompanied with a method of cure, and dissections shewing the appearances after

death: proceeding to treat of the black vomit, and then give an anylisis thereof, I have attempted to prove from reason, observation, and experiment, its non-contagious nature. And here let me observe, that when I first saw the malignant fever in this city, I was a believer in the contagion and importation of it, but that subsequent facts, aided by my experiments, have perfectly convinced me, that it never was, and unless the laws of nature should change, never will be a contagious disease. It was also my intention to have shewn that yellow fever is only a different grade of the same disease, which is called pestis or plague, originating from similar causes, cured by the same means, and prevented by attention to removing its remote causes; but as my fellow graduate, Mr. Fenks, writes exclusively upon this subject, I have relinquished it to him, and shall therefore touch as slightly upon it as is compatible with the nature of this work, and which I hope the reader will excuse. I shall therefore refer him to the work already mentioned; as also to the works of Dr. Rush.

A

CHRONOLOGICAL HISTORY

OF THE

MALIGNANT FEVER OF NORTH AMERICA.

AS the subject of malignant fever is one that interests all the inhabitants of this vast continent, a just opinion of its nature, and an acquaintance with its history, is absolutely necessary to the happiness of the citizens of all large towns, but more especially those of the sea ports of this republic ; and as such a history is a *desideratum* in the literary world, I thought it would not be unappropriate in this work, nay perhaps conducive to the best interests of the community, as by it I hope to prove, that the disease existed amongst the aborigines of the country before they had intercourse with the Europeans, and of course before it was possible to have been introduced from abroad, which will establish it as an endemic of the country, not to be excluded by quarantine laws, but by attention to those domestic causes which engender it amongst us.... that by their removal it may cease to be the scourge of our cities, the terror of our neighbours, the destruction of our friends....the occasion of the loss of our commerce by shutting all foreign ports against our vessels, and of course the annihilation of our agriculture, our manufactures, and the downfall of the fair superstructure of science and of liberty.

Therefore, without farther preface, I shall endeavour, from such authorities as I have been able to procure, to give as correct a history of the different periods in which

it has appeared as in my power lies ; and if I fail in any part of my duty, the public may rest assured it has not been from want of inclination, but of time, health, and ability.

The first account I have been able to procure of an epidemic existing amongst the Indians, is in the voyage of James Cartier to Newfoundland: " By the grand bay up the river Canada, A. D. 1535." He observes, that a mortal epidemic raged amongst the Indians in that quarter, carrying off great numbers of them ; his own people were soon seized with it, and of 110 men, (the complement of his ship's crew) ten only escaped the disease, and 25 fell victims to it.

Dan. Gookin, in his Historical Collections of the Indians in New England, speaking of the Pawkunnawhuttts, who were once a populous nation in New England, says: " This nation a very great number of them were swept away by an epidemical and unwonted sickness, Ann. 1612 and 13, about seven or eight years before the English arrived in those parts to settle the colony of New Plymouth. What this disease was that so generally and mortally swept away not only these, but other Indians, their neighbours, I cannot well learn. Doubtless it was some pestilential disease. I have conversed with some old Indians, that were then youths, who say that the bodies, all over, were exceeding *yellow*, (describing it by a yellow garment they shewed me) both before they died and afterwards."

The same writer speaking of Massachusetts, says: " In Ann. 1612 and 13, these people were sorely smitten by the hand of *God* with the same disease before mentioned in the last section, which destroyed the most of them, and made room for the English people of Massachusetts colony, and the next called Pawtucket."....See the collections of the Massachusetts's Historical Society, for the year 1792, Vol. 1, p. 148.....Gookin's " Epistle Dedicatory," is dated Dec. 7, 1674.

Captain Dermer, an English adventurer, who had arrived in America in a fishing vessel a year or two before,

passed the winter of 1618-19, in Monhiggan, an Indian town on the northern coast. On the 19th of May, 1619, he sailed along the coast on his way to Virginia, landing at several places where he had been the year before. He found many Indian towns totally depopulated; in others a few natives remained alive, but not free from sickness: their disease he denominates the plague, and observes that it was attended with eruptions in some. He says he found some villages, which in his former visit were populous, deserted, the Indians "all dead." His words are, "their disease the plague; for we might perceive the sores of some that had escaped, who described the spots of such as usually die.".....See Purchas, Vol. 4, 1778.

Richard Vines and his companions, who had been sent by Ferdinando Gorges, to explore the country, wintered amongst the Indians during the pestilence, and remained untouched.

The same destructive epidemic was severely felt in Virginia. Captain Dermer relates, that when he arrived in the Chesapeak on the 8th of September, he received an account that filled him with terror and dismay. "The first news struck cold to our hearts, the sickness over the land *. Three hundred of the settlers died in 1619.

From every circumstance, I think it probable that this epidemic was the same disease which is now known to us by the name of yellow fever, attended with petechiæ viciales, &c. which sometimes degenerated into ulcers.

Purchas observes, that the emigrants to Virginia, in 1619, 20 and 21, amounted to 3570, in 42 sail of ships †. There were 600 souls in that colony before these arrived, making the whole number 4170. Of these 349 perished in the Indian massacre of 1622, which left 3321

* Dermer coasted all along the coast from Massachusetts to Virginia, and appears to have been the first Englishman that ever passed through the rapids between Long Island and the Main Land, now called Hell-Gate. He describes this passage as a cataract, and mentions the difference, in times of high water, from East and West. His work is a rare and very curious one, and will amply repay the reader for the time and trouble of perusing it, by the important facts which he details respecting the malignant fever amongst the aborigines of this country.

† President Jefferson says only 2516.

survivors. But in 1624, no more than 1800 were living. Want of a sufficient quantity of good and wholesome food might have been one cause of their decrease: This decrease was occasioned chiefly by fevers of a malignant nature, originating no doubt from local causes, combined with an unfavourable constitution of the atmosphere.

It appears by a sermon preached by the elder Bushman in 1620, just after the colony arrived, and sent to London to be published, that a malignant fever had lately raged amongst the Indians, carrying off great numbers of them. The author has these words..... " They (the Indians) were very much wasted of late by a great mortality that fell amongst them three years since, which, with their own civil dissensions and bloody wars, hath so wasted them, that I think the twentieth person is scarcely alive." This passage is to be found in his " Epistolatory Address," dated Dec. 21st, 1621.

I find another account of the same epidemic, by which it appears that the warriors from Narragansett to Penobscot, the distance to which the disease seemed to be limited, were reduced from nine thousand to a few hundreds. When our ancestors arrived in 1620, they found the bones of those that perished in many places unburied.....Magnalia, book i. p. 7.....Purchas, book 4, p. 185-8.....Prince's Chronicle, 124.

In 1622, a malignant fever occurred amongst the Indian tribes, who were settled near where Boston now stands, and carried off great numbers of them.

Sufficient proof has been adduced to convince any person, beyond the possibility of a doubt, that a malignant fever, originating from domestic causes, existed between the 41st and 44th degrees of north latitude. No intercourse existed at this time between this part of the continent and the West Indies; nor did a single vessel pass between New England and the Islands till twenty years after that time. Not one of the islands was settled, except by the Spaniards, with whom our ancestors had no commerce. Not a European was amongst them, except a French seaman, who had escaped from a wreck a year be-

fore, and Mr. Vine's men, who arrived directly from England, and they escaped the disease, none but the aborigines suffering by it, which is a strong evidence of the origin thereof in this country. In fine, between the years 1617 and 1623, it appears that the Indians suffered in various parts of this great continent from a fever of great malignancy, which carried off immense numbers of them, and which was perhaps the great cause of their diminution, and the reason why the Europeans in general found the country so thinly inhabited....But to proceed: In 1633, a malignant fever invaded the little colony of Plymouth, Massachusetts, and carried off twenty of their number; a great mortality for so small a settlement, produced by a fever occurring from domestic causes, as they had then no intercourse with foreign countries.

In 1635, Winthrop says, 1800 persons died in Virginia; no doubt from the endemic yellow fever.

The severe winter of 1641-2, was followed by a very sickly autumn on the Delaware river. So great was the mortality amongst the settlers from New-haven, who had not been long in the country, that it broke up their settlement. The Swedes settled there suffered much by the same disease.

Neale, in his History of New England, observes, that a violent and very fatal disease prevailed amongst the Indians on Martha's vineyard, in 1645, and that few escaped.

In 1647, there prevailed a malignant fever in Connecticut, occasioned, says the historian, by the excessive heat of the summer.

The influenza, in the spring, was succeeded by a fatal epidemic; but there is no certain account what the disease was. "There was a great mortality throughout New England in 1658. The season was intemperate, and the crops light."....Trumbull, p. 244. From every circumstance, I think it very probable that the disease was the same which is now denominated yellow fever.

In 1668, the summer was very hot in N. America, and malignant diseases occurred. In New-York, the epi-

demic was so fatal, that a fast was appointed in September on that account. There is no doubt but this disease was the autumnal malignant fever. Our annals relate, that in 1678, the season was very unfavourable, the fruits blasted, and malignant diseases prevailed amongst the people, which were attributed by our very pious ancestors to God's wrath having fallen on the people, for their manifold sins and transgressions.

Hence a synod was convened at Boston, prayers and fasts ordained, and inquiry made into the sins of the community, and a plan of reformation proposed.

In 1695, a mortal epidemic prevailed amongst the Indians in the eastern parts of this continent.

In the winter of 1697-8, a fatal disease raged in the town of Fairfield, in Connecticut, which was so general, that those in health were scarce sufficient to bury the dead and attend upon the sick; 70 persons were buried in three months, although the town did not contain 1000 inhabitants. In the same winter, there raged a mortal fever in Dover, New Hampshire.

In 1699, Charlestown and Philadelphia both suffered severely by it. In the last mentioned place, there died 220, 80 or 90 of whom belonged to the society of Friends, as appears by the Journal of Thomas Story, one of the public speakers of the society. At this time the number of inhabitants could not have been great, as it had only been founded 17 years i. e. in 1681.

In 1701, New York felt the baneful influence of a malignant fever, attended with the same symptoms that commonly characterize yellow fever, and there is not the least doubt but it was the same disease.

The following year (1702) the little state of Delaware was visited by the same disease, which swept off great numbers of the inhabitants.

In the year 1732, the autumnal malignant epidemic or yellow fever, prevailed at Charlestown, S. Carolina. In 1741, it raged in Philadelphia and Virginia.....See Sinclair's Scot. vol. 6, 433. And, in 1743, in New York, where 217 of the inhabitants died with it; a great number,

considering the thin population of the place. For the satisfaction of the curious, I will subjoin the Mayor's report :

New York, October 24, 1743.

BY THE MAYOR OF THE CITY.

Account of Persons buried in the city of New York.

From July 25 to Sept. 25, 1743,	From Sept. 25 to Oct. 22,
Children - - - - - 51	Children - - - - - 16
Adults - - - - - 114	Adults - - - - - 36
.....
165	52
	165

	Total - - - - - 217

And I do not find, by the best information I have of the doctors, &c. of this city, that the distemper is now over*.

JOHN CRUGER, Mayor.

In 1745, Charlestown again experienced the desolating influence of yellow fever, and in New York it was epidemic also. Albany was also visited by a malignant fever, called by Dr. Douglass, the yellow fever. An old citizen, who was living in 1797, informed Dr. Mitchell, that the bodies of some of the patients were yellow; the crisis of the disease was on the ninth day; if the patient survived that day, he had a good chance for recovery. The disease began in August, ended with frost, and carried off 45 inhabitants, mostly men of robust bodies. During this time a similar disease raged amongst the Moheggan Indians. In 1747, it prevailed in Philadelphia, and in 1748 in Charleston; in 1762, in Philadelphia. In the month of August, 1763, the Nantucket Indians were attacked with this disease; from 358 they were reduced to 136: of 238 affected, 36 only recovered. The disease commenced with great inflammatory action, and terminated with symptoms of typhus in 5 days: the cold checked it, but cases continued to occur until Feb. 1748. It appears that a high grade of bilious fever was prevalent in Philadelphia the summer and autumn after the British army left the city.

* At this time the population was about 7000 inhabitants.

A malignant fever prevailed in Charlestown in August 1792, carrying off the patient in eight days; it was very fatal.....See Courant, Aug. 6, 1792.

In 1793, it was very malignant and fatal in Philadelphia. I deem it unnecessary to take particular notice of the various places in which the autumnal yellow fever has appeared in the United States, since that memorable year: suffice it to say, that it has frequently been epidemic in various parts of the United States, particularly in the sea ports, but also in many other parts not contiguous thereto, and in some cases several hundred miles from them, where it was impossible for it to have been conveyed from the cities.

It appears that the yellow malignant fever has, from time immemorial, existed amongst the Indians settled on or near the great western lakes; and that it also affects, almost annually, the white inhabitants settled there. I am authorized to state, from information received from Dr. Pfeiffer, that a disease, similar in every respect to yellow fever, and requiring the same method of cure, was epidemic in a number of towns in the Illinois country in the year 1797, and proved very fatal. At this time the disease did not exist at New Orleans, and of course it was not possible to have been imported, if ever so contagious; that it raged with great malignancy in Cascasias, Caotia, Galliopolis, and New Design. From information derived from the settlers of that country. I am induced to believe that the disease occurs there in a greater or less degree every year, especially amongst the new settlers, who all have to undergo what is called a seasoning. It also appears from Mr. Ellicott's Journal, that the disease prevailed with great mortality in Galliopolis, in 1796. It has also appeared as an endemic in many other parts of North America, some distance from sea ports. I find, by a communication from Dr. Harris to Dr. Mitchell, that it prevailed in the autumn of 1799, in Nittany and Bald Eagle vallies, in Mifflin county, Pennsylvania, which is about 200 miles N. N. W. of Philadelphia. It appears on the Genessee lakes in New York states. It has also appear-

ed in Maryland, in Hartford county, on the banks of the Susquehannah, on the canal of Cecil county, in Charles and Dorchester counties, and in some other places. It has also appeared in several places in Jersey; as at Red Bank, Carpenter's Landing, &c. Many other places might be mentioned; but I deem it unnecessary.....The curious on this subject I refer to the New York Medical Repository.

To conclude: I believe a great number of cases occur annually in all the large cities of the United States, and in many small villages, where similar causes produce similar effects, and that the disease is by no means a new one. Cases also occur in the *winter* as well as autumn, an account of which the reader will perceive in a letter I received from Dr. Rousseau*, dated 30th of March, 1804, giving a history of a case that fell under his care.

I shall now conclude the history with giving an account of the weather and diseases preceding the epidemic of 1802, and of its rise, progress and termination.

The diseases of the winter of 1802, assumed a very inflammatory grade, requiring more depletion than was formerly necessary; they continued later in the spring, during which time, as well as in the winter, the measles were very prevalent. When they began to decline, the scarlatina made its appearance, and was the reigning epidemic

* "On the 1st of February, 1804, I was called to visit James M'Cann, living in Sixth, below German-street. From the information which I could collect he had been ill for four or five days: The symptoms existing were, first day, a great oppression at the pit of the stomach, extreme debility, loss of mental faculties, pulse full and frequent, tongue furred, vomiting by intervals, diarrhæa, flushing in the face, alternately with paleness: Second, symptoms same: Third, appears better, diarrhæa stopped: Fourth, all the other symptoms have returned with more violence; he had a cough in the night; a cathartic produced a change for the better. During the remaining part of the disease, the patient was alternately better and worse; as soon as the diarrhæa was stopped, the symptoms were aggravated, and a cathartic produced always a happy change. Not until the 18th day from my first visit, could I pronounce my patient out of danger; he continued very weak, but recovered perfectly well. The year before this I had a similar case, but rather more violent.

I think that malignant fevers occur more frequently than is generally thought in winter, but have a happier termination, than those in summer time. I have been frequently called this winter to visit patients at the latter end of their disease, where I strongly suspected, from the extreme debility then existing, and the history given by the attendants, that the disease had been of a malignant nature."

in March and April ; some cases of the measles continued to occur during these months, but were obliged to do homage to the ruling monarch. The weather, during the greatest part of this time, was very variable ; cold and warm, fair and wet, succeeded with a suddenness that surprised even those best acquainted with the climate.

May commenced with its usual mildness : During the first part thereof the weather was very serene, the thermometer varying from forty-five to fifty-six for the first seventeen days, with occasional refreshing showers of rain ; the remainder of the month was warm, towards the end thereof several heavy rains fell, the thermometer varying from fifty-six to eighty-nine ; when at the last height the heat would have been almost insupportable, if it had not been for the occurrence of gentle zephyrs. The scarlatina, which had been rife the two preceding months, still continued in the Northern Liberties, but had entirely disappeared in Southwark ; a number of pleurisies occurred, and some cases of dysentery. The observation has often been made by writers, and was found particularly true with the inhabitants of this city, that preceding an epidemic of malignancy, affections of the skin become uncommonly frequent. Such was the case now ; for cutaneous diseases occurred daily in practice, and almost every physician was astonished at the great number thereof. They yielded to the usual mode of treatment, but some were uncommonly obstinate, and required herculæan remedies. Cases of cynanche parotidia occurred throughout the city : Three cases of hydrocephalus internus occurred ; two of them yielded to early and copious bleedings, with the free use of mercury, so as to induce an affection of the mouth.....the other terminated fatally.

June was warm and sultry, attended with frequent showers, some fine weather occurred, occasionally the sun would break forth with resplendent lustre, but at the same time the heat was so intense as to render it very unpleasant to be exposed to its influence in the streets. The thermometer ranged from seventy to ninety, and the barometer from 29.4 to 29.9. Cases of the scarlatina anginosa and

cynanche parotydica were to be met with in the Northern Liberties, but were few in number, and not attended with that malignancy that marked their origin. It is a remark made by a celebrated author, and one that in this case was strictly true, that epidemics come on like a lion, but go off like a lamb. Urticaria was very troublesome in some patients, and required more active remedies than is generally necessary to effect a cure. Cutaneous eruptions were as frequent as last month. Towards the middle of the month a great number of choleras occurred, and were very prevalent from that time to the close thereof; several spasmodic cases were met with; two cases of tetanus from wounds; they were cured by producing considerable local inflammation of the injured part, dividing the nerve, and giving plentifully of the most powerful stimuli. Remittents presented themselves daily in practice, and exhibited more malignant symptoms than usual.

On the 10th of the month I was called to see a woman in Carlisle's-row, and found her with delirium; a red and inflamed eye, dilated pupil, sunk pulse, great heat of the body, but cold extremities, difficult and laborious respiration, with constant inclination to vomit, and a discharge of brown coloured fluid similar to black vomit. It is almost unnecessary to add, that in a few hours she expired, and on the third day of her disease: The body became very yellow after her decease.

July. The first nine days thereof were very warm, but cloudy, with heavy rains; at intervals the sun dispelled the clouds, and shone forth with transcendent lustre; but ere long the delightful prospect was obscured, and again the horizon was covered with clouds. During the remainder of the month the weather was very warm, and generally fair, occasionally we were blessed with refreshing showers; the south-west wind blew for sixteen days, which in some degree moderated the otherwise intense heat, as the thermometer varied from 70 to 91°, and the barometer from 29.5 to 29.8.

The Influenza appeared in several families in Arch-street, and various other parts of the city; but it did not

become general, and was milder than usual. Choleræ continued very rife, terminating sometimes in a few hours; several died in 12 hours with it. Remittents also continued very prevalent, increasing in malignancy, and lessening in duration.

Catarrhs became very common after the 4th of July; they were contracted by persons being exposed to the alternate action of heat and cold, as well as getting wet in the evening, in consequence of a heavy shower of rain that fell while they were labouring under indirect debility, induced by the superabundance of stimuli which many take on that day, which infuses new vigour and courage into the heart of every American, a friend of liberty and to his country. On the 6th of July a young man was taken ill in Fourth-street, near Vine-street. He had great pain in his forehead and eyes, which were red and inflamed, restlessness and frequent sighing, attended with a full and strong pulse, and on the second day nausea and vomiting, a burning sensation in his stomach, hot and dry skin, furred tongue, great morbid sensibility of touch. He died on the fourth day delirious, with black vomiting.

On the 7th a young man was taken ill in Vine-street, and died on the 11th, with black vomit: After death the body became of a deep yellow colour. The 8th, a second person, who also lived in Vine-street, was taken ill, and expired on the third day, with black vomit. The 9th, a boy of the name of Essex, who lived in Sixth-street, below Fitz-Water-street, was taken ill, and died on the fourth day, with black vomit, and all the usual symptoms of yellow fever. All these persons had been out on the 4th of July, had drank freely, and got wet. Some of these persons were entirely unconnected with each other; but all being exposed to the same pre-disposing, remote, and exciting causes, consequently had the same disease. It has been said by some, that these persons were all on board the St. Domingo packet; but I can assert, from good authority, that several of them were not within 260 yards of her, and had no connexion with any person who had been on board, of course they could not receive the

disease from her : so that those who believe in the contagious nature of the yellow fever, cannot derive these cases from that vessel.

On the 11th, a man of the name of Crosby, who worked in Vine-street, was taken ill, and died in 47 hours, with black vomit. On the 12th, a young man at the corner of Front and Vine-streets, was taken, and died on the fourth day, with the usual symptoms of yellow fever. From the 9th to the 16th, no new case occurred, and the citizens began to hope, that the disease had entirely ceased; but another case occurring then in South Fifth-street, convinced them that the pleasing delusion was at an end. From this time the disease increased : some days many cases occurred; on others but few : according to the state of the weather, a change was sure to increase, while steady weather checked it. One observation worthy of remark is, that it was more rife during the prevalence of south-west winds. During the latter part of this month, cases were to be met with in all the narrow and dirty alleys of the city and liberties, particularly the northern parts of the city and Moyamensing.

August was very warm : The thermometer ranged from 74° to 91° ; frequently it would be at 77 in the morning, and 90 at noon. The barometer varied from 29 to 30. South-west winds were most prevalent; they occurred for 17 days in the month. For the first seven days, we had very heavy rains, with severe thunder and lightning; the middle of the month was fair, but towards the close thereof were several very heavy rains, and much cloudy weather. The state of the disease was very variable this month. After a few days of wet weather, sudden changes of the wind, or of the temperature from heat to cold, or *vice versa*, a number of new cases would occur; but when the weather became settled again, they diminished. It is worthy of remark, that uniformity of weather checked its progress, while sudden vicissitudes were certain to accelerate it. The same remark has been made by Dr. Charles M'Clean, of Calcutta, in his excellent disser-

tation on the source of epidemic and pestilential diseases, a work which ought to be in the hands of every American physician, and which will be read with pleasure, satisfaction, and improvement, by every friend to science.

Thus the disease continued at one time to increase; at another to diminish, and alternately to elevate the minds of the citizens with the hope of its speedy termination, and then to depress them with fear. Its ravages were greatest in the Northern and Southern Liberties; but the city was by no means exempt from the influence thereof, especially Spruce, Front, Water and Dock-streets, where it prevailed with great mortality.

September, for the first sixteen days, was warm, with occasional showers, attended with thunder. The thermometer ranged from 72° to 88°, and the barometer from 29.5 to 29.8; the wind was frequently south-west. From the 16th to the 26th, we had a constant storm, very heavy rains, high winds, with great thunder and lightning. During this month the disease was various according to the weather, vicissitudes increasing, and pleasant weather diminishing it. During the storm the number of deaths were doubled, and at the beginning and termination thereof the new cases increased; but from the 3d to the 6th, they appeared stationary. Soon after the storm ceased, the number of deaths decreased, and ere long the new cases also. More cases now occurred in Southwark, while the Northern Liberties experienced an exemption in a considerable degree; but they were also to be met with in every street south of Race.

October. The thermometer ranged from 50° to 77°, and the barometer from 29 and 2-10ths, to 30 and 1-10th. The early part of the month was diversified with occasional showers, constant south-west winds, and some very pleasant and agreeable weather; the middle was pleasant, occasional showers, refreshing and gentle zephyrs, and towards the close several days of heavy rain occurred. The disease increased whenever vicissitudes of the weather occurred, particularly between the 4th and 16th. The city hospital, which had been shut in the beginning

of the month, was again opened, and a number of patients admitted, particularly during the continuance of south-west winds; the disease soon after nearly disappeared, and but few cases occurred for the last seven days of the month.

From the time I mentioned the epidemic as rife, I have noticed no other disease; for it chased away all other diseases, and reigned alone the ruling monarch, forcing all the others to retire before it, or assume its livery.

DESCRIPTION OF THE DISEASE.

THE description of this disease has been given by so many authors, that I do not think it necessary to be very minute in the symptoms, especially when they are varied so much by the pre-disposing and exciting causes, as well as by the constitution and habit of the patient. And when it is considered that it never appears in any two successive years with the same set of symptoms, nay it varies remarkably every year; for that symptom which is uniformly fatal in one season, is sometimes a sign of the crisis of the disease and approaching health in another. It frequently comes on under the delusive appearance of an intermittent, a cholera, a head-ache, or a pain in the tooth or ear; sometimes, when the patient thinks he is getting the cholic, he is soon disappointed by the rapid advances of a much more dreadful enemy; others are complaining of pains in the extremities, weariness from exercise, &c. when lo! this disease has commenced its awful career; and ere they are sensible of the mistake, it is too late to check the rapid advances towards dissolution and death. But to proceed: The disease frequently commences in the night, or early in the morn-

ing, with languor or lassitude, restlessness, loss of appetite, an unpleasant sense of taste, sometimes preceded, at others succeeded by great debility, frequently of the indirect, occasionally of the direct kind, succeeded by a slight chill or rigour, according to the greater or less violence of the attack; for, in the most malignant cases, there was none or a very trifling chill: Soon this abates, when the patient has a sense of uneasiness in his head and eyes, frequently in his stomach, sometimes nausea attends, which in some cases ushers in the disease; at other times it does not appear until the second stage thereof; at another, pains in the back or limbs are the first premonitory symptoms; but in various and many cases they are wanting. The patient's pulse, which during the first hour of attack was not stronger or fuller than natural, is now full, frequent, quick and tense, or slow, imparting a sense of tension to the fingers, which is sometimes scarcely perceptible; sometimes it is perfectly regular, but depressed. This last occurs in the most dangerous form of the disease, and requires the utmost attention of the practitioner, that he may not confound it with the weak and low pulse; but it can be distinguished by its occurring only in the beginning of the disease, and always rises after depletion. The heat of the body now becomes considerably increased; the pain in the head grows more distressing; delirium soon follows, attended with a burning sensation in the epigastric region, frequently nausea and vomiting; pains in the back and loins, eyes red and inflamed, sometimes wild and staring; great strength in the muscles; the patient refuses to remain in bed; rises and runs into the street, if allowed; after some time becomes still and quiet; then again he raves and screams. This continues for one, two, or three days; but more frequently not longer than twenty-four or thirty-six hours, when the second stage of the disease commences. Now the inflammatory symptoms have very considerably subsided; the pulse becomes nearly natural; heat of the skin lessened, but very dry; the tongue, which was before white or dry, and of a natural colour,

now becomes as dry as an inanimate substance, assumes a brown colour, is striped with yellow near the edges and tip, and frequently has two stripes in the middle, running from the origin to the end, of a smooth yellowish brown colour remarkably glazy in appearance : The patient becomes sensible, or his delirium is much diminished ; fancies himself better, but his nausea increases, and is very distressing, although the burning sensation in the epigastric region is not so great ; he frequently attempts to vomit, but discharges little, sometimes a thick, tough, and viscid mucus is ejected, which relieves him a little ; his thirst, which was before intense, is considerably diminished, but he still calls for water to dilute the viscosity of his discharge, that he may thereby be enabled to puke easier ; his countenance is changed, and less fierce ; his eyes are not so red, inflamed, and staring, but become of a dingy yellow hue interspersed with red, are less sensible of light ; his head-ache is better, and the pains in his limbs cease to be so very troublesome ; he inclines to sleep ; his respiration, which was before somewhat difficult, is more laborious ; he makes long inspirations, and frequently gives a moan as he expires.

This stage is seldom of long duration ; sometimes twelve, occasionally eighteen, but rarely longer than twenty-four or 36 hours : And alas ! now comes on the third, and ever dreaded stage, one from which very few recover, and thrice happy he that does, more fortunate far than ninety-five hundredths of those that have been in it. The pulse is failing fast, it soon becomes weak, feeble and tremulous, the thread of life is near to a termination, and ere long the heart ceases to perform its wonted actions ; the countenance becomes Hippocratic, the eyes lose their remaining portion of redness, and become of a very muddy yellow ; the rays of light cease to stimulate the iris which has lost its power of acting ; the pupil becomes dilated ; the cornea is glassy, and loses its transparency ; the muscles of the eye ball take on an involuntary motion, and the eyes are turned in various directions, with a velocity inconceivable to those who

have never beheld so awful a sight ; the patient has constant retchings to vomit, and discharges a dark coloured flakey substance, sometimes in small quantities ; at others, by pints, quarts, and even gallons are discharged. The bowels, which in the two preceding stages were generally obstinately costive, are now very open, a diarrhæa has occurred, and the evacuations *per anum*, are similar to that discharged by the mouth : The patient soon becomes insensible to all external objects, deep hollow groans are emitted, or he is perfectly senseless ; his extremities become cold, his skin shrunk, his body assumes a cadaverous smell, and his breasts, neck, face, arms, and frequently every part of his body, is of a deep yellow colour, interspersed with red and brown spots, petechiæ, vibices, &c. and ere long the functions of life cease, and nothing but an offensive mass of putrid flesh is left*.....That form, once so beautiful, becomes disgusting ; that eye, which diffused pleasure, and evinced a soul replete with virtue, alas ! is now no longer beheld ; or, if seen, is so with horror and dismay : Such, oh man, is thy lot....such are the effects of this direful disease ! So true it is, from dust we came, and unto dust we shall return.

* But it must be observed, that the disease does not always, nay it seldom goes on thus regularly. The patient sometimes passes immediately from the first to the third stage ; occasionally the first stage is absent, and in a few instances the first obvious indisposition but a few hours preceded the discharge of black vomit. As I neglected it in the description of the third stage of the disease, I must here remark, that the tongue becomes very dry, glassy, and of a dark brown colour, and on the apex yellow ; sometimes interspersed only with yellow streaks, and cracked in many places ; large fissures extending half through it, attended with a discharge of blood therefrom ; that a hæmorrhage frequently takes place from the gums, nose, corners of the eyes, stomach and bowels, as well as from the orifice at the arm from which the patient has been bled. When these symptoms occur, they are generally followed by obstruction of urine, subsultus tendinum, syngultus, &c.

METHOD OF CURE.

MALIGNANT fever, like most others, is a disease of increased excitement, varying in different persons according to the remote pre-disposing and exciting causes; for the proximate cause I hold to be the same in all, and to consist in morbid excitement, irregular and wrong action in the sanguiferous system: It is therefore evident, that the indications for cure are, in the first place, to abstract stimuli, thereby diminishing the excitement, and accumulating the excitability until the equilibrium is restored. Secondly, as in consequence of the debility which will necessarily follow from the depletion requisite to cure the disease, the excitability will be accumulated above the healthy standard; it will be necessary to give tonics and stimulants, so as to depress it to the requisite point, and thereby increase the strength of the patient.

The first indication is to be answered by abstracting the stimulus of food by fasting, of heat by cool air and cold drink, of noise by silence, of action by rest, and a recumbent posture, of blood by venæ section, cupping, &c. of acrid bile, by gentle emetics and purgatives, of fœces by cathartics and enemata. Of these, the first to be used, and the best is blood-letting: This should always be used in the first stage of the disease, and in such quantities as the state of the patient may indicate; it may be drawn with a liberal hand, not confined to ounces but to pounds; yet I must here caution the inexperienced practitioner of the healing art, to beware that this remedy is used in the proper time, for it is as fatal in the second or third stage of the disease, as it is successful in the first.

Where local pain exists, when the pulse will not authorize the drawing of blood by opening a vein, cupping has been used with manifest advantage; if the head is much affected, it should never be dispensed with. Cathartics have been used in the first stage of the disease with very

great advantage; calomel and jalap in the proportion of ten grains of each, and repeated every two hours, generally produced the desired effect. Sometimes I have used the sulphate of soda, with the addition of a little tartar emetic, with the happiest effects. Some have supposed that the antimonial tartarizata, ought not to be administered in this disease; for, say they, it will induce emesis which ought by all means to be avoided; but I beg leave to differ from them in opinion; for, in a number of cases where puking was brought on, and the contents of the stomach evacuated, a diaphoresis was induced, which entirely annihilated the disease, and left the patient in a convalescent state.

Tartite of pot-ash was used in a number of cases, and is certainly preferable as a cathartic when greatly increased excitement exists, as its action is not so stimulant as calomel and jalap, and therefore never produces griping, which is not always the case with that celebrated cathartic powder. Soda phosphorata was frequently used, and in many cases preferred to any other cathartic; for it operated certainly, yet mildly, and did not debilitate the patient, which is very desirable when verging on the second stage.

Oleum ricini, or castor oil, is a remedy which has been highly recommended. I have used it with success in several cases, but found it frequently to disagree with the patient. As in this disease there is often great nausea, it will frequently be found to increase it: Some patients cannot retain it on their stomachs; where it could be retained, it operated gently, carrying off large quantities of fœces.

Cremor tartari, mixed with water, and given to the patients, constituted an agreeable and pleasant drink; in this way it seldom failed to operate. Senna and manna are in great vogue amongst the French practitioners; but I must acknowledge, that I do not entertain that high opinion of them which some of my medical brethren do.

Enemata. These may be administered every hour or two, according to circumstances, and as there is frequent-

ly great constipation of the bowels, it has been, and it may again be requisite to use such as are pretty stimulant; for this purpose a strong infusion of tobacco has generally been preferred, and I never knew it to fail. In some instances I have used an infusion of senna and manna, or mixed two ounces of castor oil with the common injection of salt, melasses, and warm water. In several instances warm olive oil has been used by itself to the quantity of a pint; I have seen it of very great advantage, and think it cannot be too highly recommended. Aloes have been used in large quantities with the common injection; but I prefer some of the articles already mentioned, as being equally certain, and less liable to produce unnecessary irritation of the rectum. At the same time I must admit, that there may be cases in which they are to be preferred; but the experience of every practitioner will inform him when they ought to be used.

There is a remedy not yet mentioned, which ought by no means to be passed over in silence; I mean frictions with warm olive oil. This is a new remedy in practice in this country, but one that deserves a fair trial, and which promises to alleviate much of the sufferings of patients in this disease: I have used it in several instances with the most happy effects, and think it particularly adapted to the disease in its forming state, or in the latter part of the first and commencement of the second stage. I do not think it will supercede the necessity of the use of the lancet, but believe it to be one of the best auxiliaries thereto; for, if the oil be rubbed, when warm, all over the body of the patient, and he be then wrapped in warm blankets, a most copious sweat will ensue, his pulse will be reduced in force and frequency, and the heat of the body lessened several degrees, as I have proved by actual experiments. I do not suppose that this remedy will ever come into general practice in this disease, although it is used with so much advantage in the plague of Egypt, which I hold to be only a higher grade of the same disease, originating from similar causes, and requiring similar modes of cure; for it will shock the delicacy of some,

disgust by the trouble attending it in others, or perhaps offend by being the discovery of a youth. But time will convince, experience will dictate, while reason and judgment will co-operate in proving its efficacy.

Mercury has been celebrated for the wonderful cures it has performed in malignant fevers. I must acknowledge that I have not that high opinion of it which some entertain, but believe it to be possessed of considerable powers. For a full account of it, I refer the reader to the excellent inaugural dissertation of my worthy friend, Dr. James Stuart, published in the University of Pennsylvania in 1798, who claims the honour of having first used it in very large doses in this disease in Philadelphia; to the publications of Dr. Rush and Dr. Chisholm; to their accounts I can only add that in Hayti some of the physicians of the army of Le Clerc have been in the habit of sprinkling calomel over the blisters at each dressing, and covering them with an ointment, having a considerable quantity of calomel in it. They assert that it has been found particularly beneficial when used in this manner, but I have never tried it.

The warm bath was used with great advantage in the second stage of the disease; the patients testified the highest satisfaction on being put into it, and an alleviation of all their symptoms took place. But I have never seen much benefit accrue from the use of it, when used in the early part of the first, or in the third stage, as in the first it is too powerful a stimulant, and in the third a too feeble one.

Blisters were serviceable in the second stage in removing nausea and vomiting; an epispastic applied to the epigastric region, frequently checked a most obstinate emesis after the failure of most other remedies; they were frequently applied to the extremities with the effect of removing local pains, which were often very troublesome. Where great pain of the head existed, a blister to the back of the neck seldom failed of affording relief, if in the second stage of the disease. It removed coma very effectually when applied to the scalp. I may conclude by

observing, that they are indispensably requisite in the treatment of the disease at this period, and no physician can expect success without the aid thereof, inasmuch as they create a weak place on a part not vital, and concentrate action therein, whereby they relieve the system from the more dangerous forms of morbid excitement.

Synapisms have sometimes been used; and as being more powerful, they promise to be of service in some cases where blisters are not incitant enough. But I cannot say that I have ever found them of so much advantage, as I had expected a priori; perhaps it was owing to their being used too late in the disease. I think they ought to be tried, where blisters do not appear to answer.

In the island of Hayti the physicians of the French army have used a mode of applying blisters as synapisms, i. e. applying a blister on a part of the body, and suffering it to remain until considerable inflammation, but before vessication be produced; they then change it, suffer it to remain on another part until the same effect ensue, when it should be again removed in this manner; a new action is thus produced over all the superficies of the extremities, nay of almost the whole body, which transcending the diseased excitement cures the patient. This is a new mode; one that has never been used in this country, (so far as my information extends, and one that promises to be of great utility, if we can depend on the reports of those gentlemen who have used it in the army of Le Clerc.

In the first number of a work, entitled, "Journal des Officiers de Sante de Saint Domingue," I find a new method of treating this disease, by rubbing the body all over with fresh lime or lemon juice, thereby removing the disease and curing the patient. Dr. Victor Bally, when speaking on this subject, relates the case of citizen Jomarron, an officer of health, aged 25, and who had the disease in its most aggravated form, he was rubbed all over with lime juice, which occasioned a severe and general rigour, succeeded by a retention of urine, causing insufferable pain: Sweat was induced by means of very warm lemonade, and after four hours torment, sleep su-

pervened; soon after which all the symptoms vanished, the disease subsided, and the day after he was as well as before the attack thereof. The *Eupatorium perfoliatum* of Linnæus, called bone set, and thoroughwort by the country people, has been used with advantage; it proves emetic, cathartic, and sudorific; it is commonly given in decoction, rarely in substance.

The tonics most commonly used are bark, colombo, gentian, centaury, chamomile, &c. and the liberal use of the mineral acids. These remedies were very necessary to answer the second indication; indeed it was absolutely necessary to exhibit them in large quantities to the patients when convalescent, or they would have sunk with mere debility. In general I have found cold chamomile tea, or an infusion of colombo acidulated with elixir vi-triol to answer best, although I have sometimes seen the patients prefer a tea made of the serpentaria; but it will be requisite for a physician to exercise his own judgment in these cases. Sometimes more powerful incitants were requisite, in which case tincture of cantharides, alkohol, brandy, ammoniac, &c. have been used.

DISSECTIONS.

IN all diseases it is an object of primary importance to discover the cause and effects; the former is sometimes, the latter always to be ascertained by the examination of bodies; and as the effects vary according to the greater or less violence of the disease, it is absolutely necessary to investigate the subject with boldness: Examining one, two, or twenty, will not do, but as many as circumstances will possibly admit of in different epidemics and in various periods of time during the same epidemic. This I have had an opportunity of doing

from my situation at the city hospital in the year 1802, and in the city in the same epidemic and in the succeeding one. At first it was my determination to lay before the public an account of the cases, and the appearances I discovered in each after death; but upon examining my statement, I discovered so great a similarity in each, (only varying as to degree) that I determined to give only a statement of those appearances, thereby avoiding repetition, which would have been unavoidable had I presented each particular case: I shall therefore begin by observing, that the BRAIN was generally found in a diseased state, the meninges being considerably inflamed, the dura mater being sometimes agglutinated to the pia mater, in consequence of the increased action of the arteries thereof, the blood vessels were turgid with blood, appearing as though they had been injected, the substance of the brain was harder and firmer than usual, the ventricles frequently contained water, sometimes to the amount of several ounces; in some cases the rupture of a small vessel had taken place, and an effusion of blood was found between the pia and dura mater.

The lungs in general were found of a darker colour than natural, much gorged with blood, which would not coagulate, adhesions to the pleura were common and evident marks of preceding inflammation.

The pericadium was occasionally found inflamed, sometimes containing several ounces of water, and in some instances covered completely by an inflammatory exudation of the thickness of several lines.

The heart was found evidently to have experienced its share of morbid excitement. In the right auricle, the coagulable lymph has been found separated from the other parts of the blood, in a clot by itself, and of a yellowish colour; the ventricle of the same side I generally found full of dark grumous blood, seldom in a state of coagulation. In the left auricle I have sometimes found the blood coagulated, when fluid in the other parts of the heart. The left ventricle I have found filled with dark grumous blood, not coagulable, but in a number of cases

it was entirely empty. The substance of the heart has been found inflamed, the coronary vessels uncommonly turgid, and the whole exterior surface covered by an inflammatory exudation. The columna carnea I have seen more tender and easily torn than usual, and in fine appearing as though they had been uncommonly stimulated, thereby losing all the affinity of cohesion, as occurs in persons killed by lightning.

The state of the aorta and large arterial vessels were found different from that in most other diseases, being filled with black fluid and grumous blood, whereas in general they are found empty.

The stomach was *always* found diseased; great inflammation being observable throughout, and erosions of the villous coat frequent, nay in a number of cases whole portions thereof, of the size of a dollar, were detached and found floating in the black vomit. The blood vessels were in general very much distended, and in one case their smaller extremities filled with a fluid similar to the black vomit in appearance, taste and smell.

This inflammation was frequently continued to the small intestines, the duodenum was the most affected, but the jejunum and ilium also suffered a part, nay the large intestines by no means escaped free; for I have often found them very considerably inflamed; in many instances discoloured spots were observable on various parts of the alimentary canal, sometimes sphacelus had extended for several inches on them; the spleen and pancreas were generally found in a healthy state; the kidneys were also in general found sound, but the bladder was in a number of cases inflamed, and in some so contracted, that the cavity would not hold four ounces.

The liver was generally, I might say almost always, found in a healthy and natural state; for I do not find amongst my papers on the subject, an account of its having been diseased but in *three* patients that I examined, and in *two* of them it had been of a chronic nature; in the other the inflammation was recent. The gall bladder was always found in a healthy state, containing its usual

quantity of bile and of a natural colour. I have preserved specimens of black vomit and bile taken from the same patient, showing the difference, which is obvious from first sight. From every circumstance I feel myself authorised to, and I do positively assert, that black vomit is *not* an altered secretion of the liver, is *not* changed bile, and does *not* come from the liver, whatever others may assert to the contrary, and this I would prove by the following circumstances.

First : It is never found in the gall bladder, the hepatic, the cystic, or the ductus colidochus communis.

Secondly : The bile is found natural in the gall bladder, when the stomach is distended with black vomit.

Thirdly : I have found the stomach distended with black vomit, when the pylorus valve completely obstructed all passage from the duodenum to the stomach, or *vice versa*, at the same time the liver was perfectly free from disease, and the bile in the gall bladder natural in colour, taste, and consistence.

Fourthly : I have seen the arteries of the stomach distended with a fluid similar to black vomit, and not to be distinguished from it by any means whatever; a portion of the villous coat of the stomach separated from its adhesion to the others, and the space filled with black vomit poured forth by the termination of the small arteries.

Fifthly : Very acrid and violent poisons, producing great inflammatory action in the vessels of the stomach, have induced them to take on the same action that occurs in yellow or malignant fever, and to secrete black vomit while the liver remained in a sound and healthy state.

Sixthly : In the most violent cases of hepatitis, we never see black vomit; the patient is never affected in the same manner as when the arteries of the stomach have taken on the action necessary to enable them to secrete and pour out this fluid.

Seventhly : In yellow fever the stomach is always the liver scarcely ever found in a diseased state.

From every circumstance, therefore, I am led, nay I am forced to believe, that the black vomit is a morbid se-

cretion from the arteries of the stomach, in consequence of great inflammation; that it is not confined exclusively to yellow fever, but occurs from other causes, as swallowing large doses of arsenic, opium, or any other very powerful incitant in such quantities as to produce this necessary degree of action: From which I do believe, I have long believed, and shall continue to believe, that a disease nearly similar, if *not the same*, is induced by other causes than those generally inducing the autumnal epidemic of this city. For where I discover symptoms in two persons alike, in every particular, requiring the same treatment, and yielding to the same remedies, I am led to believe with the celebrated Dr. Cullen, that disorders which are cured altogether by the same means, are of the same nature. But whither do I wander from my subject. To proceed, I must observe, that those persons who have asserted, that the black vomit was an altered secretion from the liver, were most grossly mistaken. I will almost venture to affirm they never made a dissection; sure I am they never could have been of this opinion, had they examined the bodies of any that died of the epidemic in this city during the two last epidemics, nay during any that have occurred here since the memory of man. They must have been closet speculators, have reasoned plausibly, and made conclusions from facts existing only in their own heated imaginations or the exuberance of some futile analogies; perceived only by themselves, and unable to be discovered by the enterprising sons of science, or the close investigators of facts. But some allowance must be made; they believed in the contagious nature of the disease, and were almost deprived of the use of their intellectual faculties by the sight of a person ill with malignant fever, and their errors, like the bodies of those that fall in forcing an intrenchment, will constitute a bridge for those that come after to walk safely over upon. Alas! the nature of man is such, that he cannot perceive *truth* until he has followed error through all the mazy labyrinths of her course; he tries every wrong method ere he disco-

vers the right, and we seldom acquire a new truth except at the expence of an old error.

DESCRIPTION OF THE BLACK VOMIT.

THE black matter, commonly called vomit by the Americans, is known to the Spaniards by the name of vomito prieto, and they have given us several descriptions of it, accompanied by their opinions of its nature, &c. But in general, their ideas thereof are so confused, that little information can be derived from an attentive perusal of them; for unhappily the sun of science has not dispelled the clouds of darkness with which their horizon is obscured, neither have his rays chased away the ignorance and prejudice in which they are involved: The one is prevented by the chicanery of the monks; the other by the laws of the sovereign. It is therefore not by the recondite study of the ancients, or the attentive perusal of the moderns, that we are to acquire a perfect acquaintance with black vomit, but from the chamber of disease, from the bed-side of those languishing under one of the most dreadful calamities that ever befel the human race; where death is making his advances, and where the scythe of time is gathering in a plentiful harvest; where nothing is heard but the mournful tolling of the bell, the noise of the dead cart, and the cry of "bring out your dead;" or occasionally the distressing exclamations of relatives, and the awful moans of the delirious and the dying. To continue, I must observe, that when that awful period arrives that ushers in this direful symptom, the countenance of the patient assumes an aspect that sets at defiance all the powers of description; which would baffle

the pencil of Raphael or Hogarth, and mock the efforts of a Shakespear to delineate; how much more those of my feeble powers. I shall therefore not attempt it, but content myself with observing, that he who has once beheld such a sight can never forget it; the impression on his mind will be like that made on brass or adamant; the mellowing accession of time and the advances of decay can alone obliterate it; for while reason asserts her empire, or the faculties retain their wonted uses, it will be indelible. But to proceed: The black vomit is ejected in the third or last stages of malignant fevers; it comes from the stomach, and a portion is frequently passed *per anum*.

When ejected in small quantities, it is of a dark brown colour, resembling very strong coffee with a portion of the grounds shook up in it; but when evacuated largely, it is of a colour more approaching to black, with dark coloured substances floating in it; upon standing to rest for some time, the flakey particles subside to the bottom, accompanied occasionally by portions of the villous coat of the stomach, which can be distinguished from their being larger, of a firmer texture, having more the appearance of membranes, and requiring a longer time before they descend to join their copartners. The supernatent liquor is thin, of a yellowish brown colour, slightly saline, but sometimes acid to the taste, and having a peculiar odour; the black flocci readily incorporate with the fluid by gentle agitation, after which it requires a much longer time to separate again; if suffered to continue in this situation for several months, a fermentation ensues, sometimes of the putrefactive, occasionally of the vinous nature, and after this it will not freeze, if exposed to the temperature of twenty-one degrees of Fahrenheit. If black vomit be strained through a rag, and the fluid thus obtained be put in a bottle or vial, leaving about one-third part of it empty, this being corked and sealed, if set by for one or two years, will assume a pale red colour, and taste as though it contained a portion of alkahol; there will arise a scum, or part of the vomit to

the surface of the liquid in contact with the atmospheric air of the vial, which hardening will acquire a white colour; but if all air is excluded from the vial, this will not occur, but a deposition will take place on the bottom of the vial of a very dark brown colour and the remaining fluid will be of a pale or dirty brown colour.

There are two other discharges from the stomach, which have been called black vomit, but which are essentially different as they occur in an earlier stage of the disease, and persons have frequently recovered who have had them. The first is a thick and tough phlegm or mucus, which is discharged with great difficulty and straining, always in small quantities, (and never in such quantities as the black vomit is;) it is frequently mixed with a portion of blood, which gives it a dark colour; it can be distinguished by its consistence, by the patient not sinking so rapidly as when the discharge is the true black vomit, by not being attended with so much of the Hippocratic countenance nor such distressing nausea; from conveying a sense of viscosity upon rubbing it between the fingers.

The other is blood which has been effused in the stomach and duodenum, by the rupture of some vessel, and lying there has acquired a degree of putrescency, and assumed a very black colour: It may be distinguished by attending particularly to the state of the patient, his pulse, eyes and countenance. If the discharge is large, his pulse will sink, his countenance become pale, contracted and disagreeable; he will have some nausea, but not near so distressing as when the discharge is the black vomit; and he will gradually sink without complaining of that distressing, burning sensation in his stomach, that precedes the other; no flocci will be discovered in the discharge upon standing: if filtered the serum will coagulate upon being exposed to a moderate degree of heat, which is not the case with the yellow coloured fluid obtained by filtering black vomit.

ANALYSIS OF THE BLACK VOMIT.

THIS I deemed an important point, and almost a desideratum in the history of the effects, &c. of so dreadful a disease as the malignant fever. It is true that some attempts towards an analysis thereof were made by Dr. Cathrall who deserves great credit for his ingenious memoir on this subject; but still much remains to be done, more discoveries are reserved to add laurels to the brow of some son of *Æsculapius* in the western hemisphere.

 EXPERIMENTS.

TWO ounces of black vomit being filtered, there remained on the filtre two drachms and seven grains, of a dark coloured substance, very much resembling *Theriaca Andromachi*, both in colour and consistence, having slightly the odour of sulphurated hydrogen gas. Upon the application of heat it became dry, very friable, and lost somewhat of its original colour.

By evaporating the black vomit in a moderate heat, a flakey substance was obtained of a brown colour, rather brittle and shining; on exposing it to a moist atmosphere, it acquired the consistence of that obtained by the filtre, upon placing a portion thereof between two plates of copper, and exposing them to a red heat, a powder resembling *rubigo ferri* was produced: upon adding half an ounce of alkahol to forty five-grains of the flakey extract of black vomit, and agitating it, a brown colour was produced: after being set by to rest for some time, and again inspected, it was found that the black matter was nearly all subsided in flocci to the bottom of the vessel, and left

the supernatent alkahol. Muriatic acid was now added, when it again became turbid, in a short time it resumed its pristine appearance, on adding water it became turbid, and there was a disengagement of caloric from the acid previously added; the original transparency was soon regained by the subsidence of the colouring matter, and some small coagula appeared. The nitric acid was added to some of the black flakey substance; it dissolved it, giving out nitrous gas and caloric. Upon rest, the colouring matter rose, and floated on the top of the acid, which regained its primitive appearance.

To a scruple of this flakey substance, I added half an ounce of sulphuric acid; it was dissolved, forming a brown solution, which after standing two days separated, and fell to the bottom in a very fine precipitate of a dark colour, the acid resuming its former aspect; on adding a small quantity of water, it again became turbid, and caloric was disengaged; on rest, a separation of the colouring matter took place, which was precipitated in fine flocci.

When the acetic acid was poured on the black vomit, small coagula appeared of a dark colour.

Upon triturating a portion with caustic alkali, it became of a brown colour; after rest, it was precipitated similar to what took place in the experiment with sulphuric acid.

To three drachms of the flakey substance, a quantity of pulverized carbon was added, and after being triturated together, placed in an earthen retort. Upon the application of heat, a quantity of carbonated hydrogen gas was disengaged.

Three ounces of black vomit were put in a glass retort, and a receiver adapted. Upon the application of heat, there came over about twenty drachms of a colourless fluid, having the odour of sulphurated hydrogen gas; the residue in the retort was the black flakey substance, similar in colour to that left on the filtre after filtration; it was slightly empyreumatic, and had somewhat of the same odour of the liquid. When alkahol was added to

the colourless liquid, it destroyed the odour in a few minutes, but no coagulation took place.

To a small quantity of volatile alkali, a few drops of this colourless fluid were added, when a slight effervescence took place. The same was repeated with the vegetable and mineral alkalies, but without producing the same effect. Syrup of violets was not changed by it.

Two ounces of the flakey substance obtained by filtering a large quantity of black vomit were placed in a deep earthen dish, and four ounces of sulphuric acid added, heat was applied for some time, and the acid made to boil: after which it was set aside to cool; when cold, the black matter subsided to the bottom of the vessel, and an insoluble neutral salt also with it; the acid being decanted was placed in a shallow dish and evaporated; chrystals of sulphate of soda were produced. The fluid that remained after the chrystalization of glaubers salt being poured into another vessel, a solution of mercury in the nitric acid was added, a copious white precipitation took place, which proved the existence of the muriatic acid; in this case the muriatic acid united to the mercury, and formed muriate of mercury, while the nitric acid was disengaged.

Oxalic acid was added to the remaining portion of the black matter; it decomposed the sulphate of lime, forming oxalate of lime. The sulphuric acid being separated, to the remainder, after being cleared of the oxalate of lime, alkali and sulphuric acid and alkahol was added, and suffered to remain for some time, when being poured off, and water added, a quantity of resin amounting to ten grains was precipitated.

Upon adding alkahol to the colourless fluid, and letting it stand for some time, the odour was destroyed, but no coagulation took place; had it been serum, this would undoubtedly have happened.

To a small quantity of volatile alkali, a few drops of the colourless fluid were added, when a slight effervescence took place; the same was repeated with the vegetable and mineral alkalies, but without producing the same effect.

A portion of the yellow coloured fluid was evaporated over a gentle heat, until a considerable part of it had disappeared. When it was set aside to chrySTALLIZE, chrySTALS of muriate of soda and phosphate of soda were formed, as I ascertained by taste, form of the chrySTALS, &c. and which was completely proven by the following experiment.

A large quantity of black vomit being filtered, I thereby obtained several pounds of the yellow coloured fluid, which was evaporated to about one-tenth of the original quantity, when muriate of lead was added with some muriate of ammoniac and charcoal, which being well mixed together, were dried in an iron pot until reduced to a black powder, when it was deprived of its volatile alkali and muriate of ammoniac by distillation; the residue was then put into a strong earthen retort, to which a receiver was connected; an intense heat being applied, phosphorus came over in drops. In this case the muriate of lead was employed to decompose the phosphate of soda, which is not decomposeable by charcoal, and to form the phosphate of lead, which affords the phosphorus.

Upon filtering two pounds of black vomit, I obtained four ounces two drachms, and fifty-two grains of a dark coloured extract, and one pound eleven ounces four and a half drachms of a yellow coloured fluid. To some of this fluid acetate of lead was added, a white precipitation immediately took place; this being washed, muriatic acid was added, which decomposed it, a very white powder remaining at the bottom and a fluid above. A solution of silver in the nitric acid was added to another portion of the yellow coloured fluid, a precipitation took place; a solution of mercury in the nitric acid being added to a third portion, the same effect was produced.

The black vomit then consists of,

1. The phosphoric, and frequently the
2. Muriatic acids....lime, soda, resin; water composed of hydrogen and oxygen; azote, a colouring matter or unctuous animal substance; sulphurated hydrogen gas, probably a saccharine substance, the phosphoric acid

combined with soda and lime, forming phosphate of soda and of lime.

AN ATTEMPT TO PROVE THE
NON-CONTAGIOUS NATURE OF MALIGNANT FEVER.

It may be asked what advantage will accrue from proving the malignant fever not to be contagious? I answer, if it be established that the disease is not kept up, and supported by specific contagion, but only arising from local causes, and always requiring, first, a pre-disposition to be acted upon in the person; and secondly, the aid of an exciting cause, it will take away that fear of it, possessed by the public, which operating on their minds produces debility, the only pre-disposing cause, and then an imagined exposure to contagion producing a fright, acts as an exciting cause, by which means hundreds have taken the disease and died, who would otherwise be now living and useful members of society. This, I conceive, a most important matter, and am well convinced that the mortality would be lessened one half by a correct idea of the little danger arising from attending patients in this disease; for, in the present state of public opinion, as soon as persons are taken with the fever, they are deserted by their dearest friends and relatives; the wife shuns the chamber of her husband, the husband of his wife, children of their parents, and parents of their children; they are consigned to the care of a mercenary, unfeeling black, and perhaps drunken nurse; their medicines are not given as directed; they are allowed to suffer for want of drink. On looking around their rooms, they see nothing that gives pleasure to the eye, or exhilarates the mind; in one corner they perceive a nurse asleep, or gazing out of a window; finding themselves neglected, shunned by all, and the objects of fear, despondency takes place, and life ebbs apace: When no doubt were they attended to; were they to behold the in-

terest which an affectionate relative takes in their recovery; had they the soft and endearing services of a beloved object; were they induced to believe that all are anxious to serve them and render their situation agreeable; in fact that their lives are of consequence to their friends and their country; inspired with hope, cherished with assiduity, and comforted by the presence of an endearing family, their minds would become serene and tranquil; that re-acting upon the body would assist in the recovery of the patient, and sound health be more generally the consequence.

Another important advantage will be a revision and alteration of the quarantine laws, which now unnecessarily impede commerce, destroy exertion, injure agriculture, and put the manufacturer to many inconveniences. By proving the disease *not contagious*, but the effect of local causes which can be removed, turning the attention of the citizens thereto, inspiring confidence, and annihilating error, our cities will be enabled to regain their former characters for health and salubrity: No longer will our vessels be denied admittance into foreign ports; when foreigners are convinced that it cannot be conveyed in that manner, and is annihilated by attention to cleanliness, destroying all sources of filth and stagnant ponds, draining meadows, extending cultivation, promoting all personal cleanliness, and frequently washing the streets and houses (not forgetting the roofs) with clean and good water, aided by free ventilation.

In entering upon this subject, it will be necessary to avoid as much as possible, the arguments and observations of other authors, and only to treat of the most forcible objections to the doctrine of contagion. For more information than I have had time or opportunity to give, I must refer the reader to the several excellent publications of the illustrious Dr. B. Rush, where he will find the subject treated in a very ample manner, and the inflammatory constitution of the atmosphere proved, and the various publications in the New York Medical Repository. To avoid misconception in the terms I shall use,

and the arguments advanced, I have judged it most expedient to begin with giving a definition of the six following questions, which it is absolutely necessary perfectly to comprehend before the great question can be decided. Before I proceed farther, I shall therefore ask

What is contagion ?

What is infection ?

What is a contagious disease ?

What is an infectious disease ?

What is an epidemic ?

What an endemic ?

These are the questions to be answered before we proceed to treat of contagion or non-contagion ; of infection, or diseases that are contagious or infectious : For, unhappily for mankind, we use language to convey our ideas, but clothe them with such words as are unintelligible, or not properly defined. How many have been of the same opinion, yet inveterate enemies, because they understood not the language or signification of the words they used ? So has it been upon the subject now before me ; therefore, to avoid misunderstanding, I will define what I understand by each of those terms, and then determine which the malignant fever has the greatest analogy to, or answers the best description of : By so doing no mistake can occur ; I shall be clearly understood, and have the happiness of comparison to guide my reason and inquiries.

I understand by contagion a product of morbid animal secretion, engendered by the vitiated energies of living vascular action, as vaccina, measles, lues venerea, &c. Or “ contagion I conceive to be a specific matter generated in a person *affected with disease*, and capable of communicating *that particular disease with or without contact to another.*”

By infection I understand an emanation from the bodies of persons either sick or well, when confined in a close room where there is not a free circulation of air, when surrounded by filth and retained perspiration, and which can only be propagated through the medium of a vitiated

atmosphere, as in jails, crowded hospitals, prison ships, &c. and occurs in typhus, dysentery, hospital and jail fevers.

By a contagious disease I understand one that is capable of spreading from the sick to the well with or without contact, in all *seasons, climates, and situations*, and is not influenced by the state of the atmosphere, whether pure or impure, that requires not the aid of an exciting cause, one that rages alike in London and Constantinople, in Egypt and in America; one that is the same when exposed to the vehement influence of the tropics as in the frozen regions of the North.

An infectious disease is one that is produced under certain circumstances of retained secretions and excretions of filth, by stagnant air in small rooms, by clothes worn until the perspiration which they absorb acts and becomes a fomes, or when packed close, damp, &c. they putrify and emit effluvia, which will only act through the medium of a vitiated atmosphere, and always requires the co-operation of an exciting cause, a disease that will excite one in a person thus exposed who is pre-disposed by debility, although it is not necessary that the miasma, fomes, or whatever it may be that is received, should produce a disease similar to that affecting a person from whom the emanation came. Thus a person receiving fomes under these circumstances from a dysenteric patient, may have cholera, typhus, &c. Now this can never take place in diseases that are contagious. Who ever contracted small pox from a patient labouring under the measles only? Or who has received the lues venerea from a patient that only had the vaccina?

An epidemic is a disease that prevails over a portion of land, seizing great numbers, and spreading rapidly far and wide through the medium of the atmosphere, &c. &c. and is confined to no one country, as influenza, small pox, measles and dysentery, and may be either infectious or contagious.

An endemic disease is one that arises in a country from local causes, and becomes prevalent throughout a certain

part thereof, as malignant autumnal fever in Philadelphia, the western lakes, &c. plague in Constantinople and Basorah, and spotted fevers at Bagdat.

Now under which description does the malignant fever come? Not that of a contagious disease, for it does not propagate itself by a specific matter, as is proved from innumerable facts. For if it were a contagious disease, it would necessarily be communicated from the sick to every one who came within a certain distance; whereas it is well known to every person the least conversant with the subject, that a very small proportion of those who come within what may be supposed the requisite distance, or even in contact with the sick, are seized with this disease; for the nurses and physicians of the various hospitals of New York, Philadelphia, Baltimore and Norfolk, have never taken the disease, or at least very rarely. And who are more exposed than nurses and physicians? I have several times slept all night on a bed where a patient lay extremely ill with the disease, attended with black vomit, yet never experienced any ill effects; and I make it a constant practice to receive the breath of my patients in my face, that I may ascertain its purity, &c. yet with perfect impunity.

Doctor Rousseau informed me, that he attended a woman of the name of Snyder in, Callowhill-street, with the malignant fever, whose husband slept with her every night until she died, without experiencing the least inconvenience. Of several thousand nurses employed in taking care of the sick in this city during the prevalence of an epidemic, it seldom happens that any of them have the disease. Not a single instance has occurred of a gravedigger falling a victim to it; none of those who cart the sick and the dead experience any bad effects therefrom; the washerwomen and those that lay out corpses follow their several occupations with the same indifference, and without any worse effect, during the existence of the disease, than at any other time. When the disease is carried from the city to the country, it is never communicated, which could not possibly happen if it were contagious.

Furthermore, one person in a family will have it, perhaps die ; yet the remainder continue perfectly healthy.

It has frequently been my lot to see ten or twelve persons living in the same room, and that a small one, without free circulation of air ; one of them has been taken, and died with black vomit, while the rest of the family remained in perfect health, although they ate, drank, and slept in the same place, and within a few feet of the bed in which the patient lay ill ; nay in some instances in the very bed with the patient. This has occurred to me not once or twice but a number of times ; after the death and burial of the patient, the bed has been used by the family without being cleansed, yet none of them have taken the disease. Is it probable they would have escaped had the disease been contagious ? I think not.

When it has been in its worst forms, and when the greatest number have been ill with it in this city, or any other, the sum total of sick, at one time, has never amounted to an eighth part of the inhabitants ; but I will suppose every fourth person was seized with it, is it credible, or even probable that the remaining three-fourths were not within the sphere of contagion ? And if they were, they ought certainly to have taken the disease, if contagious ; whereas nine-tenths, yea nineteen-twentieths have escaped. But this could not have been the case with small pox, or any disease that is evidently so ; for five hundred and ninety-five, of six hundred who have not previously had variola, if they come within the sphere of its action, are sure to suffer for their temerity. How different this from yellow fever or plague !

But whatever may be the proportion of those that escape, who have been exposed to those who have had it, still “ it cannot be doubted that the application of the powers producing the disease in the person first affected, is adequate to effect the same purpose in all those who are subsequently seized. The existence of contagion has uniformly been taken for granted by those strenuous advocates thereof, not only without proof, but even contrary to the evidence of numerous incontestible and con-

vincing facts." For such is the nature of man, that he takes things for granted, inquires not into the truth and stability thereof, and if his opinions are opposed and his arguments contested, it is abominable heresy : But happily for the youthful hero in science, we inhabit a land of liberty where every man's opinions are brought to the touchstone of truth, there to have an impartial trial in the face of day and of the world ; neither are they shielded by laws promulgated by tyranny, but the mind of man is left at full liberty to act without the fear of despots, or the frowns of an overbearing tyrant. No ! thanks to the valour of Fredonia's sons, we inhabit a free country, and science partakes of the blessings of liberty : Why then, oh ! ye inhabitants of America....ye physicians of Columbia, will you not lay aside your prejudices, investigate nature, and judge for yourselves ?

But here a fact presents that tends to prove the fever not contagious. During the month of August, 1803, Mr. Martin Grey, living in Spruce-street, died of an excessively malignant yellow fever, attended with black vomit, great fœtor, &c. Of a numerous family in the house not one had the disease. Soon after he was buried, some rumours existed that he had been murdered ; upon which the body was taken up, examined by a physician, and a coroner's inquest held over it, at a time when it was in a most offensive condition, and far advanced in putrefaction ; yet not one received the disease, which could not have happened had it been contagious.

The progress of malignant fever is stopped by cold, but this does not affect the small pox, vaccina, or measles ; therefore it is impossible it should be a contagious disease.

Diseases decidedly contagious are never affected by the vicissitudes of the weather ; but this disease is most remarkably : It prevails most in a hot, humid, and stagnant air, and during the prevalence of south-west winds.

“ I have frequently, says Dr. Stuart, in the course of four or five days, been called on to visit twenty or thirty new cases ; the commencement of which could, upon inquiry, be traced to a few hours after, and many times to

the very hour of the wind's change to the S. W." This seems to me a more striking proof of domestic origin and of non-contagion, than all others that I have ever heard or read in the history of the disease, as it is undoubtedly an incontrovertible evidence of its being *greatly* or *entirely* under the influence of the atmosphere.

EXPERIMENTS ON THE BLACK VOMIT, &c.

THESE experiments were instituted with a view to discover the nature, properties, and qualities of the black vomit; to determine whether it could communicate the disease or not, if active and deleterious; or if mild, inert and harmless.

EX. I. A small sized dog was confined in a room, and fed upon bread soaked in the black vomit; at the expiration of three days he became so fond of it, that he would eat the ejected matter without bread; it was therefore discontinued, and he was fed exclusively thereon for a week. After the first day he had black discharges *per anum*, which continued for two days after he fed on other substances. No other effect was produced upon the animal; he enjoyed as good health after the experiment as before.

EX. II. A small sized cat was confined in a room, and kept without food; at the end of three days, I gave her three ounces of the black vomit, which she ate with avidity; the same quantity was given her daily for five days, without her evincing any signs of disease; the discharges were of a dark colour.

EX. III. Having made a large incision into the back of a dog, and dissected the skin off from the cellular membrane and muscles, thereby forming a cavity, into which I poured one dram of fresh black vomit, (obtained from a patient in the city hospital, who was in the last agonies

which precede dissolution) and drawing the skin together, kept it in that situation by means of the dry suture; a pledget of lint was applied over this, and a bandage passed round the abdomen and over the part. The dog was confined, and prevented from irritating his back by rubbing it; the incision healed by the first intention, the black vomit was absorbed, and he continued perfectly healthy.

Ex. iv. The jugular vein of a dog was opened, and one ounce of black vomit injected into it; he immediately shewed signs of great uneasiness, puked and purged violently, became convulsed, and expired in ten minutes in great agony.

Ex. v. The same experiment was repeated with water, and with precisely the same result. It is therefore self-evident, that water injected into the blood vessels produces the same effect as the black vomit.

Ex. vi. On the 4th of October, 1802, I made an incision in my left arm, mid way between the elbow and wrist, so as to draw a few drops of blood; into the incision I introduced some fresh black vomit; a slight degree of inflammation ensued, which entirely subsided in three days, and the wound healed up very readily.

Ex. vii. Four days after the above experiment, having obtained some fresh black vomit, I made a considerable incision in my right arm, into which I introduced five drops of it; having closed the sides of the wound, and applied an adhesive plaster over it, with a bandage round the arm, it was left so for two days, when upon examination it appeared, that no more inflammation had taken place than would have occurred had not the black vomit been introduced: The wound healed up in a few days without any difficulty, and without the formation of pus.

Ex. viii. As inoculation for the variolous and vaccine diseases frequently fails taking the first time the virus is introduced beneath the cuticle, and takes after subsequent trials, it might be urged that the same was the case with this; therefore to prevent cabal, as well as to satisfy myself upon this subject, I repeated Experi-

ments No. 6 and 7 above twenty times on various parts of my body, and with precisely the same result, not only during the epidemic of 1802, but also of 1803.

EX. IX. Two drops of fresh black vomit were dropped into my right eye; it felt a little uneasy for about a minute, but produced no pain or inflammation; I have frequently had cold water to produce the same effect.

EX. X. Three ounces of recent black vomit were put into an iron skillet, and set on the fire that the fluid might evaporate; during which time I frequently held my head over it, and inhaled the gas or steam without experiencing any unpleasant sensation.

EX. XI. A few days after the former experiment was made, I heated a small stove room to 100° of Fahrenheit's thermometer; six ounces of black vomit were put in a shallow earthen dish, and placed on a sand bath on the top of the stove; it remained there until it was evaporated to the consistence of an extract. For two hours I remained in the room thus heated, breathing the air filled with the vapour produced by the evaporation, and very frequently held my head over the dish inhaling it as it arose. During this time I had great pain in my head, some nausea, and perspired very freely. Towards the close of the experiment, I felt languid and fainty, attended with great oppression at my breast: All these symptoms went off after being some time in the fresh air; so that they evidently arose from the great heat of the room, and not from the black vomit, which I conceive had not the least effect in producing them.

EX. XII. The extract procured during the last experiment was made into pills, and these were all swallowed on the same day without the least effect being produced by them.

EX. XIII. After repeating the two last experiments several times, and with precisely the same results, I took half an ounce of the black vomit immediately after it was ejected from a patient, and diluting it with an ounce and a

half of water, swallowed it; the taste was very slightly acid; as I felt no mental anxiety or uneasiness, I could attend particularly to my sensations. It neither produced nausea or pain; my pulse, which was beating seventy-six in a minute, moderately strong and full, was not altered either in force or frequency: In fine, no more effect was produced than if I had taken water alone. It is probable that if I had not, previous to the two last experiments, accustomed myself to tasting and smelling it, that emesis would have been the consequence, not from any positive quality in the substance, but from the association of ideas, and the influence of the mind on the stomach; for it is a fact now well established, that the mind has a great influence over it as well as over every other part of the body. Having satisfied myself that the black vomit could not communicate the disease, I thought of desisting from any further experiments; but upon mature consideration I thought it best to continue them, which I did, repeating them a great number of times, and varying them as much as possible, but with precisely the same results. I repeated them during two successive epidemics, without the least variation occurring in their results, and increased the quantity I took internally from half an ounce to two ounces, drinking it at length without dilution. Now had the black vomit been possessed of any active or deleterious property, is it probable....how is it possible that I should never have the least effect produced?

Having proved I hope to the satisfaction of the most sceptical, that the disease cannot be communicated by the black vomit, it will follow next in order to prove, that it cannot be communicated by the serum of the blood, the saliva, perspiration, bile or urine, and this I shall endeavour to do by experiment, the most certain data on which we can implicitly rely.

Ex. 14. The serum of the blood drawn from a patient in the first or inflammatory stage of the malignant fever, was taken, and four drops of it inserted in my left leg; the wound was closed, and retained so by the dry

suture; a slight degree of inflammation was produced, and the wound healed up in a few days. This experiment was frequently repeated with precisely the same consequence. It was also swallowed in considerable quantities without producing the least effect.

Ex. xv. I obtained a quantity of saliva from a patient, who was in the last stage of the disease, and who had taken no mercury, which I introduced beneath the cuticle by a puncture with a lancet. I also made incisions in various parts of my body, introducing into them the saliva, and closing the lips of the wound, which always healed by the first intention. These experiments were also repeated with the perspiration and the bile with exactly the same effect; when repeated with the urine some degree of inflammation was produced, which soon subsided of itself, and the part healed always after.

I hope these experiments will have a tendency to allay, if not totally to destroy that great fear which some have of the disease; for by these they may be induced to reason for themselves, when they will naturally conclude, that as the disease cannot be communicated by the secretions or excretions, it is at least very doubtful whether it is ever communicated from one person to another, and certainly never by means of contagion; I even doubt its often being communicated by infection, nay believe it very rarely is, which I think has been proved by the arguments already advanced.

Having by the preceding observations, experiments and facts, endeavoured to prove the malignant fever not contagious, I have now to shew wherein it differs most materially from such diseases as are contagious.

1st. In occurring only during the existence of hot or warm weather, by being checked by cold, and by its never becoming epidemic when the thermometer is below 32° ; by requiring the operation of several causes before it can become epidemic, as filth, animal and vegetable putrefaction, heat, an inflammatory constitution of the atmosphere, and by its never attacking unless aided

by predisposing debility and an exciting cause, though occasionally the remote cause may be so powerful as to act as an exciting cause; by being epidemic only in cities and villages in the vicinity of rivers, lakes, or sources of putrefaction and morbid exhalations.

2. It differs from contagious diseases (syphilis excepted) in affecting the same person more than once during life, yea several times during the same epidemic; by being altered by climate, local circumstances, the greater or less violence of the exciting cause, the greater or less pre-disposing debility; by *never* being communicated from the sick to their nurses or friends in the country; by its malignancy being much lessened by removing the patient to the country, and allowing him to inhale the pure air thereof; by its progress being effectually checked by paying attention to domestic cleanliness, and removing those causes which generate it; by not being communicated by secreted matter, as small pox, vaccina, &c. Moreover, it always varies in different years, nay it is never seen alike at its commencement and termination; by assuming the form of many other diseases. Where is the physician who has seen the small pox appear like the measles, or the vaccina under the form of syphilis? But if I reverse the question, every practitioner of the healing art, who is conversant with malignant fever, must declare, that he has beheld it make its insidious attack as a cholera, a diarrhæa, a dysentery, an intermittent, a cholic, yea under almost every form of disease laid down in Cullen's Nosology. How different this from diseases truly contagious!

3. In appearing in one town or village, passing a second, and again re-appearing in a third, leaving the intermediate one entirely free from disease, which is never known to occur in the progress of contagious diseases.

4. In subsiding with the subsidence of the inflammatory constitution of the atmosphere, change in the climate, or in the morbid miasma, and with want of animal and vegetable putrefaction: And where is the histo-

rian who records the appearance and general prevalence of a contagious disease, its disappearance for a great length of time, and its again becoming epidemic.

5. In spreading more rapidly over a city than contagious diseases. The small pox requires months to do it; the same is the case with other diseases truly *contagious*.

I hold it, therefore, as a fact, that malignant *fever is not a contagious disease*; that it never has been, and from the established laws of nature stamped on it, *never can be*, until they are changed, and disorder assumes the present place of that order observed in the wondrous works of nature, as received from the hand of the all wise and great creator of the universe; that it rarely is infectious, as proved by innumerable facts; that it is always an endemic of the United States, and sometimes, nay frequently an epidemic.

With this then I conclude the subject of my Thesis: If I have handled the opinions of others with freedom, I expect they will canvass mine in the same manner. I ask only for liberality of sentiment and candour in investigation; concluding, that as from the collision of opposite sentiments truth arises, so from the interrogations of nature principles are established that are conducive to the happiness, the welfare, and the prosperity of our country and of the world.

Now only one sad duty remains....to take leave of you, learned Professors, who have been the anxious guardians of my welfare, and the kind authors of my happiness; to your unexampled generosity, to your unbounded goodness I shall always, with heartfelt pleasure, bear testimony: And here let me return you my sincere thanks for the innumerable instances of friendship, and the many obligations of kindness experienced from each and all of you; permit me also to declare, that under your auspices the credit of the University has been extended throughout the two hemispheres; that the principles of the healing art are here taught with candour, integrity, and liberality not to be met with in those of any other country; your

principles being founded on the broad basis of reason, philosophy and truth. The student hears no dogmas; he is not forced to believe, or quietly to acquiesce, but is left at liberty to examine for himself and direct his judgment, according as facts are presented to him: He is allowed to reason for himself, and to publish the result of his observations and reflections, to form a theory therefrom, and to give it to the world, provided it be defended with candour and ingenuity; and that in this University a gentleman may become as competent to the practice of medicine as in any other in the world.

To the Managers and Physicians of the Philadelphia Dispensary, I also return my grateful thanks for the many acts of friendship I have experienced from them. May all their philanthropic attempts be crowned with success, and may they reap and wear deserved laurels at the Temple of Fame.

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