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A D D R E S S

TO THE

Philadelphia Medical Society,

ON THE ANALOGIES BETWEEN

*Yellow Fever and True Plague,*

DELIVERED,

BY APPOINTMENT,

ON THE 20th OF FEBRUARY, 1801.

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BY CHARLES CALDWELL, M. D.

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Philadelphia :

PRINTED BY THOMAS & WILLIAM BRADFORD, BOOKSELLERS  
AND STATIONERS, NO. 8, SOUTH FRONT STREET.

1801.

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“ AT A STATED MEETING

OF THE

*Philadelphia Medical Society,*

HELD ON THE 21st OF FEBRUARY, 1801.”

“**R**ESOLVED, *That the thanks of this Society be presented to DR. CALDWELL, for his eloquent and ingenious Oration delivered yesterday, and that a Copy of it be requested for immediate publication.”*

“ BY ORDER OF THE SOCIETY,

**GEORGE LOGAN, Sec'y.”**

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TO THE

M E M B E R S

OF THE

*Philadelphia Medical Society.*

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GENTLEMEN,

*YOUR flattering resolution of the 21st instant, conferred on me an honour no less grateful to my feelings, than it was foreign from my expectation—an honour which commands my best acknowledgements.*

*As the following address was prepared and delivered, only from the impulse of a sentiment of obedience to your wishes, it is now, from the same motive, committed to the press. Had my own inclination alone been consulted, it should have been withheld from the public eye, till farther matured by revision and time.*

*THOUGH the opinions which it contains have not been adopted without some reading, and considerable reflection, I have to regret their appearing unaccompanied by that host of facts, which nature and medical records furnish in their support. But, in the usual limits of an oration, it is impossible to embrace the details of argument.*

*AMONG the various circumstances favourable to the opinions which the following address is intended to establish, suffer me to express my belief, that no small degree of weight will be attached to the consideration, that it makes its appearance under the immediate auspices of so respectable a body as the Philadelphia Medical Society.*

*WITH a heartfelt zeal for the prosperity of our institution, and with sincere wishes for your individual welfare, I have the honour to be,*

*Gentlemen,*

*Your obliged Friend and*

*Fellow-Member,*

THE AUTHOR.

PHILADELPHIA, }  
FEB. 28<sup>th</sup>, 1801. }

# A D D R E S S,

Éc. Éc. Éc.

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*Gentlemen of the Medical Society,*

IT is not of my own but of your choice, that I rise to commemorate the anniversary of our institution. An obedience to your will, and a resolution against delinquency, in whatever may become my duty by the suffrages of the society, are the only motives which could have drawn me from the secure walks of private membership, to appear as the minister of the present occasion. These considerations encourage me to hope, that the same sentiments of partiality, which predominated in my appointment as your orator, will induce you now to palliate my faults, and to condemn even my errors with a spirit of mildness. For, who will venture to become a candidate for your indulgence, if it be denied to a functionary of your own election, whose ambition is rendered virtuous, by consisting in a wish to merit your approbation!

As the art of oratory is foreign from the profession to which I am devoted; and, as I mean to address myself, at present, to your understandings, not to your imaginations or your feelings, I disclaim all pretension to the ornaments of rhetoric. It neither comports with my qualifications, nor falls within my aim, to awaken your sorrows by the enginery of pathos: it belongs not to me to conduct you enraptured through the Elysium of fancy, to cull on our way the flowers of taste, and strew them before you in the extravagance of declamation: nor is mine the power to overwhelm your souls by the grandeur of imagery, to lead them captive by the magic of harmony, nor to hurry them away by the energy of action: the accomplishment of these ends calls for endowments which none but the favourites of nature can boast.

SPEAKING as I do, not to persuade and rouse to action, but simply to elucidate my subject, and to produce, if possible, a conviction of its truth, some degree of perspicuity, and correctness of argument, are the only properties of oratory at which I shall aim. For such is the modest simplicity of attire in which physical science delights to appear.

HAVING attempted, in a work which will be shortly before the public, to establish the

identity of the common bilious and the yellow fever, I beg leave to lay before you, in the following address, a statement of a few analogies between the latter disease and true plague, or, in other words, between the American and the oriental pestilence.

I am persuaded you will accompany me, without reluctance, in a brief contemplation of these diseases, of which one has so lately been the scourge of our own country, and the other is now spreading terror through the continent of Europe. Calamities of such magnitude and extent, call for the united exertion of the intellect of nations, to shed light on their nature and cause, and for the strenuous co-operation of society at large, to stay or avert their desolating progress.

THOUGH the analogies between yellow fever and the pestilence of the East might be treated of on a very extensive scale, I shall confine myself to narrower bounds, and dwell chiefly on those, which relate to the epidemic rise, progress, and termination of these forms of disease. Analogies resting on the correspondence of either their general or particular symptoms, being less characteristic shall receive less of our regard.

It is [www.libtool.com.cn](http://www.libtool.com.cn) alike inconsistent with my intention, and with the necessary limits of my address, to attempt a detail of all the hypotheses on the origin of pestilence, that have contributed to mislead the world, and to perpetuate the weakness and ignorance of their authors.

A certain writer, (1) however, in our own country, whose pen has been lately employed on this subject, has given birth to such a physico-theological monster—has erected such a Colossus of bigotry, error, and absurdity, that a few words in describing and exposing its deformities may not be amiss! Indeed this hypothesis, while it constitutes, in its nature, a paragon of ignorance, is, in its form, so perfect a non-descript in the catalogue of folly, that to pass it unnoticed would bespeak inattention.

THE writer, to whom I allude, is Mr. James Tytler, a plodding compiler in medicine, much more accustomed to reading than to thinking, and much more remarkable for illiberal invective than for solid argument. An indefatigable drudge in medical literature,

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(1) THE following remarks relate exclusively to this writer's medical pretensions, and have no reference to his acquirements in any other department of knowledge.

but wholly incapable of combination or arrangement, the summit of even his probable usefulness will be (like that of those who supply the mason with mortar and stone) to furnish materials for others to systemize.

THIS author, whose vanity is the only counterpart to his weakness, supposes the contagion of plague to have been manufactured in Heaven, for the express purpose of inflicting the vengeance of Deity on the profligate Jews. Respecting the manner in which this celestial poison, when compounded, was conveyed to the devoted theatre of its ravages, our author has unfortunately left us in the dark. But, as conjecture is allowable, where information is wanting, we may supply this deficiency, by supposing it consistent with this gentleman's belief, that a special messenger was dispatched from above, bearing the matter of contagion in a box, which, like that of Pandora, was opened in the midst of the camp of Isreal, and its contents suffered to escape, and attach themselves to the objects of divine resentment. However extravagant this supposition may appear, and however near it may be thought to approach to the reveries of lunacy, it commits no greater outrage on reason and common sense, than

may be found in many parts of Mr. Tytler's publication.

SPREADING, through the medium of conquest and otherwise, from the chosen people to surrounding nations, the plague has been thus, through every vicissitude of seasons, and every revolution in our atmosphere, perpetuated by contagion from the days of Moses to the present period!

SUCH is the monument of ignorance and superstition, which a man, who pretends to instruct his cotemporaries, has erected in the close of the eighteenth century! A monument, worthy of a place amid the barbarism of Egypt, where the inhabitants attribute the cessation of the plague, in common with the swelling of the Nile, to the immediate agency of a tutelary angel!

So monstrous are the errors, and so gross the absurdities of this hypothesis, as to preclude the necessity, and even to render doubtful the propriety, of a refutation. For, in the words of the poet,

“VICE is a monster of such hideous mien,  
“As to be hated, needs but to be seen!”

And such is also the case with the consumption of bigotry and folly !—But to proceed to an enumeration of the analogies proposed.

THE plague of Asia, like the yellow fever or pestilence of our own country, is a disease which delights in the devastation of populous cities. Perhaps neither of these calamities has ever been known to originate, as an epidemic, in villages or country situations ; nor do they oftentimes extend to such places, even in times of their most general prevalence. It is only in the artificial and vitiated atmospheres of large cities, that they are able to find a sufficiency of their proper nourishment.

TRUE plague, when it has prevailed in the cities of Europe, has always made its appearance about the close of spring, or in the course of the summer, has reached its summit in the autumnal months, and declined or wholly disappeared on the commencement of cold weather. But such is known to be, in like manner, the course of the yellow fever or pestilence of America. To the generation and propagation of both these diseases, therefore, a warm atmosphere is no less necessary, than the filth and crowded

population of large cities. Even when committing their heaviest devastations, a few nights of cold weather, particularly if it be accompanied by frost, will check them as certainly, and almost as speedily, as it will the vegetation of tropical plants. I know of no instance on record of either of these diseases having prevailed, to any extent, throughout the winter of high latitudes. (2)

It is a circumstance alike common to plague and yellow fever, that they occur epidemically, in places subject to them, only at certain irregular periods, or after indefinite intervals of time. Fortunately these destroyers of the human race do not appear as the regular endemics of any situation. Though summer and autumn are their native seasons, yet these seasons are not alone sufficient to produce them, unless they be aided by a pestilential constitution of atmosphere.

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(2) It is perhaps possible that, independently of summer and autumnal exhalation, the atmospheres of places may be rendered so malignant by more general causes, as to protract pestilence throughout the winter. But such occurrences (supposing their existence practicable) have been certainly no less rare than calamitous.

EPIDEMIC plague banishes from around it every other form of febrile disease, and reigns itself the solitary tyrant of the place where it prevails. It would be superfluous to offer testimony in confirmation of this fact. Most authors on pestilence, who have written from observation, bear witness to its truth. But the same thing is true with regard to the epidemic state of yellow fever. Taking possession of the atmosphere, it expels or suffocates all other descriptions of fever, and creates for itself a dismal solitude. During the late autumns in which it prevailed in this place, it is known by our practitioners to have suffered no rival disease to approach it.

PLAGUE and yellow fever are alike remarkable for being preceded, followed, or accompanied in adjacent places, either by new diseases, or by an increase in the frequency, but more particularly in the malignity of common diseases. Since the year eighty nine, this country has been several times visited by epidemic catarrh, and in some places by an epidemic cynanche, diseases which had not before occurred to such extent, within the memory of our oldest citizens. Since the same period, the common diseases, in different parts of the United States, have

undergone such a striking change, as to call for a different and much more energetic mode of treatment. That similar phenomena are connected with the prevalence of plague in Europe, and in the East, we learn from many works on the subject, particularly from that of Dr. Patrick Russel, and from Mr. Webster's excellent "History of Epidemic and Pestilential Diseases."

It belongs in common to plague and yellow fever to be attended with most fatality on their first occurrence. It is a melancholy truth, that these diseases seldom fail to hurry to the grave a great proportion of their earlier subjects. As they become more general, but especially when they are on the decline, individual cases, laying aside their malignity, prove much more manageable, and may be generally conducted to a favourable issue. These circumstances are probably attributable to a threefold cause.

1. THOSE first attacked by, would appear to be most strongly predisposed to, the above diseases, and therefore to be most likely to have them in a violent degree.

2. IN this early state of things, an ignorance of the dangerous nature of their com-

plaints, prevents patients from being sufficiently prompt in applying for medical aid.

3. ON the first occurrence of an epidemic, physicians themselves, neither acquainted with its character nor aware of its malignity, generally fail to treat the early cases of it with sufficient boldness.

NEITHER plague nor yellow fever can prevail at any time, nor in any place, which is not calculated to give rise to an abundance of putrid exhalation. Whatever is inimical to the origin of such exhalation, proves equally inimical to these complaints. But the production of this poisonous gas is particularly prevented by three causes, namely, cold, great humidity, and excessive heat accompanied by an excessive aridity of the atmosphere.

THE hostility of the first of these causes to the diseases in question, has been already mentioned, that of the two latter shall be treated of in a subsequent part of my address.

THUS far on the analogies derived more immediately from the origin of plague

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and yellow fever. In the phenomena connected with their propagation, they exhibit no less of a kindred nature.

THOUGH they have both somewhat the appearance of spreading by contagion, their progress is certainly too rapid, to depend on a cause of such limited powers. Allow me to call your attention to a palpable inconsistency (not to say an absolute contradiction) which exists in the state of common opinion on this subject.

PLAGUE and yellow fever are acknowledged by every one to be much less contagious than small pox, because they attack with much less certainty persons exposed for a short time to their influence. Nor are they supposed to be communicated to so great a distance as small pox. Notwithstanding this, they spread with nearly tenfold its rapidity. In the course of a few weeks, they will overrun an extent of city, which it would scarcely pervade in twice as many months. Here then, admitting plague and yellow fever to spread by contagion at all, they would appear to be both more and less contagious than the small pox. But this is a position which even the advocates of contagion will reject.

Perhaps the only method of removing the contradiction, is to admit that the two former diseases are not propagated by contagion at all, but by the more powerful medium of a vitiated atmosphere. But more of this hereafter.

It is a fact notorious in the United States, that if a patient, in the most malignant state of yellow fever, be removed from the city to the country, he may there be visited and nursed, without endangering the health of his physicians or attendants. But we learn from Prosper Alpinus, Russell, Mariti, Sonnini, and various other writers, that the same thing is true with regard to the pestilence of the East. When persons ill of that disease are conveyed from a place where it is epidemic, to one where it is not, they may be approached and attended without hazard.

TRUE plague, therefore, exhibits no unequivocal marks of contagion, when removed without the limits of a malignant atmosphere. That calamity is believed to be, for the most part, introduced into Syria and Egypt from Constantinople. Yet, in common

years, when no pestilential state of the elements prevails, persons in all stages of it arrive from the latter in different parts of the former places, without communicating infection to any one.

THE physicians of America have not now to learn, that certain classes of persons are much more liable than others to be attacked by yellow fever. But this is in like manner true with respect to the oriental pestilence : and it is not a little remarkable, that these two diseases manifest a predilection for persons and habits of the same description.

DOES yellow fever attack and destroy men rather than women? So does pestilence,

DOES the former select, as its victims, the robust, the healthy, and the young, rather than the weak, the infirm, and the aged? Such is also the case with the destroyer of the East. Persons turned of their seventieth year have, comparatively speaking, but little to apprehend from that dreadful calamity.

DOES yellow fever spare infants and children rather than adults? And does not a

similar discrimination characterize the desolating course of pestilence !

FINALLY, do not both these diseases either entirely pass over, or but slightly affect, the frugal and the sober, while they attack more certainly, and more certainly destroy the luxurious and the intemperate ?

BUT it is not alone for the same descriptions of the human race, that these two diseases possess and exhibit a common predilection. They also attack, in common, the same species of inferior animals. Of creatures subservient to man, the dog, the cat, the horse, and the cow, have been pre-eminent in their sufferings from yellow fever and pestilence. And, to extend the analogy still farther, these diseases appear to have attacked, in common, even the tenants of the air, and the more secure inhabitants of the flood. The liability of such a variety of disconnected animals to their influence, would seem to furnish incontestible evidence, that their cause exists in the common atmosphere of the places where they prevail.

THE prevalence of plague and yellow fever is marked, in the countries where they appear, or in adjacent places, with similar

peculiarities in the surrounding and concomitant phenomena of nature. Some of these peculiarities are,

I. CERTAIN irregularities in the seasons and weather; such as, extremely severe winters, intensely hot summers, excessive droughts, or profuse rains, and an uncommon prevalence, but more frequently an unusual absence, of hurricanes and thunder storms. To these phenomena may be added, the occurrence of earthquakes, and the eruptions of volcanos.

II. THE temporary disappearance of certain species of birds. As many of the feathered race emigrate annually to shun the severe winters of the north, some of them have been known to forsake for a while their places of residence, to escape the effects of a vitiated atmosphere.

III. Hosts of new, or an excessive increase in the numbers of common insects and reptiles. It would be needless to remind you of the myriads of locusts, that so frequently desolate the countries of the East, during periods of pestilence; and many of you will long remember the profusion of musquitos, grasshoppers, worms, &c. which

for some years past, have infested certain parts of the United States.

IV. GREAT luxuriance, alarming sterility, or an unusual degree of disease, in the vegetable kingdom. Though in common expression, and in the association of our ideas, pestilence is generally connected with famine, yet medical records inform us, that this calamity has also prevailed in times of uncommon plenty.

SUCH are a few of the irregular phenomena, which, in their respective countries, accompany in common the course of yellow fever, and the course of pestilence. Some of them appear to be the effects, and others only the kindred concomitants, of that malignant constitution of atmosphere, which co-operates in the production of pestilential diseases.

By plague as well as by yellow fever we are liable to be affected sundry times: yet these diseases resemble each other, in leaving the system, which has already suffered from them, less liable than before to further attacks.

THE present is not an improper place to remark, that the leading pathological characters of plague and yellow fever bear a reciprocal and strong resemblance.

THEY are both ushered in by febrile symptoms, sometimes rapid, violent, and alarming; at other times, slow in their progress, and light in appearance, yet in reality insidious and dangerous. It is common to these diseases, that the subjects of them are, in some instances, to the greatest degree prostrated in their strength, from the commencement of their illness, and in others walk about, apparently but little indisposed, till within a few hours of dissolution.

THEY both direct their principal force against the head, stomach, and abdominal viscera. Evidence in favour of this assertion may be collected, no less from the symptoms and complaints of patients while living, than from dissections of their bodies after death. In both diseases the stomach, in particular, is observed to be almost uniformly affected by inflammation.

DOES yellow fever oftentimes terminate in the black vomit, and in hemorrhages from different parts of the body? And do not

similar phenomena sometimes mark the termination of pestilencé?

Does yellow fever derive its name from the frequent colour of the eyes and skin, in those whom it affects? And does not a similar yellowness oftentimes appear in protracted cases of true pague? When death occurs on the first or second day of illness, this symptom is alike wanting in both diseases.

Is plague characterized, in most cases, by bubos, and, in many, by carbuncles or malignant ulcers of the skin? And is not yellow fever accompanied at times with the same symptoms? Occurrences by no means unfrequent in the autumns of ninety three, ninety seven, and ninety eight, authorize the physicians of Philadelphia to reply in the affirmative.

It is certain, however, that, in the frequency of these glandular swellings and cutaneous ulcers, plague differs more from yellow fever, than it does in any other particular. But an occasional difference between the external symptoms of two diseases, is not alone sufficient to establish the existence of an essential difference between their na-

ture and causes. Even the same disease, under different circumstances, never fails to appear under a different form. To such an extent is this true, that we seldom find an entire similarity between any two cases of the same epidemic.

It is a truth, of which no one acquainted with medical science can be ignorant, that yellow or bilious fever is oftentimes attended with certain cutaneous affections in the West Indies, which but seldom accompany it in the United States. Yet no physician will suffer such a circumstance to excite a doubt in his mind, respecting the identity of this disease as it prevails in the two countries.

WHAT complaints can be more different in their appearance and general character, than the British plague of 1666, and the Sudor Anglicanus or sweating sickness of the same century? Yet, have not these diseases been uniformly considered as nothing else than modifications or varieties of pestilence?

Who does not know, that even the complaints of pregnancy and the pains of parturition, are greatly modified by the influence of climate? Yet, who will deny that

these processes are the same, in every inhabited portion of the globe?

IT may be further observed, on this subject, that plague is more generally characterized by glandular swellings in the Turkish dominions, and in other parts of the East, than it is when it prevails in the countries of Europe. Hence there appears strong ground to infer, that these affections, instead of constituting one of its essential symptoms, are only the result of accidental circumstances. And hence, from this difference, on the score of bubos and carbuncles, between plague and yellow fever, no argument of weight can be drawn, to establish a difference in their nature and cause.

IN their type, their critical days, and indeed their whole course, cases of plague and yellow fever exhibit a perfect similitude.

THEY are both marked with very evident morning remissions, and evening exacerbations.

THEY both attack, in some instances, with such force, as to prove destructive to life in a few hours. But, in general, their progress is not so rapid. They seldom reach

their crisis before the third, fifth, or seventh, and sometimes not before the ninth, or the eleventh day. It will be observed, that with regard to their critical days, they seem alike partial to odd numbers. Even that state of apyrexia, which oftentimes occurs about the third day in yellow fever, and which has been considered by some as peculiarly characteristic of that disease, forms no uncommon feature in the pestilence of the East.

BUT epidemic plague and yellow fever resemble each other in their decline and termination, no less than they do in their rise and progress.

HAVING raged with more or less violence throughout the summer and autumnal months, the career of both is immediately closed on the accession of cold weather. So completely are their semina blasted by a moderate frost, that, after such an occurrence, there remains in general no shadow of ground to dread their influence. It is indeed true, that sporadic cases of these diseases appear even in the depth of winter: but they are the offspring of causes which operate only on a circumscribed scale. It belongs to spring, summer, and autumn, particularly to the two latter seasons, to render the plague and yellow fever epidemic. The

reason of this is obvious. It is during these seasons only, that a sufficiency of putrid exhalation can be evolved, to impregnate the atmosphere to the pestilential point.

To the foregoing account of the termination of plague, I am not ignorant that there exists an exception. Instead of continuing till the commencement of winter, this disease, in Egypt and Syria, terminates uniformly about the summer solstice. Hence it has become proverbial, that extremes of heat and cold are alike destructive to pestilential contagion.

Does not this circumstance, it may be asked, constitute an essential difference between plague and yellow fever? I answer, it does not. For, did the latter disease visit the above mentioned countries, it would terminate at the same season with the former.

HOWEVER paradoxical it may appear, it is unquestionably true, that in Syria and Egypt, plague expires during the heats of summer, on the same principle, which, in European countries, leads to its termination on the commencement of winter. The cause, in both cases, is a failure of the food of putrid exhalation. For, as already observed,

plague and yellow fever prevail only at such times and in such places, as are favourable to the production of this gaseous poison.

IN most parts of Asia and Africa the climates are materially different from those of corresponding latitudes in Europe and America. This difference is in a great measure attributable to the burning deserts of the East, which, by communicating their temperature to the surrounding countries, render them much warmer than others remote from such torrid regions. But epidemic diseases are known to be greatly under the controul of the temperature of the atmosphere. We must therefore expect, that the epidemics of countries so dissimilar in their climates as those just mentioned, will not only be somewhat different in appearance, but will rise and terminate at different seasons of the year.

SYRIA and Egypt may both be considered as southern regions, subject no less to extremely dry than to intensely hot weather. In the former country no rain falls from the middle of May till the middle of September, while the latter suffers a drought of a much longer continuance. Nor has nature been more liberal in supplying

them with terrestrial streams, than she is in refreshing them with the waters of Heaven. Syria contains no river of note but the Orontes, and the Nile is the only one that waters the land of the Pharoahs. The existence of smaller streams is rendered impracticable, partly by the scanty falls of rain, and partly by the thirsty nature of the soil.

IN consequence of this deficiency of moisture co-operating with the extreme heat of their climates, these places, throughout the summer months, exhibit the most parched and dreary prospect. During this inclement season so completely suspended are the powers of vegetation, and so dead and withered the foliage of most plants, that both countries appear as if scorched by actual fire. Exhausted of their waters, to the last drop, even the air and the earth contribute to heighten the general aridity. Under such circumstances, putrefaction, no longer able to go forward for want of humidity, ceases to impregnate the atmosphere with deleterious effluvia. For, to the existence of this process moisture is do less necessary, than it is to preserve the verdure, or to promote the growth of the tenderest vegetable.

No sooner have the heat and drought of the season produced in every thing such an excess of dryness, which happens about the 20th or 24th of June ; no sooner has the atmosphere become thus depurated of putrid exhalation, than the ravages of the plague, which had been kept up by the putrefaction of the vernal months, are immediately at an end, as if staid by the influence of supernatural agency. Deprived of its proper aliment, in consequence of this deficiency of water, the monster may be said to perish by famine. Were Syria and Egypt supplied with uniform rains, like the countries of Europe, there is no doubt but summer and autumn would be their principal period of suffering from this disease. After the autumnal rains of Syria, there is not a sufficiency of heat, previously to the commencement of winter, to generate afresh the seeds of pestilence.

WE may lay it down, then, as a physical axiom, that the destruction of putrid exhalation, whether effected by the frost of winter, or by the co-operation of heat and drought, will arrest the desolating progress of plague. But the same thing is true with regard to yellow fever, which depends for

its origin and propagation on the same effluvia. In this particular, therefore, no less than in others already mentioned, these two diseases exhibit a striking affinity.

I am not ignorant that several writers of note, have ascribed the cessation of the Egyptian plague to a different cause, namely, to the superflux of the river Nile, which they alledge purifies the air, either by drowning, or washing from the neighbouring country, all existing sources of putrefaction. But a reference to dates will immediately convince you that these authors are mistaken.

THE Nile begins to swell about the seventeenth of June, rises at the rate of four inches a day, and does not overflow its banks till the middle of August. But the plague ceases uniformly about the twenty fourth of June. How then is it possible, that the waters of this river, which do not begin to inundate the country for nearly two months afterwards, can, at this period, either overwhelm or wash away the filth of its surface?

WERE the face of Egypt covered with water at the time when the Nile is in reality only beginning to swell, I would be disposed

to attribute the ceasing of the plague to this inundation. For an excess is no less inimical than a deficiency of water to the putrefactive process. But, as every cause must necessarily precede its effect, it is unphilosophical, not to say absurd, to ascribe the cessation of the plague of Cairo, on the twenty fourth of June, to the overflowing of the Nile about the middle of August. Though the superflux of this river is the saviour of Egypt from depopulation by famine, it does not appear, from our latest and best accounts of that country, to have any particular influence on the health of its inhabitants.

THOSE persons acquainted with my infidelity respecting the contagion of yellow fever, will, no doubt, suppose me at a loss to discover, on that score, any analogy between this disease and the pestilence of the East.

ON this subject it becomes me to speak with diffidence and caution, because I am unable to speak from observation. To the writings and conversation of others am I indebted for the principal part of what knowledge I possess, relative to the nature of true plague. But from all I have been able to collect through these channels, I find

no solid ground of belief, that this disease is really contagious. On the other hand, the farther I pursue the enquiry, the more am I inclined to consider it as propagated, not by contagion, but solely through the medium of a vitiated atmosphere.

My principal reasons for this opinion I will endeavour to lay before you in a few words.

I. PLAGUE prevails only under certain constitutions of the atmosphere, which medical writers denominate pestilential, and during those seasons of the year, which favour the generation of putrid exhalations. Two circumstances therefore seem essential to its existence and propagation, an atmosphere radically malignant, rendered still more so by the admixture of deleterious gases. On the aid of these two adventitious causes it is as dependent for its prevalence, as combustion is on that of vital air.

BUT, how different is the case with small pox, measles, lues venera, and other truly contagious diseases? Possessed of an inherent and independent power of self-propagation, these maladies prevail and spread at all seasons of the year, and under every

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 varying constitution of atmosphere. To their communication from the sick to the well, foul air is no more necessary, than it is for the spreading of flame from one combustible body to another.

II. WHEN plague is epidemic in a town or city, and cases of it are removed to healthy situations in the surrounding country, or to neighbouring towns and villages free from disease, it is not communicated to the nurses or attendants of the sick. This fact is amply attested, and seems to declare in the most explicit terms, that the disease in question is not possessed of any specific contagion, or inherent power of self-propagation, but is altogether the creature of adventitious causes. Under similar circumstances how different are the phenomena exhibited by small pox? Like an electron per se, this disease, by means of an infectious power, of which nothing can deprive it, propagates itself alike in every situation.

III. THE sudden and entire cessation of plague in Syria and Egypt about the summer solstice, and in Constantinople on the accession of cold weather, is inimical to a belief in its contagious nature. Immediately after its termination in these places (which

is sometimes almost instantaneous, and where a belief in the doctrine of fatality prevents every measure for the removal or destruction of contagion) the apparel of the dead is worn by their surviving connections, their beds are slept on, and their furniture in general used and handled in the most familiar manner. Nor is this all: Even the low filthy hovels, which had been utterly depopulated by the disease, are, without purification, presently filled up again by fresh inhabitants: Yet, from all this intercourse, apparently so inconsiderate and dangerous, no inconvenience whatever is experienced. Instead of immediately sweeping off those who thus plunge into the midst of its supposed fomites, the disease is heard of no more, till the return of the next season of exhalation, or perhaps till a much more distant period, and then appears again without being attributable to any cause, except the existing state of the atmosphere.

UNDER the foregoing circumstances, plague ceases at the very time when its supposed matter of contagion would seem to exist in the greatest abundance, and when things would consequently appear to be in the best state of preparation for the continuance of its ravages. But if this disease cannot be con-

tinued in action, by such an immense volume of fresh contagious matter issuing immediately from the bodies of many thousand sick and dead, how can it be called into being again, some time afterwards, by an inconsiderable quantity of the same contagion (now perhaps grown stale with age) adhering to a bale of goods, a chest of clothes, or even to a single article of wearing apparel? As well might we attribute to a solitary and fading spark a power of producing and propagating flame, superior to that possessed by an extensive and vigorous conflagration, as to alledge, that from a small and weakened portion of contagion a disease may originate, which an incalculable quantity of the same contagion in the most active state, was unable even to preserve in existence.

INDEED were plague possessed of real contagion, I know not how it could terminate in any place, except with the final extermination of the inhabitants. For as the system is known to be subject to repeated invasions of this disease, even during the same season, a first attack would (particularly in places where all precautions of cleanliness are neglected) prepare a sufficiency of poison for the superinducement of a second, which, on the same

principle, would again prepare the way for a third, till death would finally step in and relieve the patient from his accumulated sufferings.

BUT it is said, that plague is only conditionally contagious ; that it is communicable from the sick to the well, only under certain states or conditions of atmosphere ; and, that with the termination of these states or conditions, terminates also the communicability of this disease. This is certainly a kind of compromise, or half-way business, which approaches to an acknowledgement, that the evil under consideration results from a malignant constitution of the air.

THE most enlightened and respectable contagionists alledge, that the foregoing states or conditions of atmosphere contribute to the propagation, of plague, not by heightening the virulence of its contagion, but only by encreasing the predisposition of the human system, i. e. by rendering it more susceptible of the action of pestilential poison.

A brief analysis of this proposition will expose the fallacy of the principles on which it is founded.

It is known to physicians that the constitution of man is not so extremely mutable as to be materially affected in its predispositions or susceptibilities, by the action of the atmosphere continued only for a few hours or a few days. There is reason to believe that a period of many months is not more than sufficient for the production of such an effect. Agreeably to the reasoning of our contagionists, then, it would be necessary for a person from a healthy situation to reside a considerable time in a place suffering from pestilence, before he would be liable to an attack of the disease. For in what other way could his system be rendered susceptible of the action of contagion?

BUT, how does this inference comport with observation? Do we not find that the very reverse of it is true? When a city is overrun by plague, strangers, on their first arrival, are known to be even more liable to an attack of it, than the old and permanent inhabitants of the place. Yet, according to the foregoing theory of our contagionists, the latter should be alone subject to the disease, because they alone have resided long enough in a malignant atmosphere, to have their systems prepared for its poison

IV. The last reason I shall offer for disbelieving in the contagion of the plague is, because it is a disease which unquestionably has possession of the atmosphere, as is manifest from its either banishing or assimilating to itself, all other diseases of the place where it prevails. For, it may be laid down as an axiom (if indeed medical science admit of a self-evident truth) that whatever disease acquires such an ascendancy over its contemporaries, as either to banish them, or oblige them to assume its own likeness, must do it by gaining the entire command of the atmosphere. Through no other medium could it exercise such authority, because no other medium is so general in its influence.

BUT I hold it superfluous to remark to you, that contagion, resulting from disordered action in the human system, is a cause by far too limited and feeble to revolutionize the atmosphere of a large city. Though the confined atmosphere of a single room, or even of a whole house, may be thoroughly contaminated by exhalation from the sick, it is impossible that from a source so disproportionate, the same thing can happen to a body of external atmosphere, several miles in extent, and renovated by a constant influx of fresh air.

IN opposition to the opinion that plague results from a general vitiation of the air, it will no doubt be urged, that in the cities of the East, Europeans secure themselves against this disease, by shutting themselves up in their own houses, and observing a strict quarantine during its prevalence.

THIS objection will probably have much weight with those, who either do not know, or do not recollect, that an exciting is no less necessary than a predisposing cause, to produce an attack of pestilential disease. It is a truth which must be familiar to every one who has made medical science his study, that our systems may be charged with the exhalation or seeds of pestilence, and yet, if no excess or irregularity occur to excite them into action, we may still escape a formal attack.

SUCH appears to be the case with the above mentioned Europeans. Though many of them retire into their houses carrying along with them the remote cause of pestilence, and though probably the whole of them become impregnated with this poison afterwards, yet, by avoiding every thing that might act as an exciting cause, they finally escape

the ravages of the disease. If however they act in a different manner ; if instead of being cautious and circumspect in their mode of living, they indulge, during their confinement, in intemperance or any kind of irregularity, they seldom find safety even in the most rigid seclusion from the sick. Hence, different individuals in the same house remain healthy, or sicken, accordingly as their habits are temperate or otherwise : and hence, those who escape plague under such circumstances, owe their exemption, not to the want of an intercourse with the infected, but to their avoiding such causes, as might rouse into action the principles of disease which lurk in their systems. Nor are such persons ever clear of danger from exciting causes, till by time and a change in the state of their atmosphere, their bodies are purged of the miasm they contain.

BUT further, it is customary with most Europeans in Constantinople, Syria, and Egypt, to confine themselves to the upper stories of their houses, during their quarantine, in times of pestilence. To this practice they have been led by observing, that those who reside below during their confinement, are by far the most liable to suffer from the disease.

THE explanation of this fact is simple and obvious. It would appear that the putrid exhalation which contributes to the pestilential state of their atmosphere, rises to but an inconsiderable distance above the surface of the ground. It either, therefore, does not reach the air of their upper stories at all, or exists in it in such a state of dilution and weakness, as to be incapable of deranging the functions of the body.

WERE it practicable for the citizens of Philadelphia to pass their time wholly in the upper parts of their houses, and to remain inaccessible to the lower stratum of air, during the prevalence of yellow fever, it is probable they might, by thus living above the region of the cause of disease, enjoy an equal exemption from its influence.

It remains that I should advert to that opinion, which regards plague as nothing else than the highest grade of jail or typhus fever.

WERE I to express, in general terms, my sentiments respecting this hypothesis, I would say, that what entitles it to most consideration and credit is, its ranking in the catalogue of its advocates, the illustrious professor

of the institutes and practice of medicine, in the University of Pennsylvania. But, not even the authority of that great teacher can lead me to a belief in the identity of plague and typhus fever.

THESE diseases appear to be different for the following reasons :

I. BECAUSE they prevail in different seasons of the year, and under different degrees of heat. Typhus fever is a disease of high latitudes, and rages most during the winter season ; whereas plague is most common in countries nearer to the tropics, and originates and spreads only under the influence of a summer temperature.

II. TYPHUS fever is certainly propagated by contagion, and requires, for its communication from the sick to the well, no peculiarly malignant constitution of atmosphere. If a case of it be removed from a city, town, or hospital, where it prevails, to a healthy situation in the country, it remains still a source of danger to nurses and attendants. But it has been already mentioned, that the case is different with regard to plague ; because a similar removal disarms it entirely of its power

of propagation. How, I beg leave to ask, are these facts reconcileable with the opinion, which regards the latter as a higher and more malignant grade of the former disease? Supposing them to be in reality nothing more than different modifications or degrees of the same malady, would not the foregoing circumstances bespeak plague to be of the two the most weak and perishable?

III. TYPHUS fever attacks women rather than men, and the weakly and such as subsist on impoverished fare, rather than the robust and such as indulge in a generous diet. But it was stated in a former part of my address, that the reverse of this is true with respect to plague. Its favourite victims are, high livers, and those who possess the most vigorous constitutions.

VI. IN the countries of the East, which are so frequently the mournful theatre of pestilence, typhus fever is altogether unknown. But this would not be the case were it only a subordinate modification of plague: for in such a state of things, an inferior degree of the same circumstances which produce the latter disease, would inevitably in some instances give origin to the former. Perhaps the

warmth of eastern countries, and the general circulation of air which the inhabitants consequently preserve in their dwellings, is the cause of their exemption from typhus fever. For this, as already mentioned, is a disease of cold latitudes and seasons, rather than of warm.

V. TRUE plague never prevails except during the season, and within the sphere, of putrid exhalation. The aid of this poison, therefore, seems essential to its existence. But the case is different with regard to typhus. Perfectly independent of the putrefactive process, a vitiated secretion from the human system is all it requires for its origin and propagation. Nor is it liable, like plague, to be arrested in its course by a long continuance of dry weather.

VI. To whatever extent typhus fever may spread in a town or city, it never acquires such an ascendancy over its cotemporary diseases, as either to banish them, or force them to assume its own characteristic symptoms. The reason of this is, that it never becomes truly epidemic by gaining possession of the general atmosphere of the place where it prevails. It may be regarded as at all times

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an insulated disease, resulting entirely from human contagion, and is neither preceded, accompanied, nor followed by uncommon malignity in other diseases. Nor is its prevalence marked by striking peculiarities in any of the cotemporary phenomena of nature. No commotions of the earth, nor frightful meteors in the Heavens, usher in its ravages ; no volcanic eruptions give token of its approach, nor break forth during its continuance to celebrate its orgies ; nor do drought and insects, the harbingers of famine, co-operate with it in the work of destruction.

PERFECTLY local in its origin, and circumscribed in its extent, typhus fever appears to possess no relationship to those sweeping epidemics, which are properly entitled to the name of pestilential. The disease of want and wretchedness, it is more peculiarly confined to the abodes of poverty ; but they, operating on a more extensive scale, and taking a loftier aim, attack, without distinction, the monarch on his throne, and the pauper who subsists on the fragments of charity.

BUT, conscious of the tresspass which the copiousness of my subject has already

obliged me to commit on your time, I shall conclude by laying before you a few general remarks.

PESTILENCE should be regarded as a generic term, including every description of disease, which depends for its origin and propagation on a malignant atmosphere.

As plague and yellow fever appears to result from this source, and as they agree with each other in so many and such essential points, they would seem to be nothing else than varieties of pestilence, modified by the difference of circumstances under which they prevail.

As the contagious nature of these diseases is, at least, extremely problematical, and as the propagation and ravages of both are certainly promoted by putrid exhalations, officers of police, in the cities of this and other countries, should be much less solicitous to close the avenues of their introduction from abroad, than to prevent their generation and nourishment from domestic causes.

FINALLY, as a malignant disease, whose features declare it to belong to the family of pestilence, has lately made its appearance in

the kingdom of Sp in, I cannot, without mingled emotions of pity and contempt, contemplate the unenlightened and feeble efforts that are made to prevent its introduction into adjacent nations. Unless the pestilential constitution which appears to prevail in their atmosphere be done away, or a system of domestic cleanliness be rigorously enforced, as well might those nations attempt to countermand the laws of planetary attraction, or to stay, by their military guards, the course of the angel that rides on the whirlwind, as to set limits to the ravages of this calamity.

F I N I S.

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