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CALDWELL. THOUGHTS ON QUARANTINE AND OTHER
SANITARY SYSTEMS, ETC.

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THOUGHTS

ON

Quarantine and other Sanitary Systems,

BEING AN ESSAY WHICH RECEIVED THE

PRIZE OF THE BOYLSTON MEDICAL COMMITTEE,

OF

HARVARD UNIVERSITY,

IN AUGUST, 1834.

BY CHARLES CALDWELL, M. D.

Veritas atque utilitas antiquitati præponendæ sint.

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ESSAY.

“ARE the Restrictions on the entrance of vessels into Port, called Quarantine Laws, useful? If so, in what cases should they be applied?”

Veritas atque utilitas antiquitati præponendæ sint.

Considered in relation to the matter which it comprises, and in its bearing on the interest and welfare of man, this is the most important question belonging to the science of Medical Police. Nor is it, perhaps, in these respects, surpassed by any one connected with medicine. It forms, therefore, a theme well fitted for discussion, under the auspices of a public institution, established for the promotion of professional knowledge. Not restricted to individuals or circumscinded communities, its limits are already commensurate with the concerns of all commercial nations, and may become so with those of the whole human race. It involves, moreover, in nearly an equal degree, health and life, liberty, property, and sound morals—boons, which give to human existence its chief value, and its only charm. In fine, there is scarcely, in the whole

range of civil society, an interest or immunity exempt from its influences. It is worthy, therefore, of a thorough examination. Nor can such a scrutiny be either simple, brief, or easy. It must embrace principles of great extent and importance, with no small amount of detail, in illustration and proof of them.

As it will shortly appear, of necessity, that I am no friend of Quarantine Laws, in their present form and condition, I may as well avow it now. Not only do they seem to me to be founded in error and superstition; their arbitrary principles and unrelenting spirit pronounce them a relic of barbarous times. In these respects, nothing in the history of despotism can surpass them. Though professedly intended for the benefit of man, they are strangers, within their sphere, to human right, and human sympathy. To say that they make sport and food of the sufferings and misfortunes of man, would scarcely be extravagant. They may, and often do, prohibit at pleasure, during indefinite periods, and under heavy penalties, all forms of business, and, as far as they can, of social intercourse, whether public or private—invade personal freedom, by confining those who become obnoxious to them to their own dwellings, or in places worse than common prisons; assume the right to destroy property, to the ruin of its owners, on mere supposititious ground; and have been frequently carried to the taking away of life. To finish the picture, the officers intrusted with the administration of them are too generally as unfit for their duties as ignorance and prejudice, cruelty and the pride of station can render them. Though these remarks do not apply to our own country so strikingly as to others, they, notwithstanding, apply so far to it, as to amount to a serious evil, not to call it a national disgrace.

If such be the character and scope of these laws, and so despotical and oppressive the execution of them, they should be either proved to be founded in truth, public usefulness, and absolute necessity, or be suitably modified, or entirely abolished. Nor ought a strict and solemn inquiry, which of these steps is preferable, to be any longer postponed. It need scarcely be added, that to endeavor to shed some light on the subject referred to, constitutes the aim of this dissertation.

From various causes, the inquiry, as I feel compelled to conduct it, is surrounded with difficulties. Among these, the high authority and deep-rooted prejudices it must encounter, are not the least. It will also clash with some of the public institutions and long-standing practices of our country, and with the personal interests of those concerned in them. For these reasons, I am aware that my situation is delicate, and that I am about to incur no inconsiderable hazard of giving offence. Confident, however, that no reform of abuses, or correction of errors, can be either affected or recommended in any of the established usages of society, without awakening unkind feelings, and exciting opposition, I assume the risk and responsibility, regardless of their weight; and, while it shall be my care to violate none of the observances due to other writers, I shall treat the subject under discussion, with the freedom and firmness which truth and the importance of it may seem to require.

Systems of Quarantine, being ancient institutions, are the growth of a period noted alike for ignorance, superstition, and groundless hypotheses, especially as related to the causes, prevention, and removal of pestilential diseases, and most other physical evils; and it is worthy of remark, as throwing some light on their present condition, and the estimation in which they should be held, that, neither in principle nor practice, have they undergone any material changes since they were first contrived. In these points, as well as in their spirit and administration, they are substantially the same now that they were at the time of their establishment, during the darkness of the fourteenth century. The modifications that have been made in them, have been far from keeping pace with the progress of that branch of science by which they should be regulated. They manifest, therefore, no practical wisdom, and have done no appreciable good. I speak of the evil they constitute, as it prevails throughout the world. In the United States, and a few other places, it is somewhat mitigated, but is still sufficiently annoying in its operations, and grievous in its effects. Quarantine establishments, then, are still the product of the fourteenth, with but little affinity to any of the institutions of the nineteenth century. That

consideration, alone, renders them objects of well-founded suspicion, the date of their origin being, in so high a degree, unfriendly to truth and usefulness, in all that depends on physical science. And it will appear, hereafter, that every other form of evidence bearing on the subject, concurs with this, in testifying against them. A brief history of Quarantines will show, in part, the correctness of this statement.

Their very name, which means a purifying process of *forty days*, proclaims the *superstition* on which they were founded. Nor has that basis, faulty as it was, been replaced by a better. Why *forty days*? The answer is easy. Lent, the period of abstinence instituted by the Catholic church, for *the purification of the soul*, lasted *forty days*; and that, again, was founded on the *forty days* fast in the wilderness. Hence, said the superstitious institutors of Quarantines, the term of forty days is requisite to purify merchandise, persons, ships, and other articles, from pestilential poison. No doubt the *forty years'* wandering of the Israelites in the desert, before they were deemed worthy to enter and enjoy the land of promise, had its influence in the establishment of those mischievous contrivances. Be this latter supposition as it may, the time allotted for purification had a superstitious and visionary, not a scientific or experimental origin. Nor is this all. It will appear presently, that, on principles of selfish policy, unwarranted by science, the Catholic church has had much more influence in establishing and maintaining a belief in the contagious nature of certain diseases, and in the erection and continuance of Quarantine establishments, than is generally imagined.

Quarantines had, perhaps, originally, some regard to the contagion of small pox; but they were founded chiefly, at first, and rest exclusively now, on the hypothesis of the contagious nature of pestilential diseases, especially of oriental plague. The confirmation of that hypothesis *might* sustain them, while its refutation *must* destroy them, as soon as prejudice and fashion can be uprooted, and correct principles be brought to bear on the subject. That refutation is now in progress, and, to aid in its completion, shall be a leading object of this paper.

Quarantine institutions are of Italian origin; and, as already mentioned, were first founded in the fourteenth century,—a period memorable for ignorance and gloomy superstition. The science of nature being scarcely yet in embryo, the medical notions of that date are of no value. This we learn from the works in medicine, that were then published, even by the most distinguished physicians, as well as from authentic histories of the time. Astrology and fanaticism, with their entire brood of dreams and fantasies, were then in their zenith; and the influence of the celestial bodies, the immediate finger of Heaven, the ministry of angels, or the craft of witches and evil spirits, was looked to, as the source of almost all that was extraordinary. Nor did ignorance fail to render extraordinary and wonderful *then*, many things that are familiar and common-place *now*. Two of the strongest features of the age, were a belief in the marvellous, and a want of knowledge of the laws of nature.

During this condition of the human mind, and in the midst of such gross intellectual rubbish, arose the hypothesis of pestilential contagion, and of the protective influence of Quarantine establishments. Neither from the time nor place of its origin, therefore, does that hypothesis derive any weight, but the reverse. Its strong resemblance to the other popular delusions of the age indicates its close alliance with them. It would be as easy to prove, that the pestilential diseases, which visited Italy, and other parts of Europe, during that period, came from the malign influence of the stars, from witchcraft, or demonism, as that they were imported from Egypt, the Levant, or any other portion of Asia or Africa. However heterodox this sentiment may be thought by many, facts will be adduced hereafter to sustain it.

I am not ignorant, that a belief in the contagiousness of pestilence is represented, by some writers, as the product of a much earlier period, than that just specified. It is asserted to have been entertained by the physicians of ancient Greece and Rome. With no valid authority for this assertion am I acquainted, nor do I believe that any exists. Unsuccessful, myself, in all my attempts to find a clause to support it, in the works of any of the ancient physicians, no contagionist has been able to show me

one. When, in discussing the subject, I have demanded the authority for attributing a belief in pestilential contagion, to Hippocrates, Galen, and other ancient writers, I have been requested, in reply, to prove that they *did not* believe in it. Nor is this all. It was gravely asserted, that my failure to establish their disbelief would be proof of their belief! Declarations to this effect have even found their way into print. But they are unworthy of a reply; and, being but a mockery of reason, should pass unnoticed, or be given to derision. Infer that Hippocrates *did* believe in pestilential contagion, because the *contrary* cannot be proved! As well might the inference be drawn, that his eyes were *green*, and his hair *blue*, because no proof exists that the former were gray, and the latter auburn,—or that he had a knowledge of small pox, because he has not denied it! Contagiousness is one of the strongest features of disease. The fact, therefore, that Hippocrates, Galen, and the Greek and Roman physicians generally, have not recorded their belief in it, as respects pestilential complaints, is evidence of their disbelief, or of their having formed no opinion on the subject. From such premises, no other deduction can be legitimately drawn.

But this is not all. Hippocrates *virtually* proclaimed his belief, that plague is an *atmospherical disease*, and therefore an *epidemic*, propagated otherwise than by contagion. He, on one occasion, predicted an invasion of Athens, by a pestilential complaint, which was raging at a distance from the city, in the direction from which the prevailing wind of the season blew. The plague was in Africa, and the wind was southerly. Hence, said the sage, the malady will be brought to Greece by the *atmosphere*—not by contagion.

Grant, however, that Hippocrates and all the other distinguished physicians of antiquity, those of Egypt among the rest, did believe in the contagiousness of plague,—does it follow, that their opinion was necessarily correct? Is the truth of an hypothesis always in the precise ratio of its age? And is it inevitably so? No one will maintain a notion so preposterous. In all matters involving a knowledge of nature, the reverse is much more likely to be true. The ancients, whether physicians or

philosophers, had but a meagre acquaintance with the science of nature. Were I to say that they had no *accurate* acquaintance with it at all, the position might be maintained, by evidence drawn from their own writings. Their views in relation to it, were crude and conjectural,—the product of fancy and abstraction, rather than of observation and judgment. Nor were they more so, on any points, than on those of the causes and nature of disease. Were any physician, of the present day, seriously to avow his belief in all the hypotheses of Hippocrates, Galen, Theophrastus, and other ancient luminaries in medicine, he would be held as insane.

It has been intimated, that the belief in pestilential contagion was much strengthened, and, in the mind of nearly all Christendom at the time, confirmed, by the authority of the Catholic church, or rather of the Pope, then deemed sacred and inviolable, being exerted in favor of it. This fact, not, perhaps, generally known, is of much more moment in the present discussion, than it may, at first sight, appear to be. In weighing it, and making a fair estimate of it, it must be borne in mind, that, at the period to be hereafter specified, the papal authority was irresistible, even in thought, over a great part of the Christian world. In many places, to offer resistance to it, was to hazard life. The *dictum* of his Holiness was considered tantamount to a voice from heaven. To disbelieve or oppose it, therefore, was accounted heresy, and might bring down on the offender the tortures of the inquisition. Hence, whatever cause the Head of the Church espoused, no matter how unreasonable, or absurd, was sure, for the time, to prevail.

Of the history of the belief in pestilential contagion, but little is known for the space of a century after its origin. We are informed that systems of Quarantine were established in Genoa, Milan, Venice, and other parts of Italy; and there our knowledge of the matter ends. The medical writers of the day, say but little on the subject. But, in 1545, the belief received a fresh impulse, and an accession of strength, to which it had been previously a stranger. In that year, Pope Paul III. convoked reluctantly the Council of Trent. His reluctance in the transac

tion, arose from the fact, that, in Trent, his authority was less despotic than in almost any other place. Anxious to remove the Council to Bologna, where his supremacy was absolute, he was not slow in contriving measures for the accomplishment of his purpose. A fever of a pestilential character was prevailing in Trent, at the time of the assembling of the Council. Availing himself of this circumstance, the Pope caused it to be proclaimed, that the disease was *contagious*, and therefore dangerous to the health and lives of the fathers, whom he had called together, and for whose personal welfare, no less than their spiritual, it was his duty to provide. In this proclamation, he found no difficulty in inducing physicians and others to concur; bribery, and promises, and threats, united to his own asserted infallibility, being the arguments he used. A Committee of Inquiry, composed of prelates, was formed by Cardinal Monté, an artful and distinguished ecclesiastic, who was deep and earnest in the interest of his Holiness. Before this right reverend and venerable body, Fracastorius, Physician to the Council, and many others, being solemnly examined, testified to the correctness of the Pope's opinion, and the justness of his fears for the assembled dignitaries of the church. The consequence of this manœuvre was threefold; the Council was removed; his Holiness gained his end; and the belief in pestilential contagion was established *by the authority* of the church, which, at that period, was, by most persons, deemed identical with *divine* authority! Soon after this event, Lazarettos were built and systems of Quarantines established in Naples, Leghorn, Marseilles, and other seaports of Europe, where no scheme of the kind had been previously thought of. Thus, by a selfish juggle of a set of churchmen, whose ignorance of the matter submitted to them, it would have been difficult to increase, were a medical creed, and a corresponding code of sanitary laws imposed on Christendom, which, by giving the stamp of sanctity to error and superstition, have retarded the progress of knowledge, destroyed millions of human lives, wasted hundreds of millions of property, and produced, through other channels, incalculable misery. And, as already mentioned, the scheme of protection then de-

vised, has descended, with but little alteration, to the present time. It has been sustained by precedent and authority alone. Truth and science have afforded it no support. On the contrary, it will appear, presently, that they are hostile to it.

To exhibit somewhat of the extraordinary character of the testimony, on the authority of which the right reverend Committee of Prelates assembled in Trent, ratified the belief in pestilential contagion, it may not be amiss to recite a few of the facts that were submitted to them, by some of the most enlightened of the witnesses examined. They were as follows:—

“A fur or leathern cap, worn *thirty-five years* previously, by a person infected with pestilence, communicated the disease to *twenty-five* Germans, in Verona, and destroyed them all!!”

“A feather bed, on which a pestilential subject had lain, on being shaken up, *seven years* afterwards, in Wrateslaw, produced a plague, of which nine thousand and five hundred persons died!”

“A rag, which had been infected *fourteen years* before, on being thrown out of a window, sent its plague-poison abroad, and produced frightful mortality!”

“A young man introduced his hand into a leathern trunk, which contained an infected *cobweb*, and was *immediately* attacked by pestilence! The web inflicted a plague-sore on him, *the moment* he touched it!”

On the authority of these tales, and many others equally incredible, was a judgment passed, and a code of laws established, which the accumulated experience and wisdom of centuries have not yet set aside. Nor are there wanting, even now, individuals of distinction, who still endeavor to maintain their truth, and perpetuate their influence, by narratives no less extravagant and futile—the product of fiction and a love of the marvellous. In proof of this, the following stories may be added to those already recited.

A brother of Julien, one of Napoleon’s general officers, died of plague in Egypt; and we are seriously told, that he caught the contagion *by taking a pinch of snuff from a box*, out of which one had been taken some time (not less, I think, than a week) previously by an infected soldier!

“ A rag, which had been used to wash a plague-sore, was thrown into the street. Some days afterwards, a hog took it into its mouth, and went immediately into convulsions, and died with glandular swellings! ”

The two following stories are copied from a small volume, lately published in London. The author of the work, a member of the profession, of no common rank, gravely relates and firmly believes them.

“ In Marseilles, long after a visitation of the plague had passed away, some persons, dragging out of a close corner, ropes, which it had been forgotten were once used to bury the dead, were attacked by the complaint; and, on that occasion, *ten thousand* persons died.”

“ At Venice, a blanket belonging to a person who had died of the plague, *seven years before*, reproduced the disease.” To these, hundreds of other fantasies of a similar cast might be subjoined; but, for the credit of the profession, I shall pass them by.

Were the question proposed to me, “ Is all the evidence, alleged in proof of pestilential contagion, equally frivolous with that just recited ? ” I would reply, that, although it is not all quite so extravagant and repulsive of belief, it is no less unsubstantial and insufficient to sustain the hypothesis built on it. The reason of this is plain. It is obtained by a process fallacious in itself; and, therefore, not only unfit to minister to truth, but actually hostile to it. To speak more clearly and pointedly:

The evidence adduced in proof of pestilential contagiousness has usually too broad and deep a dash of the marvellous in it. It is, moreover, mostly second-hand tattle—no better than rumor—something that every body has heard, but which nobody has seen. In these respects, it closely resembles witch, ghost, and goblin stories. Nor is the worst yet told. In too many instances, the evidence is furnished by interested witnesses—persons who hold offices and employments, founded on a belief in the contagiousness of plague, and other forms of pestilential disease. In no instance, within my knowledge, is it the result of accurate observation and research, or cautious experiment. It is not a little singular, that no well-devised plan of inquiry has been insti-

tuted to settle the question. All has been hitherto trusted to chance, tale-telling, and credulity; a course which can never lead to truth, on any subject, except as the result of accident. Such, I mean, has been the practice of the contagionists. If, in this charge, I do them wrong, it is unintentional; and I shall be gratified at being corrected by an adduction of facts, showing that they have, in any case, investigated the subject in a philosophical manner. It will appear, hereafter, that the non-contagionists have sought for evidence in a different way.

True; in the year 1819, a *feint* was made to inquire regularly into the validity of the hypothesis of pestilential contagiousness; but it was *only* a feint *in fact*, whatever it might have been *in design*. The inquiry, moreover, as far as it extended, (if, indeed, it could be called an inquiry, and not a mockery,) was conducted so inefficiently, not to say unfairly, that it could not fail to prove fruitless, if not *deceptious*. My allusion is to the proceeding of the British Parliament, in the year just specified.

A select Committee was appointed by the House of Commons, with instructions to inquire, whether the plague be contagious or not? But the commission was executed in a way reprehensibly partial, and therefore unsatisfactory. An investigation more superficial and inconclusive than that held under the direction of the assembled wisdom of the British empire, can scarcely be imagined. Almost all the medical characters examined on the occasion, were members of the College of Physicians, of London, scarcely one of whom had ever seen a single case of plague, much less witnessed an epidemic prevalence of it. All the knowledge they possessed on the subject, was derived from conversation, letters, and books,—the latter belonging almost exclusively to the school of contagion. Their testimony, therefore, was in favor of the contagiousness of the complaint, and was marked by an abundance of fancy and fiction. The result chiefly of hearsay and book-learning, unsubstantiated by observation or experiment: it was little else than a second edition of that submitted to the Committee of the Council of Trent. It, of course, left the subject of research as it found it, enveloped in the ignorance, and entangled in the errors of the fourteenth century.

At the time of this mock inquiry, London, and other parts of Great Britain, contained many able and enlightened physicians, who, having visited Egypt, and the countries of the Levant, had practised in plague, and become familiar with its history, means of propagation, and general character, from observation and experience. They were the very men, therefore, whose testimony alone was worthy of credit. Yet few, if any of them, were examined. Why? Because it was known that their evidence would be subversive of the hypothesis, which the examining Committee were determined to sustain. For it was no secret, that the settled purpose of that body was, to support, at all hazards, the long-cherished doctrine of the British government—*that plague is contagious*. Had no resolution of this sort existed,—but, had truth alone been the object of research, physicians, who had seen and contended with plague, would have been eagerly examined, and their testimony preferred to that of those, whose information had been collected from books. This assertion is too obvious and well-founded, to be held doubtful. To allege, as was done, that the members of the College of Physicians, were men of more years and experience, and of higher standing in their profession, than the others, was but an artifice of party, as shallow as it was disingenuous. The accumulation of knowledge is not always in proportion to that of years. And the experience of those, who have seen plague, can scarcely fail to be more mature and instructive, as respects that disease, than the experience of those that are strangers to it. Nor is the “standing” of a physician, according to the usual interpretation of that word, an infallible indication either of his disposition to inquire, or his capacity to judge. Physicians of the highest standing, as to the extent of their practice, are often but very ordinary students of nature, and explorers of causes. Nor is this all. Old men are too much inclined to adhere to old errors; while younger men are usually the discoverers of new truths. In fine—the Committee must have been influenced by some motive other than a sincere desire to elicit and diffuse correct information on the matter referred to them; else their proceeding would have been exceedingly different from what it was. They were men of too much sagacity and penetration, not to

know, that the course they pursued was incompetent to the solution of the important problem submitted to their examination. The result of that parliamentary farce must be regarded as having given a sort of state-sanction to the hypothesis of pestilential contagion. It exhibits, moreover, a striking example of the mischief a public body rarely fails to do, when it interferes with a subject which it does not understand. I have never known a legislature to avoid gross blunders, when framing laws about pestilential diseases. Nor can the case be otherwise, until a new course of proceeding shall be adopted. When legislators, as too often happens, have no sound and practical acquaintance with the matter to be deliberated and acted on, they should avail themselves of the knowledge of those that have. If this be done in the true spirit, and to the requisite extent, the issue may be salutary; but, if it be neglected, from motives of obstinacy and self-sufficiency, the avoidance of mischief is scarcely possible.

Nearly a hundred years previously, the British government had lent its authority, to give weight and popularity to the hypothesis of contagion. In the year 1720, the plague visited Marseilles, with a degree of violence and devastation, that dismayed all Europe, especially Great Britain, whose commerce with that city was extensive. Alarmed at the calamity which seemed to threaten them, the Ministers of the Crown directed Dr. Mead, the Court Physician, not to inquire into the contagiousness of plague, (of that they did not doubt) but to prepare and report to them a set of rules and regulations, to exclude it from the kingdom. In complying with this order, the doctor, who possessed both talents and learning, united to an inordinate fondness for theory and discussion, did not confine himself to matters merely practical. He speculated extensively on pestilential contagion, and, in a particular manner, went into an elaborate defence of the communicability of plague, from one country to another, by means of commerce. As, from his eminence and abundant knowledge, no less than from the zeal with which he engaged in the enterprize, he may be supposed to have vindicated his position, by the strongest arguments the case admitted, it may not be amiss, on the present occasion, to test the validity of his defence, by a brief review of it. This step is the

more necessary, in consideration of the fact, that Dr. Mead's Treatise is referred to, even now, as indisputable authority, on pestilential contagion. The following are some of our author's most prominent arguments, in proof of the conveyance of plague from one country to another, by travelling and commerce.

“The first instance,” says our author, “I shall mention, shall be of the entrance of the plague into Rome, in the year 1656, which we are assured was conveyed thither from Naples, by clothes, and other wares from that place, brought first to Port Neptune, and carried from thence to the neighboring castle of St. Lawrence; which, after having been kept some time there, were conveyed to Rome.” p. 254.

On this passage, I shall simply remark, that a more vague, inconclusive, narrative was never penned. Fairly interpreted, it amounts to this. At *some* period of a certain year, nearly *three centuries* ago, in *some* articles, by *some* body, as *some* one says, the contagion of plague was conveyed by a circuitous route, injuring no one during its passage, though it remained “some time” at the “castle of St. Lawrence.” In this unaccountable manner, was the poison of plague transported from Naples to Rome! Nor is this a bad specimen of all the *reputed* facts adduced by contagionists, to prove the communicability of plague, from one place to another, whether distant or near, by clothes and merchandise. How wretched must be the condition of a theory, when such trash is resorted to in support of it! It is virtually self-refuted. But, to proceed with Dr. Mead's evidence:

“A very remarkable story, lately communicated to me by a *person of undoubted credit*, is too much to the purpose to be here omitted. In the year 1726, an English ship took in goods at Grand Cairo, in the time of the plague's raging there, and carried them to Alexandria. Upon opening one of the bales of wool in a field, two Turks, employed in the work, were *immediately* killed, and *some birds, that happened to fly over the place, dropped down dead!*” p. 268.

“In the island of Bermudas, about the year, 1695, *as the account was given me by the learned Dr. Halley*, a sack of cotton was put on shore by stealth, and lay above a month, without any

prejudice to the people of the house where it was hid; but, when it came to be distributed among the inhabitants, it carried such a contagion along with it, that the living scarce sufficed to bury the dead. *This relation Dr. Halley received from Capt. Tucker, of Bermudas.*" p. 269.

"Alexander Benedictus gives a very distinct relation of a feather-bed, that was laid by *seven years*, on suspicion of its being infected, which produced mischievous effects at the end of that great length of time. And Sir Theodore Mayerne relates, that some clothes, fouled with blood and matter from plague-sores, being lodged between matting and the wall of a house, in Paris, gave the plague, *several years* afterwards, to a workman who took them out, which presently spread throughout the city." p. 270.

"Two hogs, finding, in the streets of Florence, the rags which had been thrown out from off a poor man dead of plague, after snuffing upon them, and tearing them with their teeth, fell into convulsions, and died in less than an hour!" p. 266.

Many other scraps of intelligence, equally valuable, but none, perhaps, more so—are contained in our author's *Treatise on contagion*. But the reader might well think me trifling with him, were I to trouble him any further with matter so fabulous. He will not fail to observe, that, as heretofore stated, every fact and narrative are given at *second* or *third hand*. The author *saw nothing himself*, but received and reported every thing on *hearsay*. And so strong was his credulity, and so thoroughly was his mind made up on the subject, that he appears to have been incapable of questioning or doubting. In his view of the matter, every narrator, though a mere minister of rumor, was a person of unimpeachable veracity, and well-trying accuracy. Yet it is much to be lamented, that it is scarcely possible to find an accurate reporter of any thing extraordinary. In proof of this, two persons seldom report alike on the same point. The truth is, that, as just intimated, so strong was our author's weddedness to a belief in the contagion and extraordinary communicability of plague, that he seems to have been incapable of analyzing strictly, and judging dispassionately of evidence respecting them.

His powers of discrimination being blended, and his will to examine subverted by credulity, he believed every thing that ministered to his favorite opinion. The testimony on which he relies, for the establishment of his hypothesis, is, in no degree, more valid, than that which can be adduced in proof of ghosts being seen in church-yards, fairies dancing on greens and hair-bells, and witches riding on broom-sticks, and sailing in egg-shells! Were it not for the mischief it has already done, and may, for a time, continue to do, the doctor's whole discussion of pestilential contagion is too trivial to be seriously considered. But for this reason, I should deem myself as usefully employed, in a grave attempt at a refutation of a belief in *necromancy* or the *second* sight. Yet is the work I am examining considered the ablest that has appeared on the subject of which it treats. It is, therefore, more frequently referred to, and more implicitly relied on as authority, than any other. It might be called the Alcoran of contagionists; and, for more than a century, has been almost as servilely confided in by them, as are the writings of the prophet, by the most faithful of his followers. Nor are the stories it contains, much less miraculous. In evidence of its unparalleled popularity, it passed through *seven large editions*, within one year after its first publication. No wonder, therefore, that it has done much to rivet in the human mind a belief in the contagiousness of pestilential complaints.

Dr. Mead has availed himself of every practicable source of information favorable to his views, and tasked his powers to the highest pitch, in his attempt to prove, that the plague was imported into Marseilles, in 1720, in a cargo of goods from the Levant. Yet, in this effort, he has been, if possible, even more unsuccessful than in either of his others, because he has virtually refuted himself. He admits that, before the arrival of the suspected goods, there prevailed, "in Marseilles, a fever of extraordinary malignity, such as is commonly called pestilential." And he further admits, that, "in an instance or two, that fever was attended with *eruptions* bearing *some resemblance* to the plague." Still he contends that it was not plague, but a pestilential fever, essentially different. When he attempts, however, to show

wherein the difference consists, he entirely fails. The reason is plain. There was no difference, except in degree. What he calls "pestilential fever," was *immature* plague. As the season advanced, and the heat increased, it gradually ripened; and, about the time of the arrival of the Levant vessel, its form and character became complete. It was then true plague, and was so acknowledged by every one; whereas those, who had previously called it plague, and predicted that it would soon throw off its mask, and assume a less equivocal shape, had been laughed at as visionaries, or denounced as alarmists.

Such are the circumstances that attend an eruption of plague, almost universally. It is ushered in by a "pestilential fever;" that complaint being but a lower grade of itself; precisely as the dawn ushers in the day. Nor would it be more preposterous, to declare the faint light of morning essentially different from the full light of day, than to contend for a radical difference between the precursory pestilential fever, and the subsequent plague.

The Great Plague, that devastated London, in 1665, and every other, that has prevailed in that city, to any extent, was preceded by a pestilential fever. So was the celebrated plague of Moscow, as well as those of Paris, Lyons, Milan, Rome, and other cities and towns of France and Italy, as might be easily shown, did time and the occasion permit me to adduce the evidence that is accessible. So were the noted plagues of Aleppo, as recorded by the two Russells. Even in Constantinople and Grand Cairo, the severest plagues are uniformly preceded by malignant fevers. Such is the unvarying course of things. Nor did Marseilles exhibit an exception to it. The fact, moreover, is easily explained. Plague is an atmospherical disease. But the atmosphere does not pass at once into the condition necessary to its production. It ripens for the purpose gradually, and therefore requires time. Under its first degree of vitiation, it generates fevers of a common character, under its next, pestilential ones, and ultimately true plague.

Of yellow fever, which is but a modification of plague, or at least a complaint very closely allied to it, the same is true. It is preceded, in the places it invades, by febrile affections of in-

ordinate severity, The history of that disease, as it appeared in New York, Philadelphia, and Baltimore, at the close of the last, and the beginning of the present century, testifies to this. It visited those cities, with more or less malignity, almost every year, from 1793, until 1805—five or six times with great mortality. And if, during that period, febrile complaints were unusually malignant, in May, June, and July, or either of those months, yellow fever was looked for in August or September. Nor did it fail to appear, unless prevented by a favorable change in the character of the weather. The explanation of this unvarying course of things was easy to every one, except contagionists, who, as light on the subject increased, and reason gained an ascendancy over prejudice, declined rapidly in number. The fevers of the early summer months were but lighter grades of yellow fever, which appeared in full maturity and strength, at a subsequent period.

Such, I repeat, is the true explanation of the occurrences in Marseilles, in 1720. And the contrary belief, asserted by Dr. Mead, and attempted to be proved, by evidence so insufficient, would surprise me, were it not that the doctor was an ultra-theorist. No writer of the time, nor indeed of any time, surpassed him in the visionary character of his speculations on disease. Witness his singular descants on the complaints of Saul, Jehoram, Hezekiah, Nebuchadnezzar, Judas, and Herod, respecting which we can do nothing more than frame conjectures, and that to no useful purpose, or satisfactory result. Nor are his chapters on Demoniacs, and the diseases of old age any better. Here again the discussion is unsubstantial and useless. If it be pronounced even *curious*, there its praise must end. Yet, redundant as he was in intellectual extravagances, not to say frivolities, Dr. Mead has done more, from his high and *fashionable* reputation, and the aid he derived from the British Government, to fasten on the human mind the hypothesis of pestilential contagiousness, and the necessity of Quarantines, than any other physician, with whose history I am acquainted—I believe I might say, than any other that has lived. But the sceptre is falling from the hands of his followers, and will soon be transferred to the an-

ticontagionists. The fate of his dominion in medicine resembles that of the power of emperors and kings, which is passing into the hands of those, who once considered it of divine origin, and therefore not to be resisted. The contagionists of latter times have done nothing to prevent, and but little to retard this issue of the contest. They have added nothing valuable to the stock left them by their predecessors, and have therefore proved nothing which they found wanting proof. They have dealt in assertions, surmises, and rumors, but not in facts and fair research. In acting thus, they consume their time, and waste their powers to no purpose. The evidence they affect to adduce does not suit this plain, observing, matter-of-fact period of the world. Several nations have exchanged poetry and fiction for philosophy and common sense. And the latter are intolerant of the fancies and dreams of Mead and his disciples. Visions of every description (the notions I am combating not excepted) are chiefly the product of night and darkness. The light of day dissipates them. And, as respects the subject under discussion, that light is now opening. Conjecture and hypothesis, therefore, must be no further palmed, as truth, on those who are beginning to look and think for themselves. Nor will the authority of *man* be any longer received, as a suitable substitute for that of *nature*; much less will it be admitted in opposition to it. Hence the days of the belief in pestilential contagion, and of all institutions and practices growing out of it, are numbered; and appearances indicate that they will not be protracted. That they have continued so long, under the sanction of so flimsy an hypothesis, is ascribable to circumstances already stated in general terms, but which no longer exist in their original strength. Those circumstances may be summed up more definitely, under the following heads:—

1. The ignorance, prejudice, and superstition of the world, at the time when the belief in pestilential contagion took possession of the public mind. This was an intellectual condition peculiarly favorable for erecting and maintaining *any* hypothesis, however absurd, under the sanction of high authority. Inferiors believed what their superiors dictated to them, and looked to no higher source of information. It rarely occurred to them that

they should consult nature, as a fountain of truth. They were even told, by some of their instructors, whom they regarded as oracles in knowledge, and patterns in piety, that nature was corrupt and fallacious, and, if confided in and followed, would mislead and ruin them. Thus were they blinded by ignorance, and duped by error, under the ministry of artful and ambitious ecclesiastics. In the midst of the sinister influence of such causes, and on the authority of men unacquainted with nature, and actuated chiefly by the lust of power, and the love of wealth, was the hypothesis I am examining originally founded. But the fruit must be assimilated to the tree that produces it, and the stream to the fountain from which it flows. No wonder, then, that the notions of the fourteenth century, a period of entire darkness, as respects physical science, cannot bear the scrutiny of the nineteenth, when that branch of knowledge is successfully cultivated.

2. The stratagem of Paul III, at the date of the Council of Trent, which threw into the scale of the hypothesis in question, the entire weight of the Catholic church. That event not only strengthened the notion of contagion, by what was considered infallible testimony; it imbued it with a supposed spirit of sanctity and truth, which it was heresy to dispute. Its adoption became a Christian duty, and its rejection a dangerous crime. Even to doubt it, was to question the infallibility of his holiness—an act which might bring down on its author ecclesiastical vengeance, and consign him to a dungeon, if not to the grave. Nor is this all. Lazarettos, the product of the hypothesis of contagion, were placed originally under the management of the clergy, and so continued, for more than two centuries. During that period, the directors and governors of those institutions, as rapacious as they were bigoted, enriched themselves and the cardinals, who procured them their appointments, and, no doubt, the Pope himself, by the suspected merchandise and other property placed in their hands, for purification and protection. Thus had the Dignitaries of the church two of the strongest motives, that actuate the human mind—the love of power, and the love of wealth—to induce them to perpetuate the belief in contagion.

3. The sanction given to the hypothesis, by the British Government, in 1720, through the writings of Dr. Mead. As already

mentioned, those writings have been ever since the text-book of Lazaretto and Quarantine-mongers, throughout Christendom—our own country, I regret to say, not excepted.

4. A second sanction, by the same Government, in 1819, through the Report of the Committee of the House of Commons. The influence of this act was much feebler than that of the proceedings of 1720, because the world had begun to look at things somewhat as they are, and to think for itself, much more than it did a hundred years before. The manœuvre, however, no less dishonest, than that of Pope Paul, did something towards propping up, a little longer, a tottering hypothesis.

5. The influence of all the officers of Lazaretto and Quarantine establishments in Christendom. This has, of course, been uniformly exercised, in support of the hypothesis, which gives the possessors of it their subsistence. Nor is it feeble. However ignorant these officers may be, in other matters, they have always had the credit of knowing, from experience, every thing connected with a Lazaretto—the contagiousness of pestilence not excepted. To their own personal and official influence, add that of their dependants and friends, and the two united is powerful.

6. The pride of opinion often expressed; the prejudice of education; the force of long-continued habits, the reluctance of most persons to abandon old theories, and frame and support new ones, merely on account of the trouble it gives them; the facility of adopting the opinions of men, contrasted with the difficulty of scrutinizing the laws of nature, and drawing information from that source; and, last, though not least, the sway of fashion, which is almost as despotic in matters of belief, as in forms of dress—and to believe in the contagiousness of plague has been fashionable for centuries. These several motives, each of them strong in itself, have concurred in perpetuating the notion of contagion.

Such is the general union of causes, which has sustained this delusion, from age to age, notwithstanding the increase of knowledge calculated to destroy it. Yet, multiplex as that union is, fact and fair reasoning make no part of it. It is a repulsive compound of ignorance and error, prejudice and superstition, the love of gain, and the love of power. It is an incorporation of

the same elements, that have given origin and continuance to the hypothesis of papal infallibility, the miraculous power of the relics of saints, and the divine right of kings to trample on their subjects ; and those four delusions, which have, for hundreds of years, fettered the human mind, and repressed its energies, degraded our race, and produced mischief and misery, beyond calculation, are destined to be dissipated alike, by the development of moral and physical truth. And when popes and potentates of every description, shall be no longer regarded as more than mere men, nor saintly relics than fragments of inert matter, then will be rejected the notion, no less empty and untenable, that the contagion of plague can be carried in a fur cap, a lock of hair, a bundle of wool or cotton, or a lady's glove, from country to country, and spread disease and death among the inhabitants.

I am aware that I may be suspected of intending, by the foregoing remarks, to attach undue discredit to the hypothesis I am opposing. It may be even imagined, that I am desirous of sinking it deeper in disrepute, than I myself think it deserves. Such, however, is not the fact. After deliberately investigating the subject, through every channel by which I could approach it, and by every means I could bring to bear on it, I avow my steadfast belief of all I have said. And, though far from boasting of either my powers or attainments, which I know to be sufficiently humble and limited, yet, confident of the truth of the views just stated, I challenge all believers in the contagiousness of plague, to put me in the wrong, by adducing a single *pertinent and well-substantiated fact*, in support of their hypothesis. With surmises, equivocal stories, and bold assertions, their writings abound. But, in scientific investigations, such evidence is inadmissible. It is, in truth, inadmissible every where, because it is no evidence at all. Facts alone, stripped of every thing, whether of color or shape, that may render them deceptive, are admissible in the researches of the present period. And none such have the advocates of pestilential contagion yet presented, to sustain their notions. All of that description are opposed to them.

Shall I be called on to prove that plague is *not* contagious? That would be unreasonable, and contrary to the rules of sound

logic ; a *negative* being insusceptible of proof. A mere denial, on the negative side, is sufficient, until actual proof is offered, on the positive. The criminal, on trial, is held innocent, until he is proved guilty. And the testimony he offers, in his defence, is intended chiefly to show the insufficiency, or the evil intention of that brought against him. To prove *positively* that he did *not* commit the crime, with which he is charged, is usually impossible; although he may show to the reasonable satisfaction of every one that he did not. The ground of his acquittal, therefore, is, that his commission of it is not proved.

In like manner might I proclaim the non-contagiousness of plague established, until that of its contagiousness be made definitively to appear. Nor would the expedient be a violation of the rules of discussion. Of this privilege, however, I shall not avail myself. To take shelter behind a technical covering, or to use any *artifice*, to secure victory, or avoid defeat, would be unworthy of the cause I am endeavoring to sustain. That the contest, therefore, may be perfectly fair, I shall state briefly my chief reasons, for denying that plague is a contagious disease.

To prevent all misinterpretation of the terms to be used, I shall here premise, that, by the *matter of contagion*, without which no complaint is communicable from the sick to the well, I mean a poison secreted, by morbid action in one body, capable of producing a similar kind of action in another. To be contagious therefore, a disease must be *directly* productive of such a poison. It is not sufficient that the secreted matter turn to poison, by chemical changes, after its elimination from the bodies of the sick. The poison must be formed by diseased vital action, and possess its virulent qualities, at the time of its formation and discharge from the system. Is a virus of this description generated by plague, in the manner here stated? The negative of this question seems to be established, by the following considerations.

1. The strict analogy, in all material points, between plague and yellow fever, the latter of which no one now considers contagious. Though that analogy will be frequently brought into view, in the course of my remarks, it is matter of regret to me, that the limits, within which I must confine this essay, do not

permit me to give a detailed view of it. I shall only further observe of it, at present, that it is so complete, as to show satisfactorily, that the two forms of disease (plague and yellow fever) are but modifications of each other, having a common origin. It is important to add, that the hypothesis of the contagiousness of yellow fever has, within the last forty years, passed through the same inquisition, which the contagiousness of plague is undergoing at present. And the issue is known. With all competent judges, the decision is against the contagious nature of the former complaint. No one of intelligence, who has thoroughly investigated the subject, now believes in it. Yet, when that disease appeared in Philadelphia, in 1793, the case was far otherwise. The belief in its contagiousness was much more confident and general, than is that in the contagiousness of plague, at the present period. And had yellow fever prevailed only at a distance, among an ignorant people, not qualified, or disinclined to scrutinize severely its cause and mode of propagation (as is the case with plague) its contagiousness now would be generally maintained. But, by the industry and discernment of American physicians, light was thrown on the subject, and the delusion vanished. I have said, "American physicians;" for to them belongs the merit of the work. If other physicians joined in it, it was not until an advanced period of the contest. The labor and heat of the day were borne, and the task achieved, by the Faculty of the United States. And a glorious task it was. To the civilized world, it was the day-spring of hope, as respects their emancipation from the fallacy of a belief in pestilential contagion, and the thralldom of Quarantines, with their empty mummeries, and immeasurable mischief. I repeat, that the notion of the contagious nature of plague is now undergoing a slow but regular examination; and the issue will be its extinction, as a groundless superstition in medicine. A certain pledge of this is, its progressive loss of popularity and advocates, in proportion to the increase of knowledge respecting it. Were the opportunity moreover for scrutinizing it as favorable, as was that for inquiring into the contagiousness of yellow fever, it would soon cease to encumber science, and mislead the unthinking. But difficulties exist, which

will protract its duration. Two recent occurrences, however, can scarcely fail to lessen those difficulties. The first, and perhaps the most important of these is, the establishment of a school of medicine in Egypt, and the general reform, as to science and art, which the Pacha is introducing into that country. The other is, the opening of a free intercourse between the United States and the Sublime Porte. American physicians will now settle in Constantinople, examine plague, as they have done yellow fever, and show it to be non-contagious. In Grand Cairo, and Alexandria, the same work will be performed, and the same services rendered to the world, by physicians from Europe and the United States. This great enterprize, so important to man, is now in progress, and, I doubt not, will be completed, before the middle of the present century.

2. Within the last forty years, during which period medicine has assumed much more of the character of an exact science, than it had held previously, every well-conducted inquiry into the hypothesis of pestilential contagion has proved unfavorable to it. By disclosing new ground of dissatisfaction with it, it has never failed to diminish the number and zeal of its friends, and increase those of its opponents. Witness the investigation by Napoleon's Medical Staff in Egypt, especially by his physician and surgeon in chief, Desgenettes and Assalini. Those enlightened and enterprizing officers were believers in the contagiousness of plague, when they entered Egypt, and disbelievers when they left it. Why? Because their opinion, founded at first, on rumor and reading, was now the result of observation and experience. The latter sources of information therefore had dissipated the delusions of the former. This is history.

Of the inquiry into the contagion of the pestilential fever of Gibraltar, in 1814, the same is true. The decision was, that the complaint was not contagious. On the pestilential complaints which have prevailed, during the present century, in Spain, the most enlightened physicians, who examined them, passed a similar opinion: they pronounced them non-contagious. As relates to cholera, the same may be affirmed. On the first eruption of that pestilence in Asia, and for years afterwards, the

civilized world trembled no less at its supposed contagion, than its unprecedented malignity. But several distinguished physicians, who had been observers of it, from its commencement, became satisfied, at length, that it was not contagious; and, in its passage through Europe and America, the correctness of that opinion has been fully confirmed. Among intelligent physicians, who have seen much of cholera, and been observant of its rise, progress, and termination, the disbelievers in its contagiousness are, to their opponents, as a hundred to one—perhaps more. In the United States, I know not a single physician of eminence, who, having seen it and practised in it extensively, now maintains its contagious quality. If some did so, at first, it was because the disease had not then been sufficiently scrutinized by them. Yet I venture to say, that the phenomena of cholera are as favorable to the hypothesis of contagion, as those of plague. And were the latter complaint to sweep over Europe and the United States, as the former has done, the notion of its contagiousness would be refuted and abandoned. I need scarcely add, that when the advocates of an opinion decline in number, in proportion to the increase of knowledge on the subject of it, that circumstance alone proclaims it untrue, and forewarns of its fate. A contested truth gains proselytes, as it becomes better understood.

3. A real poison produces its deleterious effects on the human system, at all times, in all places, and under every imaginable variety of circumstances. This is true, whether the poison be morbid or natural, animal, vegetable, or mineral, solid, liquid, or aeriform. Arsenic, the virus of the rattle-snake, and the juice of the mountain laurel do not poison alone in any particular place, at any particular season of the year, or under any given degree of temperature, humidity, or purity, of the atmosphere. They injure or destroy with equal certainty, in the city and the country, the plain and the valley, the dry ground and the morass, on the hill-top and the mountain, in an arid atmosphere and a moist one, and during winter and spring, as certainly as during summer and autumn. Of the virus of small-pox, and that of Lues Venerea, the same is true. But, as respects the supposed contagion of

plague, the case is otherwise. It produces disease only during certain seasons of the year, in particular places, and under peculiar conditions of the atmosphere. Hence, in Constantinople, Smyrna, and other parts of Europe and Asia, the plague ceases on the approach of winter, and, in Egypt, when the heat of summer and the aridity of the earth and the atmosphere have attained their height. Nor does it ever prevail, in the latter country, when the land is flooded by the waters of the Nile. Yet we are assured, that the contagion of the disease remains in Grand Cairo, Constantinople, Alexandria, and elsewhere, concealed in bedding, wearing apparel, and merchandise, throughout the year. Why then does it not produce disease? Because, say the contagionists, a suitable condition of the atmosphere is wanting. This allegation, though unworthy of a reply, shall receive one hereafter, that those who resort to it may not deem it unanswerable. Physicians, and all other persons familiar with the history of the two complaints, cannot fail to observe, that, in the several points referred to, under this head, plague and yellow fever are not merely analogous, but may be pronounced identical.

4. Plague bears no resemblance to a contagious disease, in either its commencement, progress, or termination. It begins without any known communication with infected persons, clothing, or merchandise, spreads irregularly but rapidly, and disappears at the time, and under the circumstances most favorable to its further propagation, were it actually contagious. To be explicit on these points, which are vitally important, in the present discussion.

Small-pox is a truly contagious disease, and usually spreads by its virus alone, being rarely epidemic. It moreover far surpasses the plague in the certainty with which it is communicated, as appears from the fact, that fewer persons exposed to it escape an attack. The calculation is, that not more than one in, I think, about seven thousand, can be fairly exposed to the contagion of small-pox, with impunity; while plague passes by a large proportion of persons, under a like exposure, without injuring them. Yet plague spreads through a city or country with tenfold the rapidity of small-pox. The latter complaint requires perhaps a year, to pervade an en-

ture city or town, which the former overruns in a single month. The reason is plain. Small-pox cannot spread, unless the well contract it, by coming within the immediate atmosphere of the sick, their bedding or clothing, or some other article that has been about their persons. All this may be avoided. But the case is different, with respect to plague, as will be made to appear, and be explained more fully hereafter. To contract it, no approach to the persons of the sick, or to any thing that has been near them, is requisite. It comes to individuals, instead of their going to it.

Small-pox again spreads, with regularity, from person to person, family to family, and neighborhood to neighborhood, according to the time and proximity of exposure. The nearest suffer first, while the more distant escape, until a later period. Very different is the manner of the spreading of plague. That malady, in its irregular progress, passes over not only individuals and families most exposed, without attacking them, but leaps over whole adjoining neighborhoods, and lights on remoter ones. It then often returns and scourges those it had spared. In these several points, again, it is identical with yellow fever.

Nor are the two maladies less similar in the mode of their termination, which is usually abrupt; while that of small-pox is as gradual as its commencement. In temperate latitudes, plague begins in June, July, or August, according to the character of the season, and ends in November, or early in December. So does yellow fever. When plague first appears, the cases are few in number, and its supposed matter of contagion correspondingly small in quantity. As the cases increase in number, so, of course, does the supposed matter of contagion in amount; and in proportion to that amount, at any given time, must be its power to spread the disease. This may be termed an axiom. When the complaint, therefore, is at its height, its capacity to spread must be greatest. But, when it begins to decline in November (and its decline is, for the most part, very rapid) the number of its cases, in a large city—say Constantinople or Grand Cairo—is a hundred-fold greater, than it was, when it first broke out, in June or July. Its supposed matter of contagion is, of course, in an

equal degree more abundant. Why then does the disease suddenly disappear, its quantity of poison and means of propagating itself being still so great? If *five or six* cases, or even a *single* case of plague, can, in June, as contagionists allege, generate a sufficiency of contagion, to diffuse the disease through a city, and destroy thousands of its inhabitants, why cannot *five or six hundred*, or a *thousand cases*, form, in November, a sufficient amount of the same matter, to prevent the complaint from expiring? Its symptoms continuing the same as previously shows the character of the disease to be unchanged. Why then has its poison lost its power? and why regain that power, at a subsequent period? For the contagionists contend, that the same poison, which has become innocent now, resumes its virulence the following summer, or even a dozen of summers afterwards, and reproduces plague! Were not this their doctrine, how could they assert, that feather-beds slept on, and clothes and fur caps worn by the infected, ropes used in burying the dead, and even a cobweb enclosed in a trunk, have regenerated the malady, after a lapse of twelve or fourteen years? Well might I say, with Hamlet, "There is something more than natural in this, if our philosophy could find it out." In fact, the whole matter, as represented by the advocates of contagion, is a glaring incongruity—a specimen of palpable self-contradiction, which no sound logic can countenance, and no weight of authority, or artful devices of sophistry maintain. The circumstances of the termination of plague, contrasted with those of its beginning, are alone sufficient to subvert the hypothesis of its contagiousness. As already intimated, the close of an epidemic prevalence of that complaint resembles as perfectly, in all material points, the close of a like prevalence of yellow fever, as one sunset resembles another. This fact furnishes an additional argument, in proof of the identity of the two diseases.

5. Closely allied to the last is another consideration, which testifies strongly to the non-contagious nature of plague. No sooner have the ravages of that complaint terminated, in Constantinople, Grand Cairo, and other parts of the east, than, without undergoing the slightest lustration, the houses just depopula-

ted by it are repopled with fresh inhabitants. By these new tenants, the beds of the deceased are slept on, without cleansing, their clothes worn, many of them without being washed, their mats sitten on, and other articles found in the dwellings used as customary—all with *perfect impunity*. Not a case of plague results from the practice. Were that malady contagious, these occurrences would be impossible. Nothing can reconcile them to such a quality in it. Yet, though those articles of bedding, clothing, and furniture, cannot, when *freshly* imbued with the poison, produce a single case of plague, contagionists maintain, that, even *years afterwards*, they may be carried hundreds of leagues through the air, by land or water, and generate the disease in distant places, to the devastation of cities, and the terror of nations! A view of the subject so utterly at variance with reason and common sense would not deserve to be seriously treated, if it were not for the immeasurable mischief it has aided in producing. But its influence cannot continue much longer. It is the product and nurseling of ignorance and credulity, and must vanish under the light of knowledge, like its kindred phantoms under that of morning.

The preceding is another point of strict resemblance between plague and yellow fever. Houses depopulated by the latter disease, as well as by the former, are, after its termination in the autumn, occupied immediately, *uncleansed*, by new tenants, with perfect impunity.

6. All attempts to communicate plague, by inoculation, have failed. Many of the soldiers of Napoleon, in Egypt, were so terrified at the supposed contagiousness of that complaint, that, though they would have marched cheerfully to the cannon's mouth, they were unwilling to attend their comrades when attacked by it. To dispel this panic, some of the physicians inoculated themselves, with the matter of buboes and carbuncles and other secretions of the sick, and several officers of rank submitted to the same operation, in presence of the troops; yet, in no instance, did the experiment produce the disease. By this bold and happy expedient, and the further one of Napoleon himself daily visiting the hospitals, and ministering to the sick, the

apprehension of the soldiers was removed, and the mortality of the complaint lessened.

Under this head may be noticed a discrepancy of opinion, or rather of conjecture among the contagionists, which is far from testifying to the soundness of their hypothesis. Those theorists cannot agree, as to the source or laboratory of pestilential contagion—I mean the part of the body, in which it is formed. Some consider that poison as the product of buboes and carbuncles; others, as generated by the skin, and thrown out in mixture with the matter of perspiration; a third set, by the lungs, and diffused by the breath; a fourth, by the liver, and mingled with the bile; a fifth, by the kidneys; a sixth, by the salivary glands; a seventh, by every part of the system, the blood not excepted; while an eighth, with much more truth and modesty on their side, frankly acknowledge, that they do not know where it is produced. Such a clashing of conjecture establishes clearly but one position—that the parties in conflict are strangers to the matter, about which they are contending. Though concord in opinion is not an infallible sign that that opinion is true, the reverse is a sure indication of error.

Here is another strong analogy between plague and yellow fever, it being as impracticable to communicate the latter disease by inoculation, as the former. To settle this point, the late Dr. Firth, then of Philadelphia, made many intrepid and decisive experiments. He inoculated himself with almost every fluid from the bodies of persons ill of yellow fever, not excepting the matter of black vomit, and even with some of the solids of the dead, reduced to a fluid condition, without being able to produce the disease. Nor did he stop here. He inhaled the breath and perspired gases of the sick and dying, and the fumes of black vomit and other excretions placed on heated iron and stones, and swallowed considerable portions of the same substances—all with impunity.

7. Plague does not resemble small-pox, in being but *once* communicable. The same person, as experience evinces, is susceptible of repeated attacks of it, during the same season. Were it contagious, therefore, its ravages, wherever it might get

a footing, would terminate only with the depopulation of the place. It is to me inconceivable how an individual could survive. All would not die under the first attack; but all must finally perish, under reiterated attacks, so speedy in their succession, as to afford no intervening time for the recovery of strength. In this view of the subject there is no extravagance. The result would be inevitably as here represented. The same individual, the same family, and the same city and community would sicken again, from their own contagion, until their sufferings would find a remedy in death. And thus, by passing from country to country, would this single disease depopulate the earth, else all communication between nations must cease. Suppose small-pox capable of an indefinite number of attacks on the same person. The consequence is plain. Nothing short of the extinction of the human race could stay its ravages. That it does not possess a reinfecting power, constitutes one of the countless instances of the beneficence, wisdom, and fitness of the dispensation, under which we live.

8. Like yellow fever, plague prevails chiefly in hot climates, and during the hot season of temperate and cold ones. And it prevails only in places abounding in filth, such as towns, camps, garrisons, and cities, and on the low lands of lakes and rivers, and other bodies of water. It never originates or appears first, in high, dry, and healthy situations. Nor does it spread in them, when cases of it reach them from a distance. The atmosphere of such places is as fatal to it, as the deadliest form of gas is to animal life. When, for example, plague is prevailing in a town or city, if the sick be removed to a neighboring hilly or mountainous district, they never propagate the disease. They are visited, prescribed for, and nursed, with entire safety; and, in places where the character of the complaint is understood, without fear. Facts testifying to this effect are reported even in the writings of Dr. Russell, one of the most strenuous advocates of pestilential contagiousness. Indeed it was an attentive perusal of his large work on the plague of Aleppo, not long after the commencement of my medical studies, that first unsettled my belief in the contagious nature of that disease. For the notion had

been inculcated on me, as on an article of my professional creed. The evidence in support of pestilential contagiousness, adduced by Dr. Russell, appeared to me so defective, even during my medical pupilage, as to excite in me strong doubts of the truth of his hypothesis. From subsequent investigation, those doubts have turned to conviction. I shall only add, that, in all the points referred to, under this head, yellow fever and plague may be pronounced the same.

9. It has been long known, and often pronounced an unaccountable fact (truly unaccountable on the hypothesis of contagion) that the physicians, nurses, and visitants of plague-patients were not more frequently attacked by the complaint, than persons, who held no intercourse with them. The same is true of those concerned in funeral preparations, and in burying the dead. To such an extent is this the case, that those individuals have been often suspected and sometimes openly accused of possessing prophylactic means, which they used for their own safety, but refused to disclose, for the safety of others. How different is this from the fate of persons, who visit and nurse, in cases of small-pox, having never been subjects of the complaint themselves! As already mentioned, not more than one in many thousands of such individuals escape an attack. On this topic I shall only further observe, that my suspicion of the non-contagious nature of yellow fever was first awakened, by perceiving, that patients laboring under that complaint, did not communicate it to their physicians and nurses.

10. The mode, in which plague spreads, is very different from that which marks a disease propagated by contagion. It varies with the changes in the temperature of the weather. While the weather is hot, it is rapid, and experiences a check, when the temperature falls. Every history of the disease I have examined, contains a record of these variations. Russell notices them, in his account of the plague of Aleppo; Hodges, in his *Loimologia*, or essay on the Great Plague of London; and Messrs. Deidier, Chirac, Verney, and Chicoyneau, in their writings on the plague of Marseilles, in 1720.

Very different from this is the spreading of small-pox, by means of contagion. Uncontrolled by the weather, that com-

plaint, whether increasing or declining, is regular in its movement, except when retarded by a diminished, or accelerated by an increased exposure of individuals. But no exposure can multiply cases of plague, when the weather is cool, nor any precaution prevent their multiplication, when it is hot. It is scarcely necessary to observe, that, in their dependence on the character of the weather, plague and yellow fever obey the same laws.

11. The following facts testify strongly to the non-contagious nature of plague.

The French officers and soldiers, under Napoleon in Egypt, when attacked by plague, and removed from the contaminated atmosphere of a sickly situation, to a place where the atmosphere was pure and healthy, never communicated the complaint to their physicians or attendants.

Both Turkish and French soldiers opened the graves of those who had died of plague, stript off their apparel, and wore it themselves, with perfect impunity.

When the plague was raging in Grand Cairo, the Citadel, which was healthy, was occupied by the French garrison. With these soldiers the inhabitants of the city held free intercourse, without, in a single instance, communicating to them the complaint.

The inhabitants of villages in Egypt, where plague is prevailing, go out of them, and mingle freely with the people of the healthy surrounding country, yet never infect them.

Dr. Russell informs us, that "In the month of April 1759, a large Turkish vessel, laden at Alexandria, and bound for Constantinople, was wrecked on her passage, not far from Cape Baffo. Of the crew who were saved, a great part happened to be infected with the plague, which was first communicated to certain villages on the road to Limsol, and afterwards to that town itself.

"Some of the sailors died in the villages. The rest, after a short stay, proceeded to Larnica, where they remained only a few days. None of them died in Larnica; though it was known that *several of them actually had the disease.*"

* * * * *

“The condition of Larnica, at this period, was remarkable. It had received part of the infected crew from Limsol; it had maintained a constant intercourse with the infected quarters of the island; peasants and mule-drivers from those parts, with pestilential sores on their bodies, were daily in the streets and markets; and some of them died in the houses of Larnica. On the 22d of May, a vessel arrived from Damietta, which put on shore some infected passengers and sailors, who lodged in the houses, and communicated freely with the natives. Another Turkish vessel, from the same place, arrived some time after, with infected persons on board, one of which died, on landing at the Marine. *Notwithstanding this new importation, none of the inhabitants of Larnica were known to have contracted the disease.*”

These extracts, which are from Russell, make a strong case in opposition to the hypothesis of pestilential contagion. Nor is it difficult to explain it. In Limsol, and the adjacent villages, the condition of the atmosphere was *pestilential*, and plague was not *introduced into them*, by infected sailors, but *broke out* in them. In Larnica, the atmosphere was pure and healthy, and plague not only did not *break out*, but could not be communicated in it.

Such are some of the leading reasons, for denying plague to be a contagious disease. Others are not wanting; but a recital of them would seem superfluous. Those already adduced are deemed sufficient to rescue all unprejudiced and reflecting minds from the delusion of the opposite hypothesis; while nothing perhaps could shake the faith of the prejudiced and unreflecting. It is needless, therefore, to dwell longer on the subject.

Am I asked, “If plague be not contagious, whence does it originate, and how is it propagated?” I answer, it arises from the same source, and spreads in the same manner with yellow fever. And, on these points, in the latter disease, no shadow of doubt now rests—at least in the United States, and all other places, where a fair opportunity has been had to examine them. If there are still in Great Britain, and other parts of Europe, physicians of character, who believe yellow fever contagious, it is because they have never seen it. With the enlightened and

reflecting portion of the world therefore, their opinions can have no weight, in opposition to the opinions of those who are familiar with it.

It is not unimportant to the inquiry to observe, that when yellow fever broke out in Philadelphia, in 1793, the views of the physicians of our country, respecting it, were directly the reverse of what they are now. The belief in its contagiousness was universal. Hence the wide-spread panic produced, and the numerous barriers that were erected, to prevent it from overrunning the land. Nor were the reasons alleged for believing it contagious in any way different from those adduced and relied on, in proof of the contagiousness of plague. The disease was said to be brought from the West Indies, by sailors sick of it, by the clothes and chests of those who had died of it, or in merchandize impregnated with its poison. And, against its introduction through these channels, Quarantines of unsparing severity were erected. Even Dr. Rush, who first pronounced the complaint an evil of domestic origin, was a firm believer in its contagiousness. To this, his earliest writings on it testify. Nor did he abandon that belief, until after a lapse of twelve or thirteen years. But he yielded at length to the stubbornness of facts, and became a non-contagionist. I am the more particular, in my representation of this matter, from a wish to disabuse the public mind, in relation to it. A belief prevails very generally, that Dr. Rush was the author of the non-contagious doctrine, as applied to yellow fever. The notion has no foundation in truth. That doctrine was broached and maintained by *young men*, who are usually first to assert and defend new truth; and the contest, on the subject of it, had been long and bitter, before the distinguished Professor relinquished his error. Nor did he ever become a strenuous advocate of non-contagion, though he firmly believed in it. He deemed it sufficient to renounce publicly his original and erroneous opinion on the subject, and left to others to finish the conflict. This was fair. No part of the victory could of right be ascribed to him. It would have been usurpation in him therefore to claim any share in the honors of it.

It is now acknowledged, by all physicians conversant with it, that yellow fever is of the same family with common bilious fever,

and arises from the same source. It is the product of malaria, formed by dead organic matter, in the process of dissolution. So is plague. Every fact of any moment, connected with the origin, progress, decline, and termination of that complaint, is confirmatory of this. Indeed, as already intimated, a few incidental symptoms excepted, its analogy to yellow fever is so perfect, as to amount to identity, slightly modified. Certainly no radical difference between the two diseases can be shown. It is believed, therefore, that nothing can throw more light on the production and propagation of plague, than a summary of this analogy. Hence, contrary to my original intention, I shall furnish one, as brief as I can render it, consistently with perspicuity. Though many of the elements of it have been already exhibited, in a detached condition, it is thought that a condensed view of them, united and supporting each other, may be more conclusive.

As already stated, plague and yellow fever are the native growth of hot climates, and of the hot season of temperate and cold ones. Only under peculiar circumstances, to be referred to hereafter, do they ever prevail, when the weather is cold.

They break out and spread only in places, where filth abounds; and, other things being equal, in proportion as that is more abundant, they are more general and malignant. In places of real purity, they never appear, except in the form of cases brought from a distance; and such cases always terminate, without propagating the complaints, or leaving any seed behind them. Cities, towns, and garrisons are their hot-beds, though they rise and spread also in the low grounds of rivers and other bodies of water, in marshy situations, and wherever the soil is alluvial, or rich in vegetable and animal relics. As already intimated, the filth productive of them consists of dead organic matter, undergoing dissolution, and forming new combinations. They are therefore of chemical origin, not the offspring of morbid secretion. To speak more definitely on this point, which is peculiarly important, in the present disquisition.

To generate the poison of plague or yellow fever, three agents are essential; heat, moisture, and dead organic matter. Where either of these is wanting, the complaints never originate or

spread. Hence, in the sandy regions of Asia and Africa, where there is heat enough, and, in some places, water enough, but no dead vegetable or animal matter, plague is unknown. Nor, for the same reason, does yellow fever visit the sandy pine lands of the American continent. Those forests, though wanting neither heat nor moisture, contain no organic substances, in a state of dissolution. Hence their healthfulness.

The plague terminates in Egypt, from a similar cause. The common belief is, that it is there checked, by the inundation of the Nile. No hypothesis, however, can be more unfounded. The plague ceases about the twenty-fourth of June, and the Nile does not pass its banks until the middle of August. But, no rain falling in the Delta, nor a cloud existing to cover the sun, and the weather being intensely hot, the whole country, by the twentieth of June, is as leafless and parched, as if swept over by a conflagration. Except within the banks of the river, and in cisterns, and other covered receptacles, the land is waterless. The dews themselves no longer descend. The consequence of all this is plain. Water is essential to the formation of plague-poison. But it is now wanting. The poison therefore is no longer formed; and plague disappears. Then it is that the dwellings of persons, who have died of the complaint, are immediately occupied by fresh incumbents, their beds slept on, their clothes worn, and their furniture used, with perfect impunity. Could this be done, were the disease contagious? No physician of standing, will hazard his reputation, by replying affirmatively.

Again. Egypt, while flooded by the Nile, a period which lasts from early in September until some time in January, is exempt from plague, for two reasons. It has too much *water*, and too little *heat*. For a superabundance of the former is as fatal to the dissolution of dead organic matter, and the formation of miasmata, as a deficiency of the latter. When, however, the waters have subsided, plague, or some other form of bilious fever commences again in February or March, according to the heat, and other characteristics of the seasons. Why? Because the ingredients requisite for generating the poison of it, are again supplied. The *debris* of vegetables, and other kinds of dead or-

ganic matter, mixed with humidity, have been deposited, by the retreating waters, the sun is powerful, and the atmosphere hot. The virus therefore is produced as naturally and certainly, as light bodies rise, or ponderous ones descend. Thus passes the year. Plague-poison is formed in the spring, and extinguished by the heat and aridity of summer; and its reproduction is prevented by the coolness and superabundant water of autumn and winter.

Plague and yellow fever, as heretofore mentioned, are affected in a similar way by changes in the weather. A few cool days in summer and autumn, retard their progress; and a few hot ones accelerate it; and the cold of winter brings it to a close. The reason of this is plain. Hot weather promotes animal and vegetable dissolution; cool weather is unfriendly to it; and cold weather stops it. Thus is there that perfect correspondence between the march of these complaints, and the production of miasmata, which always subsists between effects and their causes.

These two diseases spare alike the physicians, nurses, and visitants of those who are sick of them. But they would not do this, were they contagious. They also, in a like way, terminate *suddenly*, on the commencement of cold weather, though the persons then laboring under them are numerous, and their poison, did they produce any, not only abundant, but in the best possible condition to propagate and continue them. For it is worthy of remark, that cool weather is more favorable than warm to the propagation of a contagious complaint. In the latter state of temperature, the doors and windows of houses and sick rooms being open, the free access and circulation of pure air dilutes the poison, weakens its virulence, and carries it away. This renders it comparatively harmless. In cold weather, the condition of things is reversed. Doors and windows being closed, and fresh air excluded, the contagion not only retains all its virulence, but is confined in close apartments, and is therefore in the best imaginable condition to propagate disease. For nurses to escape a contagious complaint, under such circumstances, would seem impossible. On the hypothesis of contagion, then, the sudden disappearance of plague and yellow fever, on the commencement

of winter, is inexplicable. But, under the doctrine, that they are produced by the miasmata of animal and vegetable dissolution, the explanation is easy. The degree of heat requisite to the formation of the poison is wanting. The poison therefore is no longer generated, and the maladies cease. It is not unimportant to remark, that a theory is justly considered *approaching* truth in proportion as it explains more and more of the phenomena it bears on; and that theory which explains them all, is truth itself. I shall only add, that I am not acquainted with a single fact, connected with the rise, progress, decline, or termination of plague or yellow fever, which may not be explained, on the theory, that those complaints are the product of a miasm, resulting from the dissolution of organic matter. On the contrary, the hypothesis of their contagiousness explains nothing.

To the foregoing similarities between plague and yellow fever, may be subjoined the important fact, that their seat in the human body is the same. They attack chiefly the stomach, duodenum, and other abdominal viscera, and produce in them the same sort of derangement. In their pathology, therefore, as well as in other respects, they may be pronounced identical. To the truth of this, the shades of difference, which they present in a few points, constitutes no valid exception. I might generalize still farther, and safely add, that the similarity in origin, progress, decline, and termination between plague, yellow fever, and the various forms of common bilious fever is so striking, as to show, satisfactorily, that they all belong to the same family, proceeding from a common source, and being governed by common laws. It is in proof of this affinity, or rather identity of the two complaints, that plague, when declining, sometimes runs into "*tertian fever*." Such, according to the statement of Russell, was the case with the plague of Aleppo, in 1762. Indeed, when that complaint terminates earlier in the season than usual, it frequently goes off in a remitting form. So, at times, does yellow fever.

Other analogies, between the two diseases I am comparing, are not wanting; but those already enumerated are sufficient for my purpose. If they do not prove the complaints to be perfectly identical, they show, at least, that they have the same parentage, and are to be prevented in the same way.

Shall I be told, that these maladies cannot be the same, because they exhibit different symptoms; plague being marked with buboes and carbuncles, and yellow fever with black vomit and a jaundiced skin? I reply, that this objection is without weight. The symptoms referred to are incidental, not essential. The complaints exist without them. In the lightest, as well as in the most fatal forms of plague, neither buboes nor carbuncles appear. And the same is true of yellow fever, as respects black vomit and a yellow skin. Cases of the lowest and the highest grade exhibit neither of them. Besides—I have witnessed glandular swellings and cutaneous ulcers in yellow fever; in plague, the skin is often of a yellowish hue, and, as Russell and other writers inform us, a dark matter is, in many cases, thrown from the stomach. This is no doubt genuine black vomit; a discharge more frequent in yellow fever than in any other complaint, but by no means peculiar to it. Were a mere variety in symptoms to constitute a radical difference in disease, every attack of fever would be *sui generis*—specifically different from every other. No two attacks are precisely alike. There are thousands of cases of yellow fever much less like other cases of it, than they are like cases of plague. Of the latter complaint, the same may be affirmed. Many cases of it resemble yellow fever more than they do other cases of itself. I repeat, that, in their history and philosophy, including their origin, progress, declension, and termination, the two maladies are identical. Nor are they less so, in other respects, especially practical ones. To all intents and purposes, they are identical also in their pathology and cure. Whatever I may have heretofore said, therefore, or may say hereafter, of either of them, may be considered more or less applicable to the other—in all leading points, *strictly* applicable.

Although the miasm, arising from the dissolution of vegetable and animal substances, has been represented by me, as the cause of plague; it is not perhaps exclusively so. When that complaint prevails epidemically, and especially when, as is sometimes the case, it prevails, to a limited extent, during cold weather, its common virus would seem to be aided by another agent. Nor can that agent be well conjectured to be any thing else, than a

pestilential constitution of the atmosphere. By this is meant, a condition of that aeriform body, calculated either to facilitate the formation of miasm, to render it more virulent, or, in some other way, to act as its auxiliary, in the production of pestilence.

Were I asked, whether this pestilential constitution depends in any measure on the sensible qualities of the atmosphere, my reply would be, No; because its effects are manifested under every degree of atmospherical temperature, humidity, dryness, and weight. Though, as heretofore stated, hot weather favors the production and spreading of plague, neither the extent nor malignity of that disease is always in proportion to the height of the thermometer. Some cool and pleasant summers have proved, in the same places, more pestilential than other hot ones; and, while moderate and even warm winters are usually free from pestilence, uncommonly cold ones have been occasionally marked by it. These facts we learn from the history of the disease; and they seem to testify conclusively, that some extra and peculiar cause contributes, at times, to the production and protracted continuance of plague. The prevalence of that complaint during winter, is an uncommon effect; and must not be ascribed to an ordinary source.

True; some physicians deny the existence of any secret constitution of the atmosphere, and attribute pestilence to its sensible qualities. Denial, however, is no proof; yet, in the present case, it is all the proof that has been offered. Not a fact has been adduced, to render the prevalence of the constitution referred to improbable. All attempts to account for epidemic forms of disease without it have failed. Witness influenza, a complaint which appears and spreads, in every season of the year, and under every modification of the weather, independently of any quality in it addressed to our senses. Why? Because there is something peculiar in the air that acts on us. No other reasonable cause can be assigned. Of scarlatina and measles the same may be said. Though they are usually denominated *spring epidemics*, they are not confined to that season. They prevail also in summer, autumn, and winter, regardless of the sensible qualities of the atmosphere. And whether they ever arise from

contagion, or not, they unquestionably rise and spread, without it. They exist, I mean, in the character of real epidemics. But an epidemic does not originate either from contagion, or from a miasm generated in a given spot. It is always in some degree, and, at times, I believe, exclusively, the product of a peculiar atmospherical constitution. The source of that constitution is one of the secrets which nature has not yet revealed to us.

Of the foregoing remarks, the history of cholera appears to be confirmatory. Within the last sixteen years, that complaint has pervaded almost the whole civilized world, and produced a waste of human life, that has scarcely a parallel. That its progress and malignity are increased by hot weather, and the miasm it produces is not denied. But its existence does not depend on them. Could they alone generate it, as they do common bilious fever, the world would never be free from it. Its existence would be as perpetual as the progress of the earth, in her journey round the sun. There is always, in an immense section of the globe, heat, moisture, and dead organic matter enough, to generate the local miasm of cholera, were that *alone* the cause of the disease. But it is not, as facts abundantly show. Epidemic cholera is a new modification of disease, and is therefore the product of a novel cause. This is as true, as that like causes produce like effects and that unlike effects arise from unlike causes. Nor can the source of this new form of pestilence be looked for elsewhere, than in a new and peculiar constitution of the atmosphere. While that constitution shall continue, the complaint will continue, with but little aid from local miasm. And when it shall have passed away, so will epidemic cholera, whatever may be the heat and moisture of the seasons, and the quantity of local miasm formed. It cannot be doubted, that, since cholera appeared in India, in 1817, it has prevailed in thousands of places, under sensible qualities of the atmosphere, which never produced it, in anterior times, and which will not do it again, when a congenial constitution of the atmosphere shall be wanting.

But perhaps *epidemic* small-pox proves more incontrovertibly than any other form of disease, the existence of a peculiar atmospherical constitution. That complaint, as already mentioned,

depends, for its propagation, almost always, on *contagion alone*. And then its progress is comparatively slow. The reason is plain. None contract it, except as the result of a near approach to persons laboring under it, or of handling infected articles. The individual attacked, therefore, is usually aware of the exposure sustained. When, however, the malady becomes epidemic, as it did a few years ago, in Philadelphia and elsewhere, the case is otherwise. Individuals then often receive the poison, they know not how. Though not sensible of any exposure to either infected persons or things, the disease assails them. For those who have never had the complaint, and are not protected by vaccination, merely to reside in the infected place, whether city, town, or country, or to pass through it, is sufficient to expose them to the danger of an attack, and frequently induces one. Make its way there as it may, the poison is in the atmosphere, and produces in it a *variolous* constitution. It is under the influence of such a constitution, that two events, rarely witnessed at other times, not unfrequently occur. Persons repeatedly exposed to small-pox before, with impunity, now suffer from it, without any known exposure; while others experience a *second* attack of it. To this may be added, that the spread of the disease, under such circumstances, is unusually rapid and irregular. It does not pass, in its ordinary way, from person to person, according to exposure, or from one family or neighborhood to the adjoining one. Like epidemic plague and yellow fever, it leaps over persons, families, and neighborhoods that are contiguous, and lights on those that are more remote; and then returns to such as have escaped. In fine—being a true epidemic, it spreads like other complaints of that class.

Such are the facts; and there appears to be but one mode of explaining them. A condition of the atmosphere exists unusually favorable to the propagation of small-pox. Hence, as already mentioned, it has received the appropriate name of *variolous*. The whole atmosphere of a town or city resembles, to a certain extent, that of a small-pox ward in an infirmary. Whoever enters it, unprotected, is obnoxious to the virus.

It is not my intention to inquire into the nature of the variolous constitution. Whether there is a positive *atmospherical* forma-

tion of the matter of small-pox (that matter *must* have been originally formed *somewhere*, before its *first attack on the human system*; and why may it not be formed in the same way now?) or whether there is produced in the atmosphere a condition unusually friendly to the diffusion and action of the poison, when secreted in the bodies of the sick—whether either of these hypotheses, or some other different from both be true, my object is attained. The constitution contended for exists, and that is sufficient for my present purpose. In like manner, it appears indubitable, that a constitution of the atmosphere, inordinately favorable to the production and propagation of pestilential complaints, occurs at times; and that, under its influence, real plague may prevail, in some degree, during the winter.

In truth, the form and character of disease, in general, is controlled and determined, to an extent much greater than is commonly imagined, by some secret condition of the atmosphere. It is and must be such a condition, that produces the predisposition to every epidemic and endemic complaint. And the predisposition shapes and settles the character of the disease, which any exciting cause may develop. But all complaints, not contagious, that overrun cities, towns, and districts of country, being endemic or epidemic, are essentially connected with corresponding forms of the condition referred to. It may be added, that there are very few kinds of general disease, which are not occasionally more or less epidemic. To illustrate my meaning.

A sudden change in the atmosphere, from dryness and warmth, to coolness and humidity, excites, at one time, a prevailing catarrh, at another, a general rheumatic or pleuretic affection, in a third instance, an epidemic diarrhœa, in a fourth, a dysentery, and in a fifth, a general prevalence of regular bilious fever. These are common occurrences, and have their respective causes. Why does not the same change in the weather, always produce the same form of disease? The reply is plain, and appears satisfactory. The members of the same community have, at different times, a general predisposition to different complaints; and the change in the weather, or any other exciting cause, can produce in them no disease, but that to which they are predisposed.

At one time, they are predisposed to catarrh, and the change excites it; at another time, to pleurisy, and a similar change produces that; again to diarrhœa, to dysentery, or to bilious fever; and the same exciting cause brings either into existence, according to the predisposition, at the time of its application. Thus, when different seeds are planted by the side of each other, the same genial influence of heat, light, air, moisture and earth, excites in one of them the vegetative action necessary to produce a stalk of corn; in another, that productive of hemp; in a third, of cotton; and in a fourth, of the vine. Why? Because each seed is so organized, as to be predisposed to produce after its kind, under the action of the proper exciting causes. But no excitement can elicit from the corn seed a stalk of hemp, from the hemp seed, a grape vine, or the reverse.

Another question remains to be proposed, and solved. Whence comes the predisposition to disease, common at once to a whole community? I answer, from a common cause—some secret but operative condition of the atmosphere. There is no other source from which it can be derived. The sensible qualities of the atmosphere cannot produce it, because it does not change, as they change. Nor does it come from diet or drink, the habits, customs, or modes of life of the people—they being stationary—the same during one form of predisposition, that they are during another. The condition produced in the atmosphere, by the mixture of marsh miasmata with it, is secret. Neither our senses nor experiments can detect it, or give us any knowledge of it. Its existence is known to us only from its effects in deranging health. It is therefore as much entitled to the term constitution, as the condition productive of influenza or cholera.

I have thought it necessary to dwell thus far on atmospherical constitutions, for two reasons: without some knowledge of them, the philosophy of plague cannot, in my opinion, be understood; and yet, as already stated, there are physicians of distinction, who deny their existence. It is asserted, by several of these, that, except through its sensible qualities of heat and moisture, and the malaria they aid in forming, the atmosphere has no agency in the production of cholera; but that, in all other respects, it

is the same, while that pestilence is depopulating cities and appalling nations, as it is in a period of general health!

Were I asked, wherein consists that constitution of the atmosphere, which favors the production of plague? my reply would be, that I do not know. There is reason, however, to suspect, that in the formation of every pestilential constitution, the matter of electricity has some agency. It is not to be doubted, that, during pestilential periods, electrical phenomena are, in some way, irregular—at one time excessive—at another defective, and again productive of novel phenomena. History and observation unite, in testifying to this. Igneous meteors are all, perhaps, electrical; and that they often superabound, in a high degree, during the prevalence of pestilence, is matter of notoriety. We are informed by Josephus, and other writers, that, on several occasions, when plague prevailed in Jerusalem, they were so striking and fearful, in their display over the city, and throughout Judea, that the terror and superstition of the inhabitants converted them, in fancy, into fiery warriors engaged in combat with blazing lances, arrows, and swords. By the Romans, similar phenomena were observed, with nearly the same fears and imaginings, during the devastations of pestilence in Italy. Hence the poet tells us, on the faith of history, that,

“A little ere the mighty Julius fell,
Stars shone with trains of fire;”*

and, by consulting the Roman writers, of the time, we find that, about that period, Tuscany and other parts of Italy were visited by plague.

During several of the yellow fever calamities in Philadelphia, and the other Atlantic cities, electrical phenomena were unusually irregular. Shooting stars were, at times, abundant and brilliant, in a degree far beyond what is common. Throughout some seasons, especially the summer of 1793, scarcely a gleam of

* Shall I be told that this allusion is to comets? My reply is, that earthquakes, storms, and tempests are recorded, as marking that period, as well as comets. Indeed those celestial and terrestrial phenomena are often concomitants of each other. The night preceding the fall of “the mighty Julius” was frightfully tempestuous, and poured unwonted sheets of lightning through the streets of Rome. To so great an extent did the terrors of the tempest go, as to make some of the conspirators doubt, whether they were an encouragement from the gods, to go on with their work, or an admonition to desist.

lightning was seen; while, in others, thunder-storms were inordinately frequent and severe. In 1799, the shooting stars were most abundant.

This is the second year of pestilential cholera in the United States. And it must be in the recollection of every one, that while the summer of 1832 was almost exempt from lightning and thunder, that of 1833 was memorable for them. The instances of human beings and domestic animals being killed, and barns and dwelling-houses fired by lightning, during the latter season, were unprecedentedly numerous. To these electrical irregularities may be added the most extraordinary of all—the brilliant, perhaps unparalleled celestial fire-works let off, on the morning of the 12th of November, 1833, and gazed at, with mingled emotions of terror, wonder, and delight, through the whole United States, and probably in other countries.

If earthquakes and volcanic eruptions are not exclusively the product of electricity, that fluid has at least a deep concern in them. But almost every frightful pestilential period that can be referred to, has been noted for those terrific phenomena. History informs us, that the reign of Justinian, in the sixth century, was signalized alike by earthquakes and pestilence. In the ravages of the latter, from one to two hundred millions of the human race are said to have perished, while, by the former, the earth was convulsed repeatedly, almost from pole to pole, and from the rising to the setting sun. The same period was also marked by a superabundance of fiery and other meteors, in the production of which electricity took part.

The twelfth century was another period of extensive and destructive earthquakes and volcanic eruptions, frightful meteors, days of unwonted darkness, and devastating pestilence. So frequent and appalling were these events, from 1158 to 1170, that the writers of that era dwell on them more than on any thing else.

But I could not even allude to the innumerable plagues, earthquakes, volcanic eruptions, fiery meteors, and destructive inundations of former ages, contemporary with each other, without giving a concise history of the times. For a valuable catalogue of them, the reader is referred to the first volume of Webster

on Epidemics, a work with which every physician should be familiar. He will there find, that from an early period of the Christian era, up to the sixteenth or seventeenth century, the earth was a fearful theatre of physical and moral commotion; earthquakes, tempests, and other fierce electrical phenomena, uniting with pestilence, to play their parts in it. Since that date, be the cause what it may, our globe has been, comparatively, in a state of repose, until within the last fifteen or twenty years, during which period its concussions have been again very frequent and severe.

Observation and contemporary history concur in the fact, that, since about the time of the commencement of cholera, in the east, earthquakes and volcanic eruptions have been unusually violent and numerous, over a large portion of the globe. Asia, Africa, Europe, and America have all felt them. So has Oceanica. Nor has the ocean itself escaped them. Not only have they frightfully concussed its waters, but have thrown up new islands from its fathomless profound. All this shows, that the earth is vexed by an internal disturbance greater than usual, whose necessary effect is, to discharge into the atmosphere new gases, or an inordinate amount of common ones. It is not to be imagined that it is only when the earthquake and the volcano are convulsing the ground, that those gases are eliminated. They are no doubt sent forth, in augmented quantities, during the entire volcanic and earthquake period, by the secret but powerful working of the internal cause. It is not merely at the time of the shake and the eruption, that the cause of those phenomena is at work. There is reason to believe, that the convulsions are but the consummation of preparatory operations more or less protracted. And it is further probable, that such operations are constantly throwing into the atmosphere gases unfriendly to animal life. No wonder, then, that, during such a condition of the air they breathe, man and the beings inferior to him should suffer in their health. Nor does it seem improbable, that the mischief is increased, by irregularities in the action of *atmospherial* electricity. These views, which are offered only as conjectural, will be received for whatever the reader may think them worth.

Were it admissible to dwell a moment longer on these atmospheric constitutions unfriendly to health, I might specify other phenomena, which usually accompany them, and concur in proving their existence. Among these are, long continued and parching droughts, famine consequent on this, by reason of the failure of the products of the earth, the desertion of sickly places by birds, pestilence among domestic and wild animals, extending often to the tenants of the air and the waters, in common with those of dry land, and inordinate hosts of insects and worms. History, as well sacred as profane, tells us, that in Palestine, and other oriental regions, drought and famine, the locust, the grasshopper, the caterpillar, and the palmer-worm were among the usual concomitants of pestilence. Nor is a like concomitancy wanting in our own times and country. During the period of epidemic yellow fever, in our Atlantic cities, the country was several times swarmed with grasshoppers; and, in the summer of 1832, I saw many large tracts of forest timber, and was informed of a number more, whose leaves were stript off, or withered, by the depredations of the caterpillar. Nor was a like phenomenon wanting in 1833. The latter season, moreover, even during its dryest period, and when the weather was not inordinately hot, was more prolific in certain cryptogamous plants, especially the *conferva fontinalis* on standing water, and *mucor* on humid substances, than any other within my remembrance. All this testifies conclusively to the existence of an extraordinary condition of the atmosphere. Unusual effects cannot spring from ordinary causes. But I must pass to another point of my subject.

As heretofore stated, the hypothesis of the contagiousness of yellow fever is extinct, in the United States, and all other places, where the disease is understood; and that of the contagiousness of cholera is hastening steadily to the same condition. But the notion that plague is contagious, though evidently on the decline, still predominates. To refute that error is the main design of the foregoing discussion. If the attempt has been successful, the question,

“Are the restrictions on the entrance of vessels into port, called Quarantine Laws, useful?” may be easily solved. The

answer is, of course, an unqualified negative. A disease not contagious cannot be communicated by commerce, or any other form of intercourse, from one country to another; and therefore all barriers, in the shape of Quarantine Laws, unnecessary in themselves, are inadmissible restraints on human liberty, industry, and right. Before treating further, however, of this topic, a few remarks on the injurious effects of a belief in the hypothesis of pestilential contagion, will not, I trust, be altogether useless. Those effects have an equal bearing on the sick and the well.

A belief in the contagious nature of plague often induces those who are attacked by it, to conceal their sickness, as long as possible, from a dread of being consigned to a pest-hospital, or an apprehension of being deserted by every one, and left to suffer and die in solitude, without aid, comfort, or sympathy. This overpowering terror, by preventing early and opportune medical assistance, has rendered fatal hundreds of thousands of cases of the complaint, that would have terminated favorably, under a seasonable and skilful course of treatment.

From the influence of this fatal belief, millions of sick persons have had their worst fears realized, by being actually deserted by connexions, friends, nurses, and physicians, and left to their fate, without alimnt to sustain their sinking strength, medicine to heal their suffering, or water to mitigate it. A combination of evils so hopeless and depressing, could scarcely fail, especially in persons of delicate and sensitive frames, to give a fatal turn even to a moderate form of disease. From a malignant one thus aggravated there can be no escape. Under such circumstances, death is rendered the more certain, from its being welcomed by the sufferers, in consequence of their sense of abandonment and despair. Deserted by every one, their desire of life forsakes them; and with that desire goes much of the vigor of body, and elasticity of spirits, that might contribute to their recovery. That under debilitating and depressing diseases, hope tends to sustain, and despair to destroy life, is an axiom in medicine, which no one questions. Hence the importance of giving all the encouragement their cases will justify to persons attacked by malignant complaints.

There is again, on the other hand, to many sick persons, an influence peculiarly saddening and debilitating in the belief, that they are laboring under a contagious disease, dangerous to those whose affection and kindness draw them to their relief. That a feeling of this sort aggravates their complaints, cannot be doubted; and that it has sent thousands to the grave, appears probable. I have seen individuals much distressed and injured by it, and heard them expressing a wish to die, that they might no longer endanger the lives of their friends. Under such circumstances, soldiers have earnestly requested to be shot, that they might not be instrumental in the death of their comrades.

The sort of medical attendance, which persons sick of a complaint supposed to be contagious often receive, is injurious to them, because it is no better than neglect—sometimes perhaps worse, as it may interfere perniciously with the recuperative powers of nature. The latter effect it can scarcely fail to produce, in consequence of the debilitating terror it often excites. During the Great Plague of London, Dr. Hodges prescribed for his patients out of his parlor window, they being in the street; and, in the plague of Aleppo, Dr. Russell prescribed to the sick, who were also in the street below, through his chamber window, in the second story of his house! This was a mockery degrading to the Profession, and trebly disgraceful to the members who practised it. Yet have I witnessed, in the United States, scenes of the kind scarcely less revolting. I have repeatedly seen physicians feeling the pulses of yellow fever patients, *at arm's-length, with their faces averted, carefully ejecting their saliva on the carpet, and with sponges or handkerchiefs wet with vinegar, applied to their noses!* and I have turned from the spectacle with pity and disgust! Conduct on the part of physicians so well calculated to excite alarm, cannot fail to injure timid patients, and may destroy them. For the truth of the following anecdote I am responsible, having myself witnessed it, and been concerned in it, as a party.

A lady of youth and beauty, in the city of —, the family physician being a *contagionist*, was attacked by yellow fever. The case proving obstinate, and the anxiety for the patient's recovery being great, a consultation was requested, and the con-

sulting physician selected was a *non-contagionist*, and an intimate friend of the distressed family. On entering the sick-room, the first object that arrested his notice, was the physician in attendance feeling the young lady's pulse, in the manner and attitude just described, with a cloud of odorous volatiles issuing from about his nostrils, and filling the chamber. Several members of the family were present, each snuffing a handkerchief or napkin, moistened with vinegar or spirits of camphor; and dismay was depicted in every countenance. Indignant at the unmanly behavior of his colleague, and determined, if possible, to dispel the terror, and counteract the mischief it had produced, the consulting physician, being young, and having a little dash of gallantry in his address, advanced to the bed-side of his patient, with a cheerful countenance, took her hand, and, pressing it gently but cordially in both of his, kissed it. He then seated himself familiarly on the side of the bed, still holding the lady's hand, as if examining her pulse, and placing his countenance over her's, so as to receive her breath, bent his body more than was necessary, bringing his face near to her's, under the pretext of making a very accurate examination of her tongue. A little abashed by so close a scrutiny, the patient slightly turned away her face, when the following brief dialogue ensued:—

“Why,” said the physician to the lady, in a mild but sprightly tone, “do you turn away your face? Do you think that, because you permitted me to kiss your hand, I was about to take the liberty of kissing your brow?” Turning her face back again, she said, with a faint smile, the first that had brightened her countenance for several days, “Are you not afraid of me?” “Afraid of you? I have known you many years, and never suspected you of a bad action. Why then should I be afraid of you?” “O! Sir, I have a contagious fever; and, by coming so near me, and receiving my breath, you might catch it.” “A contagious fever! no such thing. You have no more contagion about you, than I have—except the contagion of your smiles, which make every body else smile.” The effect of this was electric. “O!” exclaimed the lady, pressing the physician's hand, in turn, “is not my fever then contagious?” “No; I assure you, it is not; and

I pledge my life, on the truth of what I say—and further; follow strictly the directions that will be given, and you will get well. On that also I would not be afraid to pledge my life.” By this time, the several members of the family had pressed close around the bed; when, looking up at them, the physician perceived comparative brightness in each countenance, and the mother and an elder sister shedding tears of joy.

The sequel is soon told. From indisposition, real or pretended, the family physician did not again visit his patient, who, under the prescription and attendance of her non-contagionist, soon recovered her health; and no other member of the family sickened.

But all the evils of a belief in pestilential contagion are not yet recited. Many individuals, after having passed through a disease accounted contagious, and entered on a state of convalescence, have sunk and died, from fatigue and famine, under their wasting and fruitless exertions to attain food and a place of shelter and rest. Why? Because, in their own dwellings, all was destitution; and, from a dread of them, as repositories of contagion, they were shut out from the dwellings of others, avoided as lazars, whose atmospheres were deadly, and denied subsistence. Shall I be told that these are extreme cases, which very rarely occur? That they are rare in our own country, is fortunately true. But, that they are so elsewhere, is not. In the late epidemics of Spain, they were disgracefully common; and events of the kind added immensely to the mortality of cholera, in its passage through Europe. Under convalescence from both complaints, patients were not only denied sustenance, but murderously shot down, in their attempts to escape from their places of confinement, to procure food, and breathe a purer air. So have hundreds been, who, not yet attacked by the disease, were endeavoring to pass through sanitary cordons, from infected towns or cities, to places of health.

That events like these often took place, during the numerous plagues, that have visited England and other parts of Europe, is matter of history; and, were London now, or any other large and populous town in the British empire, to be deeply ravaged by a pestilential disease, many of them would take place again.

Imagination can scarcely figure to us a scene of greater distress and horror, than a general pestilence in London would create, under the influence of a dread of contagion. From the prevailing panic, business would be suspended, and the people of the country would cease to carry in the requisite supplies of provision; the poor and laboring classes, who have rarely a day's subsistence ahead, would thus be deprived of employment and food in the city; and, were they to pass out of it, they would be driven back and perhaps massacred; or, every door and hand of charity being closed against them, famine would be their lot, and the hedges and open fields their dwelling. Thus would exposure and privation unite with pestilence, in the work of destruction. Scenes of this description occurred in several of the cities of Spain, that were visited by fevers deemed contagious, at an early period in the present century.

There are still other grounds, on which a belief in contagion injures those who are not yet sick. It is a source of constant and debilitating apprehension to them. Mankind have a deeper dread of pestilential contagion, than of any other kind of poison. When told that the virus of plague is in the atmosphere around them, in the form of a pestilential constitution united to common malaria, they do not fairly realize the view presented to them, and are not fully sensible of their danger. They breathe freely and refreshingly; and the atmosphere appears to them as pure as common. No visible source of danger presents itself; and they are therefore comparatively free from dread. But they can see the bodies of the sick; and, if induced to believe that they are the source of the fatal miasm, their terror is awakened, and acts as an exciting cause of the disease. Hence the sight of a corpse, or even of a passing bier and coffin, has often produced an attack of pestilence, which, but for the fright, would not have occurred. Nor is this all. As already stated, the dread of contagion prevents the inhabitants of cities and towns supposed to be infected, from receiving supplies of wholesome food. They become debilitated, therefore, by scanty fare, and a kind of aliment that does not suit them. The condition of their systems thus produced, increases greatly their liability to the complaint, and diminishes, in an equal ratio, their capability to contend with it, when it attacks them.

The necessary result is, a marked augmentation of disease and death.

A belief in contagion proves a further misfortune to the well, by uprooting or paralyzing, for the time, their finest and most amiable feelings and affections, and giving an ascendancy to their selfishness and fears. Not only does it silence the calls of benevolence and the dictates of justice, it freezes up the fountain of friendship and domestic attachment. Were not effects of this description produced by it, men would not, as they often do, desert their families, friends, and fellow-beings, when suffering from the disease. That the fearless, high-minded, and philanthropic few do not act thus, is true, and deserves to be recorded to their honor. But, that, regardless of the claims of humanity, and actuated alone, by an ignominious selfishness, the multitude usually seek safety in flight, cannot be denied, however deeply the act may disgrace them.

But the most extensively calamitous effects of a belief in pestilential contagion remain to be mentioned. They are those produced by the operation of Sanitary and Quarantine Laws; the latter being intended as a protection from pestilence by sea, and the former by land. Each of them merits a brief examination.

To the multiplied evils of Quarantine establishments a passing reference was made, in the commencement of this essay. It was there represented, that the laws prescribing their erection and administration (the product of dark and superstitious times) assuming an unlimited control over life, liberty, and property, at the discretion of ignorant and rapacious officers, are arbitrary beyond all others, and incompatible alike with the rights of individuals and communities, and the spirit of free governments. In the execution of those laws, founded in error, and framed for selfish and narrow purposes, revolting enormities have been often committed. Not only have thousands of persons, suspected of contagion, been sickened and destroyed, by tyrannical and needless confinement in foul and loathsome places, under the influence of depressing passions, unwholesome food, and other grievous and wasting privations; in their attempts to escape from the power of their oppressors, not a few of them have been slain—some inhumanly broken on the rack. Nor is this all. Under the

same unsparing system of cruelty and ruin, suspected vessels have been sunk, burnt, or driven to sea, in a condition of distress, and ultimately lost, with their crews and cargoes. One of these instances of atrocity occurred not many years ago in the Baltic. To the correctness of this detail, the history of Quarantines abundantly testifies; and the darkness and strength of the picture might be increased, without any violation being committed on truth. Nor is the mischief produced by this misnamed sanitary system of limited extent. All commercial nations feel it; the more oppressively, as Great Britain, the Queen of commerce, has been so long and deeply concerned in the enforcement of it. In thousands of instances, have bankruptcies and ruin been produced, even in remote places, from Quarantine measures, causelessly and rigidly carried into effect, in consequence of an eruption of pestilence in seats of commerce. I repeat, that of all these assertions, history furnishes matter of proof, were I at liberty to adduce it.

Shall I be told that Quarantine regulations are now enforced with more mildness and discretion, and less injury to trade and commerce than formerly? True; they are so, especially in the United States, Great Britain, and France. And what is the cause of this? An increase of knowledge on the subject of them. And in proportion as that knowledge shall be further increased, will Quarantine institutions be reduced, until not a vestige of them shall remain. In Italy, Spain, and other less enlightened and liberal portions of Europe, the evil continues, with but little mitigation. Quarantine laws are executed there, with but a slight abatement of their primitive tyranny. The reason has been already assigned. Those nations, *as nations*, are but limitedly versed in the laws of nature; and the governments, under which they suffer, are nearly as ignorant and despotic now, as they were at the beginning of the seventeenth century. But, as science shall enlighten them, will their Quarantines go down, until, by the force of truth, they shall be finally demolished. They are as directly at war with reason and common sense, as are battle, fire, and water ordeals, to decide on innocence or guilt, and award justice. Indeed they are all of the same family—the offspring of the same dark and superstitious condition of the human mind,

and destined to extinction by the same means—the disclosure and diffusion of knowledge. Quarantine institutions can no more bear, for any length of time, without being demolished, the light that is opening on them, than an inflamed eye can tolerate, without pain, the full blaze of the mid-day sun. Descendants and nurselings of an intellectual night, intellectual day will certainly destroy them.

A question of much moment is now to be considered. What good have Quarantines done, to balance the immeasurable amount of their mischief? I answer, *None*; and their advocates are challenged to disprove the assertion. Those establishments are sources of unqualified evil, as every establishment, founded in error, necessarily must be. I mean, that they do mischief exclusively, so far as their measures to prevent the transportation of pestilential contagion from one place to another are concerned. Truth alone is productive of good. Every institution built and administered on false principles, tends to evil, by a law as positive, as that by which ponderous bodies tend to the centre. This position no one will deny. And I trust it has been shown, that every principle, connected with Quarantines, is radically unsound. Those institutions have never excluded pestilence from a town or city, nor saved a single life, to compensate for the thousands they have wantonly destroyed. To speak more definitely.

The British Government has long maintained Quarantines in London, Liverpool, Bristol, Portsmouth, Rochester, Falmouth, Milford, and Hull. Between those ports and the whole country of the Levant, and indeed every oriental place of business, visited by plague, an extensive intercourse by commerce has been constantly maintained. The suspected cargoes that have entered them, and been opened, examined, and familiarly handled, are innumerable. Yet, for nearly *two hundred years*, no opener, inspector, or cleanser of reputedly infected goods in them has ever sickened of plague; nor has a single patient, affected with that disease, been received into their Lazarettos. *This is history.* Yet, it is repeated, that, within the above period, hundreds, probably thousands of ships from eastern places, with “foul bills,” have entered the designated ports, and discharged their cargoes. Do not these facts prove, as far as a negative can be proved, the

non-contagious nature, and non-importability of plague; and, of course, the uselessness of Quarantines, as respects that disease? If not, I should be gratified at being informed, wherein they fail. Were plague contagious, it seems impossible, that, in such a length of time, and under such broad and uninterrupted intercourse with the Levant, and the east generally, some of the poison of it should not have found its way into the British ports. Suppose the complaint guarded against were small-pox, instead of plague; no precaution, that wisdom might devise, and vigilance execute, could have prevented it from appearing, perhaps every year, among the crews of foul ships, or the openers and examiners of infected goods. Had the persons employed in discharging, opening, and airing suspected cargoes been attacked by plague; or, had cases of that disease been admitted into the Lazarettos, from on board of infected ships, and the towns notwithstanding escaped—had events of this sort happened, testimony in favor of Quarantines might have been derived from them. But, of the events which did happen, no such use can be made. They only show, that, for nearly *two hundred years*, there has not been imported into Great Britain, notwithstanding the extent of her commerce with oriental countries, and the number of ships pronounced unclean, that have entered her ports, as much of the contagion of plague, as could communicate the complaint to a single individual. And in the United States, though they have also had some commerce with the countries of the east, a case of plague has never been seen, except in the modified form of yellow fever. Nor can it be made to appear even probable, that all the parade and cost of their Quarantine establishments have ever saved from plague, a single seaport of France, Spain, Italy, or any other part of Europe. It is time, then, high time, that the curtain should drop, and this farce of contagion, of four or five hundred years duration, be ended. Though in harmony with the views of the fifteenth, sixteenth, and seventeenth centuries, when physical science was in its early infancy, and imagination had usurped the seat of judgment, it is as unfit for the nineteenth, in which a much sounder philosophy prevails, as any of the fantasies of the Dark Ages.

The most disastrous effects, however, of a belief in the contagiousness of plague are yet to be cited. They are those which result from attempts, by sanitary arrangements, to prevent the disease from spreading by land. And they have been, in many cases, as shocking as the calamities of war. The object of the arrangements is, to confine the inhabitants of sickly towns, cities, and districts within their own limits, and prevent the inhabitants of other places from entering them. And the means employed for these purposes, are lines and cordons of armed men.

The uselessness of these arrangements has never failed to be demonstrated, wherever they have been tried. The experiment has already failed. In no instance have they ever prevented the spreading of a pestilential disease to its natural limits—the limits I mean prescribed to it by time and place, according to the principles heretofore laid down—nor can they ever do so. The reason is plain. The miasm of the complaint is in the atmosphere, and no bodies of soldiers can impede its march. As well may they attempt to grasp the hurricane, and stop it in its career. Every effect of these measures, therefore, is pure mischief. To be particular.

A pestilential disease begins in the lowest and foulest section of a large city, situated on a river, or some other body of navigable water. At first, it occupies but a small space. Around this a cordon of troops is stationed, to prevent all egress and ingress of both the sick and the well. But this does not prevent either the egress of miasm, or the generation of it in other places. In twenty-four or forty-eight hours, or perhaps less, the disease appears without the cordon. The troops, increased in number, and falling back, enlarge their circle. The next day, or the next but one, they perceive, to their surprise, that the complaint, having again passed them, is once more in their rear. The disease continuing thus to advance, and they to retreat, it at length drives them out of the city, after having attacked and destroyed a number of themselves. This is no fancy-piece, but a picture of an event that has often occurred.

Meantime the inhabitants of the city, less at liberty than the disease, cannot pass the cordon unseen, and are prevented from doing it openly. Inhumanly confined to the pestilential spot,

where they inhale, at every breath, empoisoned air, instead of being permitted to remove, for safety, to a healthier atmosphere, a depressing terror and sense of desperation seize them, and they become, in numbers, vastly augmented by these causes, easy and certain victims to the malady. Fresh and wholesome aliment, on such an occasion essential to their health, is withheld from them, for a twofold reason. A wide-spread panic has taken from most of the inhabitants of the adjacent country all disposition to bring provisions to the place; and the sanitary cordon prohibits the entrance of the few, who, from motives of humanity, or the love of gain, are willing to enter. Thus does scanty and unsound food unite with a pestiferous atmosphere, to swell the calamity.

From causes such as these, the late epidemic of Barcelona, in Spain, increased to the appalling pitch of *eighteen fold*, in *seven days* after the imposition of the sanitary restrictions. The malady, moreover did not begin to decline, until the month of October, though the prohibitions had been laid in July—a memorable proof of the folly that devised, and the madness that continued them!

Of the epidemic of Tortosa, in 1821, the same may be said. The sanitary restrictions were inordinately rigid. The city was surrounded by powerful and vigilant cordons of troops. All travellers from sickly places were prohibited from entering the gates. Yet, as if in derision of this pageant, the pestilence invaded the city thus garrisoned against it—I should rather say, it sprung up in it—and the mortality was frightful.

At a previous period, (I think in 1804,) Gibraltar had presented a similar spectacle. In consequence of a pestilential disease prevailing at no great distance in Spain, and also on the Barbary coast, every pass leading into the town and fortress, was vigilantly guarded. But to no purpose. The Rock, which no armed force could carry, was invaded by pestilence; and the devastation was terrible—the more so, from the strictness, with which the place was barricaded. If I mistake not, the deaths amounted to *six thousand*, in a population of *eighteen or twenty thousand*.

In the Great Plague of London, the regulations adopted for checking its progress, proved equally destructive. The mortality was perceived to be so much augmented, by shutting up sickly houses, and laying restrictions on sickly neighborhoods,

that the practice, if not abandoned, was greatly mitigated. Were it necessary, further facts, testifying to the same effect with the foregoing ones, might be cited in abundance. But, to reflecting minds, those adduced will not, I trust, fail to prove satisfactory.

In no other place, and on no occasion, of which I have any knowledge, have sanitary restrictions been more successful. In his efforts to set bounds to a pestilential epidemic, man has always given proof of his impotence. He resembles Canute, by the seaside, forbidding the surf to soil his sandals. He is attempting an impossibility; because he is in conflict with a law of nature. I mean, that his success is impossible, through the instrumentality of the restrictive measures usually pursued. I shall say, hereafter, that, to no inconsiderable extent, he may succeed, and shall endeavor, at the same time, to indicate the means with which he is to accomplish the important work. When given in detail, those means will be found to be included chiefly, not in armed cordons, or barbarous Quarantines, but in CLEANLINESS.

In the United States, all sanitary arrangements, to arrest the progress of yellow fever, have proved equally fruitless with those referred to, in other countries. The complaint has never felt them. Having once invaded one of our cities, it has always set human opposition at defiance. I mean, in its march and duration. It has spread, and obstinately maintained its ground, until overpowered by cool weather. Yet I have seen it opposed by sanitary regulations, as wise and vigorous as contagionists could devise and carry into effect.

Were plague and yellow fever the offspring of human contagion, these things would not be true. Their progress *might* be arrested, by rigidly separating the sick from the well—a measure easily accomplished. Small-pox furnishes proof of this. That complaint, when propagated only by contagion, unassisted by a variolous constitution of the atmosphere, *can* be stopt, in its career, and be certainly prevented from overrunning a city. The attempt has been often successfully made. Pestilence could be also staid, in its course, more easily, I doubt not, than small-pox, were it not an atmospherical disease. Being such, however, and arising from the influence of season and weather, nothing can

arrest and extinguish it, but a counter influence, from the same source.

But perhaps the most signal failure of sanitary restrictions, which the world has witnessed, was in the case of cholera, in its late passage over Europe. Not only was that pestilence not stayed, by those restrictions; as if in scorn of all that man could do, in opposition to its progress, it seemed, in many instances, to invade cities, towns, and territories, with a certainty proportioned to the exertions made to exclude it. Unquestionably it often spared places *not* guarded, and devastated those that were. Prussia and Austria, contrasted with each other, are in proof of this. The former nation guarded itself resolutely and vigilantly, at every pass and point, yet suffered severely from cholera. The latter cannot be said, as a nation, to have guarded itself at all. Notwithstanding this, its sufferings, from the complaint, were comparatively light.

This brief account of the pernicious effects of sanitary restrictions, in times of pestilence, cannot be more fittingly closed, than by the following picture of the evils and horrors they produced, in Opiton, a village of the palatinate of Sandomir. The representation of the scene, about to be given, is a translation from the "*Gazette Medicale de Paris, par Barriere de Boismont.*" The chief of the palatinate having learnt, by letter, that cholera was committing frightful ravages, in the village referred to, appointed a commission to inquire into the facts, and devise and apply some means of relief. The following is the account of their visit, of the deplorable condition of the village, when they entered it, and the successful issue of their efforts to relieve it.

"Having reached the borders of Opiton, the Commissioners found the whole neighboring population in arms, and all communication with the place cut off. The dread of contagion having become general, no one was permitted to leave the village. When the Commissioners entered it, the most frightful and calamitous spectacle was presented to them. Business was at an end, the shops were closed, and the silence of desolation every where prevailed, except when broken by sobs, lamentations, and groans. Not a house could be found, that did not contain,

mingled together in dismal assemblage, the sick, the dying, and the dead. Already were want and despair brooding in every dwelling, and painted in gloom and ghastliness on every countenance. The first care of the Commissioners was to reanimate the courage, revive the spirits, and reinstate the hopes of the drooping inhabitants. Relief being liberally administered by them, consolation was felt by the people, brighter prospects opened to them, and, in a short time, a remarkable amendment was perceptible. The Commissioners next addressed themselves to the authorities and inhabitants of the vicinity, convinced them that the disease was not contagious, and removed their apprehensions on that subject. The customary communications with the village were consequently renewed, the markets were again supplied with provisions, confidence in all its forms was restored, and an abatement in the violence and mortality of the complaint was sudden and striking."

Such were the disasters of imposing sanitary regulations, and the relief derived from removing them. The contrast, though deep and strong, is true to nature; and similar views might be correctly given of the effects of such measures, in other places. Cholera, though a fatal scourge to the world, will, through the wise and beneficent dispensation under which we live, be productive of consequences favorable alike to science and humanity. Besides being instrumental in throwing much light on the practice of physic, it will prove highly influential in extinguishing the belief in pestilential contagion, and bringing into disrepute the Quarantine and Sanitary establishments, that have hitherto existed. No previous disease has so clearly demonstrated the fallacy of the notion, and the uselessness of all practical measures founded on it. It is thus that, in the faultless economy of our globe, and doubtless in the entire government of the Universe, *exclusive evil* has no existence. In every occurrence, however calamitous it may at first appear, the evil is but *seeming and transitory*, while the good educed from it is *positive and everlasting*. Hence the certain and cheering prospect, that the tendency of all things is to ultimate perfection. Nor will an exception to this be found in medicine. All that is fallacious and mischievous in it will be rejected, and nothing but truth and usefulness retained.

The time of this consummation may be distant; but it is approaching, and will arrive, as certainly, as that wisdom, goodness, and power preside over creation.

An objection urged against the foregoing views of Quarantines must now be noticed. Great Britain, France, and other parts of Europe have had a long respite from plague. Often visited by that complaint, a few centuries ago, they are free from it now. Is not this exemption, say my opponents, owing to the improved condition of their Quarantines? I answer, No. Quarantines have no share in the work of protection. They were more rigid and unsparing, at the time when plague visited Europe, than they are now. The exemption is attributable to the improved condition of society in other respects. In plain terms, it is attributable to increased CLEANLINESS, with its concomitant comforts. If a better diet, better cooking, and an amended general regimen, including less intemperance, and more suitable clothing, contribute somewhat toward the result, it is comparatively little. Increased PURITY, in the most extensive signification of the term, is the chief cause of the immunity enjoyed. That filth produces plague, and cleanliness prevents it, is as plain and positive a law of nature, as that warmth promotes, and cold checks the progress of vegetation. In Europe generally, but especially in Great Britain and France, towns and cities are much cleaner, and lands much more thoroughly drained and cultivated now, than they were a century or two ago. Hence arises their exemption from pestilential complaints. Nor is this the only benefit they derive from the improvements referred to. Owing to the same causes, they are more exempt than formerly from all sorts of malignant fever. In confirmation of these views, many facts and exemplifications might be adduced. What renders a town, city, or small district of country healthy or sickly, will, if sufficiently extended, do the same to a nation. The two following examples therefore are highly important, being of universal application, and testifying conclusively to the position I am maintaining.

The city of Bourdeaux, when formerly surrounded by marshes, and filthy internally, was extremely unhealthy. The fevers which annually visited it, always severe, were at times pestilen-

tial. But the cleansing of the streets, and the draining and cultivation of the marshes, and of the country around it generally, have rendered it healthy. It is now as free from pestilential complaints as any other populous city in France.

La ville-neuve les Avignon, stands on a branch of the Rhone, and was once renowned for its healthfulness and beauty. Strangers resorted to it, to breathe its fine air, and enjoy its delightful prospects. But the embankment of the river giving way, and the water escaping from its channel, the environs of the village became a marsh; and it is now shunned as a place of sickness. For similar reasons, the Pontine marshes near Rome, once the garden spot of Italy, and perhaps of the world, are at present uninhabitable. The improvement in the healthfulness of Calcutta, and other places on the Hoogley and the Ganges, is attributable to causes of the same class.

Instances of this sort are innumerable. Let the cities of Europe then become now as foul, and the lands as marshy and uncultivated, as they were formerly, and plague will revisit them, though their Quarantines, be trebled in strictness, and all intercourse with the Levant be prohibited.

Suppose Asia and Egypt to be the birth-place of small-pox, the nations of Europe unacquainted with inoculation and vaccination, as means of protection from it, and still connected with the countries of the east, as extensively and closely as they are at present. Under these circumstances, could Quarantine establishments secure them from that disease? Impossible. Every Lazaretto would be a small-pox Infirmary, its wards never empty; and, in merchandise, and the clothes of travellers, the virus of the disease would be conveyed into the interior, and there produce its deleterious effects. No precautions could prevent this result. Civilization, cleanliness, and refinement may give protection against the *generation* of certain diseases, but not against the propagation of those that are contagious.

In all inquiries into this subject, it should be borne in mind, that the intercourse between Europe and the countries of the East is much wider and freer now than it was two or three centuries ago. In the same ratio, therefore, would plague, were it contagious, be more certainly introduced into European seaports.

I mean especially, that it would find its way, in merchandise, infected persons, or infected clothing, into the Lazarettos. But, as already stated, it does not enter them at all, nor has it appeared in any British Lazaretto for nearly two centuries. It is not therefore a disease to be transported, by contagion, from one country to another. To contend, as some do, that it is semi-contagious—propagable in a vitiated atmosphere, though not in a pure one—is, as already observed, a mere trick in sophistry, unworthy of notice. It is an empty assertion, unsupported by a title of evidence. Yet, were the proposition true, it might be thus satisfactorily replied to—remove all filth, whose effluvia might adulterate the air, and the semi-poison of plague becomes harmless, and Quarantines of no use. Cleanliness is a competent safeguard without them. In truth, to admit that pestilence is but “semi-contagious”—“contagious only under certain circumstances,” is tantamount to an entire surrender of the question. It is an acknowledgment of defeat, in the contest about the contagiousness of plague. But this acknowledgment, and the retreat from the ground contended for, instead of being open and manly, is tortuous and furtive, and therefore not creditable to the vanquished party. When a disputant is convicted of error, his refuge lies in ingenuous submission.

Will it be said that I have been condemning institutions which no longer exist, inasmuch as none now impose a detention of exactly *forty days* on suspected and sickly vessels? I reply, that this objection would be a quibble, unworthy of the discussion in which I am engaged. My remarks have been directed against all detention, *on account of contagion*, whatever may be its duration. Whether it last but *one day* or extend to *forty*, it is equally faulty and indefensible, as relates to principle and tendency, though not as respects the amount of mischief it actually produces. As already shown, the practice originated in error and superstition, has been perpetuated by prejudice and selfish passions, is highly pernicious in its effects, and possesses not a single redeeming quality. It should be therefore abolished.

Let it not be imagined, however, that I would admit into port, all vessels, at all times, without examination or detention. Far from it. In warm weather, especially, no vessel should be per-

mitted to enter, whose foul condition or damaged cargo may aid in vitiating the atmosphere of the place, until the whole shall have undergone a thorough cleansing. True plague, and other forms of pestilential disease are of atmospherical origin. The great object, therefore, of sanitary establishments should be to keep the atmosphere in a pure condition. But little else is required of them; and that can be effected only by the enforcement of cleanliness. But, among the sources of filth and atmospherical corruption, in maritime cities, and those situated on lakes and navigable rivers, foul ships and damaged cargoes are justly enumerated. They should be therefore excluded, until rendered innocent by purification. The mode of effecting this must be adapted to the nature of the articles to be purified, and the depth of their contamination. In all cases and kinds of cleansing, however, the only means to be confidently relied on are, pure air, pure water, soap, sand, brushes, and sponges or cloths to wipe with. These agents, skilfully applied, are competent to the cleansing of all articles worth preserving; and fire alone can purify the rest.

Next to these modes of cleansing foul ships, come painting and whitewashing them, which are however but substitutes for cleanliness. They cover impurities, but do not necessarily destroy them. In fumigation with acids, chlorides, and other gaseous and odorous substances, I have but little confidence—or rather none at all. The process is, at best, of doubtful effect, and should never be resorted to, except when nothing better can be done. There is reason to believe, that fumigation with those irritating articles has often done mischief. Indeed it is scarcely conceivable how such pungent gases, inhaled by weak and irritable lungs, can prove innocent.

The period and process requisite for the purification of a ship and cargo depend altogether on the circumstances of the case. The duration of their detention, therefore, being very much a matter of experience and judgment in each particular instance, cannot be specified. Nor is it necessary that it should be, provided the business be conducted by men of intelligence. In no case, however, need it be very protracted. But my object being not to enter into details, but to state general principles, I shall dwell on this topic no longer.

In every sanitary port-establishment, a hospital should be included, as well as suitable buildings, grounds, and apparatus for cleansing and storing goods and merchandise. Into the former should be received all sick persons, arriving on board of ships, and sailors who may sicken in port; not because they would endanger the health of the city, by being lodged and attended elsewhere; but because their accommodations and chance of recovery might not be so good. The healthy portions of the crews and passengers of sickly ships may go on shore immediately, free from all restraint, care being taken that their persons and clothes are clean. No filth, however small in quantity, should be conveyed into the city from without. Under the best regulated police, every crowded place of commerce has filth enough of its own. Let ships, cargoes, bedding, persons, and wearing apparel be thus purified, and all other necessary measures be pursued, to enforce domestic cleanliness, and prevent the formation of malaria, and the dread of imported pestilence may be safely dismissed.

A few general remarks shall close this essay. The doctrine of febrile contagiousness, considered in the extent to which it is carried, is one of the most unfounded and mischievous, in medical science. To the injury of the Profession, as well as of the sick and the healthy, the quality of communicableness is attributed to many diseases, of whose nature and character it forms no part. When a febrile complaint attacks a number of persons, in the same house or neighborhood, about the same time, or in succession, it is too much the fashion to pronounce it contagious, without adverting to the fact, or duly weighing it, that the sick have all been exposed to a common deleterious cause. On this ground, even intermittents and remittents have been deemed contagious; and dysentery is deemed so still. So is typhus, by a great majority of the physicians of Christendom. Of influenza the same *has* been true; and the belief in its contagiousness, though much reduced in its sphere, within the present century, is still extensive. Pulmonary consumption has been declared contagious, because several individuals of the same family have died of it, in succession. In this opinion even the late Dr. Rush concurred, because he had often known a man to be attacked by the disease

first, and then his wife; or the converse. In these cases, his belief was, that the one might have been infected, by the breath of the other. I am not sure that the Doctor did not abandon this opinion, before his death. That the several complaints just named are free from contagion, might be easily made to appear, were it admissible here to enter on the discussion.

As respects measles and scarlet fever, so universal and positive is the belief in their contagiousness, that to express a doubt on the subject, is hazardous to reputation. It is received as evidence of a heresy in medicine, the result of thoughtlessness, superficialness, or wild speculation. Yet I venture to say, that the communicability of those complaints, from the sick to the well, by means of a secreted poison, is far from being proved. Nor do I hesitate to add, that the weight of sound and accurate testimony appears to give the preponderance to the opposite opinion. I know of but two *febrile* complaints unequivocally proved to be contagious—small-pox, and kine-pox; the latter being communicable only by inoculation. The hypothesis of the contagiousness of all others, (I mean fevers,) if not assumed *without* evidence, rests on evidence wholly inconclusive—such as, in the accurate sciences, would be held inadmissible. On these several points, I may possibly offer a few further thoughts, at a future time.

Finally; febrile contagion, like other poisons, having a character and permanent properties of its own, must produce its effects independently of all adventitious auxiliaries. Semi-contagiousness, therefore, as already intimated, is a term without a meaning. No disease, moreover, is contagious, which is limited, in its prevalence, by time or place—which exists, I mean, only in given situations, and under given conditions of the atmosphere. But plague and yellow fever have been shown to be complaints of this description. They are controlled by temporary and local influences. Hence their destitution of contagion, and the want of wisdom in governments, in establishing and maintaining against them, expensive and pernicious systems of Quarantine—institutions, which, in time to come, will be known only as matters of history, and will be quoted by posterity, as evidence of the error and superstition, which had once held dominion over the minds of their forefathers.

THOUGHTS

ON

Quarantine and other Sanitary Systems,

BEING AN ESSAY WHICH RECEIVED THE

PRIZE OF THE BOYLSTON MEDICAL COMMITTEE,

OF

HARVARD UNIVERSITY,

IN AUGUST, 1834.

BY CHARLES CALDWELL, M. D.

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