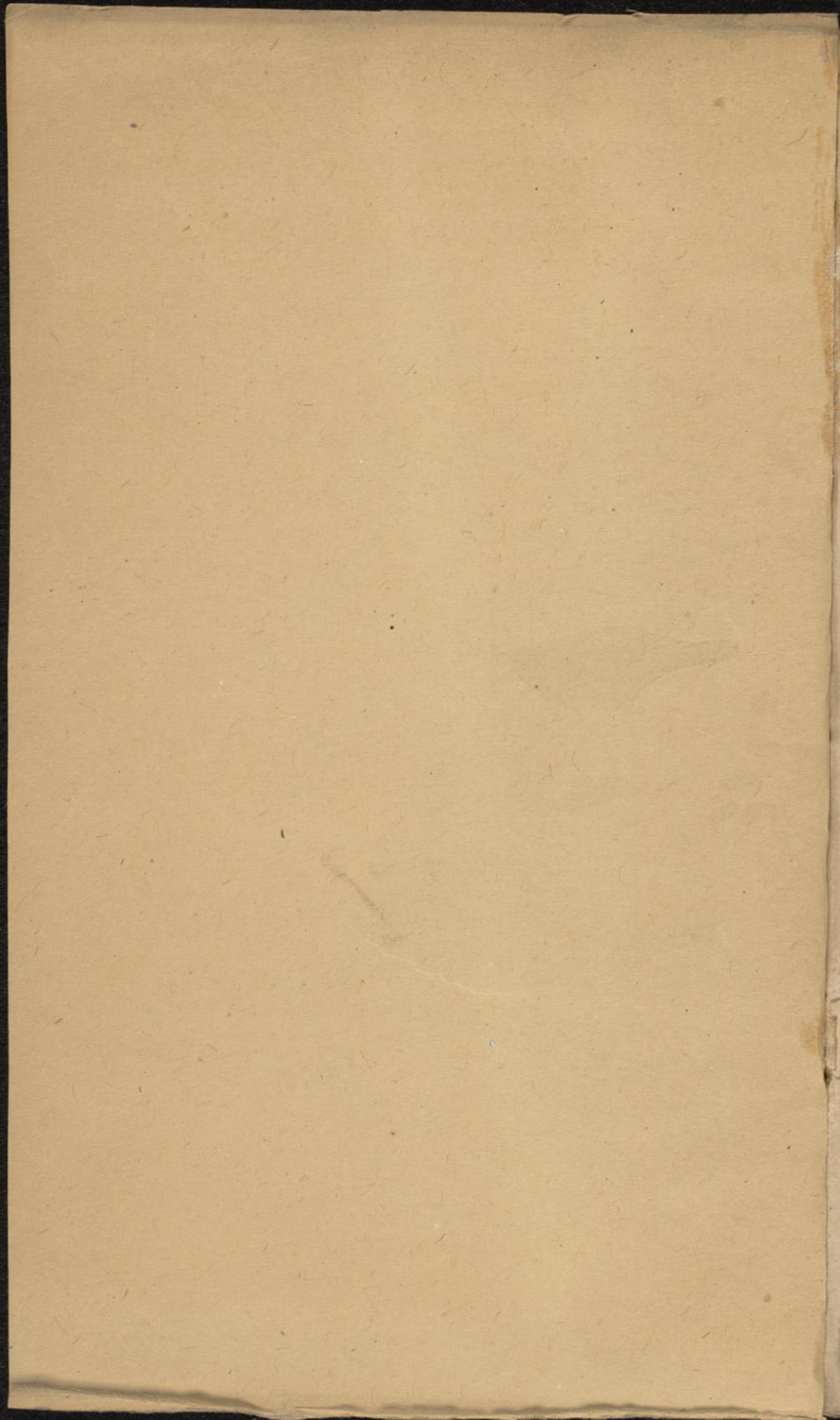


Winslow (Geo. E.)

Essay on the nature,  
symptoms, and treatment  
of Asiatic Cholera.





1684

ESSAY  
ON  
THE NATURE, SYMPTOMS,  
AND  
TREATMENT,  
OF  
ASIATIC CHOLERA.



BY GEORGE ERVING WINSLOW, M. D.,  
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the Cambridge Board of Health.

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## CHOLERA SPASMODICA.

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### INTRODUCTORY OBSERVATIONS.

ALL America being threatened with a visitation from that remarkable pestilence which has for so many years been considered endemic to the shores of the East Indies, it becomes the duty of American physicians to investigate the laws of its communication, its characteristic symptoms, and most successful plans of treatment, before the country is turned into a lazaretto by its horrible fatality—when the general panic, hurry, and confusion, will be too great to admit of cool and dispassionate deliberation. Upon the subject of its propagation, various and conflicting is the testimony. Most of the physicians of India deny its contagious nature; and though for a time the contest in England and Paris was carried on with much zeal and warmth, yet since the facts have been more closely examined, and especially since it broke out with such violence at Paris, the advocates for contagion have been gradually yielding to the force of truth: and the decision of the leading men in the profession in Paris, and the promptness

with which the government of France, acting upon their decision, abolished the quarantine regulations, may be regarded as the final settlement of the question. Upon this controversy, however, it must be remembered, hang many and important interests; and therefore we should be cautious in receiving and acting upon opinions, which, perhaps, not wilfully biased, may still in some measure have been influenced by these circumstances. We must come to the examination of these questions as guardians of the public health, and not as political economists; and throwing aside all interested views, argue the question with that calm deliberation which characterizes philosophers in pursuit of truth.

Having had opportunities of investigating this disease during its prevalence in London, both by attending the cholera hospitals and the animated discussions which took place, night after night, in the medical societies of that metropolis, I have thought it may prove interesting to the American public to have a delineation of its phenomena, and the opinion formed by an eye-witness of its laws of propagation.

To arrive at the truth on the question of the contagiousness or non-contagiousness of the cholera morbus, is at all times desirable, and especially so in commercial countries, where of necessity one of two evils must be endured—either the danger of pestilence introduced by too unguarded a communication, or the restrictions on trade and all the misery resulting from too rigid a suspension of intercourse with infected ports.

On this question, however, the medical world has been very much divided in opinion; and the governments of Europe, acting, as they thought, upon the safe side, have thrown themselves into the ranks of the contagionists, and imposed the most rigid and exclusive restrictions upon all intercourse with infected dis-

tricts. How far these quarantine regulations have impeded the advance of the disease, and protected the different nations so guarded, the history of the progress of the cholera through Europe must determine.

America being now visited by this pestilence, it becomes a matter of serious consideration how far she is justified in treading in the steps of other countries, all of which have experienced the little efficacy of quarantine regulations.

But as this question will be examined in a subsequent part of this work, it will not be necessary here further to advert to it.

The principal object of this little pamphlet is, to give in a condensed form, and in language as free as possible from technicalities, the prevailing opinions of medical writers, and my own observations, on the nature, symptoms, and treatment, of cholera spasmodica. I therefore commit it into the hands of a liberal public, trusting that the desire to benefit them will atone for all the defects arising from the hurried manner in which, from necessity, this pamphlet is brought out.

New York, June, 1832.

# SYMPTOMS OF CHOLERA

The symptoms of cholera are characterized by a sudden onset of profuse watery diarrhea, which is often described as 'rice-water' stool. This is accompanied by vomiting and a feeling of coldness. The patient may also experience a rapid pulse and a drop in blood pressure. In severe cases, there is a loss of consciousness and death may occur within a few hours. The disease is caused by the bacterium *Vibrio cholerae*, which is spread through contaminated water and food. It is most common in tropical and subtropical regions. The incubation period is usually between 1 and 5 days. The illness is self-limiting and most patients recover within a few days. However, in some cases, the disease can be fatal, especially if the patient does not receive prompt medical attention. Treatment involves rehydration with oral or intravenous fluids. In severe cases, hospitalization and intravenous fluids are necessary. Prevention includes drinking clean water and avoiding food from street vendors in areas where cholera is common. Vaccines are available for cholera, but they only provide temporary protection.

The late and earlier forms of cholera are distinguished by the nature of the stool, which is either watery or contains mucus. The disease is most common in the summer months. It is a highly contagious disease and can spread rapidly in crowded conditions. The mortality rate is high, especially in children and the elderly. The disease is caused by the bacterium *Vibrio cholerae*, which is spread through contaminated water and food. It is most common in tropical and subtropical regions. The incubation period is usually between 1 and 5 days. The illness is self-limiting and most patients recover within a few days. However, in some cases, the disease can be fatal, especially if the patient does not receive prompt medical attention. Treatment involves rehydration with oral or intravenous fluids. In severe cases, hospitalization and intravenous fluids are necessary. Prevention includes drinking clean water and avoiding food from street vendors in areas where cholera is common. Vaccines are available for cholera, but they only provide temporary protection.

## SYMPTOMS OF CHOLERA.

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LIKE all diseases of rapidly fatal character, the symptoms in the last stage have been too much dwelt upon as the characteristic marks of true cholera; and the public mind has been agitated, and the medical profession censured, in consequence of the little success which has attended the treatment of the disease under those circumstances. This disease is as much, and I hesitate not to say more, under the control of medicine, if attacked at a time when the powers of life are sufficiently active, than the common diseases, committed with confidence to the care of the physician; and it is only when from neglect or erroneous treatment the patient falls into the last or collapsed stage—when in fact he is *in articulo mortis*—that medicine fails. In most cases, during the prevalence of the epidemic in Europe, and especially in England, three stages have been observed: the first marked by intestinal irritation; the second by prostration of the nervous system; and the third, the blue stage, or state of irrecoverable collapse.

The consecutive fever, so much spoken of as a distinguishing feature of European cholera, I do not class among the stages of the disease; because it is not a universal attendant, but rather an effect arising from constitutional idiosyncrasy.

### FIRST STAGE.

The intestinal irritation, which I have distinguished as the first stage of cholera, has been usually regarded in no higher light than

a premonitory symptom; and to this neglect is to be attributed the little success which has attended the treatment of the disease. It is true, the London central board of health laid it down as a certain precursor of cholera, and gave the most public announcement of the fact, calling upon those affected with diarrhea to have immediate recourse to medical treatment. But being only regarded as a premonitory sign, and not as the *first symptom of the true cholera*, it produced little effect on the minds of the people. When the cholera made its appearance in Sunderland, the cases of diarrhea were separately noticed in the reports sent from the local to the central board of health, and subsequently were altogether struck out. Whether they were afterwards included under the general head of "*mild cholera*," or totally disregarded, I cannot say; but little, from that time until the disease appeared in London, was said upon this subject.

This stage commences with looseness of the bowels, more or less severe, according to the habits and constitutional disposition of the patient. At first the evacuations are deeply tinged with bile, but gradually the *fæces* undergo a very marked change, become colorless, and very much resemble thin gruel or rice-water.

The diarrhea is noticed in the Cholera Gazette as a common preliminary symptom, though for a long time presenting no peculiar character distinguishing it from the complaint denominated simple diarrhea; yet the dejections are in many instances from an early period more fluid, whiter, and less feculent than they usually are in that disease; and *generally*, towards the advance of the true choleric symptoms, these evacuations assume the peculiar rice-water character.

In some instances, during this stage of the complaint, there are slight indications of the symptoms which are to follow:—nausea, proceeding even to vomiting, and slight trembling of the muscular fibres in various parts of the body, attended with loss of appetite, dejection of spirits, general debility, and giddiness.

There are cases noticed, in which this diarrhea was not observed as a precursor of the second and more alarming stage. In others it has commenced at night, and before morning the disease in its most aggravated form has prostrated all the vital powers of the unfortunate sufferer. But these exceptions are not sufficiently

numerous to invalidate the rule; and I lay it down as a settled position, that *the generality of cases are preceded by a relaxed state of the bowels*. The importance of this observation will appear, when I notice the proper sanative measures to be adopted for the prevention and cure of the disease.

This stage, continuing for a longer or shorter duration, is suddenly terminated by the accession of symptoms of a more alarming character, usually denominated the proper cholera, but which I consider as the second stage of the disease.

#### SECOND STAGE.

The diarrhea, which had perhaps scarcely been noticed by the patient, becomes suddenly more severe, the evacuation thinner, and more colorless. The stomach, which up to this moment has remained undisturbed, or but little affected, now becomes very irritable, and throws off first its contents, mixed with food, and at length, like the evacuations from the bowels, colorless and of watery consistence. At the same time, the strength of the patient becomes as suddenly depressed, which is indicated not so much by his feelings, as by the lowness and almost imperceptible pulsation of the heart and arteries. The urine is suppressed, the voice weak and hoarse, the respirations few, the breath chilled, and the tongue shrunk and of icy coldness, attended with great thirst, the skin cold and covered with a cold and clammy moisture; the countenance is shrunk, the eyes glassy and sunk in their orbits, and the features pinched, and exhibiting the most painful and anxious expression. The muscles in various parts of the body are now affected with cramps, rather than spasms. They are drawn up in knots, and their fibres are seen trembling under the skin. The muscles principally affected are those of the extremities, the calves of the legs, the flexors of the fingers, and the abdominal muscles; but there are *twitches* of the muscular fibres and tendons in every part of the body. These cramps have been described to me by patients themselves, as uncomfortable rather than painful; and the generality of the cases I have seen have not appeared to suffer much from this cause; and except where there are spasms in the stomach, attending the vomiting, I should say that there is little or no pain attending this disease.

In this stage there is little or no livid hue to be noticed. There may be a darker circle under the eye, and the nails may be a little discolored; but all the medical men connected with the cholera hospitals in London assured me of this fact, and my own observation corroborates their testimony to the absence of blue color in this stage of the complaint.

I have given the symptoms of this stage of the cholera in the order in which they usually occur. Some may occasionally be absent, or more or less aggravated; but generally all are to be found occurring simultaneously.

#### THIRD STAGE.

The preceding stage of the disorder is seldom of long duration, either yielding almost immediately to the prompt application of medicine, or terminating in a few hours in the more concentrated and intense stage of the malady, when all the symptoms are fearfully aggravated, with the exception of the purging and vomiting, which entirely cease or are greatly suppressed. The countenance now has that peculiar expression, denominated *facies hippocratica*; the youthful plumpness, yielding in the space of a few hours to the violence of the shock, is succeeded by the shriveled physiognomy of old age and disease; the complexion assuming at the same time the peculiar blue or leaden color which has been considered the characteristic mark of true cholera.

From this stage, which has been denominated the state of collapse, but few recover. Indeed I think I should not much err by asserting, that when the patient is brought to the low and depressed condition I have above described, his state is utterly hopeless;—it is in fact the *dying stage of cholera*.

These three stages, though perfectly distinct and clearly observable in most cases, are nevertheless, in other instances, so suddenly overpowering in their invasion, and terminate with such alarming rapidity, as to set all efforts of discrimination at defiance. The vital powers explode like the electricity of the Leyden phial; the strong holds of life are in one moment laid prostrate; and the wretch, who one moment ago seemed in the flower of youth and vigor of health, is in the next a cold, shriveled, and ghastly object, having nothing in common with a living being; but the slow

heavings of respiration and a countenance expressive of the most unutterable anxiety.

#### CONSECUTIVE FEVER.

If there is any shade of difference between the Asiatic cholera and the disease now raging in Europe, it is the presence of this phenomenon in the latter, and absence in the former. A great handle has been made of this discovery, by some who deny the identity of the two diseases; and the presence of fever subsequent to the cold and collapsed stage has disposed others to conclude that this epidemic is only a severe form of typhus fever.

Even should it be found that the premises from which the former conclusion is drawn are correct, there would not be in the mind of an unprejudiced observer sufficient ground to justify the inference.

The occurrence of an occasional effect, arising from a cause superadded to, but not a necessary part of, any physical phenomenon, is not sufficient to destroy the identity between cases in which this consequence may or may not be present. Circumstances totally unconnected with the proper causes of disease may nevertheless so qualify and alter the symptoms, as to render the diagnosis, if not impossible, at least difficult; and in all climates, every physician is aware of the effect produced upon the character of disease by constitutional idiosyncrasy.

In India, according to the authority of Dr. James Johnson,\* consecutive fever is never observed; while, from the reports of the British commissioners appointed to investigate the nature of the disease in Russia and Poland, this phenomenon invariably follows a recovery from the state of collapse. Some of the reports of the Indian presidencies, in the discussions given, make no mention of consecutive fever; and it is ascertained to be a fact that the natives of that country, when recovering from cholera, are not affected in this manner. But among the British soldiers and European civilians, there is every reason to believe, from the statements of those connected with the British army, that this phenomenon is a common occurrence.

\* Letter to the "Times," morning journal, paper published by the privy council of Great Britain, in the appendix.

Whatever may be the case in India, it is certain that since the complaint has made its appearance in Europe, consecutive fever has invariably been noticed. The report of Drs. Russel and Barry gives the phenomenon in the following words :

“*Fever, or hot stage.* After the blue cold period has lasted from twelve to twenty-four hours, seldom to forty-eight hours or upwards, the pulse and external heat begin gradually to return ; headache is complained of, with noise in the ears ; the tongue becomes more loaded, redder at the tip and edges, and also drier. High-colored urine is passed with pain in small quantities ; the pupil is often dilated ; soreness is felt on pressure over the liver, stomach, and belly. Bleeding by the lancet or leeches is required ; ice to the head gives great relief. In short, the patient is laboring under a continued fever, not to be distinguished from ordinary fever. A profuse critical perspiration may appear on the second or third day, and leave the sufferer convalescent : but much more frequently the quickness of pulse and heat of skin continue ; the tongue becomes brown and parched ; the eyes are suffused and drowsy ; there is a dull flush, with stupor and heaviness, about the countenance, much resembling typhus ; dark sordes collect about the lips and teeth. Sometimes the patient is pale, squalid, and low, with the pulse and heat below natural ; but with the typhus stupor, delirium supervenes, and death takes place from the fourth to the eighth day, or even later, in the very individual too whom the most assiduous attention had barely saved in the first or cold stage. To give a notion of the importance and danger of cholera fever, a most intelligent physician, Dr. Reimer, of the Merchants’ Hospital, informs us that of twenty cases treated under his own eye, who fell victims to the disease, seven died in the cold stage, and thirteen in the consecutive fever.”

#### HISTORY AND REMOTE CAUSES.

Having sketched the natural symptoms of the present epidemic as it appeared in London, it may be interesting in this place to inquire how far we are warranted in concluding that it is a new disease. The first question that naturally arises in the mind upon the examination of this subject, is, Among the writings of

ancient and modern physicians, is there nothing to be found which corresponds with the descriptions given of this modern pestilence? And secondly, should there be discovered, in the present epidemic, phenomena unnoticed in any previous appearance of the disorder, have we then sufficient grounds to warrant the conclusion that this is a *nova pestis*?

In all historical records of disease, both ancient and modern, a malady of an acute and fatal nature has been noticed under the name of *cholera morbus*, the leading features of which are gastro-intestinal irritation, debility, cramps, discoloration of the nails, and rapid fatality. The disease has moreover been observed in all climates and at all seasons of the year, varying according to circumstances under some, mild in its character while under others, violent in its symptoms, and fatal in its termination.

Among the ancient writers,\* *Aretæus* stands conspicuous for the clearness and perspicuity of his delineations of the appearances diagnostic of this disease. In his graphic sketch, if examined with an unbiased judgment, will be discovered the leading and characteristic symptoms of the present epidemic, which could scarcely have been represented with more precision had the writer been an eye-witness of the disease lately raging in the cholera hospitals of London and Paris.

Celsus† also, with his usual classic beauty, describes a disease closely resembling the present. Hippocrates, an excellent authority in medicine, and Sydenam, whose works are well known and universally read, both mention the disease.

We need only examine well these ancient records to ascertain the extent of their acquaintance with the disease. True it is that in some particulars their description differs from the present epidemic; but in points so trifling, that it becomes an insult to good sense and common understanding to object to the identity of the two diseases upon grounds so miserably shallow.

To the question often put by me to the medical attendants in the cholera hospitals, What do you consider the characteristic symptoms of this disease? I have had this reply: "It is not the

\* *Aretæus*, de causis et signis morborum acutorum, lib. sec. cap. 5.—"*Cholera est materia*," &c.

† *Celsus*, de medicina, lib. iv. cap. xi. beginning, "A visceribus ad intestina."

blueness, nor the purging and vomiting, nor the muscular irritability. All these may be wanting, even in fatal cholera. But the depression of the powers of life, the cold and death-like condition of the whole system, are the only symptoms common to all attacked." In this particular symptom the ancient and modern writers upon cholera morbus mostly agree; and they are not very deficient in the enumeration of the common phenomena observable in the present epidemic. Both Aretæus and Celsus, in the clearest language, state that cholera is a disease of the whole system, attended with great prostration of the vital powers, shown by the debility, coldness, rigors, and want of action in the arteries. In connection with these characteristic signs we have enumerated purgings and vomitings of various colored matters—sometimes like water, at others like the washings of fresh meat—now white and then black—spasmodic contractions of the arms and legs—incurvation of the fingers—blueness or blackness of the nails—suppression of urine—extreme thirst—pain—great anxiety of mind—and lastly, sudden death.

From this description it is sufficiently evident that cholera, even in its most severe forms, was familiar to the ancients; though we have no evidence of its ever before prevailing epidemically. This silence of their writers upon the epidemic prevalence of cholera cannot be deemed sufficient proof that the disease has never assumed a pestilential character. We know very little of the state of disease in the earlier ages of the world; and what is transmitted to us amounts to little more than the personal experience of the writers themselves. Further, the common epidemic diseases with which we are familiar seem to be influenced by causes so inscrutable, as to baffle the penetration of the most ingenious philosophers. At one time we find them selecting here and there a victim, and confining their ravages to a few individuals residing in a large and populous community; while at another, and under circumstances to the finite ken of man the same, they spread their pestilential and deadly poison far and wide, now desolating the world by their awful and rapid fatality, and then suddenly, without any visible or known cause, vanishing from the appalled and astonished multitude. Modern writers, however, make mention of cholera as an epidemic. Mr. Jackson\* men-

\* Reflections on the Commerce of the Mediterranean.

tions that the cholera frequently rages in the kingdom of Tunis in the most frightful manner, destroying some thousands of the inhabitants. According to this author, both in the year 1799 and 1800, West Barbary was depopulated by this disease. When it was found that no instance of cholera occurred among the coolies or porters who work in the oil-stores, he recommended frictions of oil to the Jews and Mussulmen, as a preventive during the height of the fever; and no instance of its failure, when duly persevered in, came to his knowledge.

In the year 1815 or '16, in the neighborhood of London, at a school near *Clapham*, a most remarkable instance of cholera occurred among the boys of the establishment, in which a great number were attacked, and some died, with symptoms so alarming as to raise a suspicion of poisoning. The account, as contained in the "*Lancet*," I shall here give in a condensed form.

On Thursday, 13th December, a son of Mr. Day, schoolmaster at Clapham, aged three years, having been previously in perfect health, was attacked with violent purging, vomiting, and convulsions. He became comatose, and died in twelve hours after the attack.

The rest of Mr. Day's children, as well as his scholars, amounting in number to thirty boys, between four and fourteen years of age, remained all well the next day. This being Saturday, several scholars went home to spend Sunday with their friends, leaving in the school twenty-two boys. Of these, *twenty* were attacked between three and seven o'clock on Sunday morning with vomiting and purging of the most alarming character, attended with a degree of *prostration which threatened many of them with immediate death*. The appearance of the matter voided was somewhat various in different individuals, depending probably on the liquids previously taken. In some instances it was tinged with green bile, and was of a subacid smell; *but in the greater majority of cases it was colorless and inodorous*. The stools also varied in appearance; but they were for the *most part pale, consisting of mucous and muco-purulent matter*, slightly streaked with scarlet blood.

The pulse varied also very much in different individuals. *In the early stages of collapse it was very frequent, but so feeble as to be scarcely perceptible*. When reaction took place, it had

of course more force but less frequency. *The skin was in most instances cold and clammy throughout.* In a few cases it was for a short time hot, and the face was in these occasionally flushed. There was a low delirium in some advanced cases, with dilated pupils; *but the sensorium was not affected in the greater number of them.* None of the little patients complained of pain in the stomach or bowels, beyond the griping which preceded the stools. There was however in a few of them slight tenderness, and some tension of the abdomen; and as far as the exact course of the symptoms could be ascertained, in such a state of confusion, it may be said generally, *that the disease seemed to come on very much like the tropical cholera,* with a short obscure stage of excitement, which was immediately followed by a state of extreme collapse; and that this, under the use of stimulants, was succeeded in those cases which were of the best aspect by a stage of warmth, gentle moisture, and general reaction. We have mentioned that the disease was *accompanied pretty generally with convulsive action of the muscles;* but it may be of importance to remark, that this amounted rather to *a kind of twitch, or subsultus, than to cramp, which was confined to the lower extremities.*

Such was the afflicting state of circumstances in this unfortunate family, up to the afternoon of Sunday. Messrs. Angus & Sanders, and Dr. Spurgin, of Clapham, who had been employed from the first in rendering every possible assistance, now requested the co-operation of Dr. P. M. Latham and Dr. Chambers. At this time another of Mr. Day's sons was evidently sinking, and a third, as well as several of the pupils, were in a state of dangerous collapse; others again, although not out of peril, were rallying from the attack. The first question that suggested itself to the minds of the medical gentlemen in consultation was, whether the symptoms were referable to any poison received into the stomach. The scrutiny however which was instituted with reference to this point, led to nothing satisfactory at the moment. It was then determined to examine the body of the little boy who was the first victim of the disease, and who it should be remembered died in twelve hours after he was attacked by it. On laying open the abdomen, the viscera presented themselves in a remarkably healthy state, as far as external appearances went. The liver was of a perfectly healthy size and color. The gall-bladder was somewhat

distended with healthy bile ; the peritoneum throughout pale, transparent, and perfectly free from any appearance of thickening. On laying open, however, the small intestines, it was observed that the peyerian plexuses of mucous glands were enlarged in patches throughout the *intestinum ilium*, raising internally, without destroying the mucous membrane covering them, into condylomatous elevations. Lower down, in the small intestines, a few of the *glandulæ solitariae* were similarly affected ; and in the ascending colon, and transverse arch, these latter glands seemed almost universally diseased, giving an appearance of pustulation, or rather tuberculation, to the whole interior of the bowel ; the interstices of the tubercles here, as well as in the small intestines, being entirely free from vascularity. The mesenteric and mesocolic absorbent glands, in the neighborhood of the parts most diseased, were congested and enlarged. The stomach was quite healthy. The viscera of the thorax were also quite healthy. The contents of the cranium also, which were carefully examined, were entirely free from effusion or other trace of disease.

The treatment which had been adopted, and which it was determined still to pursue, was, in the first place, to obey the great indication of preserving life, by administering stimulants with opiates, to those who were sinking with exhaustion and spasm—and leeches to the temples, where the head was affected. Besides these means, it was found necessary to apply mustard-poultices to the abdomen, and to wash out the bowels with enemata, administering afterwards full doses of calomel and opium.

Early on Monday, another of Mr. Day's sons, a boy of five years of age, sunk under the attack, twenty-three hours after its commencement. His body was carefully examined, a few hours after death, and exhibited the following appearances :

The abdominal viscera, when first exposed, appeared (as in the former case) perfectly free from traces of inflammation, or other disease.

The examination of the bowels was commenced with that of the *intestinum ilium*, in which the mucous glands, both aggregate and solitary, were found generally enlarged, and the mucous membrane covering them in many places ulcerated. The interior of the *cæcum*, colon, and rectum, however, exhibited no appearance of diseased mucous glands, although the membrane itself

was throughout uniformly congested, pulpy, and very easily separable from the subjacent tissue.

The examination was now pursued upwards from the ilium: the jejunum, at the lower part was less diseased than the ilium; and as it approached the duodenum, was more and more healthy: the duodenum however, on being laid open, exhibited a pustulated appearance, depending on enlarged follicles, very similar to that of the colon in the former case. The mesenteric and mesocolic glands, belonging to the diseased portions of the bowel, were enlarged and more vascular than natural. The liver and gall-bladder quite healthy. The latter contained about an ounce of perfectly healthy bile. It was remarkable that the contents of the bowels were nearly colorless, and had no feculent or indeed any other peculiar odor. The stomach and viscera of the thorax were quite free from disease. The ventricles of the brain were distended with about three ounces of serous fluid; and the sinuses were somewhat more charged than usual with dark-colored blood. The brain and its appendages were not otherwise diseased.

Most of the boys were removed in the course of Monday, and recovered.

It came out, without any suspicion of the kind having been awakened, before the circumstance was related to Mr. Angas, that a drain that had been choked for many years had been discovered behind the house, and partially opened; directions were given to cleanse it; and during that operation, the scholars gathered repeatedly about the opening (from which issued a most offensive effluvia), and assisted the men in their labors.

The contents of the stomach and bowels were submitted to a chemical examination, and there were found animal matter, a portion of lime, together with a little magnesia; the two earths being held in solution, apparently by the muriatic and sulphuric acids respectively; there appeared also a small quantity of acetic acid. The acids appeared in slight excess. The insoluble portions of the contents were found to consist of fibrine and albumen, and an insoluble salt of lime.

In August, 1831, a case occurred at Hull, in the army, with all the symptoms of cholera, as described by those who best know the disease; and if identity of appearances proves any thing it cer-

tainly must be allowed that this is a case of genuine *Asiatic cholera*.

I shall give the extract from a work of Dr. Gillkrest,\* deputy inspector general of hospitals in England.

"Thursday, August 11th, 1831, Martin McNeal, aged 42, of the 7th fusileers, stationed at Hull, was attacked at a little before 4 A. M., with severe purging and vomiting; when seen by his surgeon at about four o'clock, he was laboring under spasms of the abdominal muscles, and of the calves of the legs. What he had vomited was considered as merely the contents of the stomach, and as the tongue was not observed to be stained of a yellow color, it was inferred that no bile was thrown up. He took seventy drops of laudanum, and diluents were ordered. Half past six, seen again by the surgeon, who was informed that he had vomited the tea which he had taken; no appearance of bile in what he had thrown up; watery stools, with a small quantity of feculent matter; thirst; the spasms in abdomen, and legs continued; countenance not expressive of anxiety; skin temperate; pulse 68 and soft; the forehead covered with moisture; ordered ten grains of calomel, with two of opium, which were rejected by the stomach, though not immediately.

"Eight o'clock, A. M., the features sinking; the temperature of the body now below the natural standard, especially the extremities; pulse small; tongue cold and moist; great retching, and a fluid vomited like barley-water, but more viscid; constant inclination to go to stool, but passed nothing; the spasms more violent and continued; a state of collapse the most terrific succeeded; at nine o'clock only a very feeble action of the heart could be ascertained as going on, even with the aid of the stethoscope; the body cold and covered with a clammy sweat; the features partly sunk; the face discolored; the lips blue; the tongue moist, and very cold; the hands and feet blue, cold, and shriveled, as if they had been soaked in water, like washerwomen's hands; no pulsation to be detected throughout the whole extent of the upper or lower extremities; the voice changed, and power of utterance diminished. He replied to questions with reluctance, and in monosyllables; the spasms became more violent, the abdomen being

\* Letters on Cholera Morbus. Lond. 1831.

to the feel, as hard as a board, and the legs drawn up. Cold as the body was he could not bear the application of heat, and he threw off the bed-clothes; passed no urine since first seen; the eyes became glassy and fixed; the spasms like those of tetanus or hydrophobia; the restlessness so great that it required restraint to keep him even for a short time in one position. A vein being opened in one of his arms, from 16 to 20 ounces of blood were drawn with the greatest difficulty. During the flowing of the blood there was great writhing of the body, and the spasms were very severe; friction had been arduously employed, and at ten A. M. he took a draught containing two and a half drachms of laudanum, and the vomiting having ceased he fell asleep: at two P. M. reaction took place so as to give hopes of recovery; at four P. M. the coldness, discoloration, &c., returned, but without a return of the vomiting and spasms, and at about half past eight he died, after a few convulsive sobs."

"On a post mortem examination, polypi were found in the ventricles of the heart, and the cavæ were filled with dark blood; some red patches were noticed on the mucous membrane; but the communication does not specify on what part of the stomach or intestinal canal. It remains to be noticed, that this man had been at a fair in the neighborhood on the 9th (two days previous to the attack), where, as it is stated, he ate freely of fruit, and got intoxicated. On the 10th he also went to the fair, but was seen to go to bed sober that night. The disease did not spread to others, either by direct or indirect contact with this patient."

"Now let this account be compared with any statement of the symptoms common to this disease—with for instance the paper issued by the college of physicians and London board of health—let the symptoms be compared by those who are desirous that truth should be ascertained, or by those who are not, and if distinctions can be made out, I must ever after follow the philosophy of the man who doubted his own existence. The case, as it bears upon certain questions connected with cholera, *is worth volumes of what has been said on the same subject*. Let it be examined by the most fastidious, and the complete identity cannot be got rid of, even to the *blue skin*, the *shriveled fingers*, the *cold tongue*, the *change of voice*, the *suppression of urine*, and the *prostration of strength*, considered in some of the descriptions as charac-

teristic of the India cholera; and this too under a "constitution of atmosphere," so remarkably disposed to favor the production of cholera of one kind or other, that any close reasoner must be satisfied that were this remarkable form of disease communicable, no circumstance was absent which can at all be considered essential to its propagation; as the symptoms in the case of McNeal were, perhaps, more characteristically grouped than in any other case which has been recorded; so it has also in all probability occurred, that more individuals had been in contact with him during his illness, and after his death, as the facility in obtaining persons to attend the sick, rub their bodies, &c., must be vastly greater in the army, than in ordinary life; so that in such cases it is not a question of one or two escaping, but of *many*, which is always the great test."

It is well known that a disease had prevailed in India, in common with all other portions of the globe, known by the name of cholera morbus, and the Hindoo writings contain very accurate descriptions of its specific characters, which were often severe and suddenly fatal, and contained nothing that could lead any to doubt its identity with the sporadic cholera of more temperate climes; and we may, from the delineation of the symptoms given by Delton, a French physician resident many years in India, described by him under the name of mordechi, or death-blow; Bontius, in his treatise "De Morbus Indorum," Dr. Lind, and lastly from the account of the epidemic which prevailed in Bengal in 1762, given by Le Begue de Presle, safely infer, that the mordechi of the Hindoo, and the mal de chien of some Indian practitioners, and the cholera morbus of European writers, are the same disorder, modified by climate and the habits and customs of the people.

In the month of August, 1817, a disease made its appearance in Jessore, a town sixty-two miles from Calcutta, differing in intensity from the common sporadic cholera morbus, but having most of the symptoms peculiar to that disorder, which led physicians and natives to the conclusion that they were one and the same disease; and that the epidemic form, its aggravated character, and dreadful fatality, were owing to peculiar atmospherical causes. All historians, who have recorded the rise of the cholera in Jessore, unite in their testimony to the fact, that at no prior period in the statistical history of the place were there so

many circumstances uniting, calculated to give vigor to a disease of such malignity as ravaged the town. The rainy season had been unusually long and severe, and was succeeded by uncommon heat previous to the irruption of cholera in Jessore, which, combined with the low and marshy condition of the surrounding country, the dirt and filth of the town, and the poverty of the native population, are sufficient to account for the origin of the epidemic and the dreadful fatality which attended its progress. The mortality was so alarming that it was thought necessary to give notice to government; and on the 28th of August it was reported that a malignant species of cholera had appeared in the populous town of Jessore, and that it was attacking all classes of natives indiscriminately, and cutting off from twenty to thirty persons daily. "In the space of a few weeks, 10,000 persons perished in the single district of Jessore."\*

It will hardly be credited in countries possessing much internal commerce, that in India, except from the march of armies, there is very little intercourse maintained between its distant towns. So sluggish is the native character, that only the most urgent demands of business will tempt them to travel from one place to another. Yet in the month of September, the same disease which had devastated Jessore broke out in Calcutta; and during the same month it overspread the whole province of Bengal. The rapid advance which was made by the disease through this district, and its malignant appearance in the grand army under the command of the Marquis of Hastings, then stationed in Bundelcund, on the banks of the river Sinde, and disappearing upon the removal of the troops from the neighborhood of that stream, must have been owing to the influence of causes of spontaneous origin.† And all writers upon this subject, and more especially the reports of the presidencies in which it raged, assert that the new disease was owing to atmospherical causes, operating in conjunction with the exhalations from the jungles and marshes which overspread the country, and were at this time in a high state of concentration.‡ It is hardly necessary to trace the advance of this disease in India farther than by stating that in 1818

\* Kennedy on Cholera. London.

† History of the Administration of the Marquis of Hastings. Asiatic Journal, vol. 16, p. 534.

‡ Annesly on diseases of India. Lond.

it spread from the bay of Bengal eastward, along the coast of the Asiatic continent, and through the islands of the Indian ocean, to the farther boundaries of China, and to Timor, near New Holland. It appeared in Arracan in the same year. In 1819, Penang, Bankak, and the island of Java, were visited. Canton was invaded during October, 1820, and the following year it extended to Pekin. By November, 1823, it had traversed the Molucca or Spice Islands, including the island of Timor.

During this period, from the first irruption of the disease in Jessore in 1817, down to the year 1830, when it made its appearance in the Russian province of Orenburg,\* it must be observed that its ravages were not continued through this period in one unbroken course; but in those places where its appearance was not simultaneous, years often intervened between its decline in one district and its reappearance in another.

Since the year 1830, this curious epidemic has traversed Europe in one line, inclining to a northwesterly course; and in spite of quarantine regulations, cordons of troops, and the most vigilant assiduity, has devastated all those nations lying in its route, has found its way to England and France, and has at length reached even the shores of the American continent.

The question, then, for the public here to decide, is, whether the disease is one communicable from the sick to the healthy, as upon its solution depends much of the comfort and well being of this large commercial city.†

I shall not here attempt to prove the negative of the question, but rely upon the evidence which can be brought to establish the fact that it is a disease produced by atmospherical causes; and if the phenomena observable in its propagation can be accounted for upon this supposition, I shall feel satisfied to leave the question exactly in that position. In the first place we have a fact upon which the argument may be based, that the first appearance of the epidemic in India was caused by atmospherical changes, and exhalations from the marshes and jungles surrounding Jessore, and that it broke out simultaneously in almost all parts of India from similar causes. That this country, from its position and uncultivated condition, is more adapted to the production of this

\* Dr. Sokolv. Die Asiatische Cholera in Russland. Berlin, 1831

† See letter of James Johnson, M. D., in the appendix.

disease than others, there can be little doubt ; but under similar circumstances, and from unexpected changes in atmospherical phenomena, there is no reason why other countries may not engender the same pestilence.

That there are diseases of purely atmospherical origin, all persons must allow ; and that the whole world has been visited at various times by epidemics so produced, all who have witnessed the extension of the common influenza will not hesitate to admit. Granting, then, the probability of such a thing as a disease spreading from country to country, in opposition to winds and tornadoes, in climes situated under the torrid zone, in more temperate latitudes, and in the frozen regions of the north, as we have noticed in the progress of the influenza, we are not disposed to yield our position to the arguments drawn from the fact that the cholera has advanced through the world in the same manner, in opposition to every thing which might naturally be expected to stop the course of a pestilence depending upon large poisonous particles floating in the air.

The peculiar condition of the atmosphere, as productive of disease, scarcely admits of investigation. There is a something of a very subtle nature entering into combination with the air, which sets at defiance the most patient chemical research ; and which, like the substratum of matter and the more delicate principle of mind, can be only known by its effects upon visible things. Of such a nature is the aura or principle which is productive of the disease under investigation. All who have resided in Europe during the last year, have been struck with the singular condition of the air. During the winter in England, the weather was remarkably mild and unhealthy ; and when the disease arrived, this state of the general atmosphere became apparent by other less equivocal signs. Before I thought of visiting patients laboring under this disease, I was affected with a disordered condition of the bowels, and starting of the muscular fibres in every part of the body ; and many of my friends complained to me of similar symptoms ; and I had no doubt at the time that mine was an attack of cholera ; but not being predisposed to the disease in its worst form, I escaped.

Dr. Tweedie, a physician of great research, most accurate habits of investigation, and of much experience as physician to

the London fever hospital, stated, that during the continuance of the cholera in London, the cases of fever in the hospital had assumed so novel a type, as to prevent recourse to the usual depleting remedies. They were all affected with so much debility that he was afraid to use the lancet in any case. This peculiar phenomenon was corroborated by several physicians, in letters to the daily journals; and establishes the fact, that during the continuance of the cholera in London, there was something generally affecting the whole breathing community, tending to produce debility and prostration of the nervous system. The principal evidence that cholera was produced by some similar condition of the atmosphere, is, that it broke out in several districts of London and Paris simultaneously; unlike the gradual and slow progress made by the plague, which was confined for one month to the single parish of St. Giles, and then extended gradually to those in its immediate vicinity; the necessary consequence of the slow progress of disease by human communication.

In Paris this rapidity of extension to all parts of the city, and the alarming fatality which attended its first appearance, prove undoubtedly, that it was produced by some more general cause than the slow radiation of pestilence from an infected centre, to the healthy circumference.

The ravages the disease produced in certain low situations in the vicinity of the docks, and in distinct families, can be accounted for, on the supposition that the inhabitants of these places were particularly predisposed, by poverty and filth, to its invasion.

People, circumstanced alike, usually congregate together, and live in the same way; and families, from similar habits, diet, and residence, become constitutionally alike, and are usually predisposed to the same diseases.

In London the places where the cholera raged were the haunts of poverty, wretchedness, and vice, and its victims were the half-famished and intemperate inhabitants of these situations. These constituted the fuel which the all-pervading flame selected as the victims of its rage; and wherever they were located in numbers, there the disease prevailed. These facts in conjunction with the circumstance that few or none of the attendants upon the patients in hospitals were attacked with the disease, and barely a single instance of persons in respectable situations in life (in England)

becoming its victims, are sufficient to convince any mind that this disease is not communicated by contagion. That it has attacked the poor and rich in Paris indiscriminately, cannot be denied; but from the habits of the French people, such a result was naturally to be expected. The higher orders of society live upon food little calculated to support great strength; it is nourishment too highly concentrated, long to promote health: while the diet of the poor has, on the contrary, scarcely nourishment sufficient to support life.

Scarcely had the cholera made its appearance in Paris, before news arrived from all the towns and villages in the neighborhood, to the distance of 200 miles, of the same disease among them; and when it did break out, it was like a sudden and overwhelming flood which swept off hundreds of persons in every situation in life, and in all parts of that extensive city—persons who could have communicated with each other in no other manner than by breathing the air common to all. In the short space of one month more people were cut off by cholera in Paris, than by the plague of London.

It will be seen that my arguments rest, not on any positive denial of particular instances of contagion, but on a string of evidence drawn from the analogies existing between other epidemics, (arising from atmospherical causes) and the present disease. In corroboration of the facts I have given, and the opinions I have advanced, I shall give extracts from the Bengal and Madras reports, together with the opinions of foreign physicians on the subject. That this disease in India is produced by atmospherical influence, we have several very remarkable proofs. In the Edinburgh Medical and Surgical Journal, No. 106, the surgeon of the 23d regiment states, that “those who are acquainted with the progress of cholera in India, must be aware how a difference in the height of places, or a few hundred yards (indeed sometimes a few yards) distance, has been observed to make all the difference between great suffering and complete immunity.\* The printed and manuscript reports from India, furnish a vast number of instances of this kind; and, incredible as it may appear, they furnish instances where, notwithstanding the freest intercourse, there has been an abrupt line of demarkation, beyond which the dis-

\* Bengal Reports, p. 311.

ease did not prevail. A most remarkable instance of this occurred in the king's 14th regiment, in 1819, during a cholera epidemic, when the light company of the regiment escaped almost untouched, owing to no other apparent cause than that they occupied the extremity of a range of barracks, in which all the other companies were stationed! This seems so remarkable an event, that the circumstance should be more particularly stated. "The disease commenced in the eastern wing of the barracks, and proceeded in a westerly direction, but suddenly stopped at the 9th company; the light infantry escaping with one or two slight cases only." It appears (*loc. cit.*) that 221 attacks took place in the other nine companies. We also find in reports from other presidencies,\* that for a little difference in situation, two cavalry regiments in a camp were altogether exempt from the disease, while all other regiments were attacked. Mr. Jukes, a surgeon in India, writes in the Bombay reports:† "I have no reason to think it (cholera) contagious here; neither myself nor any of my assistants, who have been constantly among the sick, nor any of the hospital attendants, have had the disease. It has not gone through families when one has become affected. It is very unlike contagion too in many particulars."

That the disease does not obey, in India, any of those laws which seem to influence common contagious diseases, both there and in other countries, I will again quote from the same authorities the reports from the presidencies:

In the Bengal Reports, page 125, it is observed, "that it may then be first remarked, that the rise and progress of the disorder were attended by such circumstances as showed it to be entirely independent of contagion for its propagation. This we have seen, that it arose at nearly one and the same time in many different places, and that in the same month, nay in the same week, it was raging in the unconnected and far-distant districts of Behar and Dacca." Again, page 9, that in Bengal "it at once raged simultaneously in various and remote quarters, without displaying a predilection for any one tract or district more than for another, or any thing like regularity of succession in the chain of its operations." In support of what is stated in these extracts, the fullest

\* Bombay Report, p. 11.

† Bombay Report, p. 172.

details are given as to dates and places; and at page 9 of those reports a curious fact is given: "that the large and populous city of Moorshedabod, from extent and local position apparently very favorably circumstanced for the attacks of the epidemic, should have escaped with comparatively little loss, while all around was so severely scourged."

That the question may be set at rest, with regard to the opinions of Indian practitioners, I will give an extract from a report in the army medical office, London, from Dr. Davy, an army physician. "The cause of this disease is not any sensible change in the atmosphere; yet, considering the progress of the disease, its epidemic nature, the immense extent of country it has spread over, we can hardly refuse to acknowledge that its cause, though imperceptible, and yet unknown, does exist in the atmosphere. It may be extricated from the bowels of the earth, as miasmata were formerly supposed to be; it may be generated in the air; it may possess the properties of radiant matter; and like heat and light it may be capable of passing through space unimpeded by currents; like electricity it may be capable of moving from place to place in an imperceptible moment of time." Dr. Davy is an army physician, and the report, of which this is an extract, may be seen at the army medical office, a place which of late years has become a magazine of medical information of the most valuable kind in Europe. There is this difference between the army and other information on the cholera, that (whether in the king's or E. I. Company's service) the statements given by the medical gentlemen, have their accuracy more or less guaranteed, by a certain system of military control over the documents they draw up. Thus in the circumstance already noticed as having occurred in the 14th regiment, we have every reason to rely upon its accuracy, which we could not have in a similar statement among the population of any country; and we have, I think, no reason to believe that, in pronouncing the cholera of Ceylon not contagious, Dr. Davy has not gone upon such data as may bear scrutiny.

A letter appeared in the Glasgow Herald, from Mr. staff-surgeon Marshal, a gentleman of distinguished ability, who was selected by the late secretary of war, in consequence of his known intelligence, to remodel the regulations relative to military pensioners, and was promoted in consequence of the manner he exe-

cuted this important duty. He observes, "In no instance did it (the cholera) seem to prevail among people residing in the same house or barracks, so as to excite a suspicion that the contact of the sick with the healthy contributed to its propagation."—"The Indian cholera, as it is sometimes called, appears not to be essentially different from the cholera, as it appears in this and all other countries." "I consider it therefore impossible for a medical practitioner to speak decisively from having seen one or even a few cases of cholera in this country, and to say whether they are precursors of the 'epidemic cholera' or not. That the disease is ever propagated by means of personal contact, or by the clothes of the sick, has not, as far as I know, been satisfactorily proved. The quality of contagion has never been attributed to the disease in Ceylon, and I believe no where else did it occur with greater severity. I am aware that an attempt has been made to distinguish the ordinary cholera of this country from the epidemic cholera, by means of the color or quality of the discharges from the bowels. In the former it is said that the discharge is chiefly bile, while in the latter it is said to bear no traces of bile, but to be colorless and watery. How far is this alledged diagnosis well founded? I am disposed to believe that in all severe cases of cholera, whether it be the cholera of this country or the epidemic cholera, the secretion of bile is either suppressed or the fluid is retained in the gall-bladder."

Much has been said by the contagionists in support of their position, of the importation of the cholera into the Mauritius from Ceylon, which appears equally groundless with that of its alledged importation into the latter island. The following is a copy of a letter accompanying the medical commission report at that island, forwarded by General Darling, the then commanding officer, to the senior medical gentleman there :

"Port Louis, Nov. 23, 1819.

"I have the honor of transmitting the reports of the French and English medical gentlemen on the prevalent disease; both classes of the profession seem to be unanimous in not supposing it contagious, or of foreign introduction. From the diseases pervading classes *who have nothing in common but the air they breathe*, it may be believed that the cause may exist in the atmosphere.

A similar disease prevailed in this island in 1775, after a long dry season.

“Signed

W. A. BURKE,

“*Inspector of hospitals.*”

In the reports referred to in the above letter, there is the most ample evidence of the cholera having appeared at different points in the colony, before the arrival of the *Topaz* frigate—the ship accused by contagionists of having introduced the disease; and these gentlemen seem aware of the fact, and are obliged to have recourse to such argument as, that “it is at all events clear, that the disease had not been epidemic at the Mauritius before the arrival from Ceylon;” so that the beginning of an epidemic is to be excluded from forming a part or parcel of the epidemic!

We know, from the history of cholera in India, that not only ships lying in certain harbors have had the disease appear on board, but even vessels, sailing down one coast, have suffered from it, while sailing up another has freed them from it. Now, with respect to the *Topaz*, it appears that, while lying in the harbor of Ceylon, the disease broke out on board; that, after she got into the pure air at sea, the disease disappeared, seventeen cases only having occurred from the time she left the island; and she arrived at the Mauritius, as is admitted by all, without any appearance of cholera on board. On the day after her arrival, she sent several cases (“chronic dysentery, hepatitis, and general debility;”) to the hospital, but not one of cholera; neither did any case occur on board during her stay there, at anchor, a mile and a half from shore; while a considerable number of deaths took place, from cholera, in the merchant-vessels anchored near the shore.

Having now given the opinions of the medical authorities of India, as contained in the reports from the different presidencies, I will add the opinions of physicians on the non-contagiousness of the disease as it appeared in Europe.

The following is from the British consul at Riga, who was desired by his government to draw a statement of the progress of the cholera there, from which I will extract a few passages:

“The fact of non-contagion seems determined, as far as a question can be so, which must rest upon negative evidence. The strongest possible proof is the circumstance, that not one of the

persons employed in removing the dead bodies (which is done without any precaution) has been taken ill. The statement of fifteen laborers being attacked while opening a pack of hemp, is a notorious falsehood. Some of the physicians incline to the opinion that the disease may sometimes be caught by infection, when the habit of body of the individual is predisposed to receive it; the majority of the faculty, however, maintain a contrary doctrine, and the result of the hospital practice is in their favor. There are seventy-eight persons employed in the principal hospital here; of these, only two have been attacked, one of whom was an '*inspecteur de salle*,' and not in immediate attendance upon the sick. I am assured that the other hospitals offer the same results; but as I cannot obtain equally authentic information respecting them, I confine myself to this statement, on which you may rely. On the other hand, in private families, several instances have occurred, where the illness of one individual has been followed by that of others; but generally, only when the first case has proved fatal and the survivors have given way to grief and alarm. Mercenary attendants have seldom been attacked; and as mental agitation is proved to be one of the principal agents in propagating or generating the disease, these isolated cases are attributable to that cause rather than to infection.

"It is impossible to trace the origin of the disease to the barks; indeed it had not manifested itself at the place whence they come till after it had broken out here. The nearest point infected was Schowlen (at a distance of two hundred wersts), and it appeared simultaneously in three different places in Riga, without touching the interjacent country. The first cases were the stone-masons, working in the Petersburg suburbs, a person in the citadel, and a lady resident in the town. None of these persons had had the slightest communication with the crews of barks or other strangers, and the quarter inhabited by people of that description was later attacked, though it has ultimately suffered most.

"None of the medical men entertain the slightest doubt of the action of atmospheric influence, so many undeniable instances of the spontaneous generation of the disease having occurred. Half the town has been visited by diarrhea; and the slightest deviation from the regimen now prescribed (consisting principally in an abstinence from acids, fruit, beer, &c.) invariably produces an attack

of that nature, and generally cholera. Fright and intoxication produce the same effect.

Numerous instances could be produced, of persons in perfect health, some of whom had not left their rooms since the breaking out of the disease, having been attacked by cholera, almost instantaneously, after having imprudently indulged in sour milk, cucumbers, &c. It is a curious circumstance, bearing on this question, that several individuals coming from Riga have died at Wenden and other parts of Livonia, without a single inhabitant catching the disease. On the other hand, it spreads in Courland and on the Prussian frontier, notwithstanding every effort to check its progress. The intemperance of the Russians, during the holidays, has swelled the number of new cases, the progressive diminution of which had previously led us to look forward to a speedy termination of the malady."

Here we have the plain, unprejudiced opinion of one who could be influenced by no party feeling, and who could have had no darling theory to support. It contains a plain statement of facts, important in several points of view. In the first, it establishes the fact, that the physicians in Riga were mostly inclined to the opinion that the disease is not contagious, and ascribe the disease to atmospheric influences. Second, that half the town was visited by a diarrhea, which, by neglect or bad treatment, degenerated into cholera in its more severe forms; clearly showing the action of some general cause affecting the whole community. In England, the same peculiarity has been noticed; and when the disease first broke out in Sunderland, the reports contained three classes of affections—diarrhea, mild cholera, and malignant cholera—the cases of diarrhea being four or five times more numerous than those of cholera. Whether these were afterwards struck out altogether, or blended with the others, I cannot say; but it shows the prevalence of some common epidemic cause, suddenly affecting the whole community.

The college of physicians of London drew up a paper, which was submitted to parliament, in which they declare the disease communicable from person to person. They admit\* the limited nature of the proofs upon which their opinion is founded; which

\* Parliamentary papers on cholera, page 16, dated 9th June.

is very apparent, as appears from the following papers, published by authority of Parliament, and which are the foundation of their opinion, viz. two reports to the government, by Dr. Walker, from Russia; a report from Dr. Albers, a Prussian physician; and a report with inclosures, regarding Russian quarantine regulations, from St. Petersburg, by Sir William Creighton.

Dr. Walker, who was sent from St. Petersburg to Moscow, by our ambassador at the former place, states, in his first report, dated in March, that the medical men seemed to differ on the subject of contagion, but adds, "I may so far state, that by far the greater number of medical men are disposed to think it not contagious." He says, that on his arrival at Moscow, the cholera was almost extinct there; that in twelve days he had been able to see only twenty-four cases, and that he had no means of forming an opinion of his own as to contagion. In a second report, dated in April, from St. Petersburg, this gentleman repeats his former statement as to the majority of the Moscow medical men not believing the disease to be contagious (or, as the college prefer terming it, infectious), and gives the grounds on which their belief is formed, on which he makes some observations. He seems extremely fair; for while he states that, according to his information, a peculiar state of the atmosphere "was proved by almost every person in the city (Moscow) feeling, during the time, some inconvenience or other, which wanted only the exciting cause of catching cold, or of some irregularity in diet, to bring on the cholera;" that "very few of those immediately about the patients were taken ill;" that he "did not learn that the contagionists in Moscow had any strong particular instances to prove the communication of the disease from one individual to another;" and that he had "heard of several instances brought forward in support of the opinion (contagion), but they are not fair ones." He yet mentions where exceptions seem to have taken place as to hospital attendants not being attacked, but he has neglected to tell us (a very common omission in similar statements) whether or not the hospitals in which attendants were attacked were situated in or near places where the atmosphere seemed *equally productive of the disease in those not employed in attending on the sick*. This clearly makes all the difference; for there is no earthly reason why people about the sick should not be attacked, if they breathe the same atmo-

sphere which would seem to have so particular an effect in producing the disease in others; indeed there are good reasons why, during an epidemic, attendants should be attacked in greater proportion; for the constant fatigue, night-work, &c., must greatly predispose them to disease of any kind, while the great additional number always required on those occasions, precludes the supposition of the majority so employed being *seasoned* hospital attendants, having constitutions impenetrable to contagion.

It will not be a misemployment of time to consider now the next document laid before the college, to enable them to form their opinion—the report of Dr. Albers, dated in March, and sent from St. Petersburg. This gentleman, who was at the head of a commission sent by the Prussian government to Moscow, states, that at St. Petersburg, *where the disease did not then reign*, the authorities and physicians were contagionists; but at Moscow, where it had committed such ravages, “almost all strenuously maintain that cholera is not contagious.” The following extract seems to merit particular attention:

“When the cholera first reached Moscow, all the physicians of this city were persuaded of its contagious nature; but the experience gained in the course of the epidemic has produced an entirely opposite conviction. They found that it was impossible for any length of time completely to isolate such a city as Moscow, containing 300,000 inhabitants, and having a circumference of nearly seven miles (versts?), and perceived daily the frequent frustration of the measures adopted. During the epidemic, it is certain that upwards of 40,000 inhabitants quitted Moscow, of whom a large number never performed quarantine; and notwithstanding this fact, *no case is on record of the cholera having been transferred from Moscow to other places*, and it is equally certain, that in *no situation* appointed for quarantine, *any case of cholera has occurred*. That the distemper is not contagious, has been yet more fully ascertained by the experience gathered in this city (Moscow). In many houses it happened, that one individual attacked by cholera was attended indiscriminately by all the relatives, and yet did the disease not spread to any of the inmates. It was finally found, that not only the nurses continued free of the distemper, but also that they promiscuously attended the sick chamber, and visited their friends, without in the least communicating the disease.

There are even cases fully authenticated, that nurses, to quiet timid females laboring under cholera, have shared their beds during the nights, and that they, notwithstanding, have escaped uninjured, in the same manner as physicians in hospitals have, without any bad consequences, made use of warm water, used (a moment before) by cholera patients for bathing.

“These, and numerous other examples, which, during the epidemic (we ought, perhaps, to call it endemic), became known to every inhabitant of Moscow, have confirmed the conviction of the non-infectious nature of the disease—a conviction in which their personal safety was so much concerned.

“It is also highly worthy of observation, that all those who stand up for contagion *have not witnessed* the cholera, which is, therefore, especially objected to their opinion by their opponents.” He closes by the observation, “The result of my own daily experience, therefore, perfectly agrees with the above-stated principle, namely, notwithstanding all my inquiries, I *have met with no instance which could render it at all probable that the cholera is disseminated by inanimate objects.*” The words in italics are as in the parliamentary papers on cholera, pp. 8 and 9. Here is something to help to guide people in forming opinions, and to help governments on quarantine questions.

Sir William Creighton's report gives what purports to be an extract from a memorial of his on cholera, given in to the St. Petersburg medical council, tending to establish the contagious character of the disease; and with this, a report by the extraordinary committee appointed by the emperor to inquire into the Moscow epidemic. The disease had not appeared at St. Petersburg when he drew up his memorial, and it does not appear from any thing which can be seen in the extracts he furnishes, that he had personal knowledge of any part of what he relates. He gives the reported progress of the disease on the Volga and the Don; but it is extremely deficient exactly where one might have expected that, from the greater efficiency of police authorities, &c., his information on contagion would have been more precise, viz. the introduction of the disease into Moscow, which could not, it would seem, have been by material objects, for, according to the committee, composed “of the most eminent public officers,”—“the opinion of those who do not admit the possibility of contagion by means of

material objects, has for its support both the majority of voices and the scrupulous observance of facts. The members of the medical council have been convinced, by their own experience, as also by the reports of the physicians of the hospitals, that, after having been in frequent and even habitual communication with the sick, their own clothes have never communicated the disease to any one, even without employing means of purification. Convalescents have continued to wear clothes which they wore during the disease—even furs—without having them purified, and they have had no relapse. At the opening of bodies of persons who had died of cholera, to the minute inspection of which four or five hours a day for nearly a month were devoted, neither those who attended at their operations, nor any of the assisting physicians, nor any of the attendants, caught the infection, although, with the exception of the first day, scarcely any precautions were used. But what appears still more conclusive, a physician who had received several wounds in separating the flesh, continued his operations, having only touched the injured parts with caustic. A drunken invalid having also wounded himself, had an abscess, which doubtless showed the pernicious action of the dead flesh, but the cholera morbus did not attack him. In fine, foreign *savans*, such as Moreau de Jonnés\* and Gravier, who have recognized, in various relations, the contagious nature of the cholera morbus, do not admit its propagation by means of goods and merchandize." (*Parl. papers on chol.*, p. 13.)

It may seem singular, that from these documents an opinion should have been formed, so contrary to the facts stated in them; but as the gentlemen furnishing the papers had formed their opinion, that opinion was taken, in opposition to that of almost all the medical men in the affected places, whose means of judging must have been somewhat better than those enjoyed by the writers of the documents.

Abundance of evidence now lies before the public, from various sources, in proof of the sayings of Fontenelle being fully applicable to the question of cholera. "When a thing is accounted for in two ways, the truth is usually on the side most opposed to *appearances*." How well mistaken opinions, as to contagion in cholera, are illustrated in a pamphlet which has just appeared from

\* Rapport au Conseil Supérieur de Santé, sur le Cholera Morbus pestilentiel, &c. Par Alex. Moreau de Jonnés. Paris, July, 1831.

Dr. Zoubkoff, of Moscow ! This gentleman, it appears, had been a firm believer in contagion, until the experience afforded him during the prevalence of the disease in that city proved the contrary. He tells us (p. 10) that in the hospital (Yakimanka) he saw, "to *his great astonishment*, that all the attendants, all the soldiers, handled the sick, supported their heads while they vomited, placed them in the bath, and buried the dead ; always without precaution, and always without being attacked by the cholera." He saw that even the breath of cholera patients was inhaled by others with impunity. He saw that throughout the district of which he had charge, the disease did not spread through the crowded buildings, or in families where some had been attacked ; and that exposure to exciting causes determined the attack in many instances. He saw all this, gives the public the benefit of the copious notes which he made of details as to persons, places, &c., and now ridicules the idea of contagion in cholera.

I could easily add abundance of evidence to that now given ; but really, he who can resist such testimony, must come with a mind hermetically sealed to conviction. I have given rather copious extracts from the writings of men of established character, and have in consequence extended this part of the subject farther than I originally intended. If it is thought too voluminous, the only apology I can offer is the vast importance of the subject, both to individuals and to the community at large.

Should the disease now prevailing in Canada, prove to be the Asiatic cholera which has traversed the old world, we have no evidence of its being brought in emigrant ships. That ships have arrived from infected parts with large numbers of persons, many of whom have died with a disease similar to cholera, cannot be questioned ; but this is an intercourse continually going on, and would happen even were the fact that the poison was wafted across the Atlantic by the air, fully established, so that the coincidence is neither remarkable nor tends to establish the contagiousness of the disease ; at the same time it should be remembered that, at this season of the year, cholera is a common disease, especially occurring among that class, who, from long privations in close ill-ventilated ships, seize the first opportunity of regaling themselves with fruit and vegetables, and drinking large quantities of cold water.

## PREDISPOSING AND PROXIMATE CAUSES.

The disease we are investigating, has been noticed to prevail principally among the poor, half-famished, and dissolute part of the population, and confines itself to low and filthy situations.

The habits of the residents in these situations peculiarly predispose them to those diseases, affecting principally the nervous system. They are the consequence of debility, however produced; whether from low and poor watery diet, excess in the use of ardent spirits, great fatigue, unsupported by wholesome food, old age, and the debility which follows long continued indisposition. Among these, however, the most common causes were starvation and intemperance. Few laboring under these evils escaped, unless they took measures for their immediate removal. These causes all tend to reduce the powers of life, through the medium of the nervous system, which is the seat of cholera, as is evident from its symptoms; invading the system with sudden and overpowering force, and extinguishing the nervous power of the comparatively strong in one moment.

The nervous power, whether it is a fluid conveyed by tubes, or a subtle principle like that of electricity, is doubtless the leading agent in the animal economy. It is by its energy that the perfection of organic functions is maintained, which as certainly cease as their connection with the brain and nervous system is suspended.

The heart, deriving its power of circulation from the brain, distributes with the blood vitality and heat to every part of the animal machine. The brain, like all other organs, requires the vivifying powers of the blood ere it can properly perform its function, so that this mutual dependence makes it difficult to say where the circle commences or terminates. But that the nervous principle is capable of being acted upon by external agents, either stimulated to increased action, diminished in power, or irrecoverably exhausted, like the vessel charged with electricity, every physician is aware. There can be no doubt that the diminished energy of the nervous system will bring, sooner or later, all the other functions of the body into a corresponding degree of depression; so that the organs of digestion shall be unable to pro-

vide chyle for nutrition, the heart shall become irregular and weak in action, and all the organs of secretion torpid or destroyed.

The characteristic symptom of cholera, from its commencement to its termination, is exhaustion, and the danger of the patient is always in proportion to its extent. In some instances an attack of cholera kills in the course of three hours; and in all, weakness, languor, lassitude, coldness, depression of spirits, and spasms, denote the diminished energy of the system. The other symptoms, particularly the irritability of the first passages, are too trifling to be considered adequate causes of such suddenly aggravated effects; and as these are not uniformly attendant upon the disease, they cannot be considered as its cause.

Now, whatever has a tendency to depress and destroy the nervous power, acts as a predisposing cause of the disease; hence we find its ravages chiefly confined to the poor, half-famished, and intemperate classes of society. These, in conjunction with the wretchedness and filth of the narrow lanes and close ill-ventilated houses in which several families are often congregated together, must tend greatly to depress the strength and prepare the body for the reception of those diseases peculiar to such constitutions.

Intemperance in the use of ardent spirits is, of all other causes, the most strongly predisposing to cholera. The continual desire of stimulating the system to remove the feeling of languor and depression, the consequence of long habits of drinking, proves that the nervous system is most powerfully acted upon by ardent spirits; and most of the diseases to which tipplers are liable are affections of this delicate and important part of the animal economy. The indigestion, tremblings of the limbs, loss of memory, and bloated, flabby condition of the whole body, denote extreme weakness, bordering on paralysis. Therefore it is not surprising that persons so predisposed should fall immediately a prey to cholera, a disease of which depression of the vital energies is so prominent a symptom.

The peculiar condition of the nervous system, predisposing to cholera, is in short produced by every thing tending to diminish the vital powers. I have enumerated poor diet, intemperance, long-continued fatigue, old age, and the debility that follows other diseases. To these may be added the depressing passions, as fear

and anxiety of mind, and the inhaling of foul air impregnated with the exhalations from putrid animal and vegetable matters. The effects of fearfulness are well known to be debilitating and powerfully to predispose to low nervous diseases. The protecting effects of the contrary state of mind have been evinced in numerous instances, in which exposure to the most contaminating and contagious disorders has had no effect, when the mind has been worked up to a state of courage and indifference by anxiety for the welfare of others. Mothers frequently escape while nursing their children; and medical men, guarded by the same armor, are seldom attacked by those contagious affections which they are day after day under the necessity of encountering.

One of the principal effects produced by this peculiar condition of the nervous system is the black state of the blood contained in the arteries, as well as the veins, of patients laboring under cholera.

The chemical composition of blood, in its natural or normal condition, has been lately closely investigated by M. Lecanu, of Paris, an experimentalist who has devoted himself assiduously to this subject; and by Dr. O'Shaughnessy, of London, a young though rising chemist, from whose labors much light has been thrown upon the chemical pathology of malignant cholera.\*

To understand the changes which the disease produces in the blood, we will examine the chemical composition of this fluid in its healthy state, where will be found,

1st. Those elements invariably present in a proportion little varying from a certain standard, and universally recognized by all chemists and physiologists, as water, albumen, fibrine, coloring matter, extractive matter, and various saline substances, viz. carbonate of soda, muriates, sulphates and phosphates of soda and potassa, carbonates of lime and magnesia, phosphates of these earths, and minute quantities of iron in an unknown state of combination.

2d. Those elements usually present, but occasionally absent, and perpetually liable to alteration in their quantity, viz. a fatty compound, consisting of an oily and crystalizable matter; also urea, or the peculiar animal principle of urine.

\* Report on the Chemical Pathology of the Malignant Cholera, published by authority of the Central Board of Health; by R. B. O'Shaughnessy, M. D., Lond.

And 3d. Those substances, the presence or absence of which in standard blood is asserted by some authorities, and denied or not recognized by others, viz. *free* acetic acid, carbonic acid, cholesterine, *free* carbon, and traces of manganese, silica, and copper, and Dr. O'Shaughnessy includes cholesterine, ozmezone, and cruorine, and agrees with other chemists who notice carbon, acetic acid, carbonic acid, silica, manganese, and copper; though from the following experiments he proves that the opinion of Mr. Herman, of Moscow, respecting the presence of *free* acetic acid, is erroneous. "But to satisfy my mind," the Dr. observes, "directly on the matter, I submitted to examination five specimens of blood drawn from healthy individuals. I allowed the blood to separate into serum and coagulum in *close* vessels. I diluted the serum largely with distilled water, and brought the mixture to the boiling point in a distilling apparatus. The product in the receiver was perfectly neutral, did not affect test papers of any description, was rendered alkaline by the addition of a single drop of dilute solution of soda, and when subsequently evaporated to dryness, left a minute saline residuum containing not one particle of any combination of acetic acid. The clot was similarly treated, and with the same results.

"Again, a paper having been published about three months since by M. Ozfila, in the *Annales d'Hygiene Publique*, on 'Poisoning by Acetic Acid,' I instituted several experiments to ascertain the minutest quantity of that acid I could detect in the blood; and I found that a quantity so small as to do little more than neutralize the natural alkali of the serum could be satisfactorily recovered from any proportion of blood by the process I have just described, and which I would follow exactly in any medico-legal inquiry."

From these experiments he concludes that the presence of *free* acetic acid is disproved. He then proceeds to examine the extent of carbonic acid, found in healthy blood, and expresses his belief in its existence, though he rejects the opinions of those who considered it to arise from the combination of free carbon with oxygen *in the lungs*, and its consequent reabsorption into the circulation; also the opinion of Dr. Clanny, that it proceeds from assimilation. He next denies the long cherished idea of the presence of *free* carbon; and states that it exists in no other form than that of a

binary, ternary, or even quaternary, combination; and adduces the names of Berzelius, Marcet, Denis, and Lecanu, in proof of his position.

The Doctor next proceeds to the examination of the state of the blood in cholera, the principal difference consisting in an absence or deficiency of some of the ingredients of the blood, and a remarkable deviation from the normal proportion in others. The first case presents the following results, from an examination of the serum alone: its specific gravity was 1.041. That of Lecanu's normal table is 1.028. On analysis, the quantity of water in the cholera serum, was found to be 854 parts in 1000; healthy standard, 90.6 of albumen; in the cholera serum, 133 parts; healthy standard, 78; of urea, cholera serum, 0.40; healthy standard, 0; saline matters, cholera serum, 5.60; healthy standard, 11; carbonate of soda, cholera serum, 0; healthy standard (along with phosphate and sulphate), 2.10.—This shows the absence of a large proportion of water, a corresponding preponderance of albumen, the presence of urea, the *absence of the alkaline carbonate*, and a great *deficiency of saline materials*.

I shall take another example of the analysis of blood, from a patient laboring under cholera in its most malignant form. The crassamentum was found normal, in the proportion of its ingredients. The serum and coagulum were in the following proportions:

NORMAL STANDARD.	CHOLERA SERUM.
57 serum, and 43 crass.	43 serum, and 57 crass.
Spec. grav. - - 1.29.	Spec. grav. - - 1.45.

This shows a great deficiency in the watery part of the blood. The alkaline ingredients were also deficient; the serum being found to contain but 2.92 of salts per 1000 parts: the normal quantity being 11 and 12. The most remarkable circumstance of all is, that the ingredients deficient in the blood were found in the dejections. The fluid portions were strongly alkaline, and contained water, carbonate of soda, and traces of albumen; the solid flabby portion consisted chiefly of fibrin; so that the addition of the dejection to the blood, in due proportions, would have restored the latter to its normal constitution.

Admitting the veracity of these facts, are the circumstances detailed to be regarded as causes or effects of this disease? On this

head Dr. O'Shaughnessy observes, "that they should not be regarded as primary causes is rendered evident by the fact, that the blood, *per se*, not being endowed with an inherent power of locomotion, cannot be altered in quantity within the vessel by any internal force; the moving power must proceed from without: neither I believe can its quality, while life exists, be impaired by any really intrinsic causes. External means may, however, during life, operate powerfully upon it, either by the introduction of substances alien to its constitution, or by the subtraction from, or addition to, its amount of the ingredients it naturally contains. It is, moreover, rendered evident by pathological facts, that the vessels in which the blood is contained, or the nerves distributed on those vessels, influence both the proportionate and the qualitative state of the contained fluid, in a manner which, in the present state of knowledge, we cannot satisfactorily explain, even though aided by the light which the brilliant discoveries of Dutrochet have shed upon the nature of increased vascular action."

The author, next examining the effects produced by this state of the blood, observes, "The most obvious manner in which the loss of water could occasion death, is by the physical obstruction it would necessarily occasion in the passage of the blood through the capillary vessels, especially in the pulmonary circulation. The motion of the blood would, therefore, be confined to the great vessels, which would become distended to excess—gradual asphyxia would supervene, and death be occasioned, with all the phenomena of impeded respiration and circulation. How accurately this description coincides with the events in cholera, it is unnecessary for me to point out. In short, this mode of death, in this disease, might at once be admitted, had we previously accurate ideas regarding the precise density of fluid which the capillary system will receive, and permit the passage of, and had we found that the density of cholera blood exceeded this standard. I regret that my inquiries, among some distinguished anatomical friends, have failed to procure me any conclusive evidence on the subject. I shall, therefore, content myself by expressing my conviction, that this deficiency of water in the blood is at any rate, in many cases, *a powerful adjuvant* in the production of the fatal event." \* \* \* \*  
"Giving thus to probable mechanical hyperœmia, as much importance as I think it is entitled to receive, in the consideration of

this disease, I also cannot, or will not, conceal my conviction that the remote cause of cholera *may, and frequently does, produce death, independently of its auxiliary—by the unknown agency it exerts on the nervous system.*

“I should add that from all I have been able to learn on the subject, the diminution of the quantity of saline matter in the blood is not incompatible with life, and that the injury resulting is rather of a chronic character—that is to say, that it takes hours and days for its production. I therefore would not attribute to the absence of the salts, any important share in the inducement of sudden death in cholera, but I am inclined to believe such diminution or absence to be closely connected with the fever stage of the malady; an opinion at the same time suggested, and substantiated by Dr. Stevens’ experiments on the state of the blood, in the yellow fever of Santa Cruz.”

#### APPEARANCES AFTER DEATH.

Medical men are divided in opinion as to the value of information derivable from *post mortem* examinations; for the changes produced by diseases are often not at all commensurate with their violence; and in all purely nervous cases, morbid appearances are seldom or never to be noticed.

Thus, in the examination of the few cases submitted to dissection, no changes have been discovered, adequate to the alarming nature of the symptoms. We see some of the effects, but cannot trace the causes of this affection. The principal deviations from the healthy condition of the body are to be found in the intestinal canal. Sometimes the intestines present but a slight change in structure, and at others great alteration in their texture is to be observed, generally depending upon the rapidity with which the disease has run to its termination. When this has been sudden, it is remarked that the mucous membrane is slightly injected, giving it often a roseate hue; at other times, slight patches of red are here and there observed, without any ulceration. When the disease has been protracted, these patches assume a darker appearance, and the lining membrane is rendered so soft as to be readily scraped away by the nail. The mesenteric and mesocolic veins are generally congested, and the glands enlarged. The intestines

contain no bile; but a quantity of inodorous and colorless fluid, sometimes of the consistence of cream, and at others they are covered internally with a viscous matter, which some have compared to potters' clay.

The liver is generally healthy, and the gall-bladder usually filled with bile. The pancreas and other viscera of the abdomen are natural, except the bladder, which is always found contracted and empty. The lungs are unaltered, but gorged with dark blood; the heart natural; the coronary vessels filled with black blood; the left ventricle empty, and the right usually filled with black coagulated blood. The brain is seldom congested, except when death takes place from the consecutive fever.

The changes in the blood are perhaps the most remarkable; all the veins being filled with a dark matter resembling pitch, so viscid as to adhere closely to the fingers and scalpel. This often gives to the intestines the appearance of mortification; but never has this condition been noticed.

It is unfortunate for the interests of science, that this part of the subject has not been more extensively prosecuted. Medical men have not been wanting in zeal, to add to the stock of facts already accumulated; but the difficulty arose from the aversion in the minds of the friends of cholera patients to the dissection of their bodies, and the necessity, from a general opinion of contagion, of speedy interment.

#### PREVENTION AND TREATMENT.

We have now to consider the most important part of the subject, viz. the modes by which the disease is to be prevented, individually and collectively, and the best means of overcoming the disorder when it is once set up.

As I do not consider this disease contagious, I shall make no observations upon quarantine regulations, further than to state, that the distress which must attend any impediment to trade, by throwing operatives out of employment, in conjunction with the panic which always attends the idea of contamination from communication with the sick, must greatly tend to promote the disease, by producing a predisposing tendency to it. All unnecessary alarm and unfounded reports of the extension and fatality of the

disorder are to be reprehended, and the public mind should be kept as calm and composed as the circumstances of the case will admit. From my observation of the habits and condition of the inhabitants of this country, I think there is little to fear from its approach. There are few persons so poor as to be unable to procure wholesome food; and the extent of intemperance is far less than it is among the lower orders of the English and Irish. The higher classes of the inhabitants, on the other hand, very much resemble the same orders in England, in their habits of regularity and the kind of food they are accustomed to use. From these circumstances, I am inclined to think that the poor here are not so much predisposed to the disorder, and the more wealthy will escape like the same classes in England. At the same time, it is well that every precaution should be used. The diet should be wholesome and digestible, consisting of generous and nourishing food. The meats used ought to be good, substantial, roasted or boiled, beef or mutton, with a small quantity of vegetables and a little good wine; avoiding spirits and all cold iced liquids, fried meats, cold fruits, and indigestible vegetables.

The clothing should be such as is best suited to the variable weather so common at this season, which doubtless contributes in no small degree to engender and perpetuate dysenteric fluxes—affections which, in these climates, are common and often fatal, and which bear no distant analogy to the cholera morbus itself. The close and well known sympathy which exists between the skin and the gastro-intestinal mucous membrane, produces a transmission of spasm, from the chilled surface of the body to the entire system, and a congestion of blood in the viscera of the abdomen; hence the necessity of guarding against any sudden variation of temperature by warm clothing, such as flannel next the skin, and warm cotton or woollen stockings.

What has been already said on the evils resulting from intemperance, is sufficient to point out the necessity of strict abstinence from all spirituous liquors. So remarkable was the mortality among that class of persons addicted to habits of intemperance, that the disease was supposed to be a judgment upon drunkards. I do not say that this was the case; but very few of those who continued their propensities escaped with impunity.

Exposure to great heat should also be avoided, as it tends to debilitate and exhaust the system.

All diseases of the bowels should be remedied, especially when there is a tendency to diarrhea.

In mentioning the symptoms, I noticed that the disease is in almost every instance preceded by a diarrhea, and that during that stage it is a curable affection. In order, then, to put a stop to cholera, it should be attacked with vigor in this stage. Houses should be provided in every ward in the city, supplied with the necessary remedies for this affection of the bowels; and the public should be called upon to resort immediately to one or other of these stations upon the first appearance of diarrhea. The common mode of stopping this affection is, to administer a dose of castor oil and laudanum, in strong peppermint water. When this failed, I found small and frequently repeated doses of sulphate of magnesia, in strong peppermint-water, with a small quantity of compound spirits of lavender, an excellent remedy. This, in conjunction with the warm bath or friction of the abdomen, will generally put a stop to the disease in this stage. After the diarrhea subsides, tonic remedies are indicated: carbonate of iron, in port wine, or the tincture of the muriate, frequently repeated, are sufficient to perfect the cure, and remove the unpleasant subsultus of the muscles which attends this stage of the complaint.

When the collapsed stage of the disorder has commenced, the patient should be placed in a recumbent position, and by no means moved about; as in this state, so low are the vital energies, any rough motion will be liable to stop them altogether. For this reason, the application of warm or vapor-baths was never found practicable.

With regard to the utility of blood-letting, various have been the opinions of medical men. M. Keraudren, who has written ably upon the disease, states, that evacuations of blood have not seemed to him practicable at the commencement of this disease; and during its cold stage, they could only weaken still more the circulation, and oppose the return of warmth and reaction, which contribute so much to the preservation of the patient.

This practice, however, has been found in India the sheet-anchor, relieving congestion and promoting a free circulation of blood, which before is in a state of oppression; like the effects following

blood-letting in gastritis and enteritis, the pulse will rise and become more soft and full, even during the time the blood is flowing. There can be no general rule, however, laid down for our guidance in all cases. In some there is more and in others less congestion; and we must be directed in our practice by the phenomena presented in each individual case. The earlier the operation is resorted to, the greater are the chances of success attending it; and the quantity of blood taken must be regulated by the state of the circulation. The next remedy, upon which dependence is to be placed, is the use of powerful emetics. For this purpose mustard has been very generally used, and when it speedily operated, was followed by a diffusion of warmth over the whole body. It is given in doses of three teaspoonsful of the powder to a half pint of warm water. Latterly, however, it has been found that many inconveniences arise from this remedy; especially in children, in whom severe spasms of the glottis and irritation of the muscles of the larynx have followed its administration. Common salt (*murias sodæ*) has been found the best substitute for mustard, and was generally used in the cholera hospitals of London. Its operation is quick; it is powerfully stimulant, and swallowed without inconvenience. These remedies are not given to remove any supposed poisonous matters from the stomach, or, according to the old maxim, "*vomitus vomitu curatur*," as it is not desirable to put a stop to the vomiting. But the remedy seems to act as a general stimulant, rousing the dormant powers of life, and relieving the congested lungs, by promoting a free circulation through those organs.

But the chief indication in this stage of the disease is the restoration of the depressed vital powers; and this is accomplished by the application of the most powerful and diffusible stimulants the materia medica afford, used both externally as rubefacients, and internally as stimulants. The external applications are mustard-poultices to the feet, abdomen, and chest, often rubbing the parts with hot vinegar or camphorated spirits, and the use of hot air-baths, which may be applied without the necessity of removing the patient from his recumbent position.

The internal stimuli are, brandy, laudanum, and the essential oils of peppermint and cajeput, and sulphuric ether and camphor. The Manilla physicians used the following formula:

Camphor, 4 grains.

Laudanum, seventy drops.

Rectified spirits of wine, one ounce.

Mix the entire in an equal quantity of boiling water, to be given in a single dose, and repeated every sixth hour until some abatement of the principal symptoms is perceptible. When the patients were in a state of extreme weakness or collapse, but the half of this dose was prescribed, repeated every third hour.

Opium, though a valuable remedy when judiciously employed as a stimulant, has been declared by a great number of medical men a bad remedy in every form and style of the disease. The general impression was, that the invasion of the typhus or congestive stage was accelerated by this drug. The great cause of the use and abuse of opium appears to have been the wish to stop the vomiting and diarrhea, and moderate the spasms. All these symptoms, however, are by no means essential to the disease, which has often proved fatal without any of them. When they are present as indicating reaction, they may in fact be considered rather favorable symptoms, and consequently ought not to be too promptly checked. This of course does not apply to the diarrhea which precedes the collapse; as the more readily that affection of the bowels is relieved, the more readily will the disposition to nervous depression yield to the remedies recommended.

The next indication is the promotion and improvement of secretions, for which purpose calomel has been largely used both by European and Asiatic physicians—of which more hereafter.

Dr. O'Shaughnessy, from his views of the causes of the disease, comes to the following therapeutic conclusion, that there are two indications depending upon the facts he has established: 1st, to restore the blood to its natural specific gravity; and 2d, to restore its deficient saline matter.

"The first of these can be only effected by absorption, by inhibition, or by the injection of aqueous fluid into the veins. The same remarks, with sufficiently obvious modifications, apply to the second."

He recommends, for this purpose, that copious enemata of warm water, holding the natural salts of the blood in solution, should be administered. But should absorption be entirely suspended,

as it is in desperate cases, he recommends the injection into the veins of warm water, holding in solution the normal salts of the blood.

This plan of treatment has been followed, with a slight modification, by Mr. Wakefield, surgeon to the Clerkenwell prisons—whether suggested by the chemical investigations of Dr. O'Shaughnessy, I cannot say—but with the happiest results. Out of two hundred patients attacked, he lost but seven. The practice consisted in the internal administration of large doses of alkalis, principally soda in the form of the common carbonate. It was given by the mouth, and in enemata of warm water. The effect was to restore the blood to its healthy color, which is soon seen by the alteration in the appearance of the lips and complexion of the patient; this is soon followed by a reaction of the system, and gentle diaphoresis.

Having in a very cursory and general manner run over the various remedial agents in the cure of cholera, it now is necessary to take each up in detail, and ascertain its claims to our regard. From the views laid down in this work, on the proximate causes of the disease in question—that the nervous system generally is its seat, and that it is characterized by symptoms denoting great prostration of all the functions immediately and remotely connected with life—it becomes apparent that the first indication of cure is the support of the *vis vitæ*, and the restoration of the proper balance in the several systems, so nicely adjusted in the healthy condition of the body, but which now is totally lost.\*

The second indication will be the relief of congestion, wherever discovered, whether in the viscera of the abdomen, or thorax, or in the brain and its appendages.

The third indication is the restoration and alteration of the suppressed and disordered secretions.

To effect the first of these three indications of cure, it is usual to resort to the internal exhibition of stimuli, of various powers and degrees of diffusibility, and the application of rubefacients and blistering substances to the external surface of the body.

\* These observations apply only to the second stage of the cholera, when symptoms of prostration are evidently present, and not to the *premonitory diarrhoea*, to which I shall briefly allude hereafter.

## INTERNAL STIMULANTS.

*Emetics.*—Under the head of internal stimulants, these remedies take a leading place. As they are not administered for the purpose merely of evacuating the stomach, and as the powers of life require prompt support, all those emetics are to be avoided which produce much nausea previous to operation, and those only to be used which, by the rapidity and energy of their effects, act mechanically upon the circulating fluids, independently of their stimulating qualities. The medicines found combining these properties in the highest perfection, are chiefly powdered mustard and common salt. Both act almost the instant they come in contact with the coats of the stomach, are preceded by no nausea, and urge on the sluggish fluids, often even to a restoration of the different secretions.

The powder of mustard is perhaps the more energetic of the two; but experience shows that it is attended often with serious inconvenience. Should there be such a low degree of nervous energy in the stomach as to prevent the full operation of the medicine, its acrid qualities, under circumstances of visceral congestion, may be productive of very bad consequences. Again, it is sometimes found to affect the glottis and the larynx with violent spasmodic action, which in some instances proceeds almost to suffocation. Hence, this remedy is now superseded by common salt, which is rapid in its operation, stimulating in its properties, and may, from absorption, supply in part the deficiency in the natural saline elements of the blood, which, though containing no muriate of soda, naturally may, by chemical affinity, derive its supply of alkaline salts from this source.

But the principal intention in the administration of emetics is, as I said, their mechanical action upon the fluids. During their operation, the pulse acquires force, reaction takes place, and a gentle dephoresis supervenes. The circulation of the blood through the lungs is accelerated, and the equilibrium of the nervous and sanguineous systems partially restored.

*Brandy.*—To follow up this plan of arousing the depressed energies of the system, the most diffusible stimulants are indicated, as

brandy, ether, ammonia, electricity, and heat. Some objections have been urged against the use of alcohol as a stimulant in the disease, on the ground that it is preceded by excitement, and attended by inflammation. But I cannot agree with those who advance this opinion; because, from the commencement of the disease to its termination, there are none of the symptoms of general excitement which point out the existence of inflammation of vital tissues, and there are none of the common appearances of inflammation, either high vascular action, suppuration, adhesion, or mortification, to be noticed by dissection. True it is, there is great *venous* congestion in the intestines, and these parts are often gorged with dark blood; but it appears more like the effect of stagnation in the circulation than high arterial action. How is it possible, under circumstances of such prostration and such a condition of the blood as is peculiar to this disease, that high action can proceed simultaneously with a state of depression bordering upon death? After reaction commences, the efforts of nature to restore vigor to the circulation may be productive of inflammation; and I suspect those cases presenting such appearances after death, indicating the previous existence of inflammation, are of this class; but as yet there is no evidence of its presence in the stages of collapse. The success attending the use of the most diffusible stimuli corroborates the truth of these views, which, with few exceptions, are general among those who have studied the pathology of cholera. To derive the full benefit from the administration of these remedies, they must be given in frequent doses, so that their stimulating effects may never be permitted to flag. The essential oils of peppermint, &c., from their aromatic combined with their stimulating properties, have been found very beneficial.

*Laudanum* can only be beneficial as a stimulant; but as we are in possession of more powerful remedies of this class, the less it is used the better; particularly as it has been observed to produce the typhoid fever, which sometimes follows the state of collapse. In the first stage of diarrhea, it will be found a useful remedy, in combination with purgatives, either of *ol. recini* or *calomel*.

*Electricity* and *galvanism* have been tried, but hitherto without any very happy results.

*Heat*, in the first stage, may be applied with great advantage; but during the state of collapse, it is found of very little utility. However, it may be used both internally and externally, the former by the exhibition of warm enemata, and the latter by means of hot air-baths, or metal vessels filled with hot water. However, it is a remedy in which I have very little confidence, unless some means could be adopted for its application at a very elevated temperature, with great uniformity, and persevering assiduity. Hot, water, steam, and air baths were thrown aside at the cholera-hospitals of London, as useless instruments, disturbing the patient, and interfering with remedies of more powerful operation, as rubifacients.

#### EXTERNAL STIMULANTS.

*Blisters*.—The utility of counter irritation in this disease is admitted by all, and is no doubt a powerful agent in promoting reaction and relieving congestion. The common *emplastrum lyttæ*, however is perfectly useless, as in almost every case it is an insufficient application, not even producing a redness in the skin. I need hardly observe that these remedies, to do good, must be rapid in their effects. For this reason, boiling water, and a solution of Spanish flies in the most powerful acetic acid, are in great reputation. Cloths dipped in boiling water, and laid immediately upon the abdomen, will raise a blister; and the same effect will follow the use of Sir A. Carlisle's blistering instrument, which consists of a smooth piece of metal, heated in boiling water, and applied over silk. These must be followed by mustard poultices to the thorax, abdomen, and lower extremities.

*Cautery*.—Dellon, in his travels in India, mentions the common use of the actual cautery to the calves of the legs among the natives, and with good results. He tried the remedy on himself when attacked with cholera, and recovered.

Sir David Barry mentions the application of the actual cautery to the spine, as a remedy very successful in the hands of some European physicians; and I have no doubt it is one of the best

means of altering the condition of the nerves, and thus striking at once at the root of the disease.

These remedies act precisely as they do in inflammation, by relieving the congested vessels of the internal organs from a portion of their contents, and enabling them to contract and propel the blood onward. But they must also act as stimulants, diffusing the blood equally throughout the body. Hence they are powerful remedies in this disease, and by no means to be neglected.

*Bleeding.*—The second indication is the relief of congestion, whether in the abdomen, thorax, or head; and this must be effected, partly by the remedies already recommended, but principally by *bleeding*. The low state of the pulse, and the appearance of debility characterizing this disease, have led physicians to contemplate this remedy with a suspicious eye. But the practice in India and throughout Europe of venesection, even in the stage of collapse, was very general among those most conversant with the malady. As the Indian Reports speak favorably of the practice, I will quote the passage relating to it:

The value of this remedy is well stated by Mr. Searle, in his report,\* where he says, “Few remedies, on a fair trial, have been more generally and unequivocally advocated than free blood-letting; and the most that has been urged against it is, that it is not always successful. The advocates for bleeding proceed, however, on the principle, that a certain quantity of blood is to be obtained in order to insure success, which few of them estimate at less than 30 ounces. More who are disposed, either less favorably towards bleeding, or to condemn it altogether, object, that if the circulation is in a condition to admit of free bleeding, the case is a mild or favorable one, and would probably yield to other remedies. There is no doubt that fatal collapse has sometimes followed even *large* bleedings, which has staggered the faith of many practitioners in the general safety of the remedy; but, in the great majority of cases, it is after in *small* bleedings that this has happened. There is the most ample evidence also, that cases, especially in Europeans, even under the most favorable appearances, will often, in spite of all internal and external remedies, go on to a fatal issue, when bleeding is not practiced.”

\* Madras Reports, p. lviii.

This practice has been adopted generally in England, and with great success; but the earlier it is resorted to the better, as during the collapse it is difficult to obtain a sufficient quantity of blood to benefit the patient. To relieve local congestion, leeches and cupping are perhaps safer remedies, and more likely to answer the intention than general bleeding. After reaction commences, this remedy must be resorted to without delay, as it not only gives immediate relief to the loaded vessels, but checks the disposition to that high action, which the reviving efforts of nature are likely to set up. Dr. James Johnson thinks that the general adoption of this remedy in the second stage of this complaint, in England, has been attended with bad results, and though there is a similarity between these stages, in the Indian and English epidemics, yet the debilitating effects of the previous diarrhea in England, render depletion very hazardous. But the practice in India, even among the natives, a weak and puny race, was similar to that pursued in Europe, and in both with happy results.

The 3d indication is the restoration and alteration of the secretions.

During the continuance of cholera, almost all the secretions are deranged. The function of the kidney is suspended, and the secretions from the bowels undergo a very marked change. The gall-bladder being usually found filled with healthy bile, has led to the supposition that the function of the liver is unaltered; but as no bile can be detected in the matters ejected from the stomach or bowels, and the *ductus communis choledochus* being found often impervious, while at the same time there is no appearance of absorption of bile, either in the other secretions, or in the vessels of the *tunica adnata* of the eye, it is probable that this secretion, like all others, is suspended.

*Calomel.*—To restore the healthy condition of the secretions generally, calomel, both from its purgative and salivating qualities, is a most powerful remedy.

In the early stage, or preliminary diarrhea, calomel, in combination with opium, carried even to ptyalism, will put a stop to the inordinate action of the bowels, and at the same time act upon all the other secretions, preventing the severe forms of the disease. Also in the stage of collapse, when the irritable stomach will retain no other medicine, calomel, in doses of five to ten grains will re-

main; and if followed up with vigor, soon produces an alteration in the appearance of the evacuations from the bowels; and if this can be soon effected, the chances of restoration are greatly augmented. The appearance of bile or feculent matter in the evacuations, shows the benefits resulting from the remedy; and if there should follow a mercurial condition of the system, reaction and increased secretion are the immediate consequences. There is, however, a great difficulty in inducing this state; but it has been remarked, that if salivation can be established, the patients usually recover.

All these remedies, it must be observed, in the state of collapse, are doubtful in their results; and the only stage where medicine is attended with certainty is the first, or *premonitory diarrhea*. Here there is full scope for the exercise of humanity, in urging upon the public the necessity of putting an end to this condition of the bowels; and I hesitate not to say, that cholera would be a rare affection in these temperate latitudes, if this fact were more generally known and more universally attended to. Again I urge the necessity of establishments in every part of the city, called *dispensaries for the cure of bowel-complaints*; and all persons should be advised to resort to these stations upon the first appearance of diarrhea; for during that stage, the *cholera is a curable disease*.

The state of excitement called consecutive fever does not uniformly follow the stage of collapse; but when it does occur, it is always in proportion to the degree of previous depression. Bleeding, both general and local, and mercurial purgatives, with diaphoretics, are the principal means of cure; of course to be regulated by the symptoms, as in cases of common typhus fever. No particular rules can be laid down for general guidance, as each practitioner will be directed by his own peculiar experience in the cure of febrile affections.

## APPENDIX.

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### EXTRACT FROM DR. JAMES JOHNSON'S LETTER TO THE "TIMES."

In the report of a committee on cholera in Moscow, by order of the Russian emperor, we are told (*English Parliamentary Report*), that "at the opening of bodies of persons who had died of the cholera, to the minute inspection of which four or five hours a day, for nearly a month, were devoted, neither those who attended at these operations, nor any of the assisting physicians, nor any of the attendants, caught the disease, though scarcely any precautions were used." The story of the fifteen laborers attacked with opening a pack of hemp at Riga, is now acknowledged to be a falsehood; and all your readers know that the cholera broke out in Hamburg in "a deep cellar," filled with abandoned characters and abominable filth. Mr. Searle, an Indian practitioner, who saw the disease on an extensive scale in the East, and suffered in person, went to Moscow, and lived in the hospitals there. He declares his conviction that cholera is not contagious. All, or almost all, cordons and quarantines, have been abolished in those countries where the epidemic has been witnessed, and the disease is not now half so much dreaded at Hamburg as when it was no nearer them than Moscow. Finally, by a demi-official communication in last Saturday's "*Medical Gazette*," it appears that Drs. Russell and Barry have come to the conclusion that cholera is not communicable by goods or clothes, but only by persons actually laboring under the disease. From the same source we learn that there is a German colony on the Neva, 13 *versts* from St. Petersburg, where the houses are detached in gardens, and the surrounding country highly cultivated. Thither some persons fled on cholera appear-

ing in the capital. "One of these, a female, took the disease and died of it; but it did not spread, no other instance of it having occurred, though her bed seems afterwards to have been used."—*Medical Gazette*. Indeed, there are many instances in which the beds and clothes of those who have died seem to have been made use of with impunity. Again—"At the Foundling Hospital a good many children died of cholera, and several nurses had it; and it is a curious fact, that when any of these last who were suckling had the disease, so as to render it necessary for the infant to be given to another nurse, none of those who gave the breast in this way became affected with cholera, although in many instances the infants' clothes were not changed."—Letter from Drs. Russell and Barry, *Medical Gazette*, October 22, 1831. Is this, Mr. Editor, the frightful contagion which is to sever the finest ties of humanity, and make man dread his species more than he does the lions and tigers of the woods? Is the unmanly, perhaps chimerical, dread of contagion, trumpeted forth by terrorists through all parts of the empire, to make us desert and fly from our friends and neighbors when stricken with the pestilence, and when they stand most in need of consolation and assistance? The ultra-fear of this contagion will do more; it will paralyze commerce, arrest manufactures, and throw tens of thousands into the indigence and despondency which are the most powerful predisponents and auxiliaries of contagion, if contagion exist! That a focus of infection may be generated occasionally in deep cellars, and the crowded hovels of poverty, I do not doubt. The same takes place every year with fevers and other diseases. But that the germs of cholera can be thence carried by individuals in health throughout this country, I will not believe, because it is contrary to experience. The conductors of the daily and weekly press incur a fearful responsibility by lending their aid in sounding the tocsin of alarm, and thus generating an atmosphere of terror around every individual—an atmosphere which will render contagion, if it exist, ten times more virulent; and if it exist not, will render the individual ten times more susceptible to the inscrutable cause of the pestilence!"

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In order the more forcibly to contrast the cholera as it appeared in England with the disease of the East, I shall lay before my readers some cases, collected in India by M. St. Yves, surgeon of the French navy, and correspondent of the Museum of Natural History of Paris. I shall not separate their treatment from the description of the symptoms.

## CASE I.

Madame S., of lymphatic and nervous temperament, of a thin and debilitated conformation, and laboring under disease of the womb, breakfasted on rice, as was her usual custom. Immediately afterwards she experienced tension of the epigastrium, which was quickly followed by the several symptoms of the *cholera morbus*. These continued to increase after 10 A. M. I was called in at 11 P. M., and learned that in the interval she had been attended by a Bengalese physician, who had given her *brandy*, and had also administered the tinctures of *mint* and *lavender* at short intervals, but without success. The patient had then vomited eight times, and had had twenty involuntary stools. When I saw her she experienced intense epigastric pain, burning thirst, sensation of scorching in the stomach and intestines, respiration interrupted, pulse small, intermittent, and almost insensible, cramps of the lower extremities, and general prostration of strength, and exhibited a Hippocratic countenance. She was incapable of voluntary motion, and lay in the supine position, except while the cramps were present. Her extremities were cold, her skin was dry, and she was passing viscous stools of a black color. I prescribed a mixture with *laudanum* and *camphor*, a spoonfull to be taken every quarter of an hour. The next morning the pulse was increased in fullness and frequency, the heat was re-established, she perspired abundantly, and the evacuations were suspended. The same mixture was continued every hour. In the evening her condition was natural, and she had passed one sufficiently consistent stool. She now only complained of weakness, and was allowed to drink *Madeira* and *water*. On the third day she was entirely convalescent. Her subsequent nourishment consisted of *sago*, rendered aromatic by *canella*; and before her meals she was given a small glassfull of a bitter wine.

## CASE II.

S. L., of bilious temperament and irritable disposition, of robust constitution, small stature, and threatened with a bilious affection, took some hippo powder in the morning; in the evening five grains of *calomel*; and the following morning twenty grains of *jalap*, with two drachms of *cream of tartar*. Soon after taking this purgative he was seized with the *cholera morbus*. At noon, when I was called in, he had vomited six times, and had passed fifteen stools. I found him in the following condition: dreadful pain and tension of the epigastrium, ardent thirst,

respiration slow, pulse frequent, hard, and small, with painful cramps of all his limbs. He constantly shifted his posture, was extremely weak, and perspired copiously. I ordered a mixture with *laudanum*, *camphor*, and *ether*; and in the evening he was sufficiently recovered to walk about his room, complaining only of lassitude, with dryness of the mouth, and want of appetite. He came himself to visit me the next morning. I prescribed *arrow-root*, flavored with *canella*; and directed him to take a little *bitter wine* before his meals. His appetite soon returned, and his health is completely re-established.

## CASE III.

Madame C., of thin and weak conformation, breakfasted on rice, and in half an hour was attacked with *cholera morbus*. Tincture of *mint* and *lavender* was repeatedly given her. I was called in at 5 P. M., at which time she had had from ten to a dozen stools. Her epigastrium was acutely painful, and she suffered dreadful sickness of stomach. She breathed slowly, her pulse was frequent and small, and she constantly changed her position. I directed a mixture of *ether* and *orange-flower water* to be taken in spoonfull every half hour. At 10 P. M. the epigastrium was extremely painful, but there was no vomiting. Her breathing was interrupted, and her pulse was small, with burning sensation in the abdomen, ardent thirst, cramps of the limbs, and prostration of strength. She lay in the supine posture, fainted frequently, and passed involuntary dejections: her countenance was decidedly hippocratic. A mixture was then ordered, containing *laudanum*, *camphor*, and *sulphuric ether*, a spoonfull to be taken every quarter of an hour. The next day the cholera had disappeared; but as she continued weak, thin and pale *sago*, flavored with *canella*, was allowed, and in two days her health was re-established.

## CASE IV.

Mademoiselle H., of sanguine temperament and robust constitution, of the age of puberty, and having menstruated once, after eating at breakfast some unripe jujube fruit, was quickly attacked with the following symptoms: Epigastrium tense, and sensible to pressure; no vomiting, nor any alvine evacuations; painful nausea; pupils dilated; respiration painful and interrupted; pulse frequent, hard, and contracted; cramps; continual restlessness; copious sweating; and great anxiety. A spoonfull of *laudanum*, *camphor*, and *ether*, was given every quarter of an hour, and the epigastrium was rubbed with *camphorated oil*. The symp-

toms soon abated, and in the evening she was much better. The next morning she was allowed *sago*, seasoned with *canella*; and was advised to take a glass of *bitter wine* before going to rest. In the evening she vomited two lumbrici, in consequence of which, on the third day, a *vermifuge purgative* was prescribed. No more worms, however, were evacuated, and her health is since completely restored.

## CASE V.

[This, and the subsequent cases, were collected by Dr. Lefevre, chief surgeon of H. M. S. *Cleopatra*, during and after his stay in Manilla.]

On the 9th of January, 1822, at 2 P. M., a sailor named Chevenne, æt. 45, of bilious temperament, after having eaten merely some soup and bouilli, became suddenly giddy, and would have fallen, had he not received immediate support from the bystanders, who perceived his condition. Immediately after, severe vomiting of bitter and acid matter set in, which irritated the throat. Involuntary dejections of liquid bilious matter occurred at the same time. The vomiting was only effected with great efforts; the breathing was quick; there was great pain in the stomach and belly, with cramps in the gastrocnemii muscles and the legs generally, hiccup, spasms of the pharyngeal muscles, and general convulsions, so severe that six men could scarcely restrain him. He shrieked aloud. His pulse was rather full, but accelerated and hard, and the whole body was bathed in sweat.

A mixture containing 60 drops of *laudanum*, 45 of *ether*, 33 of *sugared water*, to be taken in spoonfull every minute; and *dry frictions* to be assiduously performed over the body.

A part of the mixture was rejected, and a small enema was then administered. At 5 P. M. he was calm again, the pulse less hard though frequent, the vomiting and purging gone, and the pain more endurable; but the thirst continues, and he perspires profusely.

*Rice-water* to drink.

He slept at two intervals, from 8 P. M. to midnight. The pulse was then weak, and the patient quite overcome with fatigue.

To take, every second hour, a spoonfull of a mixture composed of *laudanum* and *ether*, of each 15 drops, *peppermint-water* 1 drachm, tincture of *gentian* 20 drops, and *water* 4 ounces.

On the second day the patient had slept since midnight, and passed urine. He complains of great weakness, but his appetite returns.

To have soup thrice daily.

On the third day he was perfectly well.

## CASE VI.

Henri Caledec, a sailor, æt. 45, of weak and broken-down constitution, was attacked on the night of the 1st of February with vomiting of bitter matter, and copious dejections, accompanied with intense pain of the stomach and belly, which became yet greater on pressure; urine suppressed; mucous and bitter vomiting, with occasional dejections of a similar kind; hiccup; cramps of the lower extremities and hands; pulse extremely small, quick, and intermittent; respiration painful and short.

A mixture, composed of 15 drops of *ether* and 10 of *laudanum*, in 2 ozs. of *sugared water*, to be taken at once.

Mixture rejected, and again repeated, a spoonfull at a time, with warm rice-water. A small emollient injection was also given. The vomiting, hiccup, and cramps continued, and extreme weakness supervened.

A mixture of 2 drachms of *mint-water*, 15 drops of *ether* and *laudanum*, 20 of tincture of *aloes*, in 3 ozs. of infusion of *camomile*; a spoonfull to be taken every quarter of an hour. Dry frictions to the limbs.

At noon no improvement.

*Ammoniacal* liniment to the epigastrium, to be followed by a *blister* in two hours.

At 4 P. M. the scene was evidently closing; all remedies had failed; the countenance became totally altered, the pulse imperceptible, and the voice choked; and at 7 P. M. he breathed his last.

## CASE VII.

Stephen —, a sailor, æt. 26, breakfasted, as usual, at 7 A. M., on bread and weak coffee, and a small quantity of rum. At 9 A. M., after having been thrown into perspiration by a rather laborious exertion, he exposed himself to the air, and soon became unwell. At noon he vomited some half-digested food; and soon afterwards, a quantity of matter of a bitter taste. The stomach and belly became painful. Diarrhea then occurred, of mucous, inodorous fluids, in consistence and appearance like mucilage of gum arabic. Considerable weakness; skin natural and dry; face of a pale yellow color; pulse very small, nearly imperceptible; respiration short and frequent; voice feeble, and enunciation difficult.

Hot *tea*, with *sugar*, was given; and afterwards *rice-water*.

2 P. M.—Cramp of one of the gastrocnemii muscles; and the other was soon similarly affected. Vomiting and purging conti-

nue, but rather more moderate. Intense pain in the stomach and abdomen.

To have 20 drops of *ether* in a little *sugared water*. Infusion of *flax-seed* for drink, to be taken in small quantities; and a small injection of the same materials.

3 P. M.—Ether not rejected. Abdominal pain diminished, but the cramps are more violent, and extend to the toes, and have occurred in other parts of the body, especially the neck, creating such violent pain that the patient cries out. His voice is, however, weak; and he complains of feeling very cold; pulse insensible at the wrist; respiration short and hurried.

To have 30 drops of *ether*.

4 P. M.—Slept a little. At 6 P. M. symptoms of a rather better kind; the pulse and heat have increased; the pains of the extremities diminished; but the head feels painful and heavy.

At 8 P. M. passed urine for the first time since his attack.

Second day.—Has slept well; complains only of fatigue; is convalescent.

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### CASES IN ENGLAND.

EXTRACT OF A LETTER FROM DR. DAUN, OF SUNDERLAND,  
DATED 14TH NOVEMBER, 1831.

“One of the cases of malignant cholera, which has just occurred I was called to see. The patient felt slightly indisposed yesterday morning, about seven o'clock, with slight uneasiness in her bowels. About 10, A. M., she took a dose of *epsom salts*, before she sent for any medical man to see her. In about an hour after taking the salts, she was seized with spasms, and began to sink. I was asked to see her in the evening, which I did; but when I arrived at her house, she was *in articulo mortis*. She died in about an hour after I saw her. It is one of the least equivocal cases of malignant cholera which has occurred since my arrival here. Having in India seen the disease, in several instances, supervene after the administration of a dose of *epsom salts*, I have thought it of use to caution the public against the use of saline purgatives, and I have caused a notice to be circulated, recommending, in their stead, the use of *rhubarb*, *magnesia*, and *ginger*, or any other warm aromatic powder, during the prevalence of the epidemic.”

## CASE OF FLORENCE SULLIVAN.

This patient was a back-maker (a kind of cooper), Florence Sullivan, residing at No. 1 Mint-street, Southwark; his age 62. Reputed to be, before the attack, a strong, healthy man, and very temperate. He was perfectly well on the night of the 7th instant; ate a sprat supper, and went to bed. Soon after twelve o'clock, he was suddenly seized with a purging, and got out of bed to relieve himself. Ten minutes after, he was again obliged to leave his bed; and in a short time vomiting came on, with dreadful cramps in the calves of the legs, arms, hands, and muscles of the abdomen. He did not apply for medical advice until twelve o'clock on the next day, when Mr. Evans, the surgeon, saw him, and he was then in a state of excessive exhaustion; no pulse at the wrist could be felt, the extremities were cold, a clammy perspiration bedewed the whole body, and the whole of the appearances of a patient in the blue or intense stage of the malignant cholera were present. The alvine evacuations were not at this time very copious, as they had so long existed; but they were whey-like and a little tinged with blood. The vomiting had ceased some hours. The stimulating remedies usually resorted to were tried, and a little heat was restored, but not permanently; and at seven o'clock, the same evening, the 8th, he died. The *post mortem* examination took place in twenty hours. The abdomen was very tense. Internally, the stomach, small intestines, omentum, and peritoneum were in a highly congested state. In the stomach was a half-pint of fluid, like coffee-grounds. Its mucous membrane was dark and pulpy, and towards its pyloric orifice there were some black patches. The ilium was congested, and contracted in some parts, having throughout the appearance of a piece of red velvet. The liver was healthy; the branches of the vena-cava were congested, but the vena-porta was empty. The gall-bladder was full of bile and distended; its ducts contracted. The bladder was contracted; only a teaspoonfull of fluid in it. The heart was flaccid, but the right side was filled with fluid black blood. The lungs were excessively congested, and upon being cut, the air-cells were found filled with serum, mixed with air. There was no abscess, nor were there any tubercles. The right pleura pulmonalis was adherent to the pleura costalis. In all other respects the body was healthy.

## CASE SECOND, RELATED BY DR. WHITNEY.

A female, name unknown; was perfectly well the day before (Sunday morning). She went to the new-cut Lambeth, before breakfast, and there drank some port or elder wine, and came home perfectly well; but before she could take her breakfast, she felt indisposed, and was induced to obtain medical advice. The gentleman who saw her thought it only a common affection of the bowels, and merely sent her some chalk mixture and opium. But violent purging and vomiting soon came on, and excessive prostration followed; coldness of the surface, loss of pulse, and sunken countenance; the tongue white and clammy, the fluid ejected like whey; and in fifteen hours from the attack she was a corpse. The *post mortem* examination gave appearances very different from those of Sullivan. There was merely a light blueness on the mucous membrane of the bowels. Indeed Dr. Hodgkin, the morbid anatomist of Guy's Hospital, said, that in any other case, he should have passed over this as an appearance of no moment. The lungs were turgid with blood. There was no frothy mucus, as in the former case. The large vessels of the heart were loaded with blood. The contents of the bowels were modified by what she had taken. A mustard emetic was given, but was never ejected. The gall-bladder had bile in it, but was not remarkably distended.

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 CASE OF OSWALD REAY, THE FIRST OCCURRING AT  
NEWCASTLE.

His age was thirty-three, and his habit spare. At eleven, P. M., 26th October, 1831, having been previously in health, he experienced a feeling of death; lips and aspect blue; purging of a liquid like thin gruel; spasms of the feet, extending up the legs to the stomach; occasional vomiting of similar fluid. In the night the neighbors alarmed by his groans; domestic aid given; brandy refused. At eight, A. M., sent for professional advice; not obtained. At three, P. M., prescribed for by Mr. Parr. At half past five, visited by Dr. McWhirter and Dr. White; extremities then cold; pulse imperceptible; skin cold and clammy; extreme thirst, but mind tranquil: no urine passed since the commencement of the attack: distressing symptoms relieved by the measures employed. At half past nine, easier, but more action. At twelve, breathing slow and laborious; incipient coma. Died tranquilly at half past four, A. M., twenty-nine hours and a half from the commence-

ment of his illness. Notwithstanding the similarity of the symptoms to those described under the name of foreign cholera, we are of opinion that the above-detailed disease has had no foreign origin. Our reasons are, that the patient had been before attacked by a similar disorder; that, as an engineer, he was not exposed to the influence of any suspicious infected material; that none such had been recently introduced by his employer; that not one of the individuals about him, before or since his death, has been affected; and lastly, that extreme cases of English cholera have occasionally proved fatal, even in a shorter time than that of Reay. We may add to all these the fact, that the deceased had, within a fortnight, removed from a healthy, airy situation, on Gateshead Fell, to a confined residence in Landgate.

T. M. McWHIRTER, M. D.

D. B. WHITE, M. D.

WOLSTENHOLME PARR, Surgeon.

*Newcastle, October 29th, 1831.*

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None of these cases present all the symptoms of cholera, as they sometimes present themselves in individual cases; neither are they of that intense kind, too frequently observed, occurring in depraved and broken down constitutions. But let any person compare these symptoms with those detailed by Aretæus, Celsus, and other writers, as peculiar to the sporadic cholera, and he must be convinced of the identity of the two affections. I will now relate cases which have occurred in England, and more immediately under my own observation:

David ———, a sailor, aged about 50, of spare habit and debilitated constitution, was attacked with a diarrhea, which he neglected for some days; and was taken with symptoms of cholera. When called to see him, I found him much relaxed in his bowels, and constantly vomiting: the evacuations, both upwards and downwards, were thin and colorless; countenance ghastly; eyes sunk in their orbits; lips discolored; and forehead covered with a cold clammy moisture; pulse almost imperceptible; skin cold; muscles of the extremities affected with cramps; suppression of urine; ardent thirst; and every liquid swallowed immediately rejected; mind tranquil; and very little pain.

I immediately administered a dose of castor-oil, laudanum, ether, and peppermint, which remained but a short time on the stomach; and was again repeated, when it was retained; slept better that night; next morning seemed better; ordered drachm

doses of Epsom salts, in strong mint water, to be repeated every hour. Noon, bowels less relaxed, and vomiting and other symptoms relieved—continued the medicines. Evening, thirst still urgent; allowed to drink large quantities of warm tea; symptoms abate; pulse soft and full; and countenance improved in expression;—recovered.

This man had a relapse subsequently, and suffered more pains from spasms of the abdominal muscles and stomach; but the symptoms were not altogether so well marked as they were in his first attack. He was treated, however, in the same way, and recovered.

Another sailor, affected with preliminary diarrhea, attended with cramps, great coldness, shriveled appearance of the extremities, and nausea, suppression of urine, with circulation languid and oppressed;—was treated in the same manner, and recovered.

A third sailor, affected with a diarrhea alone for several days; recovered under similar treatment.

These cases all occurred in one ship, in which there were many sailors, and no other was attacked. They were all exposed to the same causes, and would, no doubt, have had the disease more violently, had steps not been promptly taken to arrest the disease in its first stage; but being on the spot, and the men immediately under my care and eye, the symptoms soon yielded to the treatment.

I will conclude this pamphlet with the order issued by the central board in London, to the provincial boards of health. It will be seen that it is drawn up under the impression of the contagiousness of the disease—independent of the regulations advanced under this supposition, it will be found to contain some useful rules and sanatory plans.

The central board of health have drawn up and ordered to be issued the following important paper to the various boards of health:

*Council Office, Nov. 14, 1831.*

SIR,—The central board of health having maturely weighed all the information which has been transmitted them relative to the progress of the Asiatic spasmodic cholera in various parts of Europe, but more particularly guided by the conclusions on this head to which Doctors Russell and Barry have arrived, after a few months' careful and laborious observation of the character of that disease in those parts of Russia which they have visited, beg leave to suggest for your consideration the following sanatory hints:

## I. AS TO PRECAUTIONARY MEASURES.

In order to insure the adoption and realize the benefit of any system of sanitary arrangements in a large community, the first essential point is to divide that community into subordinate sections, and to form distinct boards of health, each to consist, if possible, of a resident clergyman and a number of substantial householders, and of one medical man at least.

These boards should be charged with the following rules in their respective districts, viz. :

1. To appoint inspectors. Each inspector to visit daily, and to inquire carefully after the health, means of subsistence, cleanliness, and comforts of the inmates (of say 100 houses, more or less, according to local circumstances).

2. To receive and examine the reports of those inspectors, which should be made up to a given hour on each day.

3. To endeavor to remedy by every means which individual and public charitable exertion can supply, such deficiency as may be found to exist in their respective districts, in the following primary elements of public health, viz. the food of the poor, clothing, bedding, ventilation, space, cleanliness, outlets for domestic filth, habits of temperance, prevention of panic.

4. To report to their principal boards respectively, on the above heads, as well as on the actual state of the health of their districts.

The subordinate divisions of each district ought to be numbered or lettered, and each district named; the names of the members of each board, of the medical men attached to each, and of the visiting inspectors employed, should be placarded in conspicuous places.

Principal boards of cities, towns, or parishes, to report directly to the central board in London :

1. On the actual state of health of the whole population.

2. On the precautionary measures already carried into effect.

3. On the measures contemplated.

4. On suspected sources, if any there be, from whence this particular disease might possibly spring.

With regard to precautions as to intercourse with suspected or really infected persons or places, the board are confident that good sense and good feeling will not only point out, but morally establish, as may be practicable, the necessity of avoiding such communication as may endanger the lives of thousands.

But they strongly deprecate all measures of coercion for this purpose, which, when tried upon the Continent, invariably have been found productive of evil. The best inducements to a prompt

acknowledgment of the disease having entered a family, as well as to an early and voluntary separation of the sick from the healthy, will always be found in the readiness and efficiency with which public charitable institutions attend to the object in S. 3

It is with much satisfaction that the board feel themselves authorized to declare, and it will no doubt be highly consolatory to the public to learn, that, under proper observances of cleanliness and ventilation, this disease seldom spreads in families, and rarely passes to those about the sick under such favorable circumstances, unless they happen to be particularly predisposed.

It will not, therefore, be necessary where there is space, and where due attention is paid to cleanliness and purity of air, to separate members of families actually affected by the disease, nor to insulate individual houses, unless in cases of crowded, filthy, badly-ventilated habitations, and other contingencies which involve the health and safety of all.

It having been proved by ample experience, in more than one city in Europe, that the fitting up and furnishing of hospitals for the reception of the poorer classes supposed likely to be attacked by the disease, at a period too long before its actual breaking out, has been productive of great waste of means, by the spoiling of various articles, and the consequent want of wholesome accommodation when most required, the central board would recommend that proper and sufficient house-room only be secured and prepared in the first instance, and that the charitable be called upon only to *pledge* themselves to furnish, at a given notice, such articles of bedding, furniture, &c., or the value of them, as they would at once have contributed.

By this means the deterioration of perishable articles will be avoided; and, should the district entirely escape, the contributions will be saved.

The situation which the board would recommend for temporary cholera hospitals would be those most detached, insulated, and thoroughly exposed to free and open air; the description of house such as would admit of the most perfect ventilation and cleanliness, and the largest space around the sick.

The board would recommend, when a family is reported to be in an unhealthy state by the sub-inspector, and the disease confirmed to be cholera by a medical member of the district board, that the head of such family, if unable to afford accommodation at home, be advised to send the sick person forthwith to the temporary hospital, and that the other members of the family be supplied with such additional means and comforts as their state may require, to enable them to resist the influence of the infected atmosphere in which they live.

## II. MEDICAL AND DIETETIC PRECAUTIONS.

These will be found of considerable importance, from their contributing to prevent or diminish the susceptibility to infection which individuals may possess at the moment the disease breaks out. No sudden nor extensive alterations should be made in the usual modes of living. All changes of food, to be useful, indeed not to be absolutely prejudicial, should tend to render it drier, more nutritive, and concentrated; moderately costive bowels, the almost invariable and consequence of a dry invigorating diet, will be found more conducive to exemption from cholera than an opposite habit.

Whenever aperients may become indispensable, those of a warm aromatic kind, in moderate doses, or domestic means, should alone be resorted to.

What is generally understood by salts—viz. Glauber's salts and Epsom salts, as well as other cold purgatives, should not be taken in *any quantities*, nor, on any account, without the express prescription of a medical man.

The medical members of the board beg to state, in the most decided manner, that no specific preventive against cholera is known to exist, and that the drugs hitherto offered with this pretension, in countries where the greatest ravages have been caused by this disease, not only did not possess the negative virtue of doing no harm, but were found to be absolutely injurious.

The true preventives are, a healthy body and a cheerful unruffled mind. Looseness of bowels should be immediately checked, and any thing like periodical chills or cold perspirations should be met by quinine in suitable quantities; but habitual drugging, at all times *improper*, is to be deprecated in the strongest terms when epidemic disease is apprehended.

The board have been anxious to lay before the public, as early as possible, the above precautionary outlines, which they trust will tend, together with the suggestions emanating from the wisdom of your and other local boards, if not to exempt the whole population of these realms from the scourge of spasmodic cholera, at least to enable them to meet it, in the event of its appearing amongst them, with physical and moral constitutions the least likely to suffer from its virulence.

The central board will avail themselves of the earliest opportunity to transmit to you any further sanatory suggestions which may occur to them on the subject of precautionary measures, as well as an outline of instructions now in preparation for communities supposed to be actually attacked.

I have the honor to be, Sir,

Your most obedient servant,

E. STEWART, Chairman.

