

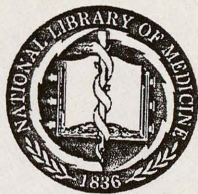
THE
PATHOLOGY AND TREATMENT
OF
ASIATIC CHOLERA,
SO CALLED.

BY
A. L. COX, M.D.

NEW YORK:
JOHN WILEY, 161 BROADWAY.

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TO
HORACE GREEN, M.D.,

These pages are inscribed,

AS
A TESTIMONY OF RESPECT

FOR
PROFESSIONAL ABILITY

AND
PERSONAL WORTH,

BY HIS FRIEND,

THE AUTHOR.

P R E F A C E .

In the months of April, May, and June, 1832, the writer of the following pages, being invited at various times by other practitioners, was enabled to see and to study the cases of Cholera which began even then to occur in the practice of some gentlemen in this city, whose duty led them more to the haunts of poverty than to the abodes of affluence. These gentlemen reported their cases as they took place, but complained of being harshly dealt with by those in civic authority, to whom the law obliged them to make the communication. The truth of their reports was openly denied until the 1st July, when the occurrence of some fifty cases rendered it impossible any longer to disguise the fact of the existence of the epidemic.

Much censure was attached to the young physicians, who were said to have created the alarm from interested motives; but it gives the writer great pleasure to be able to say that in one of the destitute families he then visited, he was informed by an aged and widowed mother, who in her poverty was doomed to witness the awful death by collapse of two daughters—her only dependence—that, for the forty-eight hours of their illness, the sole support of the family was derived from the benevolence of the “young physician” who attended on them, who also rendered his professional services without reward. One is induced to ask if even a single case of such unpretending benevolence might not inspire the public, and the press particularly, with more regard for the feelings of this very class of men, who, without remuneration of any kind, take the whole charge of the sick poor, and whose usefulness may bear a comparison with

that of any other class in the community. During the entire period of its prevalence here, even during the time that its existence was strenuously denied, the writer had ample opportunities of studying and he honestly thinks of ascertaining the nature of this disease, as well as the true principles of its cure. At least, he has seen no cause to change his views in regard to the principles here laid down and defended, more especially as the treatment which it is his purpose to advocate, and which any one may understand and bring into use on an emergency, was not only uniformly successful in his own immediate practice, comprising several hundred cases in the two former epidemics, but was the means of signally arresting the fatality of the disease far more extensively in a neighboring republic. So much said may serve to explain, if indeed any explanation were needed in a matter of such deep import to the general weal, why he has consented to the solicitations of his patients generally, as well as of many others, both in his own profession and out of it, immediately to prepare for the press, to do what good it might, this little treatise, which for many months has been lying by him partly written, in anticipation of the epidemic which has now come. His only regret is that all the leisure he could possibly command was so much less than he could have desired for such a purpose, that he fears that the truth which he wishes to promulgate may suffer from the want of that careful revision and proper arrangement which he can hardly expect of himself, especially when the hourly and engrossing cares of his profession have obliged him to find time generally after midnight to accomplish the otherwise light task which he has imposed upon himself in the preparation of these pages.

T H E E P I D E M I C .

THE terrible mortality marking the pathway of the pestilence, which has wasted the human family since its recent origin at Jessore, near Calcutta, in the year 1817, as well as the utter uncertainty of its treatment, both in result and principle, which has been exhibited by the generality of writers, renders the attempt to clear up the mystery of its pathology and treatment a very discouraging undertaking.

Unless it can be proved that errors, capable of correction, exist in the impressions which are entertained of its nature, or that the practitioner can be furnished with rules of practice more in accordance with a true pathology than has hitherto been done, little advantage can be derived from further labors, however an author may benefit his reputation for learning or impress his reader with his ingenuity or ability.

But the unspeakable importance of the subject to human life would suggest, that without the purer and higher motive of doing good by explaining the character of the disease and adding information on the subject of its treatment, by correcting an error or promoting a useful investigation, it is hardly justifiable to add another to the many essays with which the profession of medicine and the public have been already furnished.

It is the design of this communication to give the impressions derived from a careful observation of two epidemics, to state the author's views of the nature and treatment of the disease, and to endeavor to correct certain errors which prevail, both in regard to the pathology and therapeutics of the disease.

If his views should be charged with novelty, they are, perhaps, not the less true ; and he is entirely confident that he is actuated by no vain desire of signalizing any supposed originality, but simply of promoting truth on a subject of immense interest to his fellow men, because he sincerely believes them to be intrinsically right, and of deep importance to the cause of humanity and medical science.

Confining these remarks then principally to positive observation, it must be premised that little actual light has been derived from the voluminous publications with which the medical press has teemed on this subject, and that the diligent student is forced to the conclusion that the disorder is not clearly understood, and the treatment is generally, therefore, uncertain and empirical to a great extent.

If these observations are correct, they at once furnish a reason for the astonishing mortality of the epidemic, and an apology for attempting to supply a pathological and therapeutical view more conformed to rational principles than has been attempted, and more adapted to the necessities of human nature, suffering under the most deadly scourge of pestilence.

It was in August, 1822, during a residence in a hospital in Philadelphia, that the writer first heard from a surgeon in the American Navy a description of this terrible disease as he had observed it in India. His account agreed exactly with those which have since been before the public in every medical journal, pamphlet, lecture, or daily

paper throughout the country and the world. He described the attack as instantaneous. The patient being in usual previous health in one moment was prostrated with vomiting and purging, not of the common contents of the stomach and bowels, but of a substance like rice water, attended with immense prostration and fainting—the face becoming discolored with lividness, the surface cold as ice, the voice hoarse, the eyes sunk, the features contracted, the expression of countenance cadaverous and horrid, the whole body collapsed, and the fingers corrugated as if soaked in water or parboiled, the urine deficient, with an entire absence of bile, while the patient feeling like ice to others complained of excessive heat and intense and burning thirst. During these rapid changes violent cramps of all the muscles came on, adding unutterable torture to the wretched patient, death in a very few hours being his only relief.

In respect to the treatment he declared that it was all useless, and acknowledged that in the cases of recovery it was impossible to say whether this happy result was the effect of treatment, or whether it happened in spite of it, and as a rare occurrence attributable to the constitution of the patient, or some peculiarity in the nature of his attack. He declared that to be seized with the disease was usually to be destroyed by it.

He described it as a cholera morbus, but more severe and very different in intensity from the most violent form of our indigenous disease.

The gentleman who gave this account of the disease won from his audience, consisting of some eight or ten medical men, the character of an exaggerating traveller. His story was not believed, and could not be realized by those who had never seen in a vast multitude of diseases, which in that Institution came under their notice, anything

at all resembling so strange a complaint. It was like Bruce the traveller's account of the Giraffe to his countrymen, or Sir Walter Raleigh's story of Eldorado, previous to the recent golden discoveries in California. How much truth was contained in his story, and how frequently are the first discoverers rewarded with incredulity, if not with contempt and persecution for the very veracity with which they state the facts of which they are the sole witnesses !

THE DIARRHŒA, ABSURDLY CALLED "PREMONITORY SYMPTOMS."

In every medical journal since, the unvarying testimony of all writers corroborates this account of an attack of cholera ; and up to the year 1832 no author had taken any adequate notice of the diarrhœa, which is now known to precede these symptoms, until the attention of the profession and the public was called to it by Dr. Kirk, a Scottish physician of great respectability, who, in his excellent essay, designated this particular feature of the disease as "the premonitory symptoms." So inveterately fixed at that time upon the public and professional mind was the idea of the sudden and mysterious onset of the disease, that if Dr. Kirk had used a more correct designation than he did, it is more than probable that he would not have been listened to at all. The immediate effect of his pamphlet on the Asiatic Cholera was to induce attention to that symptom, and it was a great point gained in the observation of the disease. But it requires only a moment's reflection to see that even this name is unphilosophical and incorrect. Conveying an idea more true than the view it superseded, it has contributed in no small degree to confuse the mind and retard its progress in the investigation of the nature and treatment of the epidemic, and in a measure it

has perpetuated the very error which then prevailed on the subject. For if a symptom be present, that symptom, being a deviation from health, is disease. The disease is therefore present, and the symptom is not premonitory. To reflect a moment, then, no greater contradiction in language can exist than a "premonitory symptom." If it is a symptom, where is the premonition? It is the disease itself in its first symptom. The patient by this misnomer is induced, however, to think that he is not laboring under the epidemic, but that he has about him some manifestation of approaching danger—a premonition, a sort of physical prophecy of coming disease, but not the disease itself. This expression of the strongest possible conviction of the true state of the fact should not be regarded as a caricature of the opinions of one whom a sense of respect as a public benefactor should protect from an unseemly and rude assault.

Properly understood, however, it cannot be thus regarded. The great difficulty of investigating such a subject as the nature of an epidemic, is frankly confessed. There is a feeling of panic pervading the public mind. The general impression with every one is that he may be the very next victim. The prominent subject before his mind is not one easily subjected to cool and scientific inquiry: it is shrouded in mystery. The observer is more struck with astonishment at the apparent impossibility of what he sees, than with the points of analogy. If such men as Hunter and Cooper, Abernethy and Liston, could permit the deformity of club-foot to go from infancy to age, without attempting relief by the extremely simple and palpable means by which that deformity is now known universally to be cured, is it strange that in the moment of fearful terror of the pestilence, men should fail to observe facts as

palpable and apparent in the pathology of the changes which it is destined to effect in the system of its victim?

It is, therefore, with no feeling of severity or spirit of censure, that the attempt is made thus strongly to draw the line between error and truth. To conclude, then, what is most unphilosophically called the "premonitory symptom," is truly the first symptom of the disease; and it will be found to be the ruling symptom, or, in other words, the disease itself. In support of this view, let us refer to the cases which happened on board of the vessel from Havre, which, during the last autumn, introduced the disease into New Orleans. The cases were thought to be a dysentery or diarrhœa, and were treated as such, but the patients uniformly perished under the use of a dose of purgative medicine. So with the account of Captain Nye, of the "New York," the vessel which brought emigrants from the same city in France. They sickened off the northern part of our own coast. Every one of the sick was treated with calomel and ipecacuanha, and every one of them died—purged to death.

These accounts, when the parties giving them had no preconceived idea of the disease, in both instances, represented the case as a bowel complaint; in other words, taking the view of Dr. Kirk, they were the "premonitory symptoms," but in fact, the whole disease, including what this writer calls the "premonitory symptoms,"—really the incipient stage of the disorder,—and the subsequent or dying symptoms, usually called the "cholera," taken together, are truly the epidemic which has now again reached our shores.

There is certainly not so much reason to regard the last violent, extraordinary, and incurable symptoms, usually called "cholera," as the disease produced by this epidemic, as there would be to consider the simple purging alone,

and of itself, as that disease; for if the purging always either precedes or accompanies the other and more horrible symptoms, then it is the disease as much as any other attending symptom. But in truth the disease consists of all its symptoms. It then follows that the purging is a symptom of the disorder, and not a mere premonition of it. In the end, however, to use a repetition, it is the grand and ruling symptom, upon the character and treatment of which depends not only every succeeding symptom, but also the final result.

THE DISEASE IS REALLY A DIARRHŒA.

The word chosen to designate the epidemic is also a misnomer. It is derived from two Greek words signifying, the one, "*to flow*," and the other, "*bile*," and means, therefore, a discharge of bile.

This disease, which, for a time, was thought to have been unknown even in India, previous to its late appearance in 1817, has since been found to have prevailed several times in that country in the last century. Different epidemics have been recorded "by Bontius in 1642, and Dillon in 1685. The histories of the epidemics of 1756, 1759, 1781, and 1782, have been given by Father Jean Baptiste, a Jesuit, and by two Bengalese physicians, Messrs. Wise and Corbyn." Vide Scouttetten, p. 7. The description of Bontius seems more like the real Cholera which is indigenous in our own country—a bilious disease; but the others give a description which cannot be mistaken, being identical with the present epidemic. Somewhere it is stated that this disease prevailed at Pondicherry in Southern India, early in the last century, while that country was under the French. Their name was *mort de chien*, a much better designation than that which we have

adopted from the British in India. The French regarded the symptoms now universally called Cholera, as the death symptoms—a dog's death—*mort de chien*; and truly the great mistake of the British physicians in India has been to omit absolutely to notice the disease proper—the diarrhœa—and to describe the symptoms of death as the true disease. The name of the French shows conclusively that they never regarded it as a cholera.

It happens in this case, unlike that of our indigenous cholera, that there is a striking deficiency instead of a redundance of bile in the discharges. In the common cholera of this country there is found a case of real flowing of bile. The disease affects the liver as well as the stomach. The latter organ is disturbed with excessive and perverted action, by which its contents are thrown up with terrible violence, while the liver displays the excitement to which it is subjected by an immense augmentation of its secretion—the bile.

THE INDIGENOUS DISEASE OF OUR COUNTRY IS TRULY DESIGNATED CHOLERA.

The common cholera of our country commences in the stomach, with malaise at the epigastrium, pain and nausea, which precede a violent vomiting. Then come on copious dejections from the bowels, first of the usual fæcal matters, then of bile—immense discharges of that secretion. In addition to these symptoms, violent agony in the small intestines exists.

TRUE CHOLERA CONTRASTED WITH THE EPIDEMIC DIARRHŒA.

Not so in the Asiatic disease, most commonly called by the same name. This disease commences in the

intestines, as is proved by its history. Nausea, which indicates disturbance of the stomach, is not the first symptom in a case of the Asiatic cholera, strongly pronounced; neither is pain. The patient is first attacked with a looseness, unaccompanied by pain, which he therefore disregards. The first discharges are of the usual fæcal matters: these are soon followed by thinner dejections, then large fluid passages succeed. In a longer or shorter time, pure fluid, of a light straw color, containing flakes of floating mucus, the secretion of the muciparous glandulæ of the intestines, is discharged in large quantities, with surging violence. Still there is often no nausea. The strong dissimilarity of the first symptoms of these two diseases seems to establish the want of identity. They are surely different diseases. Hence many ephemeral works, which have given accounts of different epidemics of "cholera morbus," have served only to mislead and confuse the inquiry into this most important subject.

TRUE CHARACTER OF THE EPIDEMIC.

Having endeavored to show that the epidemic is not a "cholera," and that its first symptoms are not premonitory, but present, let us proceed to establish its true character by arguments derived from known and incontestable facts—a point which could not have been approached successfully until it was first shown that the disease is badly named, and that its primary symptoms should no more be regarded as "premonitory" than the first symptoms of any other disease are entitled to be considered as no part of that disease, but only premonitory of it.

Scouttetten, in his "Medical and Topographical History of the Cholera Morbus," &c., page 23 (Boston Edition), describes the disease in these words:

"The symptoms are as follows: a lively heat in the region of the stomach—vomitings and dejections of bilious, greenish, and greyish matters, or of a liquid resembling rice water; sometimes this fluid is green or dark, like an infusion of tea, and always has an acid smell—at the same time very violent and excruciating pains in the region of the epigastrium and in the abdomen, which is tense, and very painful on pressure—violent pains in the head—the pulse is small, feeble, quick, frequent, and often scarcely perceptible—depression of mind, stupor—the countenance is haggard—the eyes are first brilliant, sunken, then moist and injected, sometimes covered with a thick serum resembling a pellicle. The surface of the tongue is red; there is a burning thirst. With these formidable phenomena, the limbs contract—the cramps of the fingers and toes advance gradually from the extremities to the trunk, and there is frequently delirium and convulsions—the urine is scanty and turbid, and when the disease is violent it is generally suppressed.

"The most violent symptoms continue to afflict the patient, until his strength fails. In the latter period of the disease the vomitings and spasms cease, from the complete exhaustion of the physical powers. The patient, however, often experiences great relief, and may live a long time in this state; his mind continues vigorous, while all the functions of the body are suspended.

"In the most severe cases, and in weak and badly nourished subjects, death supervenes without any spasms, and without any derangement of the mental faculties; but the patient is astonishingly indifferent in regard to himself. In vigorous subjects, on the contrary, the spasms are extremely violent—some patients have required six men to hold them.

"The cholera sometimes supervenes suddenly, without

any precursory symptoms. More frequently, however, it shows itself after the subject has complained for one or two days of disgust for food, bitterness in the mouth, and thirst. To an experienced physician, the countenance often announces a proximate attack before the patient is sensible of any change in his appearance or feelings. His countenance appears unusually fatigued, and his whole external appearance is that of anxiety. The disease most frequently commences in the night, between two and five o'clock.

"The duration of the cholera is from one or more hours to one or more days. It rarely continues longer than the seventh. When the disease is arrested, the pulse improves, there is a desire for sleep, the patient becomes calm, and is completely well in a few days.

"In some subjects, however, debilitated by a previous disease, the convalescence is often long and tedious."

This quotation of the whole description of the disease by this author is made with the remark that he begins at a period long after the commencement of the disease, as is easily proved by reference to the fact of his description of the discharges of a fluid "resembling rice water." Now it is impossible that "rice water discharges" can occur until considerable evacuations have preceded them, sufficient to wash away and entirely cleanse the intestines of their usual feculent contents. For suppose the "rice water discharges" to begin, is it not evident that as long as the natural contents of the bowels are present, they, too, will be discharged? It is apparent, then, that this author, like many others, has disregarded in his description the primary symptoms. Hence, he says: "at the same time very violent and excruciating pains in the region of the epigastrium and the abdomen come on;" and goes on to associate all the symptoms together, without much regard

to the order of sequence, insomuch that one is obliged to regard his information as second-hand, and to suppose that he does not really describe the case from his own observation.

CHARACTER OF THE FORMER EPIDEMICS IN NEW YORK.

During the prevalence of the disease in 1832 and 1834 in this city, both in the public hospitals and in private practice, there was nothing to enable the observer to recognise the accuracy of description which is expected from so learned and eminent a writer.

Let us now enumerate the symptoms as they occurred in those epidemics. Usually a diarrhœa, unaccompanied with pain, and hence often unnoticed, or rather disregarded, came on, varying in its duration, according to its activity, from a few hours to several days, until it had entirely cleansed the intestines of their usual fæcal contents, when the "rice water passages" were observed. At this time the fluid discharged became more profuse. The debility of the patient was greater, but often, even after the loss of a gallon of this fluid, the patient seemed indifferent, and fearless of results, not having experienced the least pain. It is true that at this moment he was in reality on the verge of collapse. But he would entertain no apprehension of danger, and as his experience seemed so entirely different from the symptoms he had heard as characterizing the disease, he could not persuade himself that he was in danger. Here we may see the evil of making the fatal distinction between "premonitory symptoms" and the disease itself. Under such circumstances, he would naturally conclude "that he had not the cholera. He neither vomits nor feels pain, he feels well, and, at any rate, has only the 'premonitory symptoms.'" In a short

time another discharge happens—it is larger and more violent—it passes with a furious effort—it is irresistible—he feels less vigorous, makes an effort to assure his strength—determines that he will not give up—but soon a slight nausea, and an attempt to vomit, take place—sometimes the quantity is small—it may be what he has taken into his stomach last—or it may be pure water—or else a very copious discharge of the same clear fluid as passes from the bowels. Cramps now suddenly develope themselves. His eye sinks rapidly into its orbit. It would seem that the whole mass of fat in which that organ is imbedded had by magic been removed. The ball itself has lost its lustre. It appears no longer to be an orb of brilliant beauty, full of energy, life, and intelligence; it is revealed as a sack not filled with fluid—its lustre and expression fly. The eye seems, in fact, as if sunk into the orbit, so that the orbit looks like an auger-hole in the head. The *alæ nasi* are compressed together. The nose is pinched—the lips are contracted—the hue of the face is first leaden, then livid, then of a dark, deep bluish color. The skin looks soaked, or sodden, or parboiled. The abdomen contracts, and almost disappears; the abdominal muscles seem to cling to the spine and posterior walls of their cavity, as if they had no contents, so that, in some instances, the diameter of the abdomen in the direction from before backward, seems to be not more than two inches. The skin of the finger ends is corrugated, as if long soaked in hot water, like that of a washerwoman. The surface of the body is cold. The pulse becomes frequent and small, and ultimately stops beating. The respiration continues with effort, and the ribs heave. The cramps subside, but the heart stops its action entirely, so that no pulsation can be heard, even by the ear closely pressed to the chest of the patient; yet respiration con-

tinues laborious, and the breath is icy cold. Deep coma comes on, and, in children, the eyes are turned up, and in them strabismus and symptoms like phrenitis come on. At any rate, at this period there is generally in their cases considerable cerebral disturbance. The patient is tormented with thirst, and complains of burning heat of his surface, while that surface feels like ice to his nurse. The pupils of the eyes are usually contracted to the minutest point. Death is the next symptom.

In all this series of symptoms, it is impossible to recognise anything but the act of dying as the consequence of the terrible depletion produced by previous discharges from the bowels.

THE DISCHARGES CONSIST OF THE FLUID PART OF THE BLOOD.

In order to render intelligible the very peculiar occurrences of this form of disease, it is essential to keep in mind that the original symptom is nothing more than a discharge of fluid in immense quantities from the bowels. In fact, it is a copious hæmorrhage of the fluid parts of the circulating mass. That this discharge is derived from the blood-vessels of the intestines is indisputable, when we reflect that the bodies of those who have died of cholera, and have had no partial relief from treatment and drinks, present the extraordinary peculiarity of being without fluid; nothing remains in the small vessels but the thick parts of the blood. Frequently, mere clots or coagula in the larger vessels, and dark grumous blood in the smaller ones.

EXPLANATION OF THE SYMPTOMS OF COLLAPSE.

This circumstance, which furnishes the true explana-

tion of the disease, accounts for every symptom in the most satisfactory manner. In the first place, the exhaustion is entirely similar to what constantly follows the loss of large quantities of blood by disease or accident, with the exception merely of the difference in the color of the skin. When the red blood is lost the patient becomes pale; but when the water of the blood only is discharged, a leaden or blue tinge is imparted to the surface, in consequence of the stagnation of the remaining blood, from the loss of its fluidity.

Another symptom common to both is the nausea or vomiting. It is also a common attendant on ordinary hæmorrhage.

Cramps, likewise, attend both of these hæmorrhages.

Animals bled to death in slaughter uniformly die with cramps or spasms perfectly resembling those occasioned by the loss of the fluid of the blood in Asiatic Cholera. Persons who are bled for pleurisy or other inflammatory diseases, until fainting takes place, are likewise usually affected with cramps. These facts show that the loss of the fluid of the blood in cholera should be regarded as the true cause of the spasms or cramps.

The sudden reduction of the bulk of the body is to be referred also to the fact of the abstraction of its fluid particles. In like manner, in cases of recovery, the rapidity of the restoration of the embonpoint of the patient is perfectly astonishing, and is to be accounted for by the amount of fluid quickly returned to the system in drinks, which are demanded in immense amount by the craving thirst of the convalescent.

The coldness of the whole body, internally and externally, is owing to the same cause. For as the circulation of the blood in the lungs conveys to the air-vessels of those organs the carbon of the system, which, uniting with a

portion of the oxygen of the air, is discharged in respiration in the form of carbonic acid gas, and as this is the known process by which animal heat is produced, constituting a true but slow combustion, it is evident that the loss of the fluid particles of the circulation must at once arrest this process, since by the loss of its fluidity, the blood can no longer convey its carbon to the air-vessels of the lungs. Coldness of the body comes on, then, the moment that a certain amount of loss of fluid occurs. In vain warm applications are made to the external surface. They only annoy the patient, who is tormented with a sense of burning heat, in exact proportion to the increase of the coldness of his body. These applications are then worse than useless, for it is impossible that anything but the return of the water to the blood can afford warmth to the body. The true remedy consists in arresting first the discharge from the bowels, and then supplying fluid to the blood. Ice, or cold water, or chicken tea, whichever is most agreeable to the patient, at once allays the thirst, settles the stomach, and affords the means of circulation, efficient respiration, and consequent secretion of animal heat.

The burning heat of which the patient complains, while the body feels icy cold to the touch of his attendant, seems at first mysterious, but is perfectly natural, when we reflect that the sensible temperature is attributable to the increase of external heat, in comparison with the temperature of the body. For instance, in a state of health, the body is at 98° of Fahrenheit. When the external air becomes heated to near that point, so that the continual secretion of animal heat cannot easily be thrown off, we complain of the temperature. When, then, the heat of the body is, by the loss of circulation and healthy respiration in Cholera, reduced many degrees below that of the exter-

nal air, it is evident that the external air must convey the sensation of heat to the surface. When we feel heat or cold, then, it is not the actual temperature of the body itself, but the relation it bears to the external temperature which furnishes the criterion of judgment. Hence, what at first seems a mystery, by a little reflection, appears a simple and reasonable occurrence.

Dr. Liebig has said that "the lungs are the fire-place of the body." But the fuel must be furnished, or the fire-place will not warm the house. In like manner, the carbon of the blood must be brought in contact with the atmospheric air in the lungs, or combustion and the production of heat cannot take place. This is a most interesting fact, and really seems so apparent, that it would not be surprising if its occurrence had been generally anticipated, from the mere loss of the fluid of the blood, without the aid of the universal experience we have in regard to it.

The collapse of the whole body, the sinking of the eye, the shrivelling of the fingers, and the pinched appearance of the features, all bear testimony to the great fact that the blood-vessels have lost their fluid contents. Many persons not acquainted with the relative proportions of the fluid to the solid parts of the body, would suppose that the amount lost could not be in proportion to the diminished bulk of the body. But we have only to reflect that the largest muscle, the gluteus maximus, when dried, becomes as thin as brown paper. Nineteen-twentieths of the soft parts are fluid, and to this fact is attributable the softness and mobility of the muscles of the whole body. To it likewise must we look for the explanation of the frightful loss of bulk produced by the discharges of the Asiatic Cholera.

No bile whatever is usually present in the discharges of a patient laboring under Cholera. The simple explanation consists in the great fact, already employed to explain

the preceding phenomena, viz.—there being no fluidity to the blood, there can be no supply furnished to the liver, which cannot therefore secrete a particle of bile.

The urine also is deficient. This likewise is in perfect consistency with the other facts of the disease. As no blood passes to the kidneys, it is impossible for them to secrete the urine.

One other symptom remains to be explained, viz. the hoarseness which characterizes the voice in this disease. It is a well known fact in the physiology of the voice, that the increased width of the aperture of the larynx called the glottis, causes hoarseness. Now, the lining membrane of this organ is composed of blood-vessels and small mucous crypts, or glandulæ, which by the loss of their fluid blood collapse, and greatly enlarge the glottis, or aperture of the larynx. Thus the loss of fluid again affords a satisfactory solution of another phenomenon of this disease.

PRINCIPLES OF TREATMENT.

As, therefore, the discharge of the water of the blood explains the pathology of Cholera, it at once furnishes the true clue to the treatment of it.

This has been unfortunately conducted, hitherto, on principles of necessity purely empirical, but if we retain in mind the nature of the disease, our practice will be no longer uncertain, and there can be no doubt that human life as well as science will reap the benefit. The first indication is to economize the vital energy of the system, impaired by the epidemic cause.

During the prevalence of the disorder, all persons feel more or less its enervating influences. A baker informs the writer that he supplies but little more than half the usual quantity of bread to his customers, and that others in

his business make the same remark. This proves the universal effect of the epidemic in impairing the appetite and depressing the powers of life. In 1832, a builder remarked to the writer, that in order to complete a contract in the required time, it was necessary for him to employ nearly twice the usual number of men, and he called attention to the fact, that in using a hammer on the parlor floor which they were nailing, they uniformly rested between the strokes. This sufficiently indicates the general sensation of feebleness that attends the epidemic.

To attain this important end,—the necessity of restoring the strength,—all that is requisite is first that the patient, as soon as he is attacked, should confine himself to the horizontal position on a bed or couch, and preserve perfect repose.

So important is this direction, that it deserves to be somewhat enforced and dwelt on. Exhausting labor, fatigue from walking, marching under arms, or running up and down stairs, are some of the most common and serious exciting causes of cholera. Cleanliness of person, however desirable, is less important than repose during the presence of the epidemic cause. All labor, in a degree, exhausts vitality, and demands the return of repose, in exact proportion to its extent. As the loss of strength after labor disqualifies the muscles of volition from further toil, so it enfeebles the mouths of the exhalant arteries which open on the mucous surface of the bowels. They thus lose the tone necessary to retain their contents, and a passive discharge of fluid takes place in consequence, while from the very minute size of these capillaries, the larger and red particles are retained.

The posture, too, is far from being unimportant. When we are erect, the hydrostatic pressure of the blood undoubtedly promotes the morbid tendency already induced by the

epidemic cause, to pour out the fluid of the blood into the bowels; while it prevents a full supply of blood to the brain, which is essential to that organ to supply all parts of the system, through its nervous connexions with the peculiar energy which we suppose it destined to secrete. Hence, during sleep, the horizontal posture is demanded, in order that the brain may effect its peculiar changes on the whole system, which it vivifies by its mysterious agency, and that it may convey through the nerves its inscrutable product to every organ and structure in the body. Doubly important, then, is the injunction that, during cholera, all persons should spare their energies as much as possible. But that this direction may not appear purely theoretical, it is only necessary to remark, that the number of victims in every class is usually proportioned to the amount of fatigue required of them; thus, "in India, persons exposed to great bodily fatigue, confined to poor or scanty fare, or leading irregular lives, were usually the victims of this dreadful disease. The Europeans were usually less subject to it than the natives; and the higher classes of the latter were more exempt from it than the lower. Females suffered more rarely than men, and children in a less degree than either. Of all the circumstances predisposing to an attack, great fatigue of travelling and hard labor in the open air, were found the most powerful; thus, troops on a march, and people whose occupations exposed them to the weather, as laborers, fishermen, husbandmen, gardeners, grass-cutters, washermen, palanquin-bearers, were extremely subject to the disease."—*History of British India*, v. iii. p. 275, *Harpers' Family Library*.

It is stated that, in the British army, the mortality was confined principally to the soldiers, whose wives were less affected, and their officers scarcely ever; while the ladies

of the officers, whose habits were very quiet, were absolutely exempt.

Thus, the importance of repose in averting an attack of Cholera, is confirmed by experience, as well as by a consideration of the principles of the animal economy. Humanity requires, therefore, that the usual parades and exposures of soldiers should be generally omitted. Many lives will be uselessly sacrificed on the 4th of July, unless the celebration common to that day be avoided. It is to be hoped that this subject may be brought before our city councils.

The next object is immediately to arrest the purging.

This may be attempted by the administration of medicines by the mouth. Usually, this is the method adopted. But it may be justly questioned whether this is the treatment best adapted to the case. If the discharge commences in the intestines, it is certain that the medicine is not so directly applied to its seat in this way, as by using enemata and suppositories. The same remark is eminently applicable to the treatment of dysentery, and is familiarly acted on in practice. A dose of medicine of the same amount will do more good, in cases of intestinal disorder to which it is adapted, by applying it directly to the intestines, than by giving it by the mouth. But the intestines will bear three times the quantity, as a general rule, which we can commit to the stomach. This remark is especially true of the narcotics. A dose of opium which we would think proper to administer to the stomach, may be, and usually is, trebled when given in enema. This medicine generally affects unfavorably the digestive functions, the action of the heart, and the operations of the brain more powerfully when administered in the former manner, from the propinquity of those organs to the stomach; while its immediate effect on the bowels, from its

remoteness, when given by the mouth, is less distinct and powerful. From these palpable principles it follows, that opium, if it is intended to act as an astringent and anodyne to the intestinal vessels excited by the mysterious agency of the miasm to discharge from their minute mouths the fluid parts of the blood, must be more efficient if immediately applied to them by suppositories and injections, than if given by the mouth; for, in the latter mode, they enter the stomach, and are thus, anatomically considered, applied at a distance of six times the length of the body from the organ on which they are designed to act, while it is impossible to give them in doses of more than one third the amount in which it is safe to administer them by the other method. Injections are, therefore, for this purpose, of much greater efficacy, while they are more harmless, as they disturb less the functions of the brain, lungs, heart, and stomach.

While this is true in reference to those medicines which are designed to act on the bowels, yet, in the administration of cordials and stimulants, such as ammonia, ether, camphor, capsicum, and brandy, the design of which is to act on the brain, by increasing the energy of the nervous system, the preferable method is undoubtedly, for similar reasons, to administer them by the mouth.

From two to four drachms of laudanum, in a little water, should be employed as an enema. It will not do to temporize in respect to quantity after watery passages have happened. The disease is rapid,—the treatment must be prompt and efficient. If the dose should come away, it must be immediately repeated. If it be in sufficient quantity, it will probably arrest the disease, so that there may be nothing discharged from the bowels for three or four days. The patient is then safe.

If the discharge has produced thirst, ice is at once grateful and useful in restoring the fluid which has

been lost. The restoration of fluid to the blood is a most important indication. In addition to this remedy, a prescription at once cordial, astringent, and anodyne, should be employed, and administered by the mouth. The chalk mixture, with astringents, &c., may be used, as in common diarrhœa; but a better prescription will be found by substituting lime water for the prepared chalk and pure water.

After the thirst is abated, a drink of chicken or mutton tea should be used, until the fulness of the countenance is restored, and the desire for drink is allayed. Food of a light but nutritious and astringent kind should be employed, such as boiled rice instead of potatoes, with beef or lamb. Veal and fresh pork should not be used at all, during the epidemic, by any one.

But little or no benefit is derived from sinapisms or other counter-irritants, and they would probably never have been resorted to if the nature of the disease had been understood.

It will be manifest that venesection and purgatives are both highly injurious under common circumstances.

In the cases of the New York, from Havre, Captain Nye reported in every instance that he gave calomel and ipecacuanha. The operation of the medicine was immediately followed by collapse and death; and in the only case in which the writer was called in 1832, before collapse had been fully established, and which proved fatal, the patient had of his own accord taken fifteen grains of calomel, and as much jalap, to the operation of which alone was attributable the impossibility of arresting the purging.

No purgative whatever should be employed. Salts, oil, rhubarb, seidlitz powders, in common with all other purgatives, should be forbidden. There is no danger in immediately arresting the diarrhœa, and there is no safety until it

is arrested. In case too much discharge has existed to enable the practitioner to relieve the patient by the use of ice and drinks, not a moment's delay should be permitted in resorting to the use of infusion. Twenty or thirty ounces of water, containing a drachm of carbonate of soda, and ten grains of common salt, to the quart, at the temperature of 98° Fahrenheit, should be most carefully introduced into the vein at the usual place of performing venesection. This always affords relief, and would generally effect a cure but because of its being usually deferred until after the thick parts of the blood have had time to coagulate, then the remedy is too late.

In the course of two or three days, supposing the case to recover, the discharges from the bowels take place ; they are then hard and entirely without bile, or else they consist of black bile alone. This is supposed by some, very erroneously, to be evidence that the liver is the primary seat of the disease. But it is natural that that organ, having had its secretion entirely suspended, should at first perform its functions irregularly. It is then very much in the condition of the liver of a new-born child, the first discharges from which are perfectly black. But in cholera, we know that as soon as the liver resumes its action the bile is prepared from blood unusually loaded with carbon, which may be an additional cause of this peculiarity.

A small dose of calomel may sometimes be necessary at the conclusion of the treatment, especially when there is a manifest deficiency in the biliary secretion, but never to arrest the disease. To give calomel when the liver is discharging bile freely, and even with morbid copiousness, is a course of practice for which authority enough can be quoted, but it is a practice as unphilosophical as it is unsuccessful, and part of that system which has caused an ungovernable aversion of people to its use in general. In

such a case the liver is doing its duty, and is in no need of stimulants, requiring time only to effect all necessary changes.

In many cases, at the very commencement of the diarrhœa, a pill of opium, from one to three grains, introduced into the rectum, will, of itself, arrest the disease.

Under this plan of treatment the writer has seen several hundred cases recover, and, in 1833, when it prevailed in the City of Mexico, he had the satisfaction to learn that a gentleman, a connexion of his, following the prescription and advice of a letter, succeeded in curing more than a hundred cases without losing one. Mr. St. John, of the firm of St. John & Tousy, of this city, was then there, and united with this gentleman in the treatment of those cases. He confirms the account of the other gentleman, and they both state that the letter of directions, which had been designed only for the use of the party to whom it was addressed, was translated into Spanish and circulated in every state of the confederacy, by order of the government; and further confirmation is afforded by a gentleman who was at Matamoras, of the fact of the treatment having been followed with success in that place also. He stated that the accidental remark in the letter, that common tea being an astringent was an excellent drink in cholera, caused such an increased consumption of it at a time of comparative scarcity of the article, as to raise its price so that to get as much as one could hold in the palm of his hand cost one dollar.

These confirmations of the writer's experience are not only gratifying, but useful as testimonials from persons whose whole skill was derived from the principles of treatment so informally communicated to them, and it is hoped that this reference to them may be considered pardonable.

One of the principal objects in publishing these remarks is to set the writer's own patients at rest, and to furnish them such hints as they require in case of attack before they can see their physician.

In order to illustrate the treatment here recommended, several cases, some of which have happened during the last month, will be related.

Case 1st.—On Saturday the 12th of May, 1849, a gentleman and his wife who had just arrived at the house of his father in this city, from a journey from Burlington, Iowa, and had been exposed to the cholera in the West, were troubled with looseness of the bowels, of which they had complained on the journey for three or four days previously. They were in company with a medical gentleman on his way to the examination of the cadets at West Point, and by his advice took laudanum and brandy, which had the effect of helping them, although it did not arrest their disease. On the contrary the discharges, which were excessively prostrating, continued, and on Friday night there were as many as six or eight of pure water uncolored by any fæcal matter whatever. They were both very feeble. The lady when I saw her said that the rice water discharges had then continued with her for thirty-six hours. Her eyes were sunk, her face thin, her countenance of a leaden hue, the fingers slightly corrugated, and she was nauseated and occasionally vomited small quantities of water.

There were, however, neither cramps nor any very unusual coldness. But from the presence of the great pathognomonic sign of the disease, viz. the rice water passages, from the general expression of the face, the color of the skin, and above all from the extent of the evacuations which had taken place, there was no doubt that the lady especially would, unless relieved, become incurably col-

lapsed in a very short time. An enema of laudanum was prescribed for the lady, of three teaspoonfuls; for the gentleman one containing four.

She complained of burning and unquenchable thirst, for which she was ordered ice *ad libitum*. An astringent mixture containing laudanum was directed, and the discharges from the bowels were completely arrested. The thirst and vomiting continued for twenty-four hours, but no passage was had from the bowels, in either case, for more than three days. After the ice ceased to be strongly desired, chicken tea was substituted, and the recovery was rapid. On the sixth day after the first prescription the lady had entirely recovered her embonpoint, and declared that she felt better than before the attack. They have been both scrupulous in preserving the horizontal position, and have been in entire repose. The gentleman too has recovered.

In these cases, especially that of the lady, the use of calomel, salts, or any purgative whatever instead of the laudanum and brandy, would in all probability have precipitated a rapid collapse and certain death.

It may be observed too, that while travelling and therefore undergoing some fatigue, and depending on the use of brandy and laudanum by the mouth, although the patients were probably benefited, their discharges were not arrested. But when, in addition to positive repose on their backs, a sufficient enema of laudanum was given, the purging was promptly and permanently arrested.

We may from these cases draw the conclusion, first, of the advantage of using cordials, as brandy and camphor, in this disease, characterized as it is by the presence of a marked debility of the whole muscular as well as the nervous system, in which the orifices of the exhalants of the large intestines seem to participate in a degree more strik-

ing than the rest of the system; and second, that the administration of laudanum by the mouth did not act as well as when applied by the rectum, both because in the latter method a more direct employment of it was made to the seat of the disease, and because a much more efficient dose was given.

Case 2d.—Since those cases another has occurred near the city, on our beautiful bay, within ten miles of the ferry, on the Long Island side. The residence of the patient was one of the most delightful which the neighborhood affords. He was a gentleman of the highest respectability, and possessed of every blessing which affluent circumstances and an accomplished and affectionate family could afford him in the hour of sickness.

He had diarrhœa on the 23d and 24th of May, for which he did nothing, and on the morning of the 25th partook of some fresh broiled fish and afterwards drank milk. During the whole time of its existence he continued about his usual avocations, giving himself no particular rest. On the morning of the 25th, which was the third day of the disease, the family physician was called, and gave him brandy and laudanum in doses which checked the diarrhœa; but pursuing the course of practice originally indicated by the British physicians in India, he added a dose of calomel in the quantity of twelve grains. This, however, did not for some time seem to produce its usual purgative effect. It was not until the next day that the evacuations were renewed. These were not bilious, but consisted of the usual discharges of this disorder, viz. rice water. Since the third day of this disease the evacuations had been all of this character, presenting the strongest evidence of the nature of the case. Severe cramps came on, accompanied with violent vomiting. The former after a few hours ceased, but the latter

continued with unabated severity. The skin became slightly blue, the eyes were not much sunk nor the nose much contracted, the hands were cold and the urine suppressed. No bile was discharged and the voice was little affected, although a slight hoarseness was observed. The pupils were contracted excessively, and the patient slept with stertorous breathing. This latter symptom occasioned less alarm, however, because he was said to snore habitually in sleep, and his appearance was in that respect declared to be perfectly natural.

At twelve o'clock at night on the 27th, which was the fourth day of the disease, the writer first saw him. Collapse had already taken place, but it was not as fully marked as usual. Although comatose, he could be aroused. The contracted pupils and cerebral symptoms, resembling in their external phenomena very strikingly those of congestion of the brain, gave a bad augury, and the frequently repeated watery passages, which had returned, manifested the great danger of his case.

The prognosis was unfavorable, especially as purgative medicine had been given, and a corresponding opinion was expressed.

However much the vaunted powers of calomel are relied on to produce discharges of bilious matter in this disease, here it had no other effect than to reproduce the watery discharges, which were renewed before morning. Under the use of laudanum and brandy these had ceased, when the calomel was given and the rice-water passages were renewed. Opiates, astringents, cordials, ice, all were in vain to resist the incessant passages from the bowels. In consultation with the excellent physician who was his usual attendant, on the night of the fifth day, it was determined to give a solution of nitrate of silver and to use also an injection of the same material. This was

at eight in the evening. At midnight a discharge of bilious matter took place and vomiting ceased. Some small hopes of recovery were now entertained, but in twenty-four hours the watery discharges recurred, and though bilious passages repeatedly took place, the cerebral symptoms became more and more urgent, and on the sixth day an attempt to open the temporal artery revealed the fact that no pulsation could be found there or in any other small vessel in the head, though pulsation was felt in the carotid. The pulse had varied from 100 to 80, and had improved during the treatment, so that if the bowels could have been sooner quieted, recovery might have happened. No blood could be obtained at the temples. In the morning infusion was resorted to, but without relief, and the patient died comatose on the eighth day. These symptoms resemble congestion, but are always present where a coagulum has occurred. The contraction of the pupil and other cerebral disturbances, the absence of arterial action of the smaller vessels, and the fact that the evident absorption of drink offered no relief to the cerebral symptoms, established the direful conclusion of the coagulation of the blood and the hopelessness of the case.

The sphincter ani was so relaxed during the whole period after the fourth day that a man's thumb could have been introduced without difficulty at any time, a circumstance showing the relaxation of the muscular fibre produced by the disease, if not aggravated by the use of calomel.

Had this case been as early treated with opiate injections as the two former, it is not improbable that a different result might have occurred. As it is it presents as strong evidence of the value of the opiate and cordial, and the evil of the purgative practice, as the two cases before

described, or as the thirty-five cases on board the New York treated with calomel and ipecac.

It is more than probable that on the fourth day of the case collapse had so far done its work that the fibrine had coagulated in the heart and large vessels. Every symptom confirms this idea. From that time forward the pupils of the eyes were contracted to the extremest point, and though the occasional arrest of the purging and the use of drinks had evidently restored the fluid of the blood to a considerable extent—a fact indicated by the increased fulness of the pulse, the return of the natural color of the face, the warmth of the body, and in some degree the functions of the brain—yet there was a gradual diminution of the force of the circulation—the pulse ceasing at the parts remotest from the heart and the heart itself ceasing its action and yielding to death, a result which it is pretty certain must always occur as soon as a coagulum is formed at the centre of the circulation.

The occurrence of this cause of death is the great event to be avoided. Then, no restoration of the fluid or any other favorable change can avail. All apparent improvements in the condition of the patient are, after it has taken place, of no possible benefit.

It is, however, very surprising to see how near this point patients may approach and yet be saved. The uncertainty as to this fatal occurrence having taken place should then stimulate the physician to exertion under the most unfavorable appearances.

Case 3d.—In 1832, a gentleman, a clerk in an auction store, was engaged with another young man in packing goods until 2 o'clock in the morning. They both found themselves attacked with the diarrhœa but were not deterred from returning to the store on the next day. Towards afternoon they both left their employments from

alarm at the continuance of the complaint. One took a warm bath at a public bathing establishment and collapsed before coming out of the water. He was taken home and died. The other walked a distance of two miles to his home. Having arrived there, his mother insisted on his not leaving the chamber on occasion of an evacuation. He had a very large discharge of water, certainly above two quarts, and his physician arrived immediately afterwards. No cramps or other bad symptoms had exhibited themselves. A table-spoonful of laudanum by injection and rest in the horizontal position stayed his discharges, and nothing passed his bowels for five days. A dose of calomel and mild purgative enemata were then used, when dark bile passed off from the bowels, and, with the exception of large draughts of chicken water as a drink, he recovered without further treatment.

IMPORTANCE OF DRINKS.

Many cases of recovery have taken place with no other treatment than that of copious draughts of water. Several very curious cases are related, which are instructive and worth repeating for the support they give to the pathological views which it is the object of the writer to sustain.

CASES FROM SCOUTTETTEN.

“Case 1st.—Velly Chetty, the interpreter of the Comptroller, a powerful and robust man, was attacked in the morning very violently; vomitings, dejections, spasms, and cold sweats, appeared at the same time. Rassendren visited the patient at this time, and immediately gave him several glasses of water, which had been set away to cool; one hour after, all the symptoms had ceased, he slept

quietly, and in the evening he arose, feeling only a slight lassitude, which disappeared the next day.

“Case 2d.—A man of property was seventeen hours insensible, and his comrades thought him dead. Rassen-dren was called in, and finding neither warmth nor pulse, he applied, for his own satisfaction, fifteen leeches to the epigastrium. M. Gravier was immediately sent for, and having seen him, lost all hope. He however filled his mouth with cold water, and ordered his arms and legs to be rubbed with a piece of camel’s hair; the sick man having spit out the water in his mouth, they gave him more; he put his hand to his stomach, to remove the linen with which he was covered. The leeches were now filled and dropped off, the blood was permitted to flow, the body became warmer, the extremities alone remained cold, the frictions were continued, and also water in small quantities. Two hours after, the temperature of the body was uniform. Notwithstanding the frequency and the smallness of the pulse, the anxiety of the countenance and the derangement of the ideas announced a violent irritation of the mucous membrane of the stomach. Repeated eructations were followed with vomitings, and with violent nervous phenomena. Water then being insufficient, thirty leeches were applied to the epigastrium. In the night there was remission. The next day gum water was administered, the third day sweetened rice water; from this day to the sixth, chicken water. The sick man was up on the seventh day, saying that he was not very weak, and, in fact, his actions proved it. He was cured.

“Case 3d.—The Indian domestic of M. Delarche, Captain of Cipahis (usually written Sepoys), was attacked with epidemic cholera. Laudanum, ether, and an infusion of ginger were administered, but they were ejected by vomiting. An Indian physician was called in, and made

a paste of lemon juice, alum, and oxide of iron, and rubbed his eyes with it. The pain it produced vexed and enraged the sick man, and he attempted to strike those around him; the vomitings became more frequent, his attendants fled to avoid his blows; he pursued them: passing by a reservoir of water, which served for the purposes of the garden, he plunged into it and drank with avidity for several moments. They surrounded him, but he remained tranquil in the water. The enormous quantity of liquid he drank, was followed by fainting. He was then removed from the reservoir and put to bed; he slept quietly for eleven hours. When he awoke, the vomitings and dejections had ceased, but he was blind. This fact is known by all the inhabitants of Pondicherry."

Case 4th.—In the Crosby Street Hospital, in 1832, a woman was brought in in deep collapse, at the hour in which the physicians had gone to their dinner. A young physician, a Frenchman, only remained. The writer had entered at the moment, and on examining the patient she was found to be cold, blue, and without pulsation at her heart. Twenty-four ounces of water at 98° Fahrenheit, containing a little soda and salt, were infused into her veins. Immediately her color changed, her whole physiognomy was restored to a natural expression, her eyes became prominent instead of sunken, her circulation returned and her pulse numbered 132 in the minute. She spoke. Her first words were "where am I?" She supposed herself to have been dead, and said that she believed her existence had been renewed in another state. Her warmth of body returned and she was covered up in bed. The medical gentleman having charge of the hospital returned, and exhibited to her a dose of medicine consisting of a scruple of calomel and two grains of opium. The latter ingredient was not in sufficient quantity to prevent the purgative ope-

ration of the calomel, and she was again before night freely purged. This was followed immediately by a return of the collapse. The infusion of a larger quantity of water was again resorted to, and she again recovered. No more purgatives were employed, but it is not known what other or if any treatment was used. The patient finally recovered, and my friend, the late Doctor Downs, informed me in 1837 that he had seen the woman at the wash-tub a short time before, so that she was alive five years after.

In this case the restoration of the fluid to the blood was the instant means of restoring life. How many minutes more delay would have been requisite for her blood to have clotted at the heart?

Could anything, too, more strongly illustrate the evil effect of purging?

This case proves analytically and synthetically that the disease is a diarrhœa which discharges the water of the blood—that the symptom called collapse is the result of the loss of this water—that its restitution restored health—that purging produced relapse; and lastly, it presents an instance of the most extraordinary and unexampled delay in the congelation of the fibrine of the blood which probably has ever been recorded, or indeed ever happened.

It deserves to be remarked that cases of recovery more seldom take place after collapse in persons of robust and vigorous constitutions than in those of feebler and more spare habits, because in the former there is usually more fibrine, and a more rapid coagulation naturally occurs.

Dr. Geo. Stewart Hawthorne, whose letters on the Cholera have recently been re-published in this city, declares that no corpulent person has ever recovered from collapse, and assigns the same reason for it.

The practical use of these cases is to induce us to employ an energetic course to arrest the discharge, re-

membering that in this disease especially, "the time is short," and that it is of vital consequence to anticipate the fatal coagulation of the blood to which the diarrhœa rapidly urges the case.

What effect, then, can bleeding and purgatives exert, but to accelerate the fatal end? When they have appeared to succeed, has it not been only in the very early stages of the case? Or have they not been so combined with opiates, cordials, diluents, and astringents, that the recovery has been in spite and not in consequence of their employment?

In the writer's experience, or rather observation, calomel has always hastened the final and fatal result.

Case 5th.—On Sunday the 3d of June, 1849, a gardener, æt. 35 years, of temperate habits and spare person, walked to Bloomingdale with a friend, the distance being about five miles. He had an insignificant diarrhœa, without pain or uneasiness. It was marked by no symptoms whatever, unless its insidiousness. There was no diarrhœa at all on either of the nights of Sunday or Monday—the effect doubtless of the horizontal posture. He drank some ginger-pop on Sunday. On Monday morning his diarrhœa returned, and thinking it would be of service to him he took a glass of beer. The complaint continued. On Tuesday morning the diarrhœa returning, when he got up he administered to himself a dose of castor-oil and a few drops of laudanum. It operated profusely. Rice-water discharges came away without fæces, and he collapsed. He sent for a doctor, who gave him 20 grains of calomel and 2 of opium, and called in a friend. The purging of rice water was not arrested. On the afternoon of Tuesday the writer was called to him also in consultation. It was agreed to use opiates, cordials, astringents, and diluents. At this time he

presented a fair case of collapse, and he had been in that state ten hours. The extremities were cold as well as the tongue, the countenance blue and pinched, the collapse and contraction of the body were complete, and the voice hoarse and sepulchral; the urine was deficient, and the vomiting without being violent was constant. Ice being grateful to him was used. On Wednesday morning he was no worse, the alvine evacuations had rather subsided in the night, his vomiting had diminished, and he took his drinks freely. On Thursday the symptoms of collapse began to disappear. His countenance resumed its healthy and natural expression, and he was pronounced well by the gentlemen who had charge of him. On the morning of this day they informed the writer that they had given him forty grains of calomel, which had not been agreed on, with some opium, to which they attributed his recovery. But it is probable that his "recovery," or more accurately his temporary relief, depended upon the other remedies and not on the calomel. On Thursday night watery passages recurred, evidently the effect of the purgative, and on Friday he was at the point of death, and died before night.

In this case it is certainly to be feared that the calomel did no good—that if he had finally recovered, the recovery would have been a result in spite of and not in consequence of the calomel. And that, at the same time, it would have been in consequence of the opiates, cordials, astringents, and diluent drinks, whose operation is directly to diminish and arrest discharges, and to restore the fluid. If such were the fact, it could not be in consequence of the use either of the oil or calomel, whose operation is almost as fatal as Brandreth's Pills, which have been signally injurious in inducing the disease and rendering it fatal where it had existed, according to the testimony of

several persons, whose accuracy is entirely to be depended upon. By what principle of sound reason can one purgative be eulogized, and yet another condemned?

But the fatal coagulation of the blood had taken place on Tuesday, when the writer first saw him, he having then been in collapse ten hours, and the arrest of the discharges, previous to their recurrence on Thursday night (which recurrence is only attributable to the calomel), and the restoration of the fluid to the circulation, by which he seemed to be relieved and even cured on Thursday, were measures of relief, rendered at quite too late a period. On Friday morning the vessels at the wrist and temples were pulseless. The circulation at the heart was laborious, feeble, and slow. If a clot was in its cavity, that would exactly explain the condition of the circulation. In that case, the systole of the heart being imperfect, the presence of a coagulum effectually preventing its entire closure, the blood would be feebly propelled; the extreme vessels would not feel the force of the heart's action; their pulsations would be at first feeble, then gradually becoming weak, they would stop.

The inaction of the vessels is the inevitable effect of the presence of a coagulum of blood in the heart and aorta, and that presence exhausts and fatigues the heart's action until death arrives.

This is a mode of death very different from that produced directly from collapse without reaction. In the latter case every evidence exists of the absence of the fluid blood—coldness, lividness, shrivelling, and contraction of the whole body. In the case of reaction occurring after the formation of the coagulum, there is evidence of the return of the fluid—warmth and fulness of the vascular system—but a gradual loss of power in the extreme blood-vessels comes on, with a gradual and final cessation of all action of the

heart and arteries. Attending these symptoms in both cases, there exists disturbance in the brain, precisely like that which occurs in congestive fever, but owing to a cause very different in mere collapse, viz. the loss of the healthy stimulus of blood, and the absence of actual bulk in the contents of the vessels; while in cases of reaction, there remain the consequences of the injury done the brain, by the first loss of fluid in collapse, which keeps up an unnatural state of that organ, even after the restoration of fluid to the blood, the symptoms of which seem very much like congestion, yet they are certainly of a different character. In cases of recovery it is undoubtedly a fact, that this cerebral disturbance is often succeeded by a true congestive, and sometimes inflammatory disease, but this cannot possibly occur at a time when no fluid whatever is present in the blood-vessels, and the opinion, often dogmatically stated, deserves no more respect than philosophy usually yields to pedantry.

CONTAGION.

It is often asked if the Cholera is contagious. To give an intelligent answer to the inquiry, it is necessary to define with precision the meaning of the word contagion.

Contagion is of different kinds. It sometimes means a mode of transmission by absolute contact of the person. This is the case in Psora—vulgarly the itch. But such contagion is not intended when we speak of the febrile diseases which are considered contagious. Small-pox, measles, and scarlatina, are prominent and familiar examples of the latter sort. They are undeniably contagious diseases. But it is not at all necessary to produce positive contact of persons in order to transmit the disorder. This fact makes them not the less but the more contagious, for

it proves that their power of transmission from the body of the diseased is so great, that to come within a certain sphere of him is the means of being subjected to the contact of the poison of his disease, in other words, that there surrounds him an atmosphere of contagion. The contact, in this case, is between the uncontaminated body and the exhalation from the diseased body. The diseases referred to above are of this kind, and are fair and perfect examples of contagion.

This is not the case, however, with certain other diseases: for instance, Yellow fever. If a patient with small-pox be taken a hundred miles from the place in which he contracted the disease, his power will be found as great to communicate it to others as before his removal. But in yellow fever this is not the case. The patient laboring under the latter disease, could not extend it to others in a new atmosphere. The same is true of Cholera.

In what manner then is the disease communicated? The answer is, that the cause is in the atmosphere. The same cause that produces the first case, acts in the production of the second, and every subsequent one, in the same manner as in the first. The general predisposing cause is in the air we breathe, and its efficiency in producing disease in one case more easily than in another, is owing entirely to the coincidence of certain occasional or exciting causes. In the case of cholera, perhaps the most potent of all exciting causes is fatigue. Hence, more men than women are attacked. Among persons in the upper walks of life, one who lives out of town, walks to the boat from his place of business, then travels several miles, and at business undergoes fatigue, or stands all day at a desk writing, is more likely to be the victim of the epidemic than another who lives near his business, and does not stand, walk, or toil much in his vocation. One who takes calo-

mel, salts, or purgative pills, likewise subjects himself to an exciting cause of the epidemic. There are many occasional causes which cannot be so easily detected as those named, but which may be as powerful in determining an attack.

Those who favor the idea of the contagiousness of Yellow fever and Cholera, point with triumph to the many instances where armies, caravans, and ships, have conveyed the disease, which they have either developed in transitu or transported from place to place. These facts cannot be denied. But they should not be made to cover more ground than the truth. In all such cases it is evident that an atmosphere of infection is conveyed with the marching army, the travelling caravan, or the ship's company. This is undoubtedly the case in all the epidemic disorders.

But there is a great difference between this mode of transmission and that which prevails in contagious diseases.

In the latter, it is remarkable that a law of limitation exists of the most astonishing kind. It is that a person once afflicted with a contagious fever, is, with certain very few exceptions, never again liable to its repetition. In small-pox this is universally admitted. It is also true of measles and scarlatina. Perhaps in the latter disease the exceptions are more frequent, but the principle pervades them all.

In vaccination, the contagion of small-pox has been made to undergo an influence by communication to the cow, which deprives it in a great degree of its intensity. With the loss of this intensity it loses too in the same degree its conformity to the great law of limitation to which reference has been made, or, in other words, it loses in some degree its protecting power. It is true that immediately after the patient has undergone vaccination he is

insusceptible of small-pox, but his original susceptibility returns after a time, though not with original violence. Thus, out of 180 patients afflicted with small-pox and varioloid, those who had the former were found to have been unvaccinated, and those who had been vaccinated had only the lighter and more imperfect form of the disease called varioloid. In this group of cases the vaccinated and unvaccinated were in about equal numbers. Of those who had been vaccinated none died; of those unvaccinated, more than half died.

These facts serve to establish a strong identity for contagious diseases.

But a man who has had Yellow Fever or Cholera is by no means exempt from a repetition of attack. These diseases, on the contrary, have been repeated in the same individual case more than once, and this is no rare exception, but a general fact. It is a general characteristic of these diseases.

Let us for a moment consider what would be the effect on human life, if this most merciful law, which restricts the repetition of contagious diseases, did not exist.

It is well known that few persons escape a really contagious disease. It is rare to find an adult who has not been affected with all of them. They are familiarly called the diseases of infancy, and they usually affect people before that period of life has passed. To this fact we may refer, in order to establish the universality of the prevalence of such diseases, notwithstanding the influence of the peculiar law by which they are circumscribed.

Now, when we consider that this class of diseases prevails at all seasons of the year, and that none are exempt from them, what would be the consequence, provided the constitution, once affected by their attack, were

again liable to a repetition? It is a subject which requires but a moment's reflection to perceive, that a very short time would be sufficient to depopulate the earth. Every case would become a centre of the propagation of the disease, and every one who would come within the sphere of its action, would himself become another centre of contamination, and by the time the first subject of the disease had recovered, a hundred persons whom he had infected would be ready to communicate to his person the contagion necessary to renew the complaint. Indeed, he would take the disease from the infection of his own person, and relapses would thus be universal; whereas, such a thing as a relapse has never yet happened, nor ever can.

Enough has perhaps been said to establish the principle that there can exist no contagious disease, unless it be limited in its application by the law in question. Otherwise there would not remain on the earth two men to discuss the theory of contagion.

Another reason for denying with confidence the contagiousness of all epidemic diseases not having this peculiar law of limitation, is that they disappear, as well as approach us, in a different manner from the contagious affections.

In November, 1817, on the 15th day, the Cholera attacked an English army of 10,000 men under the Marquis of Hastings, "as it was slowly marching through the low and unhealthy district of Bundlecund." In eight days this army and its camp followers lost 9000 men. It must be borne in mind, however, that an Oriental army is always followed by hosts of vagabonds, traders, women, and servants, who greatly outnumber the soldiery themselves. This fact has been familiar to the world since the days of Xerxes. It has, indeed, been gravely stated, without qualification, that these deaths were among the

soldiery of the army.* But the Marquis had under his command some eight thousand Sepoys or Sipahis, native troops officered by Britons and hired by the East India Company. Besides these the camp followers proper exceeded 70,000 persons. So that the whole number among whom these eight or nine thousand deaths occurred was 90,000 and not 10,000. It is perhaps proper to be a little particular on this point, because there prevails on this subject the most extensive misinformation. From official reports it is ascertained that the exact number of deaths among the British army was just 764. It is true that 8000 died among the camp followers and Sepoys, but this was not more than one tenth of their number. Scoutteten states that the army under Hastings consisted of 10,000 British and 8000 native troops, and he says, "the different divisions of this army lost by the Cholera many more even than in battle: in twelve days there were 9000 deaths." So strong is the tendency to exaggeration! But he is not alone in this error. Very few writers have not fallen into it.

This amazing mortality took place in eight days, from the 15th to the 23d of November, "when it ceased at once." The army after a march of fifty miles having reached a more salubrious camp at Erich on the Betwa, became rapidly convalescent and soon resumed duty. Now if this disease had been contagious, as the small-pox, it would not have ceased thus suddenly. Every man almost would have taken it, and the inhabitants of the town of Erich could not by possibility have escaped. But its instant cessation proves its non-contagious character, The truth is the army marched through a locality poisoned

* See Bisset Hawkins' History of Cholera, p. 169. He says the deaths were eight out of ten thousand men. Scoutteten falls also into the same mischievous error.

by the miasm of Cholera. The exciting causes which exist to a great extent in a marching army, made the men peculiarly liable to the attack, but when they left the affected district they recovered promptly.*

All the contagious febrile diseases are characterized by an eruption. Hence they are called exanthemata. Even typhus fever has its eruption, a fact which furnishes the best evidence of its conformity to the contagious class of diseases. But in Cholera there is no eruption nor any exanthematic mark whatever. It would be absurd to pretend that the change in the color of the skin in this disorder, or that which occurs in yellow fever, bore any sort of analogy to a true exanthema or eruption.

The great evil of the community being misinformed on the subject of contagion is manifest. Nothing occasions a deeper panic than the idea of contagion. It has another evil effect in inducing a fear of the person of the victim, thus rendering many cases fatal from neglect which by a little timely attention might be cured. In this manner a wrong impression in regard to contagion increases the mortality of an epidemic.

Again, the sense of fear which it inspires is a most powerful exciting cause of itself, and is infinitely more injurious to the friends of a patient than any attendance upon him can possibly be.

Let us all, then, fearlessly perform the duties of our relations, and banish all dread of the contagiousness of Cholera. A more unfounded apprehension was never entertained.

It would be well if people could be made to dread as much the first appearance of diarrhœa instead of conta-

* See Hist. of Brit. India, Harper's Family Library, vol. 2, p. 194.

gion, for in that case nothing is more certain than that not a single death would in all probability attend the epidemic. For while no disease has a more certainly fatal tendency than this diarrhœa unchecked, none ever was more manageable at an early period. It has been somewhere remarked that any treatment at its commencement is apt to be successful, but that no case recovers without some aid from medicine. It is very certain that repose in bed and a strict conformity to the horizontal posture exert a powerful agency in checking this complaint, and undoubted cases of recovery have taken place from no other agency than this, combined with a free use of simple water as a drink.

DIRECTIONS FOR TREATMENT IN THE ABSENCE OF A PHYSICIAN.

In order to serve as some guide in the absence of a physician, it will be well to recapitulate and to divide the disease into its several stages, briefly stating the several treatments in each.

I. First we have what might be considered strictly the incipient stage. This stage is often unnoticed, or perhaps does not always occur, but it most generally happens, and is characterized by loss of appetite, nausea, slight disturbance in the bowels, feebleness of the muscles, and languor. Here the remedy is,

1st. Rest in the horizontal position if possible.

2d. The use of cordials, such as eight drops of spirits of camphor, or a table-spoonful of brandy with water, as a medicine only, and not to be retained afterwards as a diet drink, and great care to avoid all improper articles of diet

and all exposure of the person to irregularities of temperature.

II. Then the stage of diarrhœa comes on without pain, and is marked by its insidiousness only. The remedies are,

1st. Rest on the back.

2d. The use of a suppository of opium consisting of one grain, which is calculated only for the beginning of the diarrhœa, and in this is often sufficient to arrest the disorder without further activity in the treatment.

3d. In addition, the patient should use camphor or brandy as before directed, ether, ammonia, or other cordials.

III. The next stage may be regarded as the advanced period of the diarrhœa, when the fæcal contents of the bowels having passed off there is simply the discharge of rice-water. This is the immediate precursor of collapse. The remedy here must be more potent than in the former cases.

1st. Rest in the horizontal posture.

2d. An injection of from two to four tea-spoonfuls of laudanum, to be instantly repeated if the first does not remain. This frequently closes the bowels for a period of from three to five days. If at this moment before collapse takes place you can succeed in arresting the discharge from the bowels, the patient is safe. If not, he will assuredly die.

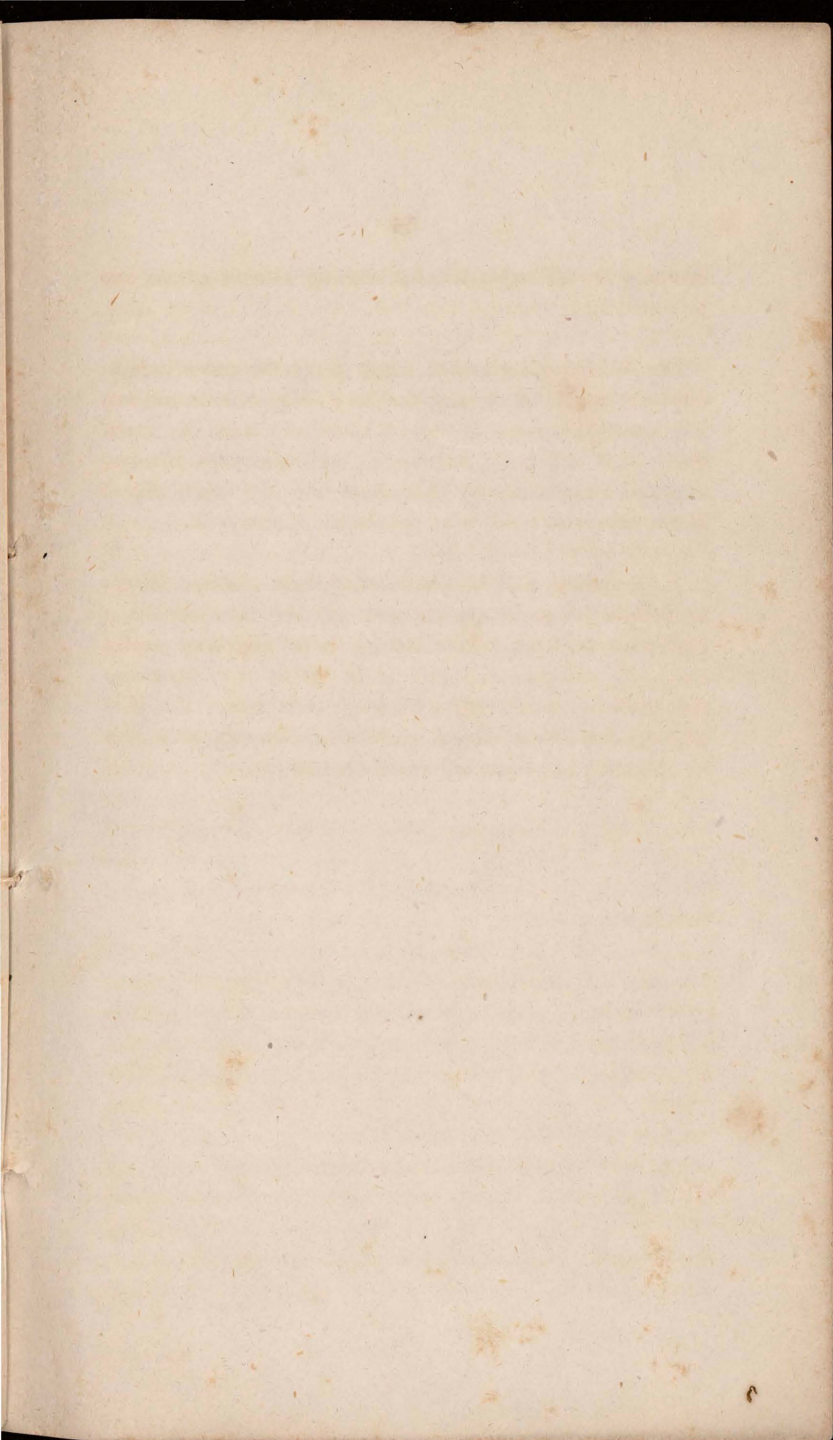
3d. The next object is to restore the fluid to the blood. If nausea or vomiting prevail, the best remedy is ice or ice water. Chicken tea and other drinks should be freely used.

4th. The cordials are then of importance. Brandy and

camphor are all important, but nothing without opium can be relied on.

IV. When collapse has taken place the same indications of treatment remain, but in a degree more urgent. The same treatment in larger quantities must be used. They will often be successful, and probably always, provided coagulation of the blood has not taken place. But in this case there is no possibility of recovery.

If the patient will implicitly obey these principal directions there is positively no need to fear the pestilence, otherwise so fatal. The disease is a diarrhœa easily checked. Of this it is well to be afraid even when unattended with pain. In its tendency it is fatal; but it is perhaps one of the easiest possible diseases to cure if it be subjected to proper and timely treatment.



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