

*X*  
REMARKS

ON

PASMODIC CHOLERA,

BY

CHARLES D. MEIGS, M.D.

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(PRINTED, NOT PUBLISHED.)



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## N O T E .

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THE following Letter to Dr. Morton has been printed for my private use, and at my expense. It contains the substance of remarks that I have, on various occasions, made both in conversation and in answers to my correspondents. It is not designed for publication or sale; but only for distribution among my friends.

I trust that, under these circumstances, I do not claim too much in regarding it as an unpublished, though printed, letter.

C. D. M.

PHILADELPHIA, *July 10th*, 1849.



TO SAMUEL GEORGE MORTON, M. D.,

VICE-PRESIDENT OF THE ACADEMY OF THE NATURAL SCIENCES OF  
PHILADELPHIA, MEMBER OF THE AMERICAN PHILOSOPHICAL  
SOCIETY, ETC. ETC. ETC.

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DEAR SIR:—

I HOPE you will not think it strange that I should venture to write and print a letter to you on the subject of the epidemic Cholera, whose existence in the United States excites so painful an interest in the minds of our fellow-citizens generally, while it causes the deepest concern to every real physician.

So much has been said and written on the subject of this detested pestilence, that it is reasonable for me to suppose you, like the rest of us, inclined to turn a deaf ear to new suggestions upon the nature and therapeutics of the malady; for it is to be presumed that you already know the whole literary and medical history of this scourge of the Nations.

I rely, however, upon your friendly regard, so liberally expressed on many occasions, as my apology for this liberty; and I entreat you to hear what I have to say upon the subject;—Not, as expecting

from me any new principles of science to be here announced, or new medicines to be proposed, but as attempting to indicate some philosophical foundations of an opinion on the nature of cholera, that I have sought for in the writings of men, whose sentiments upon subjects of this kind are worthy of our highest respect.

We physicians are, in general, a very prejudiced class of persons. We take up opinions in the Schools in our youth, and they are so deeply impressed at that age, as to be, in many of us, ineradicable during the whole of our after life—we are victims of a scholastic training that defeats its own aim for hundreds and thousands of us.

Our education is designed to make us Free—whereas, it often really binds us in the chains of the Authorities; and too few of us fail to speak and think always by the card. Is it in vain that I cite the example of the Galenical opinions, which for fifteen centuries absolutely ruled the medical mind; to so great a degree, indeed, that a distinguished writer averred he would rather be wrong with Galen than right with all mankind besides—*se malle cum Galeno errare quam cum omnibus aliis bene sentire*: and may I not cite in our day and generation, the dominant authority of the Physiological School, and other schools of equal power and of like brief duration—ruling absolutely while they

reigned, but resigning the dominion to some equally exacting, yet unpermanent, authority?

Under such circumstances, what is a man to do who desires to have the truth, in order that he may employ it freely for the relief of those who appeal to his knowledge of the truth? Let him apply to the fountain heads of authority. Let him seek for a certainty in Medicine, instead of blindly groping—being led by guides as blind as himself. Let him apply himself to learn those established truths of Natural History or Biology, rather, that can better be discovered in the labors of the Philosophers than in those of writers whose specialty is Physic, and not general science.

The distinguished position you enjoy as a naturalist renders me particularly desirous to lay my thoughts on this subject before you, and this is my apology for the liberty I have used to address you.

There *is* a certainty in Medicine, not less sure and steadfast, in its philosophical principles, than is the certainty of mathematical science.

When an astronomer pointed his tube towards the planet Uranus, and was startled to find it out of its place, he at once determined the amount of the error, and knew it could only be caused by a body of a given magnitude, at a certain distance, and in a certain place; and then directing his glasses to the point in question, he discovered Le Verrier's star. Now, this

is an example of the most exact science. Have we the power to attain to equal certainty in our beloved pursuits of Medicine? Hear, after premising that Medicine is a department of natural history, what Mr. Georges Cuvier says on this point. M. Cuvier, in his Introduction to the *Règne Animal*, p. 4, says:

“Indeed, one essential difference between the  
 “general sciences and natural history consists in  
 “this: that in the former we examine only phe-  
 “nomena, all whose circumstances we regulate, in  
 “order, by the analysis of them, to attain to the  
 “knowledge of general laws; while, in the latter,  
 “the phenomena present themselves independent  
 “of him who studies and endeavors to disengage  
 “and make manifest out of their complication, the  
 “results of general laws already ascertained. The  
 “student may not, in succession, substract them  
 “from each condition, and reduce the problem to  
 “its elements, as the experimenter does; but he  
 “must consider the case in its entirety, accom-  
 “panied with all its conditions together, and may  
 “only analyze it by his mind (*pensée*). Should  
 “he, for example, attempt to isolate the compli-  
 “cated phenomena that compose the life of an  
 “animal somewhat elevated in the scale; if a  
 “single one of those phenomena should be sup-  
 “pressed, the entire life would be abolished.

“Thus, Dynamics has become almost wholly



“ a science of calculation. Chemistry is still  
 “ wholly a science of experiment. Natural his-  
 “ tory will long remain a science wholly of obser-  
 “ vation.

“ These three epithets show pretty clearly the  
 “ methods that rule in the three branches of the  
 “ natural sciences—but while establishing among  
 “ them very different degrees of certainty, they, at  
 “ the same time, point out the end to which the last  
 “ two should tend, in order that they may rise  
 “ nearer and nearer to perfection.

“ Calculation, so to speak, commands nature ; it  
 “ determines the phenomena with an exactness  
 “ greater than that by which observation can make  
 “ them known. Experiment compels nature to  
 “ disclose herself. Observation espies her when  
 “ she is in rebellion, and always seeks to surprise  
 “ her.

“ Nevertheless, natural history is in possession  
 “ of a rational principle peculiar to it, and which  
 “ it employs advantageously on many occasions ;  
 “ it is that of the conditions of existence,  
 “ vulgarly called final causes. As nothing can  
 “ exist that does not contain the conditions which  
 “ render its existence possible, the different parts  
 “ (and powers) of each being must be so co-or-  
 “ dinated as to render the being total, not only in  
 “ itself considered, but in its relations to those that

“surround it ; and the analysis of these conditions  
 “often leads to the knowledge of general laws,  
 “as absolutely demonstrated as any that are de-  
 “duced from calculation or from observation.”

I have presented you with this long extract from M. Cuvier, in order that you may see what so great and good a man has said and thought upon the certainty obtainable in questions of biology, for it resolves itself into that ; and I shall, in a subsequent part of this letter, contend, that our knowledge of the conditions of our existence, our life forces, is as clear and as absolute as that of our personal identity ; or that of our knowledge that God who made us is, and is the cause of all things—as being all in all.

Before I come to this part of my subject, however, I must take the privilege of offering a few preliminary observations in another direction, satisfied, for the present, with having proffered the assertion that we may obtain a great, an absolute certainty in Medicine, which, as I have already said, is a branch of Natural History, a science, upon which we have founded the art of healing.

It is now thirty-two years since epidemic cholera began in the Gangetic Delta its disastrous reign ; and yet the millions, many millions, of our fellow men who have perished before our eyes, cut off by an untimely death ; the thousands of clinical and necroscopic observations, and the numerous histories,

and statements, and explanations, that might be expected to throw some light upon the subject, have been alike unavailing in their influence upon the statistics of the malady. The same melancholy returns serve to make us ashamed, whether they come as the statistics of the disorder on the Nile or the Hellespont; the Volga, the Neva, or the Thames; the Seine, the Danube, or the St. Lawrence; the Hudson, the Mississippi, the Delaware, or the Rio Grande; they all alike give the fatal result of one hundred cases, and fifty deaths—where the ratio is not one hundred cases, sixty-five deaths. I say, have we not reason to be ashamed of this opprobrium?

Is it not true that, when the question is asked, what is cholera, everybody answers—it is a mysterious thing; it is an incomprehensible malady; it is past finding out; it is inflammation; it is congestion; it is a blood disease; it is a nervous affection, &c. &c. &c.?

If this be a true representation of the case, then, I ask, whether we ought to rest satisfied with our present views of it, either out of a spirit of self-complacency in our miserable success, or out of a feeling of despair that makes us bow and kiss the rod that smites us. Can we call on the people to look at us and live, surrounded as we are with the hecatombs of victims to a malady that we misunderstand,

or do not cure, and whose pitiable state is fit to wring the sympathetic tear from the hardest heart? Is there a more deplorable sight than that we behold in a cholera hospital?

It is certainly not impertinent to ask, what it is that we have hitherto learned.

What question in cholera has been settled, if even that one, besides its non-contagious nature; and that other, the most important of all—its prodromous nature?

As to what it is, and how it may be cured, it seems to me that no two men are of the same way of thinking, save on the point of calomel, which I, for one, look upon as an evil of the time, and as serving to hurry into eternity many a sufferer who might recover and live, but for the mercurial irritations that he is doomed to superadd to his intolerable burden of cholera irritations.

I asked just now the question, what have we learned.

There is no opinion I have yet formed on the subject, more clear and decided than this, *vide* licit, that we are indebted to Dr. J. B. Kirke, of Greenock, in Scotland, for the best, soundest, and most conservative as well as consolatory truth that has hitherto been established relative to spasmodic cholera. I had almost said the only useful truth.

Dr. Kirke's report to the Board of Health of

Greenock has made perfectly clear the doctrine now universally accepted, among physicians, that this pestilence is ushered by a stadium of prodromes or premonitory symptoms, that are very readily curable in those of the people who are willing to believe the doctrine, and act in good faith under its monitions.

I was happy to observe that Dr. Drake, of Cincinnati, in a publication in the newspapers recently made by him, has admonished his fellow citizens of this important truth—and that he has, with great force, announced to them—that the disease is already upon those who, living in a cholera atmosphere, labor under diarrhœa, and that, to use his own very strong language, the diarrhœa is cholera. Dr. D., in order more fully to guard his townsmen, denies the existence of a premonitory stage, insisting that this, so called, premonitory stage is the disease itself—curable—but dangerous; yet dangerous only for those who will not suffer themselves to be cured. In making this publication, Dr. D. confirms the doctrine established by Kirke.

As to Dr. Kirke's paper, no person, I should think, could read it, without acknowledging that his touching description of the cholera scenes at Musselburg and Tranent could only have sprung from the heart of a sincere philanthropist; nor can we feel surprise at the passionate zeal with which he rapidly tra-

versed the country in every direction, in order to verify facts that had made so deep an impression upon him. Returning to Greenock, loaded with the undeniable evidences and proofs of his assertion, he gave to the world the announcement that cholera is preceded by diarrhœa, and that this diarrhœa is the curable stage, and even the easily curable stage of the malady. This was early in 1832; since which time no real progress has been made.

This is what we have learned as to cholera, and it is nearly all that we have acquired of really useful information on the subject. What other have we got?

I shall not here gainsay those who may cavil at Dr. Kirke's pretensions. I admit that a vague notion existed in regard to this prodrome, but Kirke settled it, established, and proved it, and gave it to mankind; and were our race doomed to see this detestable pestilence dwell among men as long and as persistently as variola, then I should say, that Kirke's merit is not less than Jenner's—for I am convinced that fully to know, and believe, and wisely to act under his information, is to have as true a safeguard against cholera as vaccination is against small-pox.

Small-pox still reigns, and cholera strews the earth with victims; the former, because men will not adopt Jenner's remedy;---and the latter, because

they will neither hear nor obey the warning voice of Dr. Kirke of Greenock. So many victims would not have been found at Cincinnati, if the population had taken heed to the words of their townsman.

If our municipal and state governments could but know their duty and power as the guardians of the people, they would reach the reason and conscience of every citizen on this point. Every head of a family—every individual responsible for those under his domestic authority, would be warned and fully instructed; so that, though victims must be yielded to the pestilence, only those should perish who, by a stern necessity, or by some peculiar, extraordinary state of the health, should be readily overthrown by the slightest causes.

Suppose, my dear sir, that in any city, town, or district, brought under the cholera-cloud, the El-Hawa, as the Arab calls it, a placard should be posted by public authority in terms like the following:—Can you doubt that all the people would read it, or know it; or that a multitude of lives would be saved by such knowledge, which would, without it, be foolishly thrown away? The grave stone of a cholera victim, who should have refused to believe, or obey the warning, ought to have on it the epigraph of the son of Ner—“Died Abner as a fool lieth.”

“*The Board of Health to all the people, of every age and sex.*

“The pestilence, called Cholera, has existed since 1817,  
“and has visited Asia, Europe, Africa, and America: in its  
“course of 32 years, it has killed many millions of people.

“Cholera is now epidemic in our city.

“The danger for those who are attacked by it is very great,  
“provided they be ignorant, or careless.

“Be not ignorant—know that, in a season of epidemic disorder, *all* disorders tend to come under the likeness of the prevailing malady.

“Every person now suffering with diarrhœa or abdominal  
“pain, is under the power of the epidemic.

“He who has diarrhœa, and neglects or despises the warning, may die with agony before to-morrow.

“He who, having diarrhœa, knows the truth and heeds it—  
“is saved already.

“What shall he do?

“Let him refuse to work, to eat, or to drink, and let him go  
“to his bed.

“Let him send for medical advice and aid.

“Physicians appointed by the Board, are ready to wait immediately on all the sick poor.

“You are warned. This is all that the public authorities  
“*can* do for you.

“If you neglect this warning, the fault is yours.

“May God avert from you the destroying pestilence!”

If a municipal government should post on every lamp post, watch box, and corner, a placard containing information, as in the above formula, all the people would be made acquainted with the solemn and conservative truth.

Should the same authorities establish a select



corps of active and intelligent young physicians, provided with means of rapid transportation, stationed at convenient points, and fully supplied with medicines and assistants—who can doubt the influence of such measures on the statistical results?

A municipal government, acting in such a manner, would be entitled to the warmest thanks of the constituency, and of all the friends of humanity. But I do not consider that governments have done their duty, which leave all these grave matters to the municipalities alone.

Sheriffs of counties ought to spread the true knowledge among the people. Governors of States ought to approach the citizens over whose safety they are appointed to preside, and give them the true knowledge that they want; which is all that they really want in this relation.

The President of the United States, who is elected by all the people, would but exercise a legitimate function, should he, from his high elevation, pronounce, in the hearing of all the people, the great conservative truth as to this scourge of the nations.

Having said what I have now said as to conservative or preventive measures, let me return to my more immediate object, which is to inquire what cholera is.

All the people, and ninety-five per cent. of the

Physicians still look upon it as a bowel complaint, and treat it as such.

True, we occasionally hear one say it is nervous, or that it is a disease of the blood, &c. &c., and the same thing has been said for 32 years; but the doctrine does not change the melancholy statistical account, which comes to us from all lands, burdened with the fearful ratio of 100 cases and 50 deaths.

Have not we doctors made a faulty diagnosis?

Do we not attack it with calomel and opium, and all the armamentarium for affections of the bowels—even those of us who say it is a nervous, or a blood disease? See the late discussions, April 9th, in the Royal Academy of Sciences, on the choleric *psorenterie*, between MM. Velpeau and Serres. See the opinions of Corbyn and Annesley, and Ainslie and Thompson, and, I might add, all the writers. See the varieties in the dosings with *drogue amère*, with calomel, oil, emetics, opium, capsicum, brandy, &c. &c. &c. Hear the universal exclamation—mysterious! See the statistical returns of the Health Officers! See 100 cases. 50 deaths!

I repeat, that we have made a faulty diagnosis; and have treated the pestilence on principles at variance with the nature of the malady, in the most essential of its stadia.

In order to cure, we ought to know what it is that we have to cure.

If we have to cure an affection of the whole motor-nerve system, we ought not to attempt such cure by attempting to cure a vomiting and purging, or an inflammation of the bowels, or an engorgement of the great central vessels, or a blood-disease.

What is it that we have to cure?

We have to cure a malady excited by the unknown cause of epidemic cholera.

The cause of cholera is unknown unto all men. Our ignorance of the cause does not, however, at all vitiate our reasoning upon the effects of this cause. As well might we say that we possess no knowledge of the laws of dynamics, because we know nothing of cause beyond this,—namely, cause is the antecedent, and effect the consequent.

I have already cited Cuvier's words, to show that our reasonings from conditions of existence in man and animals, yield us some of the most sincere, perfect, and precise results in knowledge, of which the human mind is capable.

Now what, in man, are the conditions of existence, as we know them?

The conditions of existence in man are:—

1st. The presence of nervous mass, either disseminated and without centres, or disseminated, and,

by linear arrangement of nerve-corpuscles, connected with central masses or bulbs.

This is the first condition.

2d. The second condition is the presence, contact, and combination of oxygen with the puncta or granules or molecules of nervous mass.

The combination of oxygen with nervous mass is the antecedent or cause of the extrication or existence and activity of the life-force, or nervous force, or biotic force. One is the antecedent; the other, the consequent.

Life nowhere exists, nor can it exist in animals, save under these two conditions.

Nervous mass and oxygen, combining, give out nervous force. This is true of all the divisions, genera, and species in zoology, as is shown in the science of classification.

You are aware that what is called classification in natural history, has been greatly improved since near the close of the last century; and that the improved method of classification has been derived from this great principle in biology, viz., that the animal is a nervous-mass; and that whatsoever in an animal is not nerve, is something derived from nerve, and to be regarded as a morphological condition of an originally nervous substance.

Hence, the whole zoological nature or kingdom is divided into four divisions or branches—vertebrates,

articulates, mollusks, and radiates—and the radiates are so because their nervous mass is of a radiate form; the mollusks, because they all have a vertical nervous system; the articulates, because their principal nervous mass is in front; and the vertebrates, because their nervous mass is behind the visceral masses.

Thus we see that the four grand divisions of animals are each peculiar, because of a peculiarity of the nervous mass which constitutes them what they are, namely—vertebrata, articulata, mollusca, and radiata.

We further know that classes, orders, and genera, and even species as well as teratological varieties, depend upon the peculiar condition of the nervous mass in which each class, order, genus, species or variety consists; for they are all arranged in view of the law of subordination of the organs; ranging in the four scales from the lowest to the highest—the lowest being those in which the organs are fewest and least essential, but rising in excellence up to those whose organs are the most numerous, complex, and perfect in power, and important in offices; as for example, man, who is the express synthesis and representative of all animated nature, of the whole animal kingdom; and who is become so perfect only through the perfection of his nervous mass.

In fine, the zoological Method, or Classification

rests upon the dogma that the nervous mass is the *Ens-vivum*, the thing that lives, the animal; and that all else within its delimiting superficies is not *Ens-vivum*, but only the appurtenants, the aids, the complementary portions thereof, subserving the purposes of the living *Ens*, being its servitors, its guardians, and agents.

In a logical conspect, therefore, of the animal, the nervous mass is the verb-noun; that which can do, and be, and suffer; but all the rest is adjective, participial, adverbial, conjunctive, pronominal, &c. &c.

I need only refer you to Baron Cuvier, to M. Flourens, and more than all to Lorenz Oken, in order to confirm the above views of the nature of living animals. These great men are the authorities to which I am willing to bow with reverence.

M. Flourens, in his *Analyse Raisonnée des Travaux de Georges Cuvier*, p. 88, has the following words:

“La forme du système nerveux détermine donc  
 “la forme de tout l’animal, et la raison en est sim-  
 “ple; c’est qu’au fond le système nerveux est tout  
 “l’animal en effet, et que tous les autres systèmes  
 “ne sont là que pour le servir et l’entretenir. Il  
 “n’est donc pas étonnant que, la forme de ce sys-  
 “tème restant la même pour chaque *embranche-*  
 “*ment*, la forme générale de chaque *embranche-*  
 “*ment* reste la même, et que cette forme change-

“ant d'un *embranchement* à l'autre, la forme de  
“chaque *embranchement* change.”

I cannot believe that, since the days of Plato, there has lived a man whose intelligence of the whole Cosmos was so comprehensive and yet concise as Oken's. After studying his physio-philosophy, I am ready to believe that M. St. Agy is correct in saying that, in his work, lies the foundation of all modern doctrine of life.

It appears to me nearly impossible to allude to his great subject in this short letter—for I am aware that Oken himself found the pages of his Physio-philosophy too few and narrow to express his whole meaning and intention. Yet, in such pages as those, a physician should search for the true physiological notitia that alone can guide him in his difficult path as a reasoning, not empirical, practitioner.

Indeed, in order to understand this great subject, one ought to be acquainted with the great original thinker on it—I mean Glisson—as he sets himself forth in his *Treatise de Vita Naturæ*; with Whytt and Porterfield; with Haller and his coadjutors of the Gottingen school, in constructing the *Traité des parties sensibles et irritables du Corps humain*; with Richat, Oken, Cuvier, Flourens—these are the sources whence we should draw the pure streams of truth. In them are the real guides of the practitioner of medicine, an art, founded on a science.

Allow me to cite a few words from Oken himself. I quote them from p. 328 of the *Physio-Philosophy* :

“ The sensitive mass is called in higher animals  
 “ nervous mass. The nervous texture is a con-  
 “ joined series of mucous granules, which have be-  
 “ come albuminous in character. \* \* \* \* \* At  
 “ the first instant of the origin of organic mat-  
 “ ter, it can, however, originate only as infinitely  
 “ numerous points. \* \* \* Granular, or point-mass  
 “ is, however, an accumulation of centres. The  
 “ nervous mass is, therefore, in accordance with  
 “ the conception of the organic, a repeated, multi-  
 “ plied centre. \* \* \* \*

“ The animal substance has commenced with  
 “ the nervous mass; thus, with that which is the  
 “ highest, and which physiologists have deemed  
 “ the ultimate mass. The origin of the animal is  
 “ from the nerve, and all anatomical systems are  
 “ only free evolutions or separations from the nerv-  
 “ ous mass.

“ The animal is naught but nerve. What  
 “ it is further, or in addition, is obtained else-  
 “ where, or is a metamorphosis of nerves. The  
 “ mucus of the infusoria, polyps, and medusæ is  
 “ nervous substance upon the lowest stage or de-  
 “ gree, when the other substances that are therein



“involved and merged, have not as yet been perfected in an isolated manner.”

You see that Oken asserts that the *animal* is naught but nerve.

Can you gainsay him?

If I have made myself clearly understood, then I desire to say, further, that there are only two kinds of nervous force, or force of nervous mass, one sensor, the other motor; for the powers of the body consist, 1st. in the power or faculty of perception, whether organic or intelligent, and 2d. in motion, whether organic or free willing.

We cannot conceive of any other.

The evolution or production of nervous force, whether it be sensor or motor, is an attribute of the nervous mass alone; and, of course, of the constituent granules of that mass everywhere.

What Oken calls point-tissue, may be supposed to be everywhere present, in animals—even in the lowest hydra, or fresh water polyps.

Every such nerve-point is in itself a producer or evolver of nervous force; and the same thing is true of the point-tissue—the conjoined series of granules,—and the greater and lesser bulbs of the highest mammal. But it is only in the higher orders that the different puncta of this point-tissue become related to nerve centres or bulbs, whether arranged as an œsophageal ring, as the successive ganglions

of an annelide, or the greater centres of the vertebrata.

As we rise in the scale, we find the connection and dependences becoming more complete and express, until we arrive at man, in whose structures are concentrated various organs, the disintegrated or analytical representatives of which are exhibited scattered abroad throughout the rest of the whole animal kingdom.

The whole nervous mass, then, is to be regarded as producer or evolver of biotic force, while the bulbs serve to co-ordinate that force.

The hemispheres are devoted to the evolution of the forces by which we have intelligent perception and the various operations of mind, under the supreme power of the soul.

The cerebellum is the co-ordinating brain for the muscular system of locomotion; the tubercula quadrigemina for the seeing brain, and the medulla oblongata for the respiratory brain.

The great sympathetic and the plexuses preside over the splanchnic innervations, &c. &c. ; but the whole nervous mass everywhere is producer, and produces only motor-force and sensor-force. It is probable that the sanctuary, the inner chamber, of this motor-force in the vertebrata, is in the medulla oblongata, called the *nœud-vital*, the vital-tie, which being destroyed, life is at an end.

Such are the views that I desired herein to express of the nature and forces of the nervous mass which is subject to disease, and which is by many persons accused as the seat of the malady called cholera, when they say it is a nervous affection.

What do they mean when they say nervous affection, or disease of the nervous system?

For my own part, I am free to confess that, for near thirty years of my life as practitioner, I had the most indefinite notions of what I, in common with most others, regarded as nervous disorders; and it is but a few years since I began to understand myself when I used such terms. At present, I do consider that I fully understand my meaning, or that I entertain precise notions of those states that I used to call nervousness, or nervous disorders.

The great and good Dr. Cullen, in his *Synopsis of Methodical Nosology*, in defining his II. Class, the Neuroses, uses the following words:—"Neuroses. Sensus et motus læsi, sine pyrexia idiopathica, et sine morbo locali."

This definition, it seems to me, defines nothing; because, it is inconceivable that any disease can exist, whether surgical or medical, that is not referable to this second class, the neuroses of Dr. Cullen.

I hope that I shall not be regarded as one uninformed or misinformed, because I have said, and be-

cause I really suppose, that the notions generally entertained by our brethren upon what are called neuroses, are not sufficiently clear, concise, or express. I lament to think so, and always feel highly gratified, when, in conversing with my friends, I discover in them those clear and concise notions of the nature of the nervous force that are discoverable by an examination of them, in view of the conditions of existence, and not otherwise.

But I am not writing a letter on the nervous system. I am attempting, by this prefatory matter, to open up to you certain views of epidemic cholera, and I now propose that you shall consider Indian cholera as a case in which the nervous mass has been poisoned by an unknown stimulating gas, exhalation, or agent, which, without evidently disturbing its sensor-force, produces an exaggerated intensity of its motor-force.

I have already said that there are two, and only two, nervous forces—sensor and motor.

It is hardly necessary for me to say to you, that we meet, in our clinical observations, with examples showing that either of these forces, or both together, may change their rate. It is enough to recall to your memory the examples in your own practice of the nullification of the sensor-force, under the exhibition of chloroform or ether, in your obstetric and chirurgical cases; and you well remember how you

rushed, under the anæsthetic power of the chloroform, those cruel cystic contractions, which, notwithstanding their continuance, could not hurt you while you had in your hands the means of quelling and absolutely abolishing their sensitive, yet leaving unquenched their motor æsthesia.

This is an example that must come home to your conviction on this point; and you know that a man can, under certain states of sensitive anæsthesia, look unconcerned and painless upon a surgeon's knife that is wounding him.

Hence, you perceive that the sensor faculty may be reduced or placed in abeyance, while the motor power remains intact.

On the other hand, we meet with examples of augmented or diminished motor-force, the sensor-force being meanwhile unaffected. See Hecker's account of Dancing Mania of the 14th century, for examples of an epidemic prevalence of this sort of motor-æsthesia; and see, also, in the curious relations of Professor Joerg, in his *Entwickelungs-Krankheiten*, &c. etc., the most striking and graphic delineations of endemial motor-æsthesias.

But, were I to seek to lay before you examples illustrative of my proposition, I should write a volume instead of a letter. I shall, therefore, merely propose to you to consider Indian cholera as a case

in which exaggerated intensity of the motor-force is developed by the poisoning cause of cholera.

If you will conceive of an exaggerated intensity of the *whole motor-force*, then you will perceive in the malady a state of the nervous mass which has resulted in the gradual or the sudden condensation of all the living solids,—not the muscles alone, which are racked with cramp or spasm,—whether those of the trunk and limbs, or those of the alimentary canal, the bladder, the uterus, &c.; but condensation, or a tendency to condensation of every artery, arteriole, capillary, and venule; of the cellular tela; of the skin; the parenchyma of the lungs; the acini of the liver; and all other textures. Every organ, every tissue in a general anatomy, every granule, and every molecule tends towards condensation, under the stimulation of cholera poison. So that the whole living mass is, as it were, under a squeeze—the cholera squeeze.

In the beginning of cholera, these phenomena are not ordinarily discoverable, save in the augmented action of the muscular fibres, as in the cramps and spasmodic twitchings that are of such general occurrence among a population residing in a cholera atmosphere; and in the increased activity of the peristaltic muscles, giving rise to the diarrhœal prodromes.

As the malady progresses, for it is a slow one at

irst, the activity of the diarrhœa augments, and the rejections begin to grow diffluent.

This is the time to save the patient, who, unless rescued now, is soon to be the victim, adding one more integer to the mournful tale of fifty deaths in a hundred cases.

This is the moment to obey the warning voice of Dr. Kirke; to hearken to which is to be saved; to contemn which is to die, racked with spasm, and to give up the reluctant ghost, that seems, in some of the victims, to linger within the chambers of the body long after it hath become a corpse. I have seen dead men move the arms and legs long after the rational soul had apparently quitted its clay tenement forever.

This is the accepted time; the time in which an anæsthetic of full power can crush the monstrous exaggeration of the motor-force with almost absolute certainty; while a cathartic, or an emetic, would hurry the victim to his fate.

What is the process, what are the pathological phases by which the cholera patient issues from these preliminary stages, these prodromes, forth to the fatal struggle with cholera asphyxia?

Let me invite your attention to the following rationale of the phenomena.

The early monitions being disregarded, the motor-force becoming constantly exaggerated, the fluids of

the body, which are not under the operation of the vital law of motion, seek to escape by every pore. The blood-vessels, deep buried in the limbs, and among the firm thick tissues, not only condense under their own motor or reflex action, but they are compressed by the surrounding tissues, and their fluid contents hasten to escape *qua data porta*.

The skin begins to cleave to the fingers and feet, the eyes grow sunken, the mass of the liver, with its acini and vessels, shrinks together, and refuses a free transit to the blood that seeks to escape through its vessels by the *venæ hepaticæ*. Water flows into the cavity of the stomach and intestines. They become filled; and then vomiting begins with the discharge of congee. At the same time, an immense ephidrosis bathes the dermal surfaces in gushing streams, as in the English sweat of old; and the whole of this liquid is derived from the aqueous element of the blood.

What is the composition of the blood?

It is 210 thousandths of solid constituents + 790 thousandths of aqueous element = 1000 parts.

A stout man has 500 ounces of blood. If, in an attack of cholera, he loses in four, six, or eight hours, 200 thousandths of the aqueous element, and loses none of the solid constituent, his remaining blood will be composed of 210 thousandths of solids, and 590 thousandths of water, against, .210+.790.



The blood is then ruined; it has lost its fluidity; it has become non-diffusible; it stops in the distant capillaries, and it slowly permeates the pulmonary capillaries and those of the brain; it imperfectly absorbs oxygen in the lungs, and ceases to be oxygeniferous to such a degree as to be unfit for extricating the vital force from the nervous mass; for life-force is a direct product of the combination of oxygen and the molecules of the granular substance of the neurine. Asphyxia is the certain consequence of an unbearable loss of the water of the blood by the congee, and by the sweat.

I said before that many physicians reiterate that cholera is a blood disease; that the blood is poisoned, and thence all the consequences and phenomena.

The frightful scenes of sudden death in Hindostan at Hurdwar, on the Scinde, at the Mauritius, and even here in Arch Street Prison, can not be explained on the hypothesis of poisoned blood. Still, it is true to say *ob solida ob humores*, and it is equally true to say *ob humores ob solida*. Yet the blood is not subject to be poisoned. You cannot poison the blood. What part of the blood is it that receives the poison? Is it the water, the albumen, the hæmoglobin, or the fibrine? Is it all the elements of the blood?

It would be more philosophical to say that poison may be conveyed by the blood; but it is not

correct to say the blood is poisoned. The living *solids* may be poisoned.

In our disease, however, I conceive that the phenomena are not those of any species of poisoning; nor can I doubt that the nervous mass is, in this case, the subject of a hyperæsthetic causation as to its motor-force, whose exaggerated operation solves all the phenomena.

Gentlemen still seem restlessly desirous to seek for the causes of cholera in a status of the mucous membrane, or the glandules or crypts of the alimentary organs. They expect to find, with their lenses, the solution of the difficulty in some injection or non-injection—some hardening or softening of those textures. It seems to me that to read the accounts of battalions and brigades on the march, that have plunged the heads of their columns into a cholera-cloud, and to hear of the ruddy, healthy soldiers falling by scores to the ground, some to die instantly, and some to pass into the cholera-fit, is to be convinced that the operation of the direful cause can, by no means, be effected through a mere condition of the bowel or of the blood; but that it can only depend on a modality of the nervous mass to be brought about by a miasm sudden as wrath, and terrible as hell in its operation. If it requires but a 200,000,000th of a second for the centripetal force to traverse the entire length of a man, then I am satisfied

to believe that the effect of an aërial or telluric agent, acting upon the distal points of the nervous system in the skin, or in the lungs, or in the stomach, may be capable to bring about in the same 200,000,000th of a second, a modality of the entire nervous mass, exaggerating its reflex power as to every subject molecule. It is a begging the question to say that the cause acts by way of the lungs, the stomach, &c. We have no evidence of the action of the cause through the lungs, or through the stomach. Why may it not act on the sentient skin? It is not necessary to get inside of the body to set it on fire. Do you remember the scene in Romeo and Juliet?

*“Did you crook your thumb at me, sir?”*

But, after all, the solemn question ever comes up—nay uppermost—what is the cure?

Certainly—we have not yet learned to answer this question. The startled public constantly address it to us, and our painful statistics give the mournful report of fifty per centum of casualties at least. What is the cure? Calomel? Calomel and opium? Calomel in small doses? Calomel in moderate doses? Ten grains? Twenty grains? Fifty grains? A teaspoonful of calomel? Camphor? Opium? Etherization? Mustard emetics? Salt water emetics? Ice applied to the surface? Warmth? Ice water? Warm drinks? Venesec-

tion? Leeches? Castor oil? And a host of remedies!! Among which, few of us seem to have a firm choice, while standing in presence of the **Werrblauen Gott**—the Blue Cholera Demon, wrestling with his strong victims victoriously.

What is the cure?

If the disease is *æsthesia*—the remedy is *anæsthesia*.

Which *anæsthetic*?

There are but two dependable ones in the world; and they are, opium and venesection.

I pray you, my dear Morton, do not retort upon me that they have been tried, and found wanting. If you should thus retort upon me, I may take shelter in incredulity, or I may reply, that the experiment has been abandoned too soon. And for what? Certainly for 50 casualties in 100 cases! Or even worse than that—if anything could be worse.

I shall take refuge in the early facts in India, and shall rejoin that the lancet was the sheet-anchor of hope and safety there; and that, until men grew appalled by the horrible spectacle of cholera, and trembling with apprehension, prescribed for the sign rather than the philosophical principle, they saved fifteen out of sixteen, and even more than that.

Scott, Corbyn, Jameson, Kennedy, Annesly and Colledge; every bold and resolute man that was called to wrestle with this angel of death, upon the

first waving of his lurid wings—all agree with one voice, that the lancet is the only sure reliance.

If the malady be in truth the spasm, the universal spasm, the exaggerated motor-force which its technical denomination implies, then there was utility combined with philosophy in the great, and I was almost ready to say the splendid ministrations of the medical gentlemen connected with the Anglo-Indian armies and civil establishments.

Look again over the Calcutta, Madras, and Bombay Reports, to see the brilliant successes that, I humbly opine, ought to put to shame the cholera Reports in Europe and America.

I say that cholera is a motor-æsthesia, and is to be treated by anæsthesia.

Would to God some mortal could be happy enough to discover an anæsthetic for the reflex or motor-nervation, equal in power to chloroform as a controller of the sensor force. He would be a benefactor of his race—since the sponge, or the inhaler, might instantly quell the movements that result in the fatal loss by congee and sweat of the aqueous element of the blood under the condensing operations of the tissues instituted by the cholera cause, which stimulates the motor power of the nervous mass.

We have an anæsthetic in the lancet. If we draw blood to incipient deliquium, we effect the completest anæsthesia of the motor faculty. This we

do daily by our venesection in puerperal convulsions—in reducing dislocations of the humerus and femur, and in a thousand other examples; for we know that, not the muscles concerned in the dislocated joint alone, but all the textures faint under the loss of blood *usque ad deliquium animi*. A man in a cholera-fit can no more faint than one in tetanus. You must make him faint, if you would procure the relaxation of deliquium.

Should you make a man in a cholera-paroxysm faint, you would instantly thereby suspend the paroxysm. Let me tell you of a case.

In 1832, I went to Montreal, to see the Cholera, where died, in a few weeks, 4,100 persons, being one-sixth of the entire population, then estimated at 25,000 souls.

Upon my return, I had charge of Cholera Hospital No. 10, and I had a large number of out-door cases, entitling me at least to say that I have seen the disease.

Among other sick, I was called to see Salvador de Negri, a very athletic Sardinian, about thirty years of age, and over six feet in stature.

It was late in a hot forenoon that I reached his brother's house in Montgomery Street, where he lodged.

Salvador was pulseless, algid, blue, voiceless; the skin was puckered and adherent to the periosteum of

his phalanges. The tongue was cold, and the mucous membrane of the everted lip cholera-blue.

Salvador had been under the cholera-squeeze. His blood-cyst—I mean his multilocular blood-membrane—comprising all his arteries, veins, and capillaries, and sinuses, had been under the influence of the universal condensation compelled by his exaggerated motor-force.

Salvador had an alimentary mucous membrane, to be estimated at thirteen superficial feet.

All the blood that circulated within or behind this membrane, gushed from the tube of the aorta by the cæliac and the two mesenterics; and every drop of it, that was not expended in the meseraic and hepatic circulation and secretions, must find its way back to the vena cava by the venæ hepaticæ, or stop in the vessels.

The arteries and capillaries of the lower extremities, and those of the arms and trunk, refused to receive the injection of the systemic ventricle, which, although itself under exaggerated motor-provocation, could not force the mass in full streams beyond the viscera. Hence, the principal torrents escaped by the three great digestive trunks, ramifying upon the mesentery and mesocolon, &c. &c.

Meanwhile, the liver itself, under the maddened motor power of its own organic life, obeyed the law of universal condensation, and the hepatic porta

passed imperfectly off, the masses that had overwhelmed the mesenteric porta. It appears to me that, if you should cast a ligature round the three hepatic veins, and draw it so tightly as to cut off one half or two-thirds of the current that they discharge into the cava, you would produce a state of the meseraic circulation, not unlike that that exists in a cholera-fit.

What must happen in such a case? The man must die outright—or he must unload the alimentary blood-vessels by exhaling, not secreting, from the mucous secernents, torrents of the aqueous element of his blood.

Salvador had already lost many pounds of congee.

What is congee—called by the Hindoos, rice-water?

It is the water of the blood—it is a part of the 790 thousandths of the aqueous element of the blood. It is sometimes almost as pure, tasteless, and inodorous as rock-water: I have tasted it gushing from the stomach of a dying negro. When it is somewhat milky, it is so because it brings away with it a small proportion of the albumen, whose solution in it, before its exhalation, constituted it serum sanguinis. Congee is the water of the blood, which has left the albumen in the vessels. Before the press came on, this water was a part of the serum; because, the .080 of albumen was dissolved in it. Now, it is



either pure water, like rock-water, or it is a little clouded or opalescent, because it contains mucus and epithelial scales and coagulated portions of albumen, giving it the appearance of rice-water, called by the Hindoos, *congee*.

Salvador had, in the morning, .210 solid constituents, and .790 aqueous element in his blood-vessels; videl. fibrin, .003; hematoglobulin, .127; albumen, .080, and water, .790=1000.

When I came to his chamber he had lost, say .100 of the aqueous element of his blood, and was near dead. If he should lose .100 more, he would certainly die.

He was still under the condensing power of his universal motor spasm. His senses and animal sensibility continued sound and good.

How was a Doctor to put an end to this paroxysm?

With three, five, ten, twenty, sixty grains of colomel?

With one, five, ten grains of opium?

There was no time for such operation. I tied up his cold arm, and opened the median vein—it would not bleed. I drew out a long veno-morphous clot; and the blood trickled down into the bowl. I rubbed his arm and hand, and it began to flow; the quivering Sardinian being all the while as composed and sensible as if in perfect health.

At length he *suddenly* fainted away; and as he laid on his back, with his head and shoulders on pillows, the mouth opened full wide. The eyes, too, were wide open; and as he was perfectly motionless, without any apparent respiration, I felt sure he was dead.

Men in cholera frequently die for turning over in bed.

I removed the pillows to let his head fall, and dashed a pitcher of water in his face; but he did not move. I slapped his cheek violently, and perceived, with delight, that the muscles of expression began to twitch; which showed me that his medulla oblongata was not yet dead; and, in fine, the motor-branch of his vagus nerve began again to irradiate with its nervative force the subject organs. The heart and the diaphragm resumed, little by little, their play, and my patient was rescued; for, in making him faint so dangerously, I had suspended the cholera-paroxysm, which was not in him, and is not in any mortal, other than a universal spasm, or intense universal operation of the motor-force of the nervous mass. I produced for Salvador a saving anæsthesia of his motor-force.

As soon as the cholera-paroxysm was at an end, the mucous membrane ceased to exhale congee; it ceased to be solely an exhalant, and recovered its physiological faculty as absorbent organ. Salvador recovered,

without one of the usual accidents of dysenteric colitis—or typhoid fever—or pneumonia, or any meningeal disorder. Hundreds of people have been saved in the same way in all countries.

Now, my dear Morton, I hope I have succeeded in laying before you my views of the cholera-paroxysm!

Do you agree with me that the nervous mass is the living Ens in animals; and that it has one sole reagent, oxygen?

Is not oxygen the sole cosmic reagent for the extrication of nervous force, or vital force, in all things that live?

If the blood is really an oxygeniferous fluid, carrying oxygen to the granular matter of the neurine, and revolving from the neurine, by its reaction on the albuminous nature of it, the nervous power—then, what higher or more absolute control can the medical man possess over the innervative forces, to depress, or reduce them, than that he employs by the means of his lancet? If you send more oxygen to the brain, will you not have greater force—less oxygen, less force—no oxygen—death? Do you not control the supply by pushing your venesection to the true, and lawful bounds?

Nature, in all her domain, has no more powerful anæsthetic than the lancet.

Granting, for the present, that I have stated correctly the manner and the effect of that waste of the

aqueous element of the blood that leads to the asphyxia stage, with cessation in that stage, of the condensing influence of the cholera chill, we ought to find the patient dying from a loss of water that he cannot recover from ; or else, resting between life and death ; to live, if he can recover the absorbing faculty of his digestive mucous surface, but, to die, if he cannot recover it.

To become asphyxiated from non-fluidity of the blood is to become anæsthetic indeed. See, in the following case, an example of complete arrest of the cholera-paroxysm, and most rapid restoration of the blood's fluidity, upon the recovery of the gastro-enteric absorbing faculty. The case is related by Dr. Hawthorne, of Belfast, whose five letters on cholera are now read with such avidity. You will find this case in Hawthorne's sixth letter, and at page 40, of the copy published by Dr. Morehead. I beg you to read it, as I have here transcribed it—but, hope you will do me the favor first to admit (*pro tem.*), that the congee exhalation had probably reached its term at the time the man began to take his jug of hot toast-water ; that the exdosome and excretion were at an end ; and that he had now recovered his absorptive or endosmotic faculty.

“A man, aged forty-seven, of a thin, spare habit of body,  
 “was seized with violent symptoms of cholera, at three o'clock,  
 “A.M. I was called to him at eight the same morning. On

“entering the house, I heard him screaming from the violence  
“of the cramps. I found his extremities quite cold and livid;  
“his pulse scarcely perceptible at the wrist, small, fluttering,  
“and very irregular; his countenance ghastly; his face and  
“hands of a livid color, and the skin of the latter shrivelled and  
“corrugated. He had incessant purging and vomiting of a  
“fluid nearly as clear as water, with an insatiable desire for  
“drink. He was so weak and exhausted as to be unable to  
“get out of bed. I had the body and extremities immediately  
“surrounded with jars and bottles of hot water, bags of hot  
“salt, and hot bricks, and, three minutes afterwards, I gave  
“him a suitable dose of the antispasmodic pills and draught,  
“which I caused him to wash down with a glass of hot punch.  
“The heat was gratifying to him, and, whenever a cramp  
“seized him, he begged that something hot might be applied.  
“During this process, I directed my attention particularly to the  
“pulse. After the heat had been thoroughly applied, and the  
“pills and the hot punch had been administered, the pulse be-  
“came gradually more distinct and full, and, at the same time,  
“improved in strength and regularity. On referring to notes  
“taken at the time, I find that, at the end of fifteen minutes  
“after the application of the external heat, and about twelve  
“minutes after the administration of the medicines and hot  
“punch, the cramps had entirely ceased. The pulse was then  
“pretty full, and of tolerable strength and regularity; the coun-  
“tenance had become more full and natural, and the hands  
“less shrivelled; the temperature of the body and extremities,  
“which rose with the pulse, had arrived at the natural standard,  
“and a profuse perspiration issued from every part. The pa-  
“tient expressed himself completely relieved. I then gave  
“him a large draught, as much as he desired, of warm whey,  
“of which he had been drinking previously to my arrival. As  
“the symptoms then appeared favorable, and as extensive ex-  
“perience had given me the most positive assurance of the

“successful result of the mode of treatment, I left the patient,  
 “promising to be back in half an hour. I, at the same time,  
 “gave the attendants strict orders to keep up the perspiration,  
 “and not to let the patient have any more drink in my absence,  
 “lest he should throw off the medicines; but I directed them  
 “to have a jug of hot toast-water prepared at my return.  
 “After taking my leave, I was so much pressed by business  
 “that this patient entirely escaped my recollection until, about  
 “two hours afterwards, I received a message that he was as ill  
 “as ever. On my way to him, it occurred to me that, if my  
 “directions had been strictly followed, he must be cramped  
 “again, as the profuse perspiration which issued from his body  
 “when I left him, if continued and not supplied by drink,  
 “must, before then, have produced a draining effect on the  
 “vascular system, equal to that which had been produced on it  
 “by the previous discharges from the internal surfaces. Ac-  
 “cordingly, on entering the house, I again heard his cries, and  
 “was met by his friends, who, in despair, told me that he was  
 “cramped worse than ever, though they had strictly followed  
 “my directions in keeping up the heat, and in refusing to com-  
 “ply with his desire for drink, which was urgent. Though an  
 “accidental experiment, it was one very important and curious.  
 “I was anxious, therefore, to note down with accuracy every  
 “particular. His face and hands, which before were livid,  
 “were then of a crimson hue; the prominences on these parts  
 “were sharp, and the depressions were hollow; the skin seemed  
 “to be sticking to the bones, without any apparent intervening  
 “substance; the course of the veins was marked by hollow  
 “lines; the body and extremities had become almost dry, and  
 “on touching them, their morbid heat and parched state com-  
 “municated to the hand a very unpleasant sensation; the re-  
 “spirations were quick, with great anxiety and pain in the region  
 “of the heart; and the thirst was most urgent. There had  
 “been no discharge from either stomach or bowels after the

“medicines had been administered. The pulse at the wrist  
 “was felt like the ticking of a watch, at intervals of a few  
 “seconds, fluttering very quick, and presenting to the finger a  
 “degree of smallness similar to that of a very fine needle.  
 “Keeping my finger placed on the pulse, I ordered the patient  
 “to drink warm toast-water *ad libitum*. The rapidity with  
 “which the drink was absorbed, and the sudden effect pro-  
 “duced on the pulse by it, were very remarkable, not a minute  
 “having elapsed after it was swallowed till I felt a perceptible  
 “change. The intervals between the flutterings of the pulse  
 “became gradually shorter and less perceptible. As the pulse  
 “became fuller, it became more and more distinct, till it  
 “bounded full and strong. The veins filled in the same pro-  
 “portion till they became distended like rods. The breathing  
 “became natural, and the pain about the heart ceased. The  
 “cramps then disappeared, and a profuse perspiration again  
 “issued from every part of the body. This all occurred in the  
 “course of eleven minutes, and the patient in that time drank  
 “above a gallon of fluid. As the vascular system filled up,  
 “the complexion improved, till it became nearly natural, but  
 “rather florid. The external heat was gradually removed, the  
 “temperature of the body was reduced to the natural standard,  
 “and the patient felt free from every complaint. He was con-  
 “valescent the next day, though weak, and he was walking  
 “about on the fourth day.”

Dr. Hawthorne's patient recovered as rapidly as  
 some of those into whose half empty blood-vessels  
 water was injected by the syringe in 1832. He  
 appears to have recovered permanently. Most of  
 those, however, who were subjected to the artificial  
 method of restoring the aqueous element to the

blood, died ; probably, because the cholera-paroxysm was not yet at an end for them.

And now, the question comes up again, as to what is the method of cure, a question I am not about to answer in detail. I am well aware that the best of remedies is not applicable in all cases ; that best of remedies is Kirk's doctrine. I say it is not applicable in all cases, because, even were our Governments, which they are not, able or willing to impress the truth upon every mind in the community, there would still be found many to scorn it or forget it, or to be compelled to forego its sanative provisions.

If the disease is really *æsthesia* of the motor-force, as I have proposed the doctrine already, then the cure is to be sought in *anæsthesia*. Let us suppose that a man, finding himself affected with the first symptoms of the malady, should hasten to lie down in bed, and take one or five grains of opium ; or even lie still, covered warm, not hot, refusing to eat or drink for twelve or twenty-four hours ! How many such men could cholera kill ? None, save such as are too much broken in health to withstand even slight occasional causes of illness. Dr. Hawthorne thinks that ten grains of opium, with camphor and capsicum, assisted by doses of chloric ether, aromatic spirits of ammonia, tinct. of camphor and laudanum, will cure every body—not too far gone already. I believe so too, for I find in his ten grain



doses of opium the equivalent of two hundred drops of laudanum, which is by no means an over dose for persons in the dreadful pains of the cholera cramp. I am free to confess that I admire Mr. Hawthorne's treatment in all respects, and that I feel personally very much obliged to him for his whole communication, save his condemnation of the resort to venesection, in which point I can by no means coincide with him, as being contrary to reason, and contrary to the soundest experience in practice.

As to a particular formula for the use of opium, it is probable that it matters little what is the form, provided the substance be there; though we may well suppose that the combination of camphor with the principal ingredient is not improper.

I think that we should make our doses as concentrated as possible; and I prefer a formula like that of the following:—

#### ANÆSTHETIC PILLS.

|                                     |                        |
|-------------------------------------|------------------------|
| Take of sulphate of morphia         | five grains ;          |
| Camphor                             | twenty grains ;        |
| Cajeput oil                         | ten drops ;            |
| Fragacanth, and Extract of gentian, | a sufficient quantity. |

Make the *smallest possible* proper mass, and divide into one hundred pills; to be kept in a *three drachm* phial, well stopped.

This is a very concentrated form, and very portable; for a three drachm phial may readily be carried in the fob or waistcoat pocket. Each one of the pills, not much bigger than a large pin's head, is equivalent to eight drops of laudanum, besides the camphor and oil. The whole are equivalent to two ounces nearly, or eight hundred drops of laudanum. The smallness of their bulk renders them less disgusting. Should I be suddenly seized with the violent pain of a cholera-fit, I should not hesitate to take from five to twenty of these anæsthetic pills, and, lying down in my bed, I should wait a few minutes to learn whether their anæsthetic power might suffice to quell the motor æsthesia—failing which, I should bleed from my arm to incipient deliquium. Perhaps, a patient treated thus might die with cholera, but I should consider the security so great as to require no insurance.

The cure of the blue or asphyxia stage is, for many persons, impossible. Men, in losing congee, are like men in losing blood. Some of them can bear two hundred thousandths and live; while others die for losing twenty-five, or for fifty thousandths of the water of the blood. So, in my special practice, I have found patients to perish from the loss of twenty ounces of blood, while others have seemed to waste half as many pounds in labour without great inconvenience.

I believe that many patients begin to recover as soon as they begin to be cyanosed; for that very cyanosis is, for many, the term of the cholera-fit; being the result of, and the putting an end to, the morbid state of the motor æsthesia.

Such persons should be kept warm, and in a horizontal posture: their cramps are over, their exosmose is finished; and if the blood has not become too thick or non-diffluent, the victim may be saved with the grace of God, and good nursing. I should give such a person no calomel; but I should greatly prefer Mr. Hawthorne's jug of toast-water, until he had begun to recover from his cyanosis.

If, upon so recovering, I should have reason to suppose him attacked with psorentery, with pneumonia, with gastritis, or hepatitis, &c. &c., I should then treat him for the special malady, and as a man who has had cholera, which had made him ill, in this way or in that.

If I were about to teach a young and inexperienced practitioner the use of venesection in the conduct of cases of cholera, I should begin by advising him to bleed every patient that he might dare to bleed.

In the forming stages of the cholera-fit, he ought, if possible, to bleed every person subjected to his medical control; and he should do this with a view to arrest

the progress of the motor-æsthesia, the continued operation of which leads to an unbearable loss of congee.

If the patient is in a more advanced stage, I advise him to inquire, 1st. Is he losing, or has he already lost, all the aqueous element? or, in other words, is he collapsing—or, is he already collapsed? If the patient is already collapsed, there is no reasonableness in taking blood; because a collapsed patient has already reached the anæsthetic stage, and wants no anæsthetic. But if he is still losing the water of the blood, I advise the resort to venesection, because I am very confident that the paroxysm will be suspended as soon as the first indications of a deliquium animi begin to exhibit themselves.

In the cholera-fit, the man is in a condition more dangerous than his who is losing blood in any kind of hemorrhage—he loses the aqueous portion only, and dies with what remains, whereas the hemorrhagic patient can live upon what is saved.

But I am admonished to bring this letter to a close, lest I should enter upon a discussion of the various accidents of cholera, which was by no means my design in these remarks. Before, however, I bid you farewell, I owe it to myself to make a few observations that may serve to disengage me from an otherwise false position as to the doctrine of Dr. Kirk.

I have spoken very positively, in this letter, as to a

premonitory stage of the malady, being well aware, at the same time, that there are many facts in contravention of the assertion. I do not like to suffer under an imputation of ignorance of such facts, or of utter disregard of them.

The following extract from the "Public Ledger" of July 11th, 1849, may serve to exhibit a sufficiently striking picture of the suddenness of the disease in the Mississippi valley.

"CHOLERA IN MISSISSIPPI.—A correspondent of the *Philadelphia Inquirer* writes from Natchez on June 25th as follows:—

"The scourge has produced, and is still producing frightful havoc among the people. On some plantations, the loss has been 75 per cent., on others 50, and on many 33, and on a very few less than 15 per cent. The total losses on the plantation of myself and family—in Stack Island Reach—amounted to 106 on the 22d; 103 of them of cholera. If it will stop there, I will have fared better than a great many others. It has been in my place for fifty-two days—a very unusual period.

"At Mrs. T. Minor's place, below Baton Rouge, it appeared in March, and remained four days, and carried off 21 out of 220. It appeared again on the 12th of June, and up to the 21st (nine days) the number of deaths reached 79—making a total loss of 100 out of 220.

"On Miller's place, the deaths were 38 out of 55; on Phillips', 34 out of 64; on Briscoe's, 15 out of 18; on Haggert's, 73 out of 220. The disease seems to be spreading all over the country, and increasing in malignity and violence. I have lost on Stack Island Reach 89 to 90 of the best men and women. But the pecuniary loss is a mere bagatelle,

“ compared with the suffering in feelings at parting with  
 “ slaves endeared to me by long ownership, and whose faces  
 “ were as familiar to me as my own children’s. The disease is  
 “ of the most malignant type ; more than half died in less than  
 “ eight hours from the first symptoms ; a good many of them  
 “ in three to three and a half hours, and several in less time,  
 “ without a discharge either way.

“ The crops in Stack Island Reach are almost a total loss ;  
 “ there cannot be a sixth of a crop made. But the crop of the  
 “ whole valley will be, must be, the shortest ever made.

“ Those who have escaped the cholera have been afraid to  
 “ work their people, and their crops are little better than those  
 “ who have had cholera.”

The foregoing extract from the “ Public Ledger” does not, in the least degree, diminish my reliance on the Doctrine of Dr. Kirk.

I admit that examples have occurred of so great an intenseness of the cholera-cause as to kill, upon the instant, persons subjected to its force ; but these examples are found among troops on the march, or travelers on the road. I saw, within forty-eight hours, a woman collapsed and hopelessly ill, who had been attacked about one hour before I saw her, and who averred that she had had no dejection the day before, nor the preceding day, and that she was seized at once with violent purging and vomiting. I know that she had been actively engaged, and had cheerfully performed her usual morning duties as a nurse. She was dead in eight hours.

Will you, can you believe that this was a case

without antecedent symptoms or prodromes? Can you deem it possible that, had she been carefully inspected as to the state of her pulse, respiration, temperature, &c. &c., two, or even four hours, before she went down, there could not have been detected in her the evidences of the operation of the cause? And, if so detected; whether in the pain, in the paleness, in the reduced force of the pulse, or in the dim expression of the eye; in the wet, flabby tongue; in some act of gesture, or station, or progression; in the feeble or slow beat of the ausculted heart,—can you doubt of the power of your Art to arrest, at once, the march of a malady so appalling? For my own part, I have no doubt, no misgivings, on this point.

The gentlemen at the South, therefore, have not taken all the precautions as to the safety of their people. They have looked for prodromes in diarrhœa alone, and they have been misinformed. They ought to know that the cholera-cause, in many individuals, even operates, at first, by producing a sort of intoxication; the first beginnings of which may rise to the height of agreeable sensation. It is even probable that the poor woman of whom I spoke above was stimulated by it at first in a manner to render her more gay and active than usual. There were many people in the same house where she fell. Did she alone encounter the cholera-cause

in the air; or did she not, rather, touch it, and suffer it like the rest, who, from some unknown status of their health, resisted, while she became its victim?

I deny not, therefore, that men, and many of them, do die very suddenly, cut off, on the instant, and that while enjoying perfect health, up to the moment of attack. Those who die thus suddenly, do not perish with cholera; but from the direful operation of the cause, in its highest intensity. Cholera is characterized by vomiting and purging of congee; by cramps, and ephidrosis; by algid limbs and surface, &c. &c.; but these sudden victims fall and die on the spot. I have not met with such examples, which, however, were not rare in Hindostan, in 1817 and 1818. Many that perished at Hurdwar in 1780, at the camp on the Scinde in 1818, at the Mauritius in 1819, and on the Southern plantations in 1849, appear to me to have fallen victims to sudden and universal spasm, which, affecting the heart and diaphragm, as well as the other organs and textures, cut short the thread of existence. They died as suddenly as those who descend into a well filled with carbonic acid gas—very differently, however. The man who dies from such gas is perfectly flaccid; the victim of cholera becomes as rigid as a Thebes mummy: the one dies from motor-æsthesia, the other from anæsthesia of the same motor-system.



Similar examples are observable in other violent epidemic maladies. Thus, in the English sweat, which ordinarily required about twenty-four hours to destroy the patient, many instances were observed of the most appalling suddenness of death. Men rising in the morning in apparent health, threw open their windows and fell back dead; while others standing on the steps of their doors, amidst their children, in like manner suddenly expired.

I think it may well be assumed that, in this epidemic, producing, as it does, an almost universal affection of the public health, manifest in the so-called cholera, a great majority of the population have been brought within the range of the cholera-cause. It has affected the nervous mass everywhere. I have, in the course of a month or six weeks past, bled great many people; and I have found only one person in whom the coagulum was not soft, with retained serum. I could cut the clot to pieces with a pin—whereas, in any other epidemic constitution of an inflammatory character, one might lift the clot clear of the pure serum with a common hair-pin. It is probable that every one of the poor colored men and women who have died in the fields in the south, had had their blood thus changed for many days before they fell down and died.

As a fair offset to this appalling account of cholera in the south, you will allow me to set before you a

most striking and encouraging example of wiser conduct by certain of our brethren, that may serve to illustrate and enforce the views I have endeavored to present to you.

You will find the whole affair related by Dr. Annesley, in his *Sketches of the Principal Diseases of India, &c. &c.*, and I leave you to judge whether the quotation is apposite for the repudiation of the Mississippi cases, above cited from the "Public Ledger." You know that Mr. Annesley's work bears, in every page, the proof and stamp both of his great intelligence and truthfulness.

"Although I recommend bleeding to be attempted at all  
 "times, and in every stage of the disease, I am fully aware  
 "that many cases have recovered where it has not been used  
 "at all; nor do I answer for its universal success: but I do  
 "venture to assert that, if it can be accomplished in the early  
 "stage of the disease, and before the circulation has ceased at  
 "the wrist, in nine cases out of ten it will prove successful;  
 "especially if the color of the blood change from black to red;  
 "if the pulse get up, and the spasms be relieved.

"In confirmation of this opinion, I cannot do better than  
 "detail a circumstance bearing upon it, which occurred at  
 "Madras in 1821.

"The General Harris, East Indiaman, arrived at Madras on  
 "the 20th June, 1821; her crew were in perfect health, and  
 "had been so during the passage from England. On the 27th  
 "of June, epidemic cholera made its appearance amongst them,  
 "and raged with great violence. Captain Welstead, and Mr.  
 "Colledge, Surgeon of the ship, called upon me, at the General  
 "Hospital, to consult upon the best means of curing, as well  
 "as preventing, the disease.

“ I stated my views fully upon the subject to Mr. Colledge,  
 “ and the line of future treatment was decided upon. This  
 “ gentleman was unremitting in his attention to the men under  
 “ his charge, and whenever he observed any of them depressed  
 “ and low-spirited, he at once inquired into their feelings, and  
 “ without a moment’s hesitation, took twenty to thirty ounces  
 “ of blood from the arm, gave ℥j of calomel, with two grains  
 “ of opium, and sent them on shore, well wrapped, to the  
 “ General Hospital under my charge; and the subsequent dis-  
 “ ease showed what might have been expected from less ener-  
 “ getic measures.

“ The disorder being thus checked before it had made any  
 “ great invasion upon the constitution, was, when brought be-  
 “ fore me, in a manageable state, and I looked forward with  
 “ confidence to a successful termination of it almost in every  
 “ instance.

“ Upwards of fifty men were landed from the General Harris,  
 “ Indiaman, under the disease, and sent to the General Hospital;  
 “ and it is with peculiar satisfaction I can say, that the whole  
 “ number returned in health to that ship before she left Madras  
 “ Roads.

“ Nearly all the men who were attacked with this disease on  
 “ board ship, and who were not bled, or from whom blood  
 “ could not be drawn, died. Many of those who were bled,  
 “ and who derived benefit, but whose subsequent treatment  
 “ could not be closely watched, from want of means, also died.  
 “ Those men who were bled, and sent to the General Hospital  
 “ at Madras, where they could receive every attention, and  
 “ had every means of accommodation, recovered.

“ I enter more fully into these circumstances, with a view  
 “ of giving the practitioner confidence in his attempts to cure  
 “ the disease, and at the same time to give that credit which  
 “ is justly due to Mr. Colledge, whose prompt, decided, and  
 “ judicious treatment of one of the most destructive diseases

“ that has ever visited the globe, deserves the highest praise.  
 “ I am perfectly persuaded that, if he had not paid the closest  
 “ attention to the invading symptoms of the disorder, and  
 “ acted in the most decided manner, many of those lives which  
 “ have been preserved, would, under other circumstances,  
 “ have fallen a sacrifice; and I feel great satisfaction in having  
 “ the opportunity of bearing testimony to the zeal and merits  
 “ of this gentleman.

“ Whilst I consider bleeding to be the sheet-anchor in the  
 “ treatment of this disease, it must not, at the same time, be  
 “ imagined that this alone will cure it. There are other aids  
 “ equally essential. The object of bleeding is to remove spasm  
 “ and venous congestion; to relieve the heart and lungs from  
 “ oppression, and to check the most urgent and distressing  
 “ symptoms; and without this be in some measure attained,  
 “ all our efforts will prove fruitless: but this having been once  
 “ accomplished, the disease is brought into a manageable state,  
 “ though it not unfrequently happens that our most active  
 “ efforts are afterwards required to remove a very opposite state  
 “ of the disease, nearly as dangerous as the former, occasioned  
 “ by the reaction which occurs, under a state of system un-  
 “ favorable to its development.

“ I have thought it right to discuss thus fully the advantages  
 “ of bleeding, because I know there is, among many of the  
 “ profession in India, a very great prejudice against it. My  
 “ own experience is decidedly in its favor, but it is not al-  
 “ ways that we can see patients in time to secure its good  
 “ effects. In such cases, we must have recourse to other mea-  
 “ sures, as antispasmodics and stimulants.”

Doubtless the cause of cholera may be so concentrated and intense as to destroy at once, by spasm of the heart and diaphragm, or by congealing the already vitiated blood in the heart; but, these things

ought not to excite our surprise, as inexplicable upon any principles of knowledge. We are not surprised to see animals perish in the *grotto del cane*, or in sulphur wells, and mines; for we know that carbonic acid destroys life by occupying the place of oxygen, and that nothing can live out of oxygen. As to the cause of cholera, we know nothing positive. Yet we have reason to believe that Earth-miasms may come up from great depths through the stratified crust of the globe. The great spiracles of the earth that we know of at Ætna, at Vesuvius, at Hecla, and Stromboli; at Cotopaxi, and Jorullo, and others like them, are not reasonably to be esteemed the sole points of escape for imprisoned gases and miasms, into our genial air of the atmosphere. Doubtless, therefore, the atmosphere is often poisoned and rendered deleterious by imponderable and non-endiometrical substances that escape throughout vast tracts of country, in every latitude and longitude. Those terrible earthquakes that shake a whole continent, though unattended by volcanic eruptions, are commonly followed by epidemic or endemial disorders, that ought rather to be attributed to Earth-miasms that come forth, during the convulsion, to mingle with the air, and punish with God's judgments an impious race.

Look at Baglivi, p. 346, *Op. omnia*, for his opinion of the occurrence of these telluric miasms after

earthquakes. That celebrated physician says : “ Un-  
 “dè nil mirum si dicat Seneca, post graves terræ-  
 “motus oriri sæpe pestilentiam ; sæpe verò insolita,  
 “gravia epidemica, et difficilia morborum gene-  
 “ra : idque non solum ob præfata incommoda,  
 “\* \* \* verum etiam ob halitus malignos, arse-  
 “nicales, ac veneficos, qui è terræ abyssis ignitis,  
 “mortiferis ac veneniferos prodeunt, purum hunc,  
 “liquidumque, quem respiramus ærem maculant  
 “atque inquinant,” &c.

Such are the words of Baglivi. I have no time to do more than refer you to our countryman Webster, who cites numerous examples of disastrous epidemics that followed great earthquakes.

Everybody is aware that instances are recorded of dreadful pestilence, the forerunners and premonitions of disturbances in the strata of the globe—while, on the other hand, the convulsions of the earth have often preceded, for a greater or less length of time, the eruption of devastating diseases.

Trace on the map of the world the progress of the present, which is the second epidemic, and you will see that, beginning in 1844, on the regions of the Indus, it has, proceeding from thence, overspread the northern hemisphere. Mark the dates of its eruption, and observe that, on Monday, it shall explode at Damascus, and, on Tuesday, at Riga on the Baltic—scattering terror and death at the same hours in Trebizonde, at

Taganrog, and at Moscow. These circumstances serve, in my humble opinion, to prove that the cause is of telluric origin, and that the wisdom of man is foolishness when it strives to debar it of its prey by means of Lazarettos and *Cordons sanitaires*.

Why should we look for the cause of cholera in the atmosphere, in thermometry, in barometry, or in hygrometry? Why refer it to electricity or the magnetic force? Why to idio-miasm of men or animals? Why to vegetable substances, alive or in decomposition?

Is it not clear that all possible states of the thermometer, the barometer, and hygrometer, of the electrometer, and the magnetic needle, must have existed a thousand and a thousand times within the period of human records without producing this cholera? The cause of cholera produces cholera — cholera alone. Hence, these are not the causes. By reasoning thus in a way of exclusions we arrive at a certainty, and that is, that the cause is not in the strata of the air, nor in animated nature, whether the vegetable or animal tribes living or dead. We are left, therefore, to our only resource, and we find it in the Earth-miasm, or koino-miasm, as our distinguished countryman, Dr. Miller, called it.

To escape from its pestilent cloud is not possible; to defend one's life from it is, on the other hand, wholly possible.

It is reasonable to say so; since, the vast, the im-

mense majority of persons touched by it, manifest its influence on the nervous mass by premonitory symptoms that are not to be mistaken by the cautious and the well informed. Doubtless 100,000 persons have been touched by it, in our city, during the present year.

He who walks into a concentrated cholera cloud may fall dead like the men of the British regiments in Hindostan. He who is touched by a less concentrated exhalation sickens day by day until the fierce attack is made; while the great majority of the population, affected by the most dilute portions of the miasm, suffer under the universal cholera.

\* To suppose that epidemic constitutions of the air, as Sydenham calls them, are occasioned by an altered mixt of the nitrogen and oxygen of the atmosphere, is idle, since, in that case, all men and animals must alike perish. To suppose that the invisible cholera cloud may pass by *a* and *b*, and select *c* to *x* is equally idle. Under such epidemial constitutions as the present, all the people are involved in any town, city, or district. The ignorant, the audacious, the impure, the feeble, the necessitous—these furnish the victims!

Whence come the crowds that fall before the lurid wings of this great Angel of Death? Not from the palace and the hall; not from the villa or the cottage or *fêrme-ornée*; but from the hovel, the lane, the alley, and the kennel. Not they that feed daintily and



\* The idea of an epidemic constitution of the air is one which, though universally accepted by our profession, appears to be involved in much mystery. An epidemic constitution of an ataxic character commenced in the northeastern parts of the United States in 1813, and extended itself southwards to Alabama: it did not give place to taxic forms for several years. A constitution may, therefore, reign for many consecutive years; and that, probably, independent of any state of temperature, dew point, pressure, or electricity; since those ever changing agents cannot be supposed to have so even a tenor of influence throughout a long series of years. Hence, though I admit the powerful influence of weatherly causes on the general health, I feel constrained to look beyond such transitory causes for an explanation of very permanent conditions of an epidemial kind.

If I am not incorrect in the views I have imbibed from Oken and others, as to the essential Ens—the nervous mass of animals—then I venture to suppose, that epidemic constitutions are states of the nervous mass of men, or animals, brought about by means of miasms, by fungi, insect-life, &c. &c., which give to it a proneness to become affected with disorders of the blood, of the respiratory mucous membranes, the digestive apparatus; with exanthemata, and so on, for the entire catalogue of the epidemial and epizootic disorders.

In our present epidemic, I suppose that I have reason to think the nervous status of the population generally, has brought about a condition of the blood which is not truly healthy—one in which the coagulium has, in a majority of the people, less tenacity or firmness than under other constitutions, even in many who, notwithstanding, have not exhibited any manifest signs of disease.

Such a state of the blood, as I above supposed to exist, might well be assumed to be the cause why slight imprudences in diet, exposure, &c., have to precipitate so many persons into the cholera-fit, as I have endeavored to explain in another part of this letter.



cautiously, but those that subsist on scraps and garbage; not the tremblingly alive to the first signs of activity of the miasm; but the poor, the unfriended, the imprisoned, the toil-worn, the intemperate, the houseless, and the homeless. These are always sick, and their sensibilities are benumbed, and their perceptions hebetized by habitual pain, and fatigue, and misery, so that they know not when they are changed. These are the poor of whom Christ said—the poor you have always with you. If but he himself were always with us! We should better instruct and guard them.

But, enough—let us be reasonable in our judgments; let us acknowledge that the cause of Cholera is ever the same, in all latitudes and under every meridian—that there cannot reasonably be supposed two causes of this unique malady; and that it would be as unreasonable to indulge such a supposition, as it would be to attribute to variola or scarlatina, each, more than one causative force. Hence, those who yield to the temptation, a very great temptation, I admit, of believing in the contagion of cholera, show, in my estimation, a weakness of reason and judgment that is surprising, when observed in the learned; and that exerts a most disastrous influence among the people; one tending to increase tenfold the horrors of the pestilence, since it serves to break asunder the bands that

unite families, and, under the madness of a panic fear of contagion, leave the doomed patient to die under the double pangs of a painful disease, and a broken heart—for when the wife deserts the husband, and when the parent flees from the pestilential touch of the son or the daughter, and when the mother is left to perish, without a drop of water, by her affrighted child!!

Who can paint the distress!!

I ought not wholly to omit some advertence to the opinions entertained by able writers on insect-life, or on fungi, or spores, as causative of epidemics.

I have lately read again, and with renewed satisfaction, the interesting article of the distinguished English physician, Dr. Henry Holland, which is contained in his *Medical Notes and Reflections*.

My friend and esteemed colleague, Dr. Mitchell, has, as you are aware, lately favored the profession with an elaborate treatise on the fungous origin of fevers.

Both these writers have displayed great research and honorable scholarship in these essays; but, as they are in everybody's hands, and, as I have already extended these remarks far beyond what I originally designed, I must dismiss them with that respect and feeling of gratification that always rise in the mind upon the perusal of works of learning and research. I shall merely observe, in relation to the hypothesis,

whether of insect-life, or of fungi or spores, as causes of cholera, that I consider it fatal to either, and both, that cholera prevails with equal and remorseless violence, whether in the plains of Hindostan, with the thermometer at  $100^{\circ}$ , or on the banks of the Neva, with the mercury at  $-35^{\circ}$ . It appears to me that a same insect-life cannot be equally active under such opposite states of the thermometer; and that the same objection applies to the theory of the propagation, or even existence, of fungi and spores—as causes of cholera. Cholera has one cause, and that one is unique, sole, universal in all north latitudes, and under all meridians.

The cause of cholera is ever the same—one and indivisible—it cannot be contagious. What a monstrous doctrine, then, is it that inculcates the abandonment of them that are ready to perish! And shall we medical men admit its truth under any circumstances? Are we not derelict of duty and judgment to admit the contagiousness of cholera! Shall we not, rather, inform the people and console them by our example and conversation; teaching them to know, and believe the doctrine of Dr. Kirk; and, acting under its conservative provisions, save their wives, and those of their wives and children?

Is not this, my dear Morton, a true exposition, and does it not awaken in your sympathetic breast a strong desire to see our Municipal, State, and Federal

authorities addressing themselves assiduously to the task of informing and thereby guarding the people?

Do you say that the people already know the truth, and are therein guarded already? Far from it. They know it not; or they know it indefinitely. The better classes know it, and are alert to the watch, and so, comparatively secure. But the poor, the ignorant, the careless—do they know it? They do not know it; or they know it as little children, whose knowledge is not valid—not unto conviction.

Let the governments, therefore, rouse themselves, and guard the citizens by informing them. A predatory band of Apaches or Sioux cannot fall in fury on the scalps of our frontier men without rousing the Eagle and drawing his bolts. But the Cholera Demon ravens and ravages, throughout our vast domain, while every Governor of a State, and the Supreme Executive Chief himself, fulfil the whole duty of man, by appointing a solemn fast! It is better both to pray and work.

And now that I have brought this long letter to a close, I have the honor to assure you of the sincere esteem and respect of your m<sup>o</sup> obedient servant and m<sup>o</sup> faithful friend,

CHARLES D. MEIGS.

PHILADELPHIA, *July 19th*, 1849.