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LETTER

ADDRESSED TO THE

MAYOR AND ALDERMEN

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OF THE

CITY OF KNOXVILLE.

BY

FRANK A. RAMSEY, A. M., M. D.,

PERMANENT MEMBER OF THE AMERICAN MEDICAL ASSOCIATION, ETC.



KNOXVILLE, TENN:

PUBLISHED BY KINSLOE & BROTHER,

JOB PRINTERS, GAY STREET.

1854.

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NOVEMBER 1911

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"As THE power of acquiring knowledge is to be ascribed to reason, so the attainment of it mightily strengthens and improves it, and thereby enables it to enrich itself with farther acquisitions. Knowledge, in general, expands the mind, exalts the faculties, refines the taste of pleasure, and opens numerous sources of intellectual enjoyment. By means of it we become less dependent for satisfaction upon the sensitive appetites, the gross pleasures of sense are more easily despised, and we are made to feel the superiority of the spiritual to the material part of our nature. Instead of being continually solicited by the influence and irritation of sensible objects, the mind can retire within herself, and expatiate in the cool and quiet walks of contemplation."—ROBERT HALL.

## LETTER.

GENTLEMEN:—The American Medical Association has published a Code of Ethics, by which every practitioner of Medicine in the United States, who is at all worthy of sustenance by the people, is governed. In accordance with paragraph 1, article 1, chapter 3, of *the duties of the profession to the public, and of the obligations of the public to the profession*, of that code, I address you this letter. The paragraph reads—

“As good citizens, it is the duty of physicians *to be ever vigilant* for the welfare of the community, and to bear their part in sustaining its institutions and burdens; they should also be ever ready to give counsel to the public in relation to matters especially appertaining to their profession, as on subjects of medical police, public hygiene, and legal medicine. It is their *province* to enlighten the public in regard to quarantine regulations; the location, arrangement, and dietaries of hospitals, asylums, schools, prisons, and similar institutions—in relation to the medical police of towns, as drainage, ventillation, &c., and in regard to measures for the prevention of epidemic and contagious diseases; and when pestilence prevails, it is their duty to face the danger, and to continue their labors for the alleviation of the suffering, even at the jeopardy of their own lives.”

Acting, as I conceive, from a sense of duty, I hope that I shall not be deemed to be assuming or presumptuous;

but rather that I may be indulged with a patient consideration and deliberate investigation of the matters which it is my desire to lay before you. And the more may I indulge the hope of my letter being thus courteously received, because I intend, to the extent of my ability, to prevent anything being written that will contravene the spirit or the letter of language occurring in the "Introduction to the Code of Medical Ethics:"—"Physicians are peculiarly enjoined, by every consideration of honor and of conscientious regard for the health and lives of their fellow-beings, not to advance any statement unsupported by positive facts, nor to hazard an opinion or hypothesis that is not the result of deliberate inquiry into *all the data* and bearings of which the subject is capable."

In thus presenting myself to you, I am but following the examples of men eminent in their day, and whose works live after them, and whose lives have served to excite a noble emulation. Amongst these none was more eminent than Doctor Samuel Mitchell, who, during the last century, frequently addressed letters advisory and suggestive to "the Chief Magistrate and Councilmen of the City of New York," where he resided; and to which that attention was ordinarily given which ensured efficiency in operation, and secured the "good of the community." And indeed, at the present day, the advice of physicians, sustained by facts and processes of reasoning which they bring to bear for the "good of the community," redeems waste places, and fills them with dense and happy populations, and reclaims the poisoned swamps and sickening vales, turning them into rich meadows, and well cultivated and fruitful fields.

I know that the opinions which I shall advance, and attempt to maintain, are not in accordance with the popu-

lar sentiment, encouraged too, as it has been, and is, by very many medical advisors in whose expressions and modes of practice, a very large number of people repose most implicit confidence. And I am fully aware of the great difficulty attending an effort to change public opinion when once formed; not to say anything of the exceeding danger inevitably connected with any attempt to sustain a proposition that is very positively opposed to the settled convictions of the minds of people whose education and institutions establish independence of opinion, without regard to consideration of facts, and independence of thought or thinking, without any appeal whatever to "the nature of things," which the ancient philosophers, headed by Heraclitus, affirmed was the only correct way by which to attain the truth. But, nevertheless, I am very anxious to escape a charge of vain temerity, in running the risks to which I have just adverted; and desire to receive, at least, the commendation due good intention, whatever little success may attend my efforts.

But professionally, in all humbleness, I must be permitted to say that I think I know the ground on which I stand; and of medical men who may entertain different views, and who have the right to consider themselves in duty bound to sustain them before your honorable board, or the public, I must beg the favor—in the language of Spenser, somewhat altered—that

"They calm their warmth with goodly temperance,"  
and not permit open questions and differences of opinion to engender those personal feelings which have unfortunately, but too frequently, given just occasion for the anathemas hurled at physicians for their indulgence of suspiciousness and jealousy.

The object I have in view is, to make such a distinc-

tion as really exists between Cholera Morbus and Epidemic Cholera, apparent to the minds of the people, that they may take such steps at the proper time, and practice such habits, as will inevitably prevent the occurrence of Cholera Morbus to such an extent as the production of a panic, in the foolish fear, under the circumstances, that Epidemic Cholera is in their midst. If I can succeed in making this distinction apparent, I at once establish a probability that Epidemic Cholera has not existed during the past summer at Martinsburg, Virginia, at Columbia, Penn., at many other inland localities in the United States, but especially at Loudon, Madisonville and Knoxville, East Tennessee; but that a malignant Cholera Morbus, traceable to known and recognizable causes, and therefore sporadic as regards the particular cases, or at most but endemic as regards the places, for the reason that there, and only there, was the cause, which was discoverable, in operation.

That Epidemic Cholera does occur in these States is a fact that cannot be denied. The very marked visitations which it has, at different times and seasons, made to various points but too well attest the truth. Indeed, though much nearer, and on the same continent with countries which it ravaged, "Sweden was not visited until one or two years, nor Sicily until four years after the epidemic had reached New Orleans." It was, in truth, an epidemic "at the same time spreading consternation in the United States, throughout the North of Europe, in the deserts of Arabia, the towns of Egypt, Cuba and other islands of the Atlantic, and the cities of Mexico. It was absolutely confined to no particular character of locality, but showed itself occasionally upon lofty mountains, in the midst of sandy deserts, and among the scattered inhabitants of thinly peopled agricultural districts. *No barriers were sufficient to obstruct its progress.* It crossed moun-

tains, deserts and oceans. *Opposing winds did not check it. All classes of persons, male and female, young and old, the robust and the feeble, were exposed to its assaults.*" In 1817, *the cause—a specific one*—sprang from the jungles of India, to which it had confined its operations for hundreds of years, and took up its devastating line of march, without regard to circumstances, sometimes regularly onward, sometimes wayward, uninfluenced alike by heat or cold, wet or dry, cleanliness or filth, it poisoned the heart-blood, and sapped the principle of vitality in the persons of the high and low, the temperate and discreet, as well as the vicious, and those given to excessive indulgence. It is an active, actual, self-existing *something*, flying hither and thither, seemingly at its own option—its visitations being unaccountable, not necessarily or always preceded by any voice of warning, or evidences to arouse unpleasant anticipations or fearful apprehension. This opinion of Epidemic Cholera and its cause, much of which is given in the language of others, has been attained by a laborious investigation of all the Cholera literature of which I could avail myself—reading as well the newspaper articles written by men with personal and professional characters more or less important, and whose very errors will prove a savour of death, being implanted upon the minds of the people, lulling them into a false security, and a feeling of certainty of Cholera being easily cured, which will meet with disappointment as surely as Epidemic Cholera visits a community entertaining such an opinion. I say I have read as well these newspaper letters as the more profound discussions of those few who affirm and attempt to prove Epidemic Cholera to be a contagion or paludal miasm, and the yet more recondite reports and observations, and ratiocinations of those who grant the generation in India of *a specific something*,

which has disseminated itself throughout the known world.

And now I ask for a candid reply to the question, Is there, in the allusion to the Epidemic course, anything to render it at all probable that while Philadelphia remained comparatively free from true Cholera, an inland town—Columbia—should suffer, and no other town in close proximity to it; that while Baltimore fails to report a single case of true Cholera, an inland town only a hundred miles distant—Martinsburg, Va.,—should be almost depopulated; that while the whole line of railroad from the Southern seaboard at Charleston and Savannah, to Chattanooga, Tenn., and from Dalton, Ga., to Athens, Tenn., fails to present Cholera, that it should be the disease which prevails at three isolated points, and their immediate vicinities, Loudon, Madisonville and Knoxville, Tenn.? I think not; and will hereafter appeal more directly to facts sustaining such an opinion.

Before I state my proposition, let me call your attention, particularly, to the language of Dr. Wood, of Philadelphia, who has, for very many years, adorned professorial chairs in the University of Pennsylvania, and whose work on the Practice of Medicine—from which I quote—it is the pride of every American physician to have, not on the shelves of his library, but on his study-table, at his elbow, that he may, at any moment of leisure, open a volume, even at random, and draw wisdom from its pages.

Under the head of CHOLERA MORBUS, he says, "The name of CHOLERA is given to *any* complaint in which the prominent characters are simultaneous and repeated vomiting and purging, with painful spasms of the stomach and bowels, and occasional cramps of the external muscles. *Three* varieties of the disease have been observed, so *different in the circumstances* of their occurrence, as well

as in their symptoms, progress and results, as to merit distinct consideration. These are, CHOLERA MORBUS, EPIDEMIC CHOLERA, and CHOLERA INFANTUM. The present article is devoted especially to the first of these affections. *It is the variety so common as an Endemic disease in various parts of the United States during the summer season, and, no doubt, the same as that noticed by the ancient authors, and described by Sydenham as occurring epidemically in England towards the close of summer and beginning of autumn. By recent European writers it is distinguished from the epidemic variety by the name of Common or SPORADIC Cholera.*"

I have, for the most part, italicized the quotation, for the purpose of presenting directly to the attention of non-medical persons, assertions, points, or facts which are, in my estimation, essential to the proper appreciation of the language which I may use in this letter.

#### PROPOSITION.

*There is a difference between Common or Sporadic Cholera, or Cholera Morbus, (by all of which names it has been designated,) and Asiatic or Epidemic, or Algide, or Pestilential Cholera, (by all of which names it has been designated.)*

There are two reasons why the governmental officers, as well as the inhabitants of a city, should be fully informed upon the correctness of the proposition.

1st. That they may understand that physicians upon all material points, do not essentially disagree; and that "the wranglings, quibblings, contradictions, doubts, vacillations and abuses" which occur amongst the medical faculty of particular localities, and which, in truth, are the odium of professional men, result sometimes from ignorance in their own midst, but oftener from a sinister

disposition to use the want of information on the part of the people, for the individual benefit of the practitioners. This, as a matter of course, engenders doubt in the capacity of medicine as an art or a science, and the non-medical portion of the community become governed by personal regard, and motives springing from individual, or religious, or political association; and hence, assume the position of partizans. Under these circumstances, true medicine suffers; the citizens are divided in opinion; and the officers of a corporation are unable to adopt suggestions made by one or more practitioners, lest offence be given to others and their friends, who have, may be in a spirit of opposition, pronounced the suggestions futile, or offered others.

2d. To sustain the proposition before your honorable board and the public, involves the necessity of recognizing the distinct nature of sporadic, endemic, epidemic and contagious disease; which recognition would inevitably lead to a prompt and efficient institution of those hygienic or sanitary measures, which correct observation and actual experience have shown are eminently adapted to the protection of the health of citizens against certain classes of disease, while against others they are of but moderate, if any, importance. The distinct nature of different classes of disease being recognized, those who have so sagely remarked, that "no difference whether a disease that is raging in their midst and attended with great mortality, is sporadic or epidemic, it kills," will see their error, and zealously co-operate in instituting such police arrangements as will prevent the occurrence of the one, and do no possible injury should the other present. This being true, I am sure that I shall not be considered prolix, in giving here the correct force of these terms, as derived from the writings of individuals

who have lived and acted in the midst of disease originating from accidental, local, contagious and epidemic causes.

### SPORADIC,

According to Dunglison, as given in his Dictionary, is a term applied to diseases originating from "*accidental causes*, and independently of any epidemic or contagious influence." And to every physician, familiar, as he should be, with recorded observation, the succinct definition conveys very much; but for the better understanding on the part of non-medical persons, I will express the same in different language. A disease originating at a particular point, and which affects a greater or less number of persons at the place—all of whom, however, are placed under circumstances approximating to, if not positive in, identity; and which circumstances constitute the cause of the disease, and can be definitely pointed out, and are susceptible of being very nearly, if not entirely, suppressed or destroyed, and which circumstances being thus prevented from occasioning disease, proof positive is furnished that the cases that had already occurred were sporadic; and this is true, if there should occur the limited number of ten, or the larger number of five hundred cases. Of this class of diseases, Cholera Morbus is fitly illustrative, as will be more clearly demonstrated hereafter, and as Dr. Wood says—"Recent writers distinguishing it as sporadic."

### ENDEMIC

Is defined, in Dunglison's Dictionary, to be "a disease owing to some peculiarity in a situation or locality." Again, other language may be used probably with advantage. Endemic disease originates from causes that are permanent, but located within prescribed topographi-

cal lines; and affects those, and those only, whose system is in such a state as to be impressed by the influence to which they are subjected when within the atmosphere of such circumscribed boundaries.

In Hooper's Dictionary, it is defined to be "a disease peculiar to a certain class of persons or country." But by far the best definition is that by Prof. Samuel H. Dickson, of Charleston, South Carolina, so favorably known personally by many of the citizens of Knoxville, and whose fame, professionally and as a *litterateur*, is by no means circumscribed by the boundaries of our own extended country. He says: "By the phrase," an endemic disease, "I recognize any malady, which, occurring with special frequency, in any one locality in a permanent way, prove the existence, in that locality, of an agency of a peculiar nature, whether known or unknown, efficient in its production. Thus yellow fever is an endemic of Vera Cruz, Havana, and New Orleans; bilious remittent in all our low alluvial country; intermittent fever in Holland, &c."

#### LOCAL EPIDEMICS.

Dr. Dickson further illustrates the force of the term that has just been defined, saying—"Local epidemics have been often confounded with endemics, but are readily distinguished by reference to *the permanency* of the cause which gives rise to them, whatever it may be. Thus yellow fever, which, at a certain season of the year, is *always* ready to be generated in a fit subject at Havana and Vera Cruz, is occasionally, though rarely, epidemic at New York, Boston, or Philadelphia—in which places, when it occurs, it is singularly local, and confined to very narrow spots, or "infected districts." The disease which depopulated our town during the sum-

mer of 1838, and which so many of our people have cause to remember with sorrow, and which was considered by physicians of that day as yellow fever, may be very appropriately considered "a local epidemic." But had the cause or the circumstances producing the cause—which were removed in the breaking down of large mill-dams, the drainage of flag-ponds, and an opportune rise in the river—been permitted to remain, inducing every summer the same disease, it would be eminently an endemic disease of Knoxville.

Taking it from the connection in which he placed it, but yet on the same subject, Dr. Dickson says—"Local epidemics, however, are almost always attributable to some obvious cause, whose influence is limited to the situations in which they appear, and may be detected and pointed out, upon careful examination of all the concurring circumstances—such as the temperature of the season; the previous and present state of the weather, as to dryness or moisture; the stagnation of the air from infrequency of winds or tempests; the prevalence of particular winds of known or special quality; the deficiency, perhaps, and perhaps the superabundance, of the electric fluid; the decomposition of vegetable substances, by a subtle and malignant effluvium, is produced, recognized as marsh miasm or malaria; and lastly, animal putrefaction, &c."

#### CONTAGION.

Cullen, of Edinburg, who was distinguished during the last century, and whose works, for many reasons, it is a privilege of to-day's physicians to read, defined Contagions to be "effluvia arising directly or originally from the body of a man under a particular disease, and exciting the same kind of disease in the body of the person to whom they are applied." And since his day, if not

before—for quarantines were instituted long prior to Cullen's life as a teacher or author—the term has been so recognized, except by some few who attempt definitions, varying in some little particular, merely for the apparent originality. Dr. Dickson, who is probably as good a representative of those in the profession considered *par excellence*, to be contagionists, as can be found, says—“*Contagion* may be defined a peculiar modification of matter given out by a diseased body which possesses the characteristic power of generating in a healthy body, when brought to act upon it, a condition of disease similar to that which produced it.” Cullen published in 1789, Dickson in 1845—so that, as yet, Cullen's definition has undergone no change.

#### INFECTION

Is a word used by many as interchangeable, or of the same signification with Contagion. By others it is used as expressive of the same facts constituting the definition of Contagion; while the latter is used to convey the mode in which the poison is applied; and the reverse is true. Thus some contagious diseases require actual contact with the poison in the affected person before it can be communicated—as syphilis. Others require a very close approach to the atmosphere surrounding the person diseased, or contact with clothes that had been used by the diseased person, or contact with the poison in any way. This is the case with small pox, for the most part. But under certain circumstances, not clearly defined, the poison disseminates itself through a much more extended portion of the atmosphere, attacking all who come within the boundaries of that atmosphere, who are fit subjects—it is then truly, according to the majority of physicians of this age, *infectious*. By some under such circum-

stances, it has been called epidemic, referring to the number attacked, disturbing the correct and received definition.

Almost any febrile, or epidemic, or endemic, or sporadic disease *may possibly*, under appropriate circumstances, become contagious; but ordinarily, the contagious character is not preserved longer than the existence of such circumstances. Thus, comparatively, many laying sick in a relatively small room, badly ventilated and filthy, with a disease not ordinarily contagious, will render the atmosphere contaminated, and very dangerous to be entered by any person in health. But let them be separated—their persons washed and exposed to pure air, in different clothes, and cleanliness properly attended to afterwards, and the contagious character is destroyed. A notable example, referred to by almost every systematic writer, occurred in England many years ago, and is known as the Black Assizes. Very many prisoners had been, for a length of time, crowded together in jail, without any attention to comfort or cleanliness. The courts sitting, they were brought out, and though not laboring under the disease themselves, such was the condition of their clothes as to contaminate the atmosphere of the court room to such an extent as to have infected or contagioned so large a number of persons, who died, that the session received the designation by which it is yet referred to—the Black Assizes. Very many contagious affections are known and recognized—their poisons are palpable and transmissible; while others are known and recognized, but the essential nature of their poisons has not been clearly defined; and yet by proper precaution the influence of the poisons may be made subservient, and confined to a limited circle.

#### EPIDEMIC.

Epidemic diseases are defined by *Ægeneta*, a distin-

guished surgeon, who is said, by some, to have lived during the fourth, by others, during the seventh century, as quoted by some later author, whose works I have read, to be "popular and common diseases, which happen to many at the same time, *whose generation being universal, their cause is so likewise.*"

Dunglison, in his Dictionary, defines an epidemic disease to be "a disease which attacks at the same time a number of individuals, and which is depending upon some particular condition of the atmosphere of which we are altogether ignorant."

Prof. Dickson says that, in the expression "used by Sydenham, '*peculiar constitutions of the air during certain years or portions of years, disposing the body to take on one kind of disease in preference to another,*' there is a 'distinct assertion' of the belief in some occult quality of the atmosphere, having no relation to cognizable conditions, barometrical or thermometrical—not to be detected by our scientific apparatus, of eudiometers, hygrometers or electrometers, *and this doctrine has been received as an established fact.*" And after some remarks to be found in connection with local epidemics, he says—"General epidemics present some of the most wonderful and unaccountable, as well as most interesting, events that occur in the history of our race. The sources whence they arise, and the laws which govern their appearance and progress, are the themes of inexhaustible discussion, and are, in many instances, enveloped in perplexing obscurity. *They cannot* be dependent for their origin upon the *local influences* which I just now enumerated under the preceding head, (see local epidemics,) for they prevail under every possible diversity of circumstance and situation, not only independently of, but actually bidding defiance to, all known contingencies."

Epidemic diseases are occasioned by specific causes, of which we are wholly ignorant. When and where they originate, can sometimes be told; how, never. The cause existing, the work commences, and taking its course, it is not, and cannot be, confined within prescribed limits of territory, impeded by barriers, either natural or artificial, or affected by temperature, or modified by wet or dry seasons. Having sped on its course of destruction until its mission is completed, it disappears, sometimes gradually, sometimes suddenly, perhaps never to arise again, or to await such a concatenation of circumstances, as will once more set it, as an ocean of wrath, in commotion. The dirty, the insufficiently fed and clothed, and the dissolute generally furnish large numbers of subjects to the operation of the specific cause producing an epidemic; yet the prudent, the cleanly and the wealthy are, by no means, secure from attack—nay, indeed, they must furnish their quota of victims.

I have thus, gentlemen, in making you acquainted with the distinctions which men of observation, not mere science mongers, or book worms, who split hairs upon non-essentials, but men whose lives have been spent in the midst of daily occurring disease, with minds accustomed to attaining conclusions by comparing their own with other's observations, have made and established the fact, that there is a difference—a marked and positive difference—between Cholera Morbus or Sporadic Cholera, and Asiatic, Algid, or Epidemic Cholera. And this will be yet more apparent, as every position hereafter taken, and which, I trust, I will sustain, will but open wider and wider the lines which seem blended, and which every practitioner should be able, after mature investigation, to determine, and of which the people themselves, by no means, should be so ignorant as not, in some degree, to comprehend. And I

am not this year alone in my disposition to call in question the source of the awful mortality which has been ascribed to Cholera—Epidemic Cholera, of course—by the newspapers, probably sustained by a large majority of the practitioners resident in the places or towns from which the papers are issued. Epidemic Cholera has been reported as prevalent at Richmond, Va., which some of the physicians of that city have denied, affirming that the disease was Sporadic Cholera—Cholera Morbus—and traceable to local and known causes; and therefore it could not be justly ascribed to the specific cause of Epidemic Cholera. And another case in point is the city of Baltimore; quite a number of deaths having occurred during the course of the evening, the report was soon current over the city that East Baltimore was visited with Epidemic Cholera. The editor of the “Sun” undertook its investigation, and effectually quelled the panic, by demonstrating the cases to be Sporadic Cholera—Cholera Morbus—every case of death from the disease was produced by eating hard crabs from the dirty waters of the harbor. These things I wish to be remembered, as they have a very positive bearing on the argument of this letter, and very materially relate to the conclusion to which I wish you to arrive, as regards the nature of the sickness which created the panic here in August and September.

The symptoms which presented were diarrhoea, vomiting, cramp, rice water discharges, sinking of the vital force, as evidenced by cold sweating, low pulse and corrugated skin. These, it is admitted, occur in Epidemic Cholera, but are not singly or in any combination distinctive of that disease. They have been recognized as symptoms of disease from the earliest periods of observation, and yet present, under appropriate circumstances, to the

practitioner almost every month of the year. Nor is suddenness of death any more a distinctive of Epidemic Cholera, than the symptoms which have been mentioned, either collectively or individually.

Affections of the abdomen have ever been regarded by physicians as of the utmost importance, and always attract attention from those who are afflicted. And these affections, whatever their nature, or whatever the temperament or habits of the person affected, are often evidenced by vomiting or purging, or both in combination. Thus, not to refer to later writers, in Duncan's Selections and Translations from Hoffman's Practice, who wrote in Latin prior to the year 1761, is to be found recorded several cases of death from vomiting, which resisted every means known to the practitioners of that day. And to sustain the importance of vomiting as a symptom even at the present day, reference is only necessary to the almost innumerable articles and compounds which are proposed in our medical systematic and periodical works, and which, to be used judiciously, requires the closest investigation of every case of vomiting which presents to the physician.

But diarrhœa has ever been of more importance professionally, because it presents in by far many more subjects than vomiting alone. We are all familiar with the fact, that in hot climates the diarrhœa occurs endemically, inasmuch as our returned volunteers from Mexico returned exhibiting the ravages, in their systems, of the disease of the climate of the country which their valor conquered. And in this country, during very hot weather and sudden changes of temperature, many persons are affected with diarrhœa, particularly if there be added to the causes mentioned, error in habit or particular excesses—speaking relatively, the condition of the system of the subject being considered.

Cook translated a portion of Morgagni's extensive works, who wrote previous to the year 1760, having enjoyed an enviable reputation during the latter half of the seventeenth and first half of the eighteenth century. From that translation we learn that Marcellus Donatius, who flourished previously, narrated particulars relative to a woman in whom syncope was occasioned by the excessive *serous* (or fluid) discharges from the bowels. So copious was the evacuation that a large vessel was filled at one discharge. And from the same source, that Porteri makes mention of a notary who, within one day, voided upwards of forty pints of serous (or fluid) matter, and it nearly proved fatal to him; and that Morgagni himself, in 1733, voided, within twelve hours, sixteen pints of a *serous* fluid, which was almost *limpid*, and vomiting until he threw up a small substance of a greenish color, which appeared to be the leaf of a boiled herb. The vomiting and diarrhoea were cured simultaneously. In these cases, like a vast number which occur to the practitioner of the present day, an irritated stomach and bowels caused a draining of the fluids (*limpid*) from the system, evidenced in diarrhoea and Cholera Morbus, which, happily, were relieved by allaying local irritation. And thus every case of diarrhoea that presents, if permitted to progress or continue, will terminate, according to the cause and the condition of the subject, in a permanently diseased condition, or in the more active symptoms of vomiting and purging—terminating the life of the subject in a greater or less length of time, according to the force of the symptoms and the vigor of the patient. But if promptly attended to, and resort be had immediately to the ordinary medical advisor, the attack will generally be as efficiently subdued as in the cases that have been cited. Diarrhoea, then, being a

common disease, and one which prevails to a greater or less extent every hot summer, wherever heat has an influence, cannot be made to be in itself a premonitory symptom of Epidemic Cholera. It may be true that very frequently this pestilence visits localities where diarrhoea has existed for a greater or less length of time, and its attacks, perchance, may be more positive upon those who have been negligent, or unable to alter the condition of their bowels; but the fact is in itself no evidence that the vomiting, purging and cramp are the result of an impression made by the specific poison producing the epidemic disease. And, by way of negative evidence, I introduce the following newspaper paragraph. It serves to show that diarrhoea must be regarded as a disease itself, and to exhibit the foolishness of not looking for local and appreciable causes, before flying to the specific of an epidemic:

“THE LATE STORM.—The Savannah Georgian relates the following fact in connection with the late storm: ‘For six days after the late storm of the 8th inst., the water in the Savannah river, opposite the city, continued salt. The negroes on the neighboring rice plantations were supplied with fresh water from Savannah. At the city water works, water could not be pumped up for several days, on account of its saltness. Fresh water fish were killed in great numbers.’

“‘The diarrhoea making its appearance among the negroes on rice plantations, many of their proprietors have been induced to abandon the small remnant of uncut crops, for fear of approaching cholera. We are happy, however, to say that the diarrhoea was owing to brackish water, which having subsided, all apprehension of cholera has ceased.’”

In addition to the very positive evidence of the annual, and almost universal, prevalence of diarrhoea, and the negative evidence of such articles as the one quoted, I

might introduce the observation of men whose characters are vouched for by the circumstances of a professional nature by which they have been surrounded, as well as by the testimony of the editors of the journals through the pages of which they have made their observations known, that diarrhoea is not an essential premonitory symptom of Epidemic Cholera. And I now invite your particular attention to a quotation which I will hereafter make from Dr. Parkes, of London.

Just as erroneous is the position taken by the secular and religious press, that—as it is expressed in a Richmond (Va.) paper, in an article full of error from beginning to ending—“The cold comes and the Cholera goes,”—is the position that Epidemic Cholera is a disease of warm weather. Any one who has read the quotations already made can see the fallacy of such an opinion, and the definition of epidemic wholly destroys the position. But is not the fact that the public prints put forth such an idea, an argument favoring the probability that a vast majority of the towns reported to be visited by Epidemic Cholera, suffer in reality under Cholera Morbus, produced by local or cognizable causes, if they were but searched after with that zeal and energy which characterizes the people of the present age, in their pursuit of wealth? It is a fact, well established, that though by no means confining its operations to such places, yet, ordinarily, Epidemic Cholera makes choice of the most populous, most densely inhabited cities, passing by, even though they be in hourly communication with larger places, cities of second rate importance. And this being true, that we should so frequently hear of Epidemic Cholera raging in places of from three hundred to a few thousand inhabitants, seems exceedingly strange. The truth is, that though from accidental causes Cholera Morbus may and

does occur during every month of the year, it is a disease of warm weather, belonging rather to the autumnal group of diseases. More particularly liable to make its eruption in the latter part of July, it runs its course through August, and gradually declines as cool weather commences. It was graphically described by Sydenham as early as 1669, more than a century and a half before the Asiatic Epidemic attracted any attention whatever. And I beg you, who have witnessed cases of the disease that prevailed at the several points in East Tennessee, designated as visited by Epidemic Cholera, to read this enumeration of symptoms made long before Epidemic Cholera was known. Sydenham says—"It sets in at the end of summer and the beginning of autumn, as truly as the swallow comes in spring, or the cuckoo sings in summer. Its presence is understood at once. There is vomiting to a great degree; there are also foul, difficult, and straining motions from the bowels. The pulse is quick and frequent at times, small and unequal. The feeling of sickness is most distressing, and is accompanied with heat and disquiet. The perspiration sometimes amounts to absolute sweating. The legs and arms are cramped, and the extremities cold. To these symptoms, and to others of a like stamp, we may add faintness. The disease terrifies the lookers on, and sometimes proves fatal within twenty-four hours."

Celsus, who flourished during the reign of Augustus, second Emperor of Rome, and whose works have come down to our time, but which I have never had the pleasure of reading, as quoted by Dr. Good, in his "Study of Medicine," explains more fully than Sydenham the exact nature and appearance of the ill-discharges to which the latter refers.

"The bile burts forth both upwards and downwards—at

first like water, afterwards as though fresh flesh had been washed in it; sometimes white, sometimes black, or variegated." And he adds accordant with Sydenham—"All these symptoms associating, it is not to be wondered at that the patient should die suddenly."

Or take if you please, the language of Van Swieten, taken from his commentaries on Boerhaave's Aphorisms, written prior to the year 1750. "Thus we know that by the repeated use of purgative medicines, the whole body may be exhausted; and that the same may happen from a long-continued diarrhœa we shall declare hereafter. But this appears in nothing so evident as in the disease termed Cholera Morbus; where, of a sudden, in a few hours' time, there is so great a discharge of the humors both by vomiting and stool, that the whole body is exhausted, the face looks pale and collapsed, all the strength is destroyed, and even sometimes convulsions are observed from so profuse and sudden inanition, (emptiness,) even though not so much as a drop of blood is discharged either upward or downward; and this I have observed with great admiration, and particularly in a strong girl, who, in the space of three hours, had her face so much altered and collapsed by the disease, that her most intimate acquaintances could not know her—all the humors being dissolved, as it were, by a poisonous force, and violently expelled by vomiting and stool."

Or that of Hoffman, written previous to the year 1750. "The matters voided are, at first, the remains of the food, (or the ordinary fecal matter;) afterwards bilious humors, more or less mixed with frothy mucus, of a yellow, green, and, at length, often of a black color; sometimes bloody, like the washings of flesh, extremely acid, and almost corrosive. Acute pains and convulsions of the bowels, especially about the navel, and vehement car-

dialgia (or burning at the stomach) are conjoined. The disease increasing, an insatiable thirst, coldness of the extremities, palpitation of the heart, and singultus (hic-cough,) heavings of the diaphragm, come on; the urine is suppressed, cold sweats break out, the patient faints, and dies with convulsive ritchings."

And again, as to its danger and the symptoms, Colhoun, of this country, who published in 1826, six years before the advent of the Epidemic Disease on the American continent, says of Sporadic Cholera—"The prostration of strength which accompanies it, and the rapidity with which it advances, give to this disease a peculiar character, and render it one of very urgent danger. In many cases when unchecked, it proceeds so rapidly that, in a few hours, the patient is brought into a state of considerable risk. Cramps of the legs, extending to the thighs, abdominal muscles, and diaphragm, combine with the incessant vomiting and purging, to exhaust the patient's strength; and if relief be not speedily obtained, are followed by coldness of the extremities, and of the whole skin, extreme restlessness, clammy sweats, hiccup, and death." And Good, treating of Cholera Morbus, affirms that "Cholera is, in all cases, a very acute disease, and of short duration;" and the affirmation is confirmed by Dr. Doane, of our own country:—"This affection may last only a few hours, seizing the patient, for instance, early in the morning and proving fatal in the middle of the day."

And Joseph Brown, of England, a recent writer, tells us that "ordinary Cholera, in temperate climates, is not very often fatal; yet it is a dangerous disease, and one which requires much attention on the part of the practitioner." His article is a contribution to the Cyclopædia of Practical Medicine.

These descriptions, it seems to me, are sufficient in themselves to establish the fact, that purging, vomiting, even of limpid water, cramps, and sudden death, are by no means sufficient to destroy the character of the Cholera, with which every practitioner of any extent of observation is familiar; and wholly inadequate as symptoms to establish the existence of Epidemic Cholera. They are, in fact, essential to Cholera Morbus, and inseparable, while, in Epidemic Cholera, they are only secondary, and of but little value to the physician, in his attaining a conclusion as to the intimate nature of the disease he is called on to treat. This is the idea conveyed by the language of Dr. Parkes, to which I have before invited your particular attention:—

“That the vomiting, purging and cramps must be considered as usual but non-essential symptoms of Cholera, *whose absence would not, in the least,* affect the diagnosis (telling the nature) of the disease, and that consequently it is within the bounds of possibility, or even probability, that cases of Cholera may occur entirely divested of these symptoms. I need scarcely remark that several cases of this kind are upon record; and although I have never myself witnessed these extreme instances, it is satisfactory that, from reasoning on my own fatal cases, in every one of which purging was present at some period of the case, I have come to a conclusion identical with that derived from actual observation by several of the most eminent writers on the subject.”

And again, after having established the nature of true Cholera, which he expresses in the term Algide or cold, Parkes says, that

“The purging and vomiting bear no relation whatever to the algide or cold symptoms, or that, if any relation exists, it is inverse rather than direct. \* \* \* Thus, at a period of the case when the algide symp-

toms were most fully developed, namely, in the last five hours, the purging ceased; in cases where the algide symptoms were prominent throughout, and which cases were the most malignant, and the most rapidly fatal, the passage of fluid from the intestines was often times trivial in degree and shortened in the period of its occurrence. In cases in which the vomiting and purging were excessive, the algide symptoms often came on slowly, and were less marked and deadly. And when the algide symptoms were at their point of greatest intensity, the cramps ceased."

And to the same point is the observation of the physicians of Buffalo, N. Y., as reported by the editor of the Medical Journal, of that city, regarding Epidemic Cholera, as it presented there and at Niagara Bridge during the past summer. A stoppage of the diarrhoea and vomiting, by means implies recovery, the discharges being frequently too small to account for the excessive prostration and inevitable death. Thus it is evident, as I affirmed in 1849, when writing on this subject, that the vomiting, purging and cramp are of but secondary value, even when known, and undoubted cases of Algide or Epidemic Cholera have existed in the same atmosphere with the cases presenting simply the symptoms of puking, purging and cramp. And if a patient with these symptoms present no features characteristic of Epidemic Cholera, no physician can be justifiable in pronouncing the case anything more than Cholera Morbus. That cases of Sporadic Cholera do occur during the existence of the Epidemic is a fact that is testified to by all the reports of the health officers of the larger cities; but has been more curiously sustained by my friend Dr. E. D. Fenner, of New Orleans, who says, in estimating the mortality of Epidemic Cholera from a particular visitation to that city—"It may be that our aggregate will be objected to, inasmuch as it embraces cases of Cholera Morbus, as well as the

eases of Epidemic Cholera." I have not made the quotation from the book, relying upon my memory; but while the language may not be, the idea is, identical.

The nature of Sporadic Cholera has already been affirmed to be an irritation of the stomach and bowels, resulting from a variety of causes, some of which will attract our attention at an after point in this letter.

As to the nature of Epidemic Cholera, it has already been shown that, like all true epidemics, it results from the impress of a specific something, which produces its own specific or peculiar evidences, though it may be these are in connection with others that are more prominent, as well as more common. Evidence of this specific cause is published by the Philadelphia Board of Health—"The appearance of Cholera at Staten Island, (New York,) and its almost simultaneous outbreak at New Orleans, is one of those peculiar coincidences which will ever be shrouded in obscurity. Carried into both ports by emigrant ships from Havre, when they sailed, there was no Cholera known to exist—the one leaving on the 3rd of November, the other on the 9th, following nearly the same track, the disease appearing at sea on the 25th November in one, and on the 28th in the other, when most probably in the vicinity of each other, crowded with emigrants, uncleanly and badly ventilated. The inference is, that they must have passed through a stratum of atmosphere, loaded with some peculiar influence, which, under favorable circumstances, produced in both cases the Cholera poison." Or, in other words, a stratum of atmosphere contaminated with the Cholera poison. And not less to the point is the following language, from an article on the Causes and Diffusion of Cholera, in the July number (1845) of the "British and Foreign Medico-Chirurgical Review:"

"Another argument is derived from the necessity of in-

cluding Cholera among the class of epidemic diseases, all of which arise from peculiar and specific poisons. The progress of a case of Cholera, its regularity, its similarity of feature to every other case, even the general uniformity of its mortality, point to a special agent."

In the same article, it is, previous to the quotation just made, said:

"It is a very remarkable circumstance, and one proving the uniformity of the poison of Cholera, that the ratio of mortality to attacks of Cholera is as great in the healthy as in the unhealthy districts. The average varied between 1 in 3-6 and 1 in 1-1 of those attacked."

This specific poison enters the system of those who exhibit the symptoms of its influence, no matter how, whether through the skin, by inhalation, or otherwise, and from the very commencement of diseased manifestations, the peculiarity of Cholera is exhibited—*coldness*, to an extent proportioned to the intensity of the impression from concentrated energy of the poison, or the peculiar adaptation of the system to be impressed.

The general opinion of the nature of Cholera is that conveyed by Dr. Parkes, of London; and as I have introduced his name into this letter several times, it will probably add importance, if it does not give excuthedra weight to the quotations which I make, for me to give something of his standing where he is personally known. Dr. Parkes was Assistant Surgeon to one of H. M.'s Regiments in India, and published, in 1747, his "Researches into the Pathology and Treatment of Algide Cholera, the result of observations made during two severe Epidemics of Cholera, which prevailed in India in 1843 and 1845." The doctrines set forth by Dr. Parkes, and which can be seen to be the view entertained by the best observers, many others expressing their opinions in almost the same language used by Dr. Parkes, I became acquainted with

through a review published in the January number (1848) of the "British and Foreign Medico-Chirurgical Review." The reviewer speaks of Dr. Parkes personally, and gives reasons "which lead us to feel the greatest confidence in the acuteness and industry with which he (Dr. P.) has prosecuted his researches, and in the fidelity and discrimination with which he presents the world with their results." And more recently, the confidence of the profession of the city of London, in Dr. Parkes' ability and familiarity with Epidemic Cholera was manifested "in a request made by the General Board of Health, that he should examine into the evidence which might be derived, for or against the doctrine of Contagion, by an analysis of the early cases of Cholera in London." The result of his labors, in accordance with this request, may be consulted in the July number (1849) of the "British and Foreign Medico-Chirurgical Review."

In attempting to establish the seat of the primary diseased condition, Dr. Parkes says :

"As, therefore, the mechanical part of respiration is perfect, and as there is no impairment in the voluntary command of the respiratory muscles, and as the heart evidently beats, in many cases, till stopped by the want of blood on the left side, and by its accumulating on the right side, we are compelled to look for the cause of such arrest of the circulation in the only remaining element of respiration; namely, IN THE BLOOD ITSELF."

The blood is compounded of certain elements, in definite proportions. Those proportions being destroyed, the result must, necessarily, be manifestations of disease. If the blood be rich, the closeness of the relations of its constituents enhanced, or the proportion of some of its elements be heightened, the effect will be an increase of vigor in the action of the heart, and pain, with unnatural redness of some particular part, or general punctual derange-

ment, increased heat, and quickened pulse. These, every one has observed in complicated inflammations and simple fevers. But if the closeness of the relation of the constituents of the blood be weakened, the proportion of some of its elements be lessened, the reverse takes place. The heart—though in itself unaffected—beats weak, yet it may be quick, the surface is cool, and diseased action occurs in particular parts, differing materially from the local affections occurring when the circulating fluid is enriched. Under any circumstances, the evidences of disease, when proceeding from an abnormal or unwonted condition of the blood, bear a ratio to the degree of disturbance of the relations of its constituents.

The general opinion of the nature of Cholera may be thus expressed. The causative agent—whatever it may be—enters the economy, and by its impression on the blood causes an alteration of the relations of its constituent parts, and the effect is unhealthy manifestations, proportioned to the degree of such alterations.

A want of knowledge as to the character of the causative agent has been affirmed; and of course there must necessarily be a want of knowledge as to the essential nature of the impression it makes on the blood. In the absence of such knowledge, effects must be investigated. Every effect itself becomes the cause of subsequent effects; and if the first and essential effects produced by the action of the poisonous cause can be discovered, and successfully combated, the subsequent, dependant, or secondary effects will be entirely prevented, and the disease cured.

The peculiar effect or manifestation in attacks of Epidemic Cholera is *coldness*, of greater or less intensity, according to the severity of the attack, in the severer cases universal coldness.

It is not incumbent on me to discuss here the theories

relating to animal heat. It is sufficient for the unprofessional reader to know, that no medical man will deny that the circulating fluid is largely involved in its production. And this is evident from the facts mentioned when speaking of the consequences upon a change of the relations of the blood-constituents.

The immediate effect of the impression of the Choleraic poison is a destruction of the relations of the blood-constituents, setting loose, or uncombining the elements, so as to prevent the motion of the fluid necessary to the production of heat; and the same want of motion in the fluid, prevents the heart from receiving the stimulus constantly necessary to the production of action in that organ, and of course it stops, as does the mill-wheel when its supply of water is shut off. The extent and degree of coldness, and the want of force, as manifested from the pulse by the heart, are then evidences of the extent of the disturbance of the relations of the blood-constituents. This is observable in the successive manifestations presenting during the progressive course of those cases which, at first, are mild. The disturbance of relations is evidenced, and the evidences become, if not interfered with, more open and marked; and consentaneous with their development is observed a lessening of the temperature of the body—first cool, then cooler, then cold—and sinking of the circulation—first weak, then weaker, and finally wholly gone. The coldness, and loss of power by the heart, are then ultimate or primary evidence of disease. And that they are not secondary to intermediate or intercurrent evidences, but result from the primary impression of the choleraic poison is proven by the fact that cases occur—the severer cases in which death takes place almost as soon as evidences of disease are observed—which have no intermediate effects. In cases of this char-

acter, after death, a fluid identical in appearance, and chemically the same, with the fluid passed by vomiting and purging by those less violently attacked, is found in the stomach and bowels, and sometimes in the lungs. And the blood in the circulating vessels is found to be destitute in a greater or less degree, of the very substances found in the cavities of the stomach, bowels and lungs. This fact abundantly proves that disturbance of relations, and a tendency of certain of the blood-constituents to escape by free surfaces, are coincident effects immediate upon the impression made by the choleraic poison.

The loss of support by the tissues of the stomach and bowels, in common with the tissues of the organs of the whole economy, from the absence of well and duly proportioned blood, and the impression which the constituents make in passing from their own vessels to the exposed or free surfaces, in contact with which they are found, are sufficient to induce the unhealthy manifestations observed in gradually developed cases of Epidemic Cholera. Generally, in such attacks, with a degree of coldness, the first evidence is looseness of the bowels. Here the impression of the causative agent is slight. The relations are but to a minor extent disturbed, and coincidentally with such a minor disturbance is a slight tendency of elements to escape. The tendency not being interfered with, or unsuccessfully treated, becomes stronger and stronger, as does the leak in a great reservoir, which becomes greater and greater, by the constant pressure exerted upon it, until it pours forth a mighty stream. Then present the vomitings, purgings and cramps. The variety of the secondary evidences—the sometimes vomiting preceding purging, the sometimes entire absence of one or the other, and the sometimes purging before vomiting, and the occasional absence of pain or uneasiness at the stomach, and

its more ordinary presence, &c.—are to be accounted for by the variety of susceptibility of different tissues and organs, consequent upon intrinsic or extraneous causes exhibited by different individuals, placed under seemingly the same circumstances. The cramps are the result of an irregular nervous influence, necessarily exerted from the nervous system being compelled to act under the reception of a circulating fluid more or less destitute of certain essential constituent ingredients. Throughout the whole attack, the coldness and prostration bear a ratio to the degree of disturbance of the relations of the blood-constituents. And from first to last, the want of glandular action is fully evidenced. The engagements of the vessels consequent upon the rush of fluid to the centre, and the very great alteration of the fluid from which they prepare their secretions, are sufficient to account for the entire absence of action by the glands.

The vomiting, the purging, the nervous manifestations, and the torpidity of the glands, are then secondary evidences and effects. And the destruction of the natural relations of the blood-constituents, and the coincident tendency of certain elements of the blood to escape, are the only immediate or direct, and, therefore, primary effects. These being coincident and inseparable, may legitimately be considered identical; and the one being hidden, while the other is obvious, the primary effect may be stated to be, *a tendency of certain of the blood-constituents to escape from the free surfaces offered them by the stomach, bowels and lungs.* And coldness, of greater or less degree, with a corresponding sinking of the pulse, is pathognomonic or characteristic of Epidemic Cholera; and this coldness and corresponding sinking of the vital power, is a direct manifestation from the effect following the impression of the causative agent in the production of Epidemic Cholera.

It is not secondary to other manifestations—that is, it is not the effect of exhaustion proceeding from the ejections and dejections, and the efforts made to vomit and purge—as is the case in Sporadic Cholera.

By some the rice-water or limpid character of the matters passed from the stomach and bowels, has had attached to it the weight of a characteristic element. But enough has already been said to destroy its value as a peculiar symptom, unless indeed the matters be chemically tested, and found to be no secretion, but portions of the blood itself; otherwise, the watery limpid feature cannot be considered as peculiar. Copious white flakes floating or suspended in a watery fluid, in connection with loss of heat, or a greater or less prevalence of coldness, with corresponding failure of the circulation, may, probably, in the room of chemical test, be considered as peculiar, and evidencing Epidemic Cholera. But this fact must be remembered, that the discharges in Epidemic Cholera are from the first of this limpid or rice-water character. “Bilious purging never occurs in Asiatic Cholera;” and it is the testimony of all observers that, as soon as any appearance of bile presents in the discharges, the patient is considered safe.

Having thus, in as plain language as I am capable of commanding, conveyed a description of Epidemic Cholera, it remains for me to sustain the ground which I occupy, by the introduction of quotations from others. And no other better suits my purpose than the following from Dr. Parkes. His reviewer says—“We must conclude our extracts with the following classification of the three principal varieties of Cholera, which will be seen to coincide extremely well with the notice of different degrees of the presumed change in the blood:”

“1. Thus, if the final change at once occur, and there is

a complete and rapid arrest of the circulation, either from the intensity of the cause or from constitutional predisposition, the worst variety is produced, in which a 'mortal coldness comes on from the beginning.' As the circulation is soon almost entirely arrested by physical alterations in the blood—presumably, changes in the fibrine—there can be little purging, and comparatively little sweating; there is always some effusion of the thick white substance into the intestines, but often little of the watery part of the blood. The symptoms might be inferred from a statement of this condition; we might have presupposed a very rapid loss of animal heat, loss of voice, deafness, and vertigo, total arrest of all secretions, defective aeration of the blood, consequent dark color of the surface, and early and deep coma.

“2. If the cause act with less intensity, we have the second variety, in which there is less physical alteration in the fibrine, and the circulation is carried on for a longer time. Consequently, the characteristic change is not evidenced solely or chiefly in the interior of the vessels, but is partly transferred to the exterior of the vascular system. The proteine constituents, fibrine and perhaps albumen, are effused in large quantities, and in all parts of the body, though chiefly on the free surfaces of the skin, alimentary mucous membrane (stomach and bowels,) and more rarely the bronchial mucous (that lining the tubes of the lungs.) This effusion, and its general nature, form two characteristic distinctions between Cholera and diarrhœa; for diarrhœa is a disease confined, in the first instance, to the eliminating parts—viz: the large or small intestines, as the case may be, and is unattended, as a general rule, by the effusion of albumen and fibrine. The worst forms of this variety are seen in those cases in which, after two or three choleraic stools, severe and long-continued cramps come on, accompanied and followed by intense algide (cold) symptoms; after death the small intestines are generally found distended with the thick, white, flakey substance. Other cases of this variety present infinite modifications in severity, according as watery

elimination is added to effusion of the fibrine; in other words, according as they tend towards the slighter forms.

“3. The slighter forms commence with much watery purging and vomiting, and pass into the first and second varieties in varying times. There may be from ten to fifty copious watery stools, and frequent copious vomiting, before there is any great loss of heat and failure of circulation. But there is always some degree of this even in the slightest cases, else the case would be mere watery diarrhoea, attended only by exhaustion, and not the symptoms peculiar to Cholera. Cramps are seldom present till the stools put on the true choleraic character—viz: of copious white flocculæ, suspended in a watery fluid. The algide symptoms come on gradually, and are less intense than in the former cases; recovery is also more common.”

Now let a rational comparison be instituted between the descriptions of Sporadic and Epidemic Cholera, can any one at all familiar with the disease, as it presented in Knoxville, for a moment doubt under which designative title to place the cases which occurred here? But before I go into an analysis of such of these cases as I have been able to familiarize myself with, indulge me in stating the differences between the two diseases in a way varying somewhat from that which has been employed. In doing this I will use, without being particular to quotation marks, an article already referred to, “On the Cause and Diffusion of Cholera.”

The cause of Epidemic Cholera is specific. “Nothing is more certain than that Asiatic Cholera spreads and extends itself; it does not appear at any particular time of the year, and is limited to no locality.”

Sporadic Cholera is a disease of warm weather, occurring, for the most part, at the end of summer; and its extension depends altogether upon thermometrical and hydrometrical conditions, in connection with the hygienic

or sanitary condition of localities visited, and individual habits. "Sporadic Cholera does not travel," does not spread and extend itself.

"The symptoms of Epidemic and Sporadic Cholera are, in most cases, strikingly dissimilar. Thus as to the manner in which they commence; the attack of Asiatic Cholera is sometimes sudden; if preceded by a premonitory period, this is of short duration; whereas, it appears that, in Sporadic Cholera, *there is a long period, during which the system is becoming more and more out of health under the influence of hygienic conditions, and not from the incubation of a specific poison, until the outbreak takes place, which is the cure of the disease,*" if the system be not exhausted by the violence of the action which prevails.

"Again, in the future progress of Asiatic Cholera, it has been clearly proved that the vomiting and purging are only secondary symptoms, and in the purest forms of the disease may be absent."

But in Sporadic Cholera, the vomiting and purging are essential symptoms, are the evidences which most demand and attract the physician's attention, and constituting the force of the disease, require consideration, as to the time when they shall be encouraged or quieted.

"In Epidemic Cholera, vomiting and purging are only secondary symptoms; in Sporadic Cholera, they mark the utmost severity of the disease. When Sporadic Cholera kills, it is by the exhausting nature of these discharges, and not from the action of some agent, whose highest influence is quite unattended by discharges in any notable degree." "Billious purgings never occur in Epidemic Cholera; whereas, in Sporadic Cholera there is deranged action of the liver, as well as of the lining membrane of the stomach and bowels."

Having now, as I best could, proven my proposition, and shown that there are differences between Cholera Epidemically and Cholera Sporadically, or if others choose as an Endemic, I wish to apply the doctrines and assertions, which must be taken and received as facts until disproved, to the disease which has, during the past summer, appeared at *three* points in East Tennessee, and their immediate vicinities, presenting, in the language of the Madisonville correspondent of the "Athens Post," "more or less of the symptoms of Cholera."

As a member of the medical profession, however humble, but desiring that truth and correct information should abound in the place of error;—as a citizen, however destitute of influence, but not unwilling to have my opinion known, and ready at all times to "give a reason for the faith that is in me," to my fellow-men;—and under an impression, however little qualified I may be to form a correct opinion on such points, that the commercial interests of the whole of East Tennessee are involved in the question,—upon the force of the facts and doctrines which I have advanced, and the application which I desire shall be made of them, I assert with as much impressiveness as can be attached to positiveness, that *Epidemic Cholera is a disease which physicians have never had an opportunity to treat in East Tennessee.*

In every portion of the Union newspapers have published as a fact, that Epidemic Cholera in Knoxville, "walked in darkness and destroyed at noon-day," to an extent as almost to decimate the people; and so severe as to have so nearly depopulated the town, by death and flight, as to leave, at one time, out of the four thousand, of the town and its vicinity, but from three to five hundred inhabitants.

Thus has been destroyed the previous character for health sustained by Knoxville, since the visitation of disease in 1838, which was owing to local circumstances or causes, that aroused

the citizens to activity in establishing sanitary or hygienic measures, from which they gradually relaxed by the influence of the uniformly healthy condition of the place, and the excitement engendered by the progressive spirit of the age, that had communicated itself with, and was daily more and more manifest, in the improvement and enlargement of the city, and the rapid increase of inhabitants. And thus have many been deterred from coming amongst us, to invest their capital, at least until they regain their confidence in the general healthfulness of East Tennessee atmosphere, which had been, in connection with the developing resources of the country, a leading reason for their breaking up old associations to form new, and for their withdrawing capital from present investment to seek other resources for its increase. And so far as Knoxville interests are involved, if the commerce and manufacturing have not been directly and injuriously effected, the influence of the educational institutions has been very materially circumscribed; and that these maintained the pre-eminent commercial position of the city, and its metropolitan character as an East Tennessee town, at least until the near approach of railroads with their revolutionizing powers, gave an influx of inhabitants, reanimated and enlarged trade, aroused the spirit of speculation, and encouraged agriculture by widening the boundaries of the mart for the consumption of the products of the farm, should not be a matter to escape the minds of those whose pecuniary worth has been enhanced, and social position advanced by such an influence. And to these institutions, to which so much is due, should the fostering care and encouraging attentions of the governors and people of this city be extended for the benefit of their own children, and the offspring of the Alumni of the Female Institute, and of East Tennessee University, scattered so extensively over the South, South-west, and West, and who still look with love upon the institutions of Knoxville, at which their minds were

trained to meet the many varying circumstances and difficulties that have been encountered since they laid aside the humbleness of pupils, and assumed the gravity of matronly dignity, or the positiveness and determination necessarily exercised by the encounter of man with man.

As regards the depopulation of the town, there was at no time, during the sickness, less than twelve or fifteen hundred persons in Knoxville, and its suburbs. I have a list of upwards of one hundred families, some of which number as high as twenty members, several fifteen or more, and but few less than six persons in family, which at an average of eight would make eight hundred; and it is not to be supposed that I could set down and remember the position of every house, or know the name of every householder within the bounds designated; the list though, as far as made, is correct in every particular. How many young men there were in town I am unable to determine; but everything of this kind, when taken together, will, I am sure, present the eight hundred, with at least four hundred in addition, from being considered exaggeration, or as doing violence to correctness of calculation.

I ask a particular investigation of the following tables, which I am enabled to form from observations taken by the esteemed President of East Tennessee University, for the use of the Smithsonian Institution. It is unnecessary for me to more than refer to the very peculiar character of the past summer. It is fresh in the remembrance of all the readers of this letter, that a very extraordinary drougth prevailed—that a much more than ordinarily high thermometrical range, or excessive heat, was observed, and that the condition of most vegetables and fruits was worse than wilted, being parched and dried, and development stopped far, very far, before reaching maturity, or a healthy condition.

The observations from which the following tables are formed, were made on the western declivity of University Hill, about half way from its base—the hill rising about two hundred feet, and our position above the sea being about one thousand feet. The instruments have a northern exposure, and the house and grounds are fully exposed, being unprotected, except by a few young trees.

The point I wish to fix on the mind of the reader, is the very extraordinary degree of heat to which the country was subjected during the past summer, and which, it must be remembered, was complained of from one end of the continent to the other extreme. This, probably, will be as effectually done by mention of the fact, that an aged citizen of Jefferson county, residing some thirty miles from this point, by the name of Newman, has, for twenty years, taken and recorded two thermometrical observations a day, with the same instrument, and it occupying very nearly, if not all the time, the same position; and he says that the records he has made establishes beyond cavil, that the past summer was the hottest by two degrees, with probably one exception, that has passed since he commenced observing and recording.

Another point to which I wish attention to be paid, is the relative humidity of the atmosphere. But as this point is one with which the general reader, for the most part, is wholly unacquainted, I think it necessary to give a few rules which can be found stated in every work—large or small—on Meteorology. I extract from Brocklesby.

At all temperatures, moisture resides in the intervals between the particles of air, which may be either partially or wholly filled with vapor that rises from the earth.

This constitutes the capacity of the atmosphere for moisture, and when the intervals are full of vapor, it is

saturated, which, in figures, is expressed by one hundred. *By relative humidity is understood the dampness of the atmosphere, or its proximity to saturation.*

An increase of temperature by dilating the air, separates the particles farther from each other, enlarging the intervals, and then the capacity of the atmosphere is increased, and to such an extent that, "while the temperature advances in an arithmetical series, the capacity is accelerated in a geometrical progression. Thus, at 32° F., the air may contain the 160th part of its own weight, while, at 27 degrees higher, or 59° F., it may contain the 80th part of its own weight, and so on progressively. But this is the capacity of the atmosphere for moisture, for while it *may* contain so much, it is far from always doing so; and as the capacity at 32° F. is far less than it is at 90° F., a grain of vapor in every one hundred and sixty grains of atmosphere at the latter degree of heat, would be relatively small, while the same amount of moisture to the same amount of air, at the former temperature, would be relatively damp. It is a fact that the relative humidity is highest, or nearer one hundred, the point of saturation, in the morning and evening, than at mid-day, or the hour of greatest diurnal heat, when it is lowest, or farther removed from the point of saturation.

And in the language of Dr. Drake—"It is known to all the world, that air which does not feel damp nor impart moisture to the bodies immersed in it, may be made to do both by lowering its temperature. Now, when two volumes of air, having the same sensible heat, are subjected to cooling, the one which first begins to deposite moisture on the refrigerator, contains the greater quantity of water, and is said to have the higher dew point. The range through which the thermometer falls before the

dew appears, is called the complement of the dew point. When air feels damp, and wets the bodies with which it is in contact, it is saturated with vapor; and the complement of the dew point is annihilated." The dew point, then, is the degree of temperature at which the atmosphere, upon sinking from a higher to a lower degree, commences to deposite its moisture, and may be thus illustrated: Two columns of air at a temperature of  $75^{\circ}$  subjected to a reduction of temperature by the application of a cooling or freezing mixture, one column is found to commence depositing dew at  $65^{\circ}$ , and the other at  $60^{\circ}$ . The first, then, has a complement of  $10^{\circ}$ , the difference between  $65^{\circ}$  and  $75^{\circ}$ , also, has the highest dew point by  $5^{\circ}$ , the difference between  $65^{\circ}$  and  $60^{\circ}$ , and commences depositing its dew soonest because it contains the greater quantity of moisture or water.

These principles have been stated as being necessary to the perfect comprehension of the following tables; and though by some I may be considered as presuming on their deficiency of knowledge upon subjects which every professedly educated gentleman should know something about, yet I hope that a portion of my readers will be materially advanced in their "knowledge of things" by the perusal, in this letter, of the principles of Meteorology.

	Thermometer.				Relative Humidity.				
	7 A.M.	2 P.M.	9 P.M.	Mean.	7 A.M.	2 P.M.	9 P.M.	Mean.	Dew point of Mean.
August 20	67	79.5	71	72.5	78	62	91	77	63.2
21	66.5	82	73	73.8	98	56	95	83	63.3
22	67	83	73	74.4	98	59	91	82.6	65.1
23	68.5	84	75.5	76	94	60	93	82.3	66.6
24	74		76	75	91		91	91	70.3
25	72	86	77.5	78.5	94	54	88	78.6	66.8
26	70	84.5	77	77	100	60	87	82.3	66.6
27	74	85	76	78.5	88	61	72	73.6	64.5
28	74.5	86	80	80	88	55	82	75	66
29	75	86	80	80	83	58	73	71.3	64.9
30	72.5	82	76	76.5	82	67	82	77	64.8
31	63.5	84	73	73.5	100	54	76	76.6	67.6
August 1	72	83	75	76.6	86	58	86	76.6	63.8
2	70	84.5	77.5	73.3	91	59	77	75.6	68.6
3	74	87	81	80.6	86	55	73	71.3	64.3
4	72	90	79	80.3	94	50	87	77	66
5	73	89	80	80.6	91	49	73	71	64.2
6	72	87	82	82.6	91	52	65	69.3	61.9
7	74	91	81.5	82.9	76	39	67	60.6	57.2
8	75	87	80	80.6	70	43	58	57	56.2
9	78	84	79	80.3	65	59	78	67.3	61.6
10	77	91	77	81.6	82	47	72	67	63
11	72	90	79	80.3	86	44	76	68.6	61.6
12	74.5	84	75	77.8	88	63	95	82	68.5
13	73.5	85	76	78.2	91	64	80	78.3	66.5
14	71.5	85	73	76.6	81	51	83	71.6	67.2
15	71.5	75	75	73.8	94	48	67	69.6	65.4
16	69	83	74.5	75.5	80	51	53	61.3	54.5
17	66.5	80	72.5	73	86	48	66	66.6	55.5
18	64		72	68	78		70	74	56.3
19	67	71	66	68	84	74	94	84	61.8
20	68	72	66	68.6	90	86	53	76.3	58.1
21	60.5		62	61.2	68		94	81	54.2
22	57	74.5	59	63.5	91	45	78	71.3	50.7
23	55.5	73.5	64	64.3	90	60	84	78	53.8
24	61	65	63	63	98	84	94	92	58.3
25	63	73.5	68	68.1	98	79	96	91	63.4
26	67	74	69	70	94	81	94	89.6	64.5
27	70	81	69	73.3	94	60	94	82.6	65
28	65	81	69	71.6	98	60	94	84	68.4
29	63.5	78	67	69.5	98	57	84	79.6	66
30	61	77	68	68.8	89	50	72	70.3	53.6

Before entering upon an intimate consideration of the tables, let certain other points of intrinsic value to the position I have assumed be presented to your attention. In 1821, Jos. Lovell, then Surgeon-General U. S. Army,

in a communication to a medical journal, contributing "An Abstract of Meteorological Observations at the Military Posts in the United States, during the Third Quarter" of the year 1820, uses the following language:—"Thus, there are some diseases which prevail at certain points, whenever the mean temperature of the season is above or below a certain degree. These, it would appear, depend upon a combination of general or local causes; for these points are scattered over a great extent of country, and their number bears a pretty direct proportion to the magnitude of the general atmospheric changes; while the intermediate healthy spots, often *in the vicinity of the former*, prove the necessity of local agents to produce the effects. Many extensive epidemics are neither arrested nor materially affected by localities; while a great proportion of our diseases proceed from causes obviously confined to places in which they originate."

To apply this to the history of disease in East Tennessee during the past summer, is, I think, an easy matter. Hippocrates, in his Aphorisms, says—"All diseases occur at all seasons of the year, but certain of them are apt to occur, and be exacerbated at certain seasons." And amongst those of summer and autumn, he mentions "especially vomiting, diarrhœa," and dysentery and lientery—all affections of the stomach and bowels; and the affirmation of Sydenham, with the concurring observation of all practitioners, have already been given, as placing Sporadic Cholera as an affection of the same season. The disease which prevailed at Loudon, Madisonville and Knoxville, and their immediate vicinities, did not prevail at Athens, twenty-five miles from either Madisonville or Loudon, and in constant communication, nor at Maryville, within twenty-five miles of Madisonville, thirty of Loudon, and twenty of Knoxville, with an intercourse cer-

tainly daily with Knoxville, and frequent with Loudon; indeed, did not prevail at any other point of East Tennessee. But diarrhœa did, and some portions of the section, dysentery ravaged with a mortality far exceeding that of the disease at Loudon, Madisonville or Knoxville; yes, not to be surpassed by the mortality of the three places in the aggregate; while it is also true that diarrhœa and dysentery prevailed extensively at Loudon, Madisonville and Knoxville. Now, it is evident that the unusually long continued or uninterrupted excessive heat, was largely involved as a cause in the production of diarrhœa and dysentery—the diseases prevailing generally, and heat being a general cause. But the Cholera Morbus, a disease remotely induced by heat, was limited, in its occurrence, to the places designated—was a disease of those points, and this limitation and localization “prove the necessity of local agents to produce the effects” of vomiting, cramp, prostration and sudden death, observed in this disease.

But the remark has been made that Sydenham's affirmation makes Cholera Morbus an autumnal disease; and, therefore, if he is to be taken as authority, the disease at Loudon having occurred in July, he is evidence that it was not the disease now known as Common or Sporadic Cholera. Though I consider the reasoning as being very far from forcible, I deem it proper to answer it by reference to Hippocrates' Aphorism, already quoted:—“All diseases occur at all seasons of the year,” &c., which I regard as sufficient in itself to destroy any force whatever that it may be considered the remark carries, and, as I think, will be more apparent from a consideration of the causes inducing Sporadic Cholera.

The causes of Sporadic Cholera are given here, for the most part, in quotations, it being no part of my purpose to seem to be original in idea or language, only desiring

that long since recorded, and yet constantly occurring, observations should not be lost sight of, either by people or practitioners, in the seeming anxiety to adopt opinions having a shade of modernism, and for no other apparent reason than that the shade exists.

Hoffman says—“The Cholera is the most frequent in the warm climates. \* \* \* Among us, it is most common in summer, or in the beginning of autumn, \* \* \* after violent passion, or eating too freely of fermentable relaxing fruits.”

Colhoun certifies that “it occurs principally in the months of July and August, and appears to be altogether dependant upon some peculiar influence of a heated atmosphere on the system, more particularly on the functions of the chylopoetic (vessels concerned in the first steps of digestion, or formation of chyle) viscera. *The violence of the disease is almost always proportioned to the heat of the preceding summer.*”

Good ascribes very positive influence to heat, and specifies, amongst other causes, “cold, undigestible, unripe or incompletely developed fruits, as unripe apples or pears, cucumbers, melons, mushrooms, the ascent of an unhealthy affluvia from the decomposition of animal and vegetable substances that form the face of swamps, marshes, and other moist grounds; which predisposes the body to the action of this and other diseases as well,” &c.

Copeland's language is—“It generally attacks persons whose bowels and secreting viscera have either been, for some time previously, in an inactive state, or become loaded by an accumulation of retained and thereby altered secretions, &c.; and arises from exposure to the sun's rays, or to a high degree of temperature, &c.; from cold miasmatic night air and dews, after a warm sun; from cold, indigestible or unripe fruits, particularly melons, cucum-

bers, pine apples, &c.; and from whatever occasions a sudden depression of the vital energies of the frame," &c. He mentions other causes, dwelling on the sometimes malarious origin, but these referred to are, in my opinion, especially bearing on the circumstances surrounding the town, and some, at least, of the persons who died here.

Joseph Brown states—"Its most frequent exciting cause is exposure to the chill of damp or cold air after unusual heat;" and he is, by no means, adverse to the opinion of malarious causality.

Dr. George Budd, in Library of Practical Medicine, says—"The chief predisposing cause is season; \* \* \* and the disease is most frequent in autumn. Among the occasional exciting causes may be mentioned spoiled or unwholesome vegetables, \* \* \* and an abrupt transition from a high to a low temperature."

Dunglison is not less positive than others in designating "Cholera Morbus as a disease of warm climates and seasons. With us, it occurs in summer, and more frequently perhaps in early autumn, after the system has been subjected to elevated summer heat. The most common exciting cause is diet, improper by quantity or quality." And Prof. Wood is very strong in the language he uses in the affirmation that "hot weather, long continued, strongly predisposes the system to Cholera Morbus, and may, of itself, occasion the disease without any other cause. The same may, probably, be said of marsh miasma. Among the exciting causes may be mentioned the use of certain indigestible and irritating articles of food or drink, as cabbage, cucumbers, melons, various unripe fruits, fat pork, crabs, sour and incompletely fermented liquors, putrid waters; strong mental emotions, as fear or anger." And he adds, in this connection, that which I wish others to remember, and would like to have fully appreciated:—

“Sometimes it is so prevalent as to put on the *appearance* of an Epidemic, though probably dependent on the heat of the weather, or the local miasmata, in the same manner as our endemic remittent fever.”

Prof. Dickson ascribes the large majority of cases of Sporadic Cholera “to crude ingesta, such as fish, unripe fruits, vegetables insufficiently prepared by cooking, meats which have commenced to decay, vegetables in a similar condition.” And the following language used by him, I desire that you will especially notice:—“Fruits brought to market, in cities, for sale, are generally immature, and undergo an imperfect maturation or softening, instead of ripening *properly*: hence it is, perhaps, that fruit so often produces Cholera, especially when taken in any large quantity.”

And the sententious and expressive language of Dr. W. L. Sutton, Chairman Committee on “Epidemics of Tennessee and Kentucky,” used, in his report made at the sixth session (1853,) to the American Medical Association:—“A predisposition to the disease is created by the continued heat of summer, whereby the powers of the digestive organs are greatly weakened. A sudden change of temperature, (usually at night,) finding the body unprotected, or some indiscretion in eating, is usually the exciting cause.”

And, in connection with these causes, which so many corroborate, as regards individuals, the Aphorism of the great father of medicine must not be forgotten:—“Of natures or temperaments some are well, or ill, adapted for summer, and some for winter.” This, says the translator of Hippocrates’ writings, is indisputable; and I presume no one will have the temerity to assert to the contrary, for every body, professionally or not, even of the weakest powers of observation, cannot have failed to realize

the fact, that some persons are healthier in winter—that some are more liable to be attacked by the prevalent diseases of summer, and to escape the diseases prevalent in winter, while precisely the reverse is true of other persons.

This brings us to the consideration of the disease which existed at *three* points, during the past summer, in East Tennessee, and which has been asserted to have been essentially Epidemic Cholera—an assertion which I have denied, and again affirm my belief in the opinion, that it was Sporadic Cholera, or Cholera Morbus.

It will be remembered that evidence was adduced to show Epidemic Cholera, as is true of all epidemics, to be intrinsically a disease having its own specific cause, uninfluenced in its action by time, locality, or known particular circumstances; and it must also be known and remembered, that the doctrine has been taught, if not before, and received since Van Swieten's writings, that all other diseases were modified by epidemic diseases, they not being modified themselves; and, therefore, Algid Cholera being an epidemic, is not modifiable. Plague, an epidemic of the last century, has revisited London, and was recognized by the physicians of the present day from the identity of manifestations described by the practitioners of near a hundred years ago. Sporadic Cholera, though, as has been shown, depends for its production on a combination of general and local, or individual causes.

These two propositions being true, let us apply it to the points which have attracted most attention throughout the United States, as being, unfortunately, under the influence of Epidemic Cholera's specific poison. These are, Columbia, Penn., Martinsburg, Va., Pittsburg, Penn., and Knoxville, Tenn.

It is not my intention to pronounce positively upon

the nature of the disease occurring in other States, than the section of our own in which we reside, as I have seen no description of the disease as given by a physician; and I have, as a professional man, to look at the reports given in the secular or non-professional papers. If these are true, the places designated were, according to the definitions and observations of this letter, not subjected to a visitation from Epidemic Cholera.

A cause being found which is sufficient to account for particular results or effects, it is unphilosophical, because unnecessary, to seek for other causes whether more occult or not; being unnecessary, such a search would be a work of supererogation.

Now, at Columbia, Penn., comparatively a small town, a disease called Epidemic Cholera prevailed.

But none of the surrounding towns were similarly affected, and Cholera, though irregular and erratic, or any other epidemic disease, has never been known to localize and circumscribe, in such a manner, its action; it operates at one place, and travels to another.

The same facts may be applied to the other places designated as choleraic-points.

The disease was therefore local; and while the heat was excessive at these, as well as all other points of the whole continent—the disease being local, as regards the several points in their relations to towns in near proximity with them, and being so far removed as to preclude any influence from being exerted by the diseased places on such other locality, must be looked to, and circumstances connected with the places, to account reasonably for the visitation of the sickness.

What are the facts, as stated by the newspapers? At Columbia, the fountain from which the supply of water to the citizens was derived, had been contaminated by

decaying or putrefying and putried animal matter. Into the reservoir, or into the river above, so it was thrown into the reservoir, were dead sheep, and other animals which had been thrown from railroad cars, in which they had perished from over-crowding or suffocation. And the effect of such matters, when sufficiently concentrated, are, I believe, universally acknowledged.

As regards Martinsburg, Va., what are the facts from newspaper reports?

A load of water-melons, probably from the Eastern Shore of Maryland, were brought to the town, and very freely indulged in by its citizens. Before twelve hours, there occurred, probably, as many deaths. Under such circumstances, does rationality point to a hidden specific cause which runs universally, or to the water-melons? Or, to present the question as it touches my capacity, suppose but one citizen had eaten of the water-melons, and he had been sickened, the evidences of disease being purging, vomiting, cramp, &c., with death in three or four hours, would any one have assigned Epidemic Cholera as the cause of death, or would not every one have said, the excessive heat, the long drought, the insufficiently developed and long journeyed melon, predisposed to, and excited, the disease? But another efficient cause, the newspapers tell us, was superadded to the melons. The railroad cars—stock train—had thrown a number of hogs along-side of the road, which had been smothered to death in transit, and some more than ordinarily mercenary person or persons had skinned them, and furnished the Martinsburg market with meat professedly fresh and pure, but which, in fact, was in decomposition to a greater or less extent; and which was eaten by the citizens.

The influence of fresh meat, whether beef or pork, but

particularly pork, in very hot weather, in producing looseness of the bowels, and sometimes conjoined with involvement of the stomach, is too well known for me to dwell on now. But the state of decomposition being super-added, makes the case, in my opinion, very decided, and mark the attacks as Sporadic Cholera, from poisonous meat.

And the city of Pittsburg, with its several thousand inhabitants, loosing more than five hundred citizens within ten days, by a disease evidenced in purging, vomiting, cramp, and terminating the life of an affected person within comparatively a few hours! Did Epidemic Cholera cause the awful mortality of Pittsburg? Remembering that Epidemic Cholera is a disease resulting from a specific poison, the following from the "Pittsburg American" will show the absence of any such an agency, and points out a particular or known cause, abundantly sufficient to occasion such evidences of disease, and with malignancy great enough to terminate life with fearful rapidity:

"The appearance of Cholera here is to be attributed to the distribution of cheap but diseased potatoes. They were brought from Michigan in a damaged state, but were sold, and eaten freely. Another cause was the water in the basins. It had long been exposed to a sultry sun, engendered animal life on its surface, was widely used, and, no doubt, had a pernicious effect."

In truth, if diseased potatoes and putrid water are not sufficient, in excessively hot weather, to engender purging, vomiting and cramp, which terminate in death, sudden and surprising, the power of the specific poison of Epidemic Cholera is rightly solicited!!!

Having thus disposed of these points, which are, in no way, connected with East Tennessee, except so far as the local or known causes of the disease, with which they were visited, makes a relation, I will now confine myself

to home; but I am particularly anxious that it be not forgotten that all the physicians of Richmond, Va., do not agree that Epidemic Cholera has visited that city during the past summer or fall.

At Loudon, the announcement was first made that the dreadful enemy to mankind (Epidemic Cholera) was, in truth, in East Tennessee. In this connection, it must not be omitted to call up the fact, that the assertion was made in the article announcing that Cholera was in this division of the State, that it was "brought from Chattanooga," a point which, during the whole summer, was more than ordinarily healthy, not furnishing, as I am informed by one of that city's prominent practitioners, so much as one case of Cholera Morbus, not to say anything of Epidemic Cholera; the article thus affirming an opinion upon the question of the contagiousness of Epidemic Cholera, which the most extensive observers of the disease, in its widest and most lamentable devastations, would hesitate to express.

Loudon is the temporary terminus of the East Tennessee and Georgia Railroad, and has between seven hundred and one thousand inhabitants. Its business portion is so positively exposed to the full burning heat of a summer's sun, if I remember correctly, that the genial coolness of a tree's shade can hardly be experienced by the citizen or stranger, when necessitated to pass from one point to another. The immediate southern boundary of the town is a sluggish stream, which, during the drought of the past season, I am told, (for during a very short professional visit, made on the 20th of July, I did not examine the stream,) stood in pools, its banks before covered with water; and having a deep layer of debris and alluvial soil, being fully exposed; while immediately east, and leaving the very base of the slight hill on which the

town is located, is the Tennessee river, which, of course, was remarkably low, leaving the edges of the banks which are ordinarily covered with water, free to impart to the atmosphere an amount of paludal miasma which they would give off, in connection with the banks and putrid waters of the little stream having its mouth just at the entrance to the town from the river. According to the causes, to which I refer you, heat alone is sufficient to induce Cholera Morbus; but heat and malaria, or miasma, or bad, or, if you please, poisonous air, conjoined, are certainly sufficient. But the cases occurring at Loudon, so far as reported, show personal or individual indiscretions, in addition. Take that of Mr. Truit. A number of water-melons coming from the Southern States, where, be pleased to remember, the heat and drough were as positive as with us, were indulged in to an extraordinarily unwarrantable extent the night before his attack; he died, notwithstanding his offer of a thousand dollars to the practitioner in attendance, if he would not permit death to transpire. And if my information is correct, those with whom I conversed did not remember whether vomiting occurred or not, that spasm was not observed, the prominent symptom consisted of free and copious purgings, which ultimately became involuntary, while the patient was dying, as he did within twenty-four hours, comatose. But the case which probably most conduced to the panic fear by which Loudon was almost depopulated, travel very materially incommoded, and transportation almost, if not wholly, interrupted, and therefore commerce seriously injured, probably more strikingly shows the oversight of personal indiscretion as an exciting cause of a disease to which such strong predisposition was given by general circumstances. A man in the employ of the machine shop of the railroad company, at Loudon, had, during the pre-

ceding twelve months, been sorely affected with mumps, which had located itself, as that disease is well known to sometimes do, and with such violence that he recovered with a broken constitution, being really more an object for employment from charitable motives than from any interested objects of gain. His imprudence, after his recovery, was ordinarily a matter of remark, and was, most certainly, finally the cause of his death. During the day preceding his attack, and until a late hour, he ate freely of water-melons, and went into the river, remaining so long as to be remonstrated with; after night-fall he repeated the bath, until he was seized with cramp, and within twenty-four hours he was dead. Any other symptoms presenting after he left the water, and of which I was informed, have escaped my memory. The information, as regards these cases, has been obtained from reliable citizens of Loudon, and some of them believe that the disease of their town and vicinity was Epidemic Cholera. Many of the cases of the vicinity occurred on the line of the railroad work, in the midst of freshly upturned earth, and amongst a class of people not remarkable for personal prudence. Others, doubtless, for they were scattered, or in parcels, if enquired into most intimately, would, for the most part, be correctly assigned a position, as resulting from miasma, originating from some source in proximity to the habitations in which the cases occurred; and from some error in diet, not correctly stated to the medical attendant, either from the fault of the patient and his family, or from his own carelessness, or some other cause.

By the courtesy of a professional gentleman, I was, while on a visit of observation to Loudon, permitted to see a few cases that he pronounced Cholera. Without any personal or professional intention to question his ca-

capacity to decide, I must be permitted to differ. One of the cases, said to be in "the typhoid stage of Cholera," I could not learn had vomiting—purging he had suffered; and when seen by me, with constant tossings, red eye-balls, full pulse, delirium that did not permit a knowledge of his name, and the visible attendant circumstances, I would have unhesitatingly said he was the subject of delirium tremens, though it was positively denied that he ever drank—he had been under treatment about twenty-four hours.

Another: A Mr. Crews, if I am not mistaken, had, from Sunday until Wednesday or Thursday, the day of my visit, free, loose and frequent operations from his bowels; had been seen the day before by the prescriber, and had not vomited until after he took medicine, and then but little; had no cramp. We found him setting in the door of his railroad shanty—a kind of board house, generally over-crowded, and similar to which all the cases I examined occupied. Another case I examined on the line of railroad, two miles or more east of Loudon. An Irishman had eaten cabbage and drank singlings, or the first drippings of the still, the day before, until he took diarrhœa. Twelve hours after, he had vomitings and cramp. His shanty was immediately on the fresh up-turned diggings, on the railroad; and he died about one week after I saw him, having failed, the very first day, to take the prescription, made by his professional attendant. All these facts will, doubtless, be remembered by Dr. B. B. Lenoir and Mr. Thomas Sharp, of Baltimore, who were with me at the time the observations were made. After referring to the fact—and I do it professionally, and without any intention of assailing the feelings or reputation of either one or all of the practitioners of Loudon—that on two previous occasions, before the publica-

tion of this letter detailing the symptoms of Epidemic and Sporadic Cholera, I called for a detailed exhibition of symptoms of cases upon which the opinion of Epidemic Cholera was based, and which calls have never yet been responded to—the suddenness of death being the only reason on which the non-professional belief in Epidemic Cholera, in East Tennessee, is based and founded. I say, “this much for Epidemic Cholera at Loudon, East Tennessee.”

As regards the disease at Madisonville, I have but little data. The correspondent of the “Athens Post,” well known in East Tennessee for his honesty, probity, general intelligence, and gentlemanly bearing, is, in his knowledge of medical points, most unfortunately like too many others who freely and fearlessly express opinions—their knowledge on such points is as crude as the child’s of history, who has but reached his pictures in the spelling book. But as the reliability of the letter is vouched for by the correspondent, its matter, and we presume its medical expressions, being obtained by conversing with the physicians of the town, it must not pass unnoticed. For some of the practitioners of Madisonville, with whom I am personally and professionally acquainted, I have high regard; and therefore make bold to say that they would have done themselves much more justice, added to professional statistics, and advanced the interests of medicine, if they had reported the “upwards of thirty cases” of disease “presenting the appearance of Cholera,” that occurred under their observation, rather than left them to the vagueness of general terms, used by unprofessional men, and derived, I fear, from want of definiteness on the part of medical men. The language to which I have reference is such as the following:—“Distinguished by Cholera symptoms;”—“decidedly the appearance of Chol-

era;"—"whose disease had more or less of the symptoms of Cholera;"—"these cases, though having decidedly the appearance of Cholera, yet they were not positively pronounced such *until after their successful treatment!!*" What are Cholera symptoms? I apprehend that in these successful cases, and others, the purging, puking, cramp, and the result—sudden death—the discharges probably of a limpid character, constituted, if not the pathognomonic or peculiar symptoms, "decidedly the appearance of Cholera."

I beg you, gentlemen, to remember the remarks made upon the force of watery discharges, and the descriptions of Common Cholera, given by Celsus, Sydenham, and others, both ancient and modern; and, in the same connection, to remember that Common Cholera is emphatically a disease of hot weather; and these combined with the little that is known of the Madisonville sickness—that there were "upwards of thirty cases, more or less distinguished by Cholera symptoms, of which *seven* proved fatal; but of this number only *two* deaths can be attributed exclusively to Cholera"—and then pronounce upon the critical acumen of judgments that can decide definitely so small a proportion of cases—two fatal cases are said to be "exclusively Cholera," and three or four "pronounced to be Cholera after their successful treatment"—say five out of "upwards of thirty," not Cholera cases, nor indeed cases of Cholera, but "upwards of thirty cases *more or less* distinguished by Cholera symptoms." Truly, such a few number of cases in all, with such a very small mortality, is hard, to my mind, to be reconciled with the effects usually following the operation of the subtle, awfully poisonous specific of an epidemic. I suppose the population of Madisonville to be about five hundred. It is located on a slight undulating, and very

rocky ground, and, if I remember aright, with but little, if any, shade; and if its police arrangements have ever contemplated cleanliness of back yards, stable lots and cess-pools, I am wholly ignorant of the fact. I am unable to say anything as to the existence, in or around the town, of pools, ponds or water-courses, to produce miasma, but am prepared to say that one of the two deaths said to have resulted "exclusively from Cholera," had been in the habit of indulging freely in melons, and probably fruits—had eaten them the morning of the day of his attack, and that his first vomissions contained the ejected undigested portions of water-melon, the exciting and immediate cause of the attack that ended with his life. This, upon my confidence in the verity of a conversation held with one of the residents of Madisonville, whose word would not be contradicted by any one at all acquainted with his character. And if it is true that one case was excited by water-melon, what was the exciting cause in the other case, attributed "exclusively to Cholera," or of the other five that only had "Cholera symptoms," remembering the probability that it was as hot at Madisonville as at Loudon, and maybe as hot as at Columbia, or Martinsburg, or Pittsburg?

At all the points, then, have existed local circumstances, referring to the language of the Surgeon-general, used in 1820, or individual indiscretions which are sufficient to account, without any irrational appeal to an unknown specific poison, for all the evidences of disease, and its heart-rending, harrowing effects. How is the case with Knoxville? Let us, if you please, examine as minutely as can now be done all the circumstances connected with the place during the past summer, which, by a possibility, could have had any influence. In the description of Knoxville, I, of course, don't confine myself to the limits of the corporation.

First. HEAT.—The tables are before you, and will be again referred to; remarking that heat was excessive and continuous.

Second. The town, approaching it from the East, is situated on the apex and declivity of one hill, and on the ascent, apex, and declivity of a second. Immediately at the West end, rises a third hill. These are about one height—say one hundred and fifty feet, perpendicular measure.

At the bases of the East and middle hills, runs South, but meandering, first creek, on which are five mill-dams, not occasioning any very considerable backage of water, merely turning the course and body of the stream into dirt and plank races.

At the bases of the middle and West hills, runs almost South, then for a shorter distance West, changing again South, second creek, on which are two mill-dams, one fully a half a mile from the edge of town, West of North, probably the dam structure being a foot high, and immediately through the dam passes one of the most extensively travelled highways leading from the town, so that the water is kept in constant agitation, and, like the dams on first creek, very little back water is occasioned, the course and body of the creek being merely turned into the race-channel. The second dam, one-quarter of a mile below the first, makes no back-water whatever, being simply a round stick of wood, not more than half a foot in diameter, and which effects, as it lays in the creek, a change in the current, sufficient to supply a mill and carding machine, under the same roof, located one-half a mile below, and immediately in the West end of town. Until this mill is reached, the fall of the creek is considerable, over a very rocky bed, and the force of its current very great. But there is a portion of it—half-way from

first to second dam—in which, at very low stages of water, pools are formed, the water collecting in the recesses and excavations of the rocks; while below the machine or mill, for several hundred yards, the creek, over a somewhat less rocky bed, at low stages of water, is more sluggish and pooly than it is above the mill; yet farther below, the current of the creek is rapid and forcible, until it empties into the river, except at very high tides, when it is backed, and overflows a very large, rich alluvial soil, the bed of, and the debris or deposit from, an old mill-dam that had stood for very many years, but was destroyed after 1838, and lying South-west from the centre of town.

On First creek, there are two tanneries—one on the East, and one on the West bank, and it near sixty years established. Above these, and below three of the dams, is a very fine spring, and subject to overflow during tides, being at its rise but a few feet from the edge of the bank of the creek. It is on the West side of the creek, at the base of the hill, and about five hundred yards from the Eastern line of the oldest, and now frequently used, graveyard of the town, settled more than half a century ago. The grave-yard is near the apex of the hill, and is probably three hundred feet long—the length nearly parallel with the course of the creek—by one hundred and fifty feet deep; from this depository of the dead, the superstitious derived food for speculation during the sickness of 1838, from the observation of phosphorescent appearances, which occurred frequently on suitable nights. A half mile, or less, below this spring, and almost on the edge of the West bank of the creek, is another spring, furnishing a large portion of the town's inhabitants, supplying its water from a deep reservoir, and which it unceasingly discharges from a spout, in a full large stream—say twenty feet from the reservoir, which is covered, but the door-way is always

open. The reservoir is immediately below, and in very close proximity to the slaughter-house of the old tannery. The conduit from the reservoir to the spout is of wood, and has not been renewed but once within my recollection, for very many years.

On the East bank of Second creek is a spring, no other occurring on that bank for near a mile, following the course of the creek. This is immediately opposite a tannery, situated on the West bank, and at the basis of the third hill, that has been referred to, which extends round, until three springs gush forth with, usually, all the limpidness and coolness of a mountain streamlet, or a "fountain of the valley." These are in a line with each other, and all included within a length of line not more than sixty feet, and evidently furnished from the same underground source. But on a certain morning, near the close of July, the amazement and fright of a number of early visitors to the springs was excessive, and communicated rapidly to the large body of citizens, already on the verge of panic, from the nearness of the Epidemic Cholera—twenty-eight miles—at Loudon. The purity of the three springs was destroyed—they were bloody; and, of course, something was to happen very striking, remarkably peculiar, probably that never before had been, and just as probably, never again would be witnessed; a convulsion of the earth, an immense amount of sickness and death, "wars and rumors of wars;" thus proving that people are alike in Tennessee and Virginia, and everywhere, however intelligent in the general, when ignorant of particular subjects, compelled to resort—an involuntary arriving at a conclusion—to recondite causes, and unnatural connections, when a little reflection, having all the data bearing on the case in possession, would develop a cognizable cause, and establish rational relationships. The tannery of the West bank is in a flat,

and about three-fourths of a mile above the springs. The slope of the creek is from its East to its West side, the hill on the East side, for the most part, coming abruptly to the edge of the creek, while on the West side, until the springs are reached, the reverse is true, the base of the hill terminating on the Western edge of a flat or plain, of more or less width, which terminates its Eastern edge on the West side of the creek. The course of the creek will be remembered; the first spring is nearly South, or rather West of South, from the tannery. This description is made because it is fully believed that reflecting minds will adopt the conclusion held by very many of the citizens of the town. The tannery has been established four years. Near six weeks before the bloody-springs were observed, many hundred gallons of exhausted tan-ooze had been discharged from the vats, and settled in a low place of the yard, and gradually disappeared by sinking into the ground. Before this, the spring had never presented any unusual appearance; since then, no great amount of exhausted ooze has been thrown from the vats, nor has any disturbance on account of the springs transpired. It is therefore concluded, from the slope of the creek, and the character of the West bank, that underground streams bore off the ooze, and discolored the springs. It should have been mentioned that, in fact, the water, except after agitation of the spring, was unaffected, the iron-rust, or, as it was termed, bloody color, being reflected from a sediment at the bottom. It wholly disappeared in less than a week. No other springs were similarly affected. Other causes have been assigned, but this seems to me the most rational. A pond at the top of the hill very suddenly sunk, but it was, in the course of the creek, below the rising of the first spring; and an iron vein being worn by the passage of the waters, has been suggested; but the general opinion is, that it

was the ooze from the tannery. Immediately above the mill, West end of town, on the East bank of second creek, is an old tannery.

North of town, and almost upon its edge, at the basis of an imposing crag or cliff, is a large moist bottom, the bed of a deep fresh water pond, which, from its being full of a particular water plant, was known, prior to the winter of '38 and '39, when it was drained, as Flag-pond, and which is now covered with a rich luxuriant growth peculiar to damp grounds. It is separated from a race and dam by a very few feet of earth—the great road—which, however, does not prevent the bottom from being overflowed during the winter season for the purpose of furnishing ice, and thus occasioning a more constant and extended moisture of the bed of the old pond than would otherwise occur. This, though, it is now certain, will no longer be the case, inasmuch as the depots of railroads and the improving influence of speculation, have brought the ground under sale, enhanced its value, and made it worth gold, rather than being a mere point for the collection of one or two hundred dollars' worth of ice. Immediately upon the hill South from the pond bed, have been erected many buildings—amongst them the market house, which occasioned the removal of a large portion of upper soil from one part of the market house grounds, and its deposite at other points, so as to level for streets; and within the circumference of a few hundred yards, almost all the bricks used within the town and its vicinity during the summer and fall, were moulded from earth turned up since spring. There were five yards, manufacturing from five to twenty thousand bricks a day—all within a stones' throw, successively, of each other.

Immediately South, the bases of the hills are laved by the waters of Holston river, which is navigable for second

class steamers, except the seasons be extraordinarily dry, for nine months of the year. Opposite Gay, the principal business street, running North and South, and about equally dividing the town, East and West, the river, and for some distance above, is rather slow in its current, just before entering a shoal, when it becomes swift and strong, which it maintains until near the mouth of Second creek, some distance below the Western verge of town.

Upon the apex of the hill, there were several lots below the level of the street, and are yet some. Many of these have been filled up by an immense amount of dirt, freshly up-turned, obtained from cellars and foundations, which were dug during the spring and summer, the workman's hammer and the laborer's spade ceasing only from the panic—the fear of the much to be dreaded Epidemic Cholera. Into one of these lots, situated two and a half squares West of Gay street—the squares front three hundred feet—on Main street, half a square from the jail, and about the same distance from dwellings in which occurred considerable mortality, is a lot of near seventy-five feet front, by one hundred and fifty deep, which, I am told, was filled by the debris or offal of a very extensive hotel, the accumulation of fully twelve months, except what had been carried away by the heavy rains of winter and spring, in addition to the very large amount of recently dug dirt—all commingled, having been deposited together, and during a portion of the hot weather—several weeks before the eruption of the fear-inducing disease. The debris was, for the most part, if not wholly, covered by the earth. Adjoining this is a lot one hundred and fifty feet square, very much below the level of the streets which it corners, and one half of which is covered, when the water is not evaporated by excessive heat, or sinks from long intervals between rains, by a pond; and the soil on that part is rich,

very generally moist, and seldom, if ever, becomes perfectly dry. The locality of these lots, in my estimation, and their condition, are intimately connected with several deaths, which conspired to strike alarm to the hearts of the timid, to engender determination and courageous sympathy and action with the generously brave, to make our citizens flee their dwellings, leaving the comforts of home, for the cheerless residences of strangers, or of doubtful friends, closing the stores, and the workshops of the artizans, stopping the powerful heavings of the manufacturers' power, and leaving the affliction of neighbors, and the mournful condition of friends to be administered to only by the ministration of inexperienced nurses, but as efficient as the nobleness of the motive which prompted each individual to fill such a position, the anxious labor of the apothecary, and the practitioners of medicine, every one of whom remained in town, and I am proud to make mention of it, zealously and faithfully—whatever may have been his opinion of the disease—met it in its mildest and worst forms. Not one left town; one of the oldest practitioners, who had been confined during most of the summer, and prevented from practice, alone excepted—his condition requiring his withdrawal to a watering place, previous to any alarm; and he returned before the final subsidence of the sickness, and gave advice, in his room, to those who applied to him. And yet, if the grounds and arguments of this letter are correct, all this was from panic-fear—not from the actual operation of an epidemic's hidden specific poison.

The cess-pits of the town are numerous, for the most part old, generally very nearly full, and, in many instances, running over, and a very large number of houses for alvine deposits do not cover pits, the weight of the deposits making the room for subsequent ones, that should

be made by the scavenger. These are sometimes limed, by order of police regulations, upon the apprehension arising of an epidemic visitation—at which times, and, that I am aware of, at no others, are back-yards, stable-lots, and cellars, cleansed and limed; indeed, then a general white-washing occurs.

The drainage of the town is altogether surface-drainage, except an occasional culvert as long as the width of a street made from the necessities of travel, rather than any appreciation of a hygienic advantage.

There are quite a number of cellars in town, which fill with water during wet times, and their floors are constantly damp and unhealthy. Though vegetation is very abundant, most every citizen having a flower and vegetable garden, and hardly a house, but has trees on its grounds, there are very few trees upon the streets.

It may be that there are some facts omitted that should be placed in this connection; but for the present let these suffice, and with them fresh in mind, enter upon a more intimate investigation of the cases of death which occurred.

The first cases which gave any positiveness to the fears of our people, originally induced by the disease at Loudon, were three—one a child, and two young married females; and about which I am very poorly informed. They all resided in houses having locations but a little way removed from each other, and in close proximity to the brick-yards immediately North of town, and South of the bed of Flag-pond. Families immediately between this bed and the race, and upon the creek, and first dam of First creek, were not sick in any way. The three cases resulted in death; occurring, according to the report, within six days, but were not admitted, I remember, by a very large number of citizens to have any very particular bearing, as counter reports circulated regarding the length of time the two ladies had been

in such a condition as to require medical attention. But admit, for a while, that all were suddenly sickened, and suddenly died, with symptoms, such as have been frequently mentioned in this letter—as was certainly the case with the youth—the excessive heat, and the influence of fresh turned-up earth, are alledged by me as very powerful predisposing causes; indeed, I am, by no means, convinced that, in the further connection with excessive humidity morning and night, and considerable approach to medium at noon, they are not powerful enough to excite the disease in persons whose “temperaments suited them to summer diseases.” [See Copeland and Sutton, as quoted on the causes of Sporadic Cholera.] What can be said as regards the circumstances surrounding these individuals, their usual habits, the nature, the articles of diet used for several weeks, a few days, or a day before, or the day on which they were attacked? [See Dickson on ingesta as a cause of Sporadic Cholera.] When was the attack—day or night, and what hour? What was the character of the first vomitions and dejections, etc., etc.? All these must be explained, as well as the symptoms be fully detailed, before professional weight can be attached to the opinion that they were Epidemic Cholera. These cases occurred between the 30th of August and 6th of September, and I refer you to the state of humidity and heat for each of those days.

But a case of death occurred on the 27th, with which I shall commence, numbering each case, and will, as far as I can, fill the requisitions I have laid down in remarks on the three cases not enumerated, first from personal observation, and second, from that deemed by me to be reliable information.

I wish the difference in degrees of heat and the amount of relative humidity at noon, morning and night to be in

mind, when the history of the deaths of each day is given, and will thus state it, which can be verified or corrected by reference to the tables:—

Aug. 27, N.  $11^{\circ}$  A. M., N.  $9^{\circ}$  P. M., by which I mean to say that, on the 27th day of August, it was  $11^{\circ}$  hotter at noon than at 7 A. M., and  $9^{\circ}$  hotter at noon than at 9 P. M.—N.  $27^{\circ}$  A. M., N.  $11^{\circ}$  P. M., by which I mean the relative humidity was 27 fractionals lower at noon than at 7 A. M., and  $11^{\circ}$  lower than at 9 P. M.— $27^{\circ}$  and  $11^{\circ}$  farther removed from  $100^{\circ}$ , the point of saturation.

Aug. 27, N.  $11^{\circ}$  A. M., N.  $9^{\circ}$  P. M.—N. 27 A. M., N. 11 P. M.

No. 1. A negro man, æt., say 60, occupation water-carter, locality of house in a hollow of the hill, on which he lived, in every respect comfortable, and in general cleanly, sent word, early in the morning, to a practitioner for something to stop diarrhœa; afterwards rang a bell for religious service, returned to his house, and some time having elapsed, he attracted, by his calls, the attention of a neighbor, having crawled to the door of his house on his hands and knees. The doctor was immediately summoned, and found him cold and pulseless—life almost extinct; he died within a very few hours from the time of the doctor's visit. and was reported in town to have died of Epidemic Cholera.

The immense number of water-melons offered for sale, to the citizens of the town, during several weeks, and estimated at twenty wagon loads a day, the vehicles being generally uncovered, and more or less exposed to the sun's heat, afforded abundant supply of unwholesome ingesta, the peculiarity of the whole season, and the length of time which very frequently the melons were kept, being duly considered. In these, case No. 1, it is presumed, indulged with a liberality commensurate with his known carelessness of dietic habits, and freedom in indulgence

of appetite; and it is known that *his supper the evening before, and his breakfast the morning, of his attack and death, consisted of water-melon.* Something less than thirty years ago I became acquainted with this subject, No. 1, and know that since that time, *he has been affected with fistula in ano and chronic diarrhæa.* What the character of stools was, whether he vomited or cramped, I am unable to say. Judged by the principles, the ungainsaid, and generally received opinions and statements of this letter, its definitions and explanations, if no other case of sudden death, (aye, how many *reported* sudden deaths occurred, when, in fact, the natural effect of long-continued disease, probably, under an exacerbating influence, but "just happened" at the particular time, to evidence itself?)—if, judged as I have said, no other sudden death had occurred, all the data that have been stated being known, preceding and attending, would a universally-existing or epidemic-producing poison have been appealed to as the cause, or would the case, attracting but little attention, have been, at the time regarded as Sporadic Cholera, and the demise of the old negro, have been as soon forgotten, as his position was humble, or the disease which carried him to "that bourne," is common? In my judgment, with "an emphasis," No!

If, then, this process of reasoning, and the conclusion, be correct, and a large number of those who died here can be shown to have been, under similar circumstances, not identical in name, but in the nature of effects assimilated, operating under similar or assimilated predisposing influences, will not every one at once say, there has been no hidden influence operating here, but a known, appreciable cause, producing results that physicians might anticipate?

Aug. 31, N. 20° 5 A. M.—N. 11° P. M.—N. 46 A. M., N. 22 P. M.

No. 2. A mulatto æt., say 55, industrious, large frame,

and plethoric; occupation, butcher, requiring his constant daily action to supply his stall three times each week. He killed the evening before market morning—seldom retiring until late at night, and rising from one to three hours before day, for the purpose of filling his place at the market-house. His whole life had been full of exposure, and his industry was rewarded by a comfortable return—no one's family lived more comfortably, not having reference to luxuries, even those of this country. His residence is located immediately between, and opposite the tannery and machine or mill of the entrance West of town, his butchery at the tannery above, on Second creek—the residence a mile, the slaughter pen, in which the meat was left hanging during the night of slaughter, half a mile from the market-house. The usual animal diet of his family consisted of the meats, or portions of beef, mutton, and pork left on hand, of which he had failed effecting sale at market. Beef was, by far, the largest quantity of any kind of meat he sold—having it regularly, and other meats only on occasional market days.

By reference to any of the quotations of causes, here is a person most singularly favorably placed to be attacked by Cholera Morbus; and the history of his attack serves well to show the correctness of observation when made and recorded or expressed from correct, rather than sinister, motives. "Sudden atmospherical changes," "mental emotion," and "indigestible diet," are mentioned in the quotations, and are all in operation, and influencing this patient, and in this irregularity of habit, it can hardly be a matter of wonder that he had been the subject of diarrhœa for *two weeks* or more, immediately preceding the attack that terminated in death.

The atmospherical condition of the 30th was, N.  $9.5^{\circ}$  A. M., N.  $6^{\circ}$  P. M.—N. 15 A. M., N. 15 P. M.;—the

temperature was very high, the humidity at noon but medium, but approaching close upon saturation at morning and night, and reaching that point during the night of the 30th, and until the morning's observation of 31st, sinking by noon of that day to medium.

On the 30th, the subject, searching for cattle, rode from a very early hour, without eating after breakfast, until nearly, or after, night-fall. On arriving at his house, he found one of his children sick, and without a physician. Greatly alarmed, he twice left home, and in a run, visited the centre, and probably the East part of town, thus adding to physical debility by running between one and a half and three miles—the altitude of the hill, at the base of which he resided, I have already said, is about one hundred and fifty feet. After the fatigue of the day, and experiencing excessive mental emotion, he sat down to his supper, consisting of hot bread, coffee, fresh meats and vegetables, of which he partook, as represented, most unsparingly—drinking half a dozen cups of coffee, eating a dozen biscuits, and other things in proportion. His attack occurred after midnight, and his death before twenty-four hours. Is it not unnecessary to comment on this case, in applying “the causes” which are plainly productive of Common Cholera, to disprove the general belief that the man died from the impress made by the unseen, unknown specific—the subtle poison that occasions Epidemic Cholera.

Aug. 31. N. 20.5° P. M.—N. 46 A. M., N. 22 P. M.

No. 3. A mulatto girl, æt., 6. The antecedents of this girl's condition, whether she had diarrhœa or not, or as to her general health, I have been unable to ascertain. She was the child of No. 2, and in addition to the circumstances of locality, and ordinary diet, which both were influenced by, is another fact of importance. An apple

tree, bearing a winter-fruit, and which, of course, did not ripen until late in the fall, and afterwards until some time elapses, is not suitable as an eating apple, stood immediately in the lot adjoining her father's. Of this unripe fruit, and even in its green state, very imperfectly developed, the child had been, for several weeks, in the daily habit of eating. Fruit of this description will be again noticed, as an exciting cause of Cholera Morbus, particularly in connection with case No. 4.

Aug. 31. No. 4. With the circumstances of this case, I have failed to become acquainted. She resided at the hotel, before referred to as having had its accumulations removed during the hot months.

Aug. 31. No. 5. A child, *æt.*, 2, had been sick for most of the summer, with some infantile disorder, probably involving the bowels, but was not presumed to have been a subject of Cholera.

Sept. 1, N. 11° A. M., N. 8° P. M.—N. 28 A. M., N. 28 P. M.

No. 6. A lady, *æt.*, about 20. Confined a few days before with first child, having had sufficient hæmorrhage to produce considerable prostration. The location of her residence is on Walnut street, running N. E., South of Hill street, running E., W., and which had been filled, during the hot weather, with fresh-dug earth, from the cellars and foundations of extensive improvements then making on the lot immediately above—say two hundred yards North. The lady's residence is also about two hundred yards from the river, and a neighborhood of streets and lots but little used, because of the numerous gullies that are made the receptacles of shavings, and other debris of the town. On the morning of her attack, three large table spoonfulls of Castor Oil had been very imprudently administered, and its excessive purging permitted to continue, by ill-judging friends, until cramp and excessive sweat-

ing occasioned very much alarm, when physicians were called, but nothing could be achieved by the means they directed.

No. 7. Residence, the hotel, from which the lot, heretofore particularly placed under your consideration, was partly filled, æt., 55. Had been always very actively engaged; had endured all the vicissitudes of climacteric changes, and the trials and pleasures consequent upon army-life; free and generous, from the numerous acquaintances necessarily formed by his profession, he received universal regard and uniform respect. But his habits of appetite were so irregular as to be frequently the cause of illness, of different kinds; and, as I believe, contributed to the production of the disease which

“Deadened and loosened  
 Hopes that bounded in glad anticipation,  
 Each vivid passion, and each tender tie.”

No. 8. A black, æt., 90. Residence two hundred feet South of the lot filled from the hotel grounds, and the dirt from cellars and streets but a very few weeks or months before, and about forty feet South of the low flat lot adjoining the one just before mentioned. He had been worn down during the two years immediately preceding his death, by bloody-infiltration from the kidneys, and had accustomed himself to the use of purgatives, generally aloetic pills. He was capricious in his appetite for food, was particularly fond of fruits, and had the means of procuring almost anything he desired. It is not known what the nature of his diet was a few days before his final confinement to bed. He was sick for more than fifty hours, with diarrhœa, lying comatose for twenty-four hours—exhibiting the effects of poisoning by uric acid, distributed through his system, probably from the condition of the kidney, or, perhaps, by the congelation of blood in the bladder, preventing its discharging.

Sept. 2, N. 14, 5° A. M., N. 7° P. M.—N. 31 A. M., N. 18 P. M.

No. 9 will be noticed in connection with No. 14.

No. 10. Residence, hotel, æt., 25. Said to have been the subject of diarrhœa for several weeks before the active symptoms threw him into bed; but his attack is generally ascribed to *fear*.

No. 11. Residence, hotel, æt. probably 50. Mother of several children; general health not good; no particular error of diet is known to have occurred, though the want of general good health was ascribed to dyspepsia, or some affection of the stomach; was very much alarmed prior to her attack.

No. 12. Æt., 4. Bowels had been affected every summer since its birth. Most of the members of this family were sick, and similarly affected, produced unquestionably by cabbage in process of preparation for the German dish of krout, which they all had eaten.

Sept. 3, N. 13° A. M., N. 6° P. M.

No. 13. Of this case I have no reliable information. She resided immediately opposite an old cellar, which had, for many years, stood full of water. The house was torn down, the cellar left exposed a considerable time, and had been recently filled with newly up-turned dirt.

No. 14. A female, æt., 35. Residence situated immediately West, and probably within an hundred feet of the dwelling that has been referred to as being extensively improved, requiring considerable digging, and the removal of a large amount of dirt; immediately North, and within one hundred feet of the street where the dirt was deposited; and West of South, and probably within three hundred feet of the lot that was mentioned as having been filled with dirt from excavations and the hotel. The family had indulged freely in water-melons during the season, even up to a day or two before the outbreak of panic-fear. She was subjected to attacks of bowel ailments, and was

exceedingly nervous under such attacks. Her daughter had died the day before, and the corpse had been taken to the bed-side of the mother, with the permission of the practitioner in attendance, and from that moment she visibly grew worse, until death closed the scene. Her daughter—No. 9—by no means in the enjoyment of health at any time since an attack of measles, twelve months or more preceding, was, of course, placed under the same general circumstances, and personally, it is presumable, used the diet and fruits of the family. So, too, with No. 20, a hale yellow girl, æt., 20, who nursed the daughter and mother, and who died—the whole family being in great grief and fear—from pure consternation within less than five hours after the death of her mistress.

No. 15. An old black woman, subjected to cramp-colic on almost every occasion of indiscretion of diet, which she was by no means careful to guard against. She had eaten freely of peaches the evening before.

No. 16. A child, æt., 3. Parents resided in a frame house covering a cellar filled with water during wet weather, and always damp—the location of the house being very low. The house was but one story, and wholly unprotected from the rays of the sun—morning, noon, or night. Several members of the family were sick.

No. 17. A young lady, æt., 20. Resided within one hundred feet, East, of the filled up lot; had been constipated for a considerable time; spent several hours during the heat of the day—near  $80.6^{\circ}$ —shopping, returned home, and shortly after was taken with bilious diarrhœa, which continued for five or more hours, when the disease assumed the choleraic symptoms.

No. 18. A negro woman. Residence, the dwelling to which additions had been made; ate cabbage the day, or the day before, she died.

No. 19. A very frail negro man. Could not ascertain any imprudencies connected with his habits. He resided three hundred feet, West of North, from the filled up lot.

No. 21. A young lady, æt., 18. Resided three hundred feet West of the filled up lot, and immediately on a street that had been improved by the deposite of dirt during the summer. She had been attending a friend, and witnessed the excessive and sudden prostration of another associate; and, laboring under very considerable feeling, upon her return home sickened, and died within a very few hours.

No. 22. A negro woman, æt., 50. Resided on the filled up lot. Habits not known.

No. 23. Age not known—male—at time of sickness, and for some time previous, resided in a confined room, with but one window, and it fronting the filled up lot, two hundred feet—West of North—distant. He had suffered for several weeks from dysentery—eventually had watery discharges, no vomiting, and no cramp of extremities.

No. 24. A colored child, æt., 5. Of this case I have no information.

Sept. 4, N. 18° A. M., N. 11° P. M.—N. 44 A. M., N. 37 P. M.

No. 25. A yellow woman, æt., 45. Resided in a low damp hollow, three hundred feet from the filled up lot, and within one hundred and fifty feet of a large embankment of fresh earth. I am unacquainted with her habits.

No. 26. A male, æt., 40. Resided immediately on the East bank of First creek, in close proximity to the tannery situated on the East bank, and not very far removed from the tannery located on the West bank. His occupation as day-laborer exposed him to the sun, and any bad influence that might be experienced from digging and shoveling in the ground. About noon, and after morn-

ing's labor, he indulged freely in melons, which, doubtless, had not been the first time, and but a few hours elapsed until death occurred.

No. 27. A female, æt., 65. From the country; had been, for several weeks, in town with her daughter, but occasionally absent, a short time; very large, and apparently healthy; indulged freely in melons; sickened on Thursday, after riding through the sun during the day; on Sunday passed by stool the seed of melons of which she had eaten previous to, probably the day of, her attack. Sept. 5, N. 16° A. M., N. 9° P. M. — N. 52 A. M., N. 25 P. M.

No. 28. A female, æt., 18. Resided South of the filled up lot, and the low grounds of the lot adjoining, one hundred and fifty feet from the former, and from the latter the width—thirty-two feet—of the street, which had been filled with dirt during the summer. Accustomed for many months to eat apples, and for the last few weeks had eaten freely of a hard, immature fruit, which fell from trees growing in the yard of the residence—eating but little else. She sickened on Thursday, and died Tuesday.

No. 29. A male, æt., 40. Thin and spare, though, I believe, not considered to be unhealthy. Residence on a hill-side, South, and within, probably, three hundred yards of the bed of the old dam, on Second creek. His occupation called him into the sun. He had been sick for some time with diarrhæa, but improving, his anxiety about business induced him to venture too much—a walk of more than a fourth of a mile, and back, at noon, was followed by death before night. I could not learn that he either vomited or purged, but am informed that the color of the discharges from his bowels never assumed a limpid character: they were black.

No. 30. An Irishman, on the line of the railroad—shanty on the ground below a “high fill.” His bed was

the ground, and, I suppose, his habits were by no means free from the excesses to which people of his country and his occupation are addicted.

Sept. 6, N. 15° A. M., N. 5° P. M.—N. 39 A. M., N. 43 P. M.

No. 31. A yellow man, æt., 40. He had labored all day, pulling corn, returned home, ate a hearty supper, of which cabbage constituted largely, a part.

No. 32. A male, æt., 30. His history I am unacquainted with; his discharges were dark. It is said that he died from fear.

No. 33. I know nothing of this case—a child, æt., 4. Sept. 7, N. 17° A. M., N. 9.5° P. M.—N. 37 A. M., N. 28 P. M.

No. 34. A very old negro woman, occupation washer-woman, and of very intemperate habits. I'm unacquainted with the history of her attack.

No. 35. A male, Irishman, and laborer on railroad; and of whose habits, or history of sickness, I have no information.

No. 36. A female, æt., 30, in rather indigent circumstances, and who had suffered, for some time, considerable mental agitation from deaths, and other circumstances. Her residence was on the East bank of the creek, at the Northern head of the old dam-bed.

No. 37. An infant, placed under the same general circumstances as No. 16.

Sept. 9, N. 11° A. M., N. 5° P. M.—N. 6 A. M., N. 19 P. M.

No. 38. A female, æt., 24. Had been accustomed to indulge in fruit, though by no means in good health, and the day before, and perhaps the day of, her death, had partaken of peach-cobler.

Sept. 11, N. 18° A. M., N. 11° P. M.—N. 42 A. M., N. 32 P. M.

No. 39. A hale healthy Irishman, æt., 30. Contractor, and consequently exposed to the sun, and the influence of the freshly dug dirt, at the work which he had under-

taken to complete. Occasionally intemperate, and had been freely "indulging" for a time before, and until his attack, which was, at first, easily relieved, but he re-induced it by drinking cremor-tartar water, and vinegar and water.

No. 40. A very old man, constitution broken by many years of intemperance, tremor, and exposure. Residence at the Northern head of the old dam-bed, East bank of the creek. He was indigent, and by no means particular in the choice of articles of diet—fruit of every description, and meats, cured or fresh, when they could be obtained, always were relished and taken by him.

Sept. 12, N. 9.5° A. M., N. 9° P. M.—N. 25 A. M., N. 32 P. M.

No. 41. A female, æt., 15, long time sick, and died without any symptoms of Cholera.

No. 42. A female infant, colored, æt., 3. Mother very careless; had been under the same circumstances of No. 12. Sept. 13, N. 11.5° A. M., N. 9° P. M.—N. 27 A. M., N. 16 P. M.

No. 43. A male child. Died with an affection of the throat.

Sept. 14, N. 13.5° A. M., N. 12° P. M.—N. 30 A. M., N. 32 P. M.

Nos. 44, 45, 46. Children under three years of age—Cholera infantum of a protracted character.

No. 47. An old lady from Ireland, æt., 80, very frail, and who had been suffering under "nostalgia" or "homesickness," and a variety of harrassing circumstances, as well as sickness. The death of her son—No. 39—was a final blow—her future had no brightness. In the agony of her spirit, she ran to and fro, seeking comfort, and finding none, she lay down to die. The night after her son's death, she was exposed for several hours, sickened before day, and died the morning following.

Sept. 15, N. 4.5° A. M., N. 00° P. M.—N. 46 A. M., N. 19 P. M.

No. 48. A waggoner, æt., 40, careless in diet, went to bed for an injury he had received, sickened, recovered, exposed himself to the sun, relapsed and died.

Nos. 49, 50. I am unacquainted with the histories of these cases.

Sept. 17, N. 13.5° A. M., N. 7.5° P. M.—N. 32 A. M., N. 18 P. M.

No. 51. A small boy. Residence and general circumstances same as No. 25. He visited a neighboring orchard, filled his stomach to surfeiting, near the hour of mid-day, and immediately went into the water, in the race, in which he remained long enough to shrivel his skin. Immediately on his return home, he sickened, and finally died.

No. 52. I have no information relating to this case.

No. 53. A female, æt., 70. Very frail. Bowels habitually constipated, and frequently subjected to the impression of purgative medicines. I did not learn that she either vomited or cramped—discharges from the bowels induced such prostration as terminated in death.

Sept. 18, N.

No. 54. A female, æt., 20. Very frail, some months complaining of ill-health, and died with dysentery, without any choleraic symptoms.

Sept. 20, N. 4° A. M., N. 6° P. M.—N. 4 A. M., N. 33 P. M.

No. 55. Child, sick for several days.

No. 56. A female, æt., 30. Placed under the same general circumstances with No. 51—living in dirt, and notwithstanding the deaths in the family, ate cabbage, sickened and died.

In the formation of this epitome, I am indebted to a list of deaths made by one of the editors of our city, whose services, during the existence of panic, and of disease, were freely and effectually rendered, especially in dispensing necessary food to the poor and friendless, and, generally, in securing attention to all of every social or pecuniary condition. The ages are approximative, but the facts are, without doubt, authentic.

The facts, then, remove our town, if the grounds I have attempted to sustain, be correct, from the charge of having been one of the three points, only, selected by the poison of an *epidemic*, out of all the towns of East Tennessee, to exert its fell action; and persons away from us, who have been deterred from removing their families, and their wealth, and from bringing them amongst us, because here the *epidemics* rage as elsewhere, may feel that, as yet, such is not the fact—the cause of disease here is local and personal, and removable and preventable.

Quite a number of the cases of death were infants and children, a class seldom affected to any considerable extent by Epidemic Cholera; many of the cases died from diarrhoea, and some from dysentery and other diseases; and of all the cases, it is clearly shown that a very large proportion of them were cases in which sickness was induced, under the influence of the general circumstances, by the habits of diet, or indiscretions of the individuals; and it is a strong point which should be remembered, that the disease subsided after but a short career, relatively sudden; and why? Because the citizens had become careful in habits of diet, avoided exposure to the heat of noon, and the humidity of night and morning; and melons and immature vegetables were all gone.

But, in my opinion, by far the most important lesson to be derived from the account of cases, by you as governors and as legislators, is the influence of miasma, as developed from earth dug, removed and deposited, during the hot months of spring and summer; more especially when mixed with debris—animal and vegetable—the accumulation of time, removed from cellars, yards and cess-pools, during hot weather.

This letter, designed when commenced to be but a few pages, has grown, beyond my control, to many, and I must

bring it to a close, summing up the conclusions relating to sanitary measures, which, in my judgment, should be adopted.

1. The digging of cellars, and foundations, removal of dirt, and improvement of streets, and the up-turning of dirt for making brick, should, as far as practicable, be encouraged, by the corporate authorities, to be done during the time embraced between late fall and early spring.

2. The removal of offal, the cleansings of cellars, and of cess-pools, should not be permitted during the hot months, but should be enforced during the winter.

3. The citizens, for their own safety, or the preservation of their own health, should plant trees, at suitable distances, on the side-walks before their lots.

4. No place for the accumulation of ponds or standing water, should be permitted to remain—owners should fill the low grounds of their lots, and the authorities, the holes and sinks of the streets, during the winter.

5. The street drain should be covered.

6. The authorities should enforce such a preparation of the foundation walls of houses as will ensure dry cellars; or if the cellars cannot be made to remain free from dampness, they should be filled up.

7. A board of health, with a physician as principal officer, should be established, and empowered by your honorable board to carry out and enforce such measures as they, in the wisdom of consideration, after examination, may determine necessary to the well being and health of the citizens, and the maintainance of the good character of the town.

I have written to you, gentlemen, with the hope of advancing the interests of the town, and of its citizens. I have written prompted by the spirit of the following quotation:—

“Let every man *find* his work, and *do* it.’ *Our* work, as a profession, is in every way to endeavor to diminish physical suffering, according to the knowledge which has been given to us. That the imperfections and delinquences of men will impede Sanitary Reform, is no reason why we, whose bounden duty it is to preach Sanitary Reform, should be silent. We are to do what our science bids us, and to trust the result to that Providence, who, we are told, accounts of value even the life of a sparrow; and we have faith and hope in this result being what our researches have led us to anticipate.

“The medical profession, in urging on and in administering Sanitary Reform—for no other body of men can do it—will be fulfilling the most important duties which any class of men have ever rendered to a State in the history of the world. They will be indeed realizing the prediction of Descartes, who saw, in the unfolding of medical science, the amelioration of mankind. They will convince even those miserable sceptics, who dare to sneer at medical science, because it cannot cure, like a God, those diseases which the self-indulgence, the sensuality, and the brutality of years have induced; or to remedy, as by a miracle, those ills which the neglect and cruelty of men have inflicted on their fellow-men; they will convince even these detractors of a noble calling, that medical science, which had its birth in the weaknesses and necessities of the human race, is as the light arising out of darkness, which itself destroyed that from which it sprang.”

Let me adopt, without arrogance, the quaint language of a medical man of the seventeenth century, known as Sir THOMAS BROWNE:—“Lastly, we are not magisterial in opinions, nor have we, dictator-like, obtruded our conceptions; but, in the humility of inquiries or disquisitions, have only proposed them unto more ocular discerners. And, therefore, opinions are free; and open it is for any to think or declare the contrary; and we shall so far encourage contradiction as to promise no disturbance, or re-

*oppose any pen that shall fallaciously or captiously refute us; that shall only lay hold of our lapses, single out digressions, corollaries, or ornamental conceptions, to evidence his own, in as indifferent truths; and shall only take notice of such whose experimental and judicious knowledge shall solemnly look upon it; not only to destroy of ours, but to establish of his own; not to traduce or extenuate, but to explain and dilucidate, to add and amplify, according to the laudable custom of the ancients in their sober promotion of learning—unto whom, notwithstanding, we shall not contentiously rejoin, or only to justify our own, but to applaud or confirm his maturer assertions."*

Yours, obediently,

FRANK A. RAMSEY.

KNOXVILLE, September 20th, 1854.



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 justify our own, but to applaud or confirm his manner  
 assertions.

Your obediently

FRANK A. HANSEY

Knoxville, September 30th 1864





