Graham. Spasmodic Cholera

A

LECTURE

ON

EPIDEMIC DISEASES GENERALLY,

AND PARTICULARLY

THE SPASMODIC CHOLERA,

DELIVERED IN THE CITY OF NEW YORK, MARCH, 1832, AND REPEATED JUNE, 1832, AND IN ALBANY, JULY 4, 1832, AND IN NEW YORK, JUNE, 1833.

WITH

AN APPENDIX,

CONTAINING

SEVERAL TESTIMONIALS, AND A REVIEW OF BEAUMONT'S EXPERIMENTS ON THE GASTRIC JUICE.

New Edition, revised and enlarged.

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AN EXPLANATION OF TECHNICAL, AND OTHER HARD TERMS.

Abnormal, not according to the healthy laws and operations of the system; diseased.
Alimentary canal, includes the stomach and intestines.
Arterial, belonging to the arteries.
Acute disease, comes on suddenly, with increased action, inflammation, &c.
Adscititious, added, supplemental, additional.
Chyme, the digested food of the stomach; *chymification*, making chyme.
Chyle, the nutritious part of the food which forms the blood; *chylification*, making chyle.
Capillary, very small, hair-sized vessel
Calorific, having the power to produce heat; *calorification*, causing heat.
Chronic disease, of slow advances and long standing.
Collapse, falling together; ceasing to act.
Calculi, hard stone-like substances formed in the liver, kidneys, bladder, &c.
Cholera morbus, a diseased flow of bile or gall
Congestion, an over fulness of the blood vessels, &c.
Diaphragm, the membrane that divides the body into chest and abdomen, or belly.
Diabetes, disease of the kidneys; excessive secretion.
Depurating, cleansing, purifying.
Endemic disease, a local disease peculiar to a country or place.
Epidemic disease, general, extensive, common to many.
Epigastric, round about the stomach.
Enteritis, inflammation of the intestines.
Function, office of the organ; digestion is the function of the stomach.
Filamentary, thread-like, smallest form of the structure.
Ganglion, a bulbous enlargement, or knot of nervous substance.
Gastric, belonging to the stomach—*gastritis* inflammation of the stomach.
Gastro-intestinal, belonging to the stomach and intestines.
Inosculate, to unite, to run into one.
Intercostal, between the ribs.
Idiosyncrasy, peculiar temperament, predisposition.
Idiopathic, the original disease; original character of the disease.
Lacteals, small vessels that convey the chyle to the blood vessels.
Lymphatics, small vessels that convey the lymph, &c. to the blood vessels.
Medulla oblongata, top of the spinal marrow.
Morbid, diseased—*morbific*, causing disease.
Mucous membrane, the membrane lining the alimentary canal, lungs, &c.
Malaria, bad, or poisonous air, pestilential air, &c.
Messentary, the membrane to which the intestines are attached.
Normal, according to the healthy laws and operations of the system.
Ossification, bony formation.
Plexus, a number of nervous cords, woven together.
Pneumo-gastric, belonging to the lungs and stomach.
Preternatural, above what is natural, or ordinary and healthy.
Physiology, the science of the properties and functions of animals and plants.
Pathology, the doctrine of diseases, their causes, symptoms, &c.
Psycology, the doctrine of the nature and properties of the soul.
Physiological pathology, disease connected with disordered function, &c.
Pulmonary, belonging to the lungs.
Scirrus, or *Scirrhus*, hardened indurated gland.
Serous, thin, watery, like whey.
Tissue, a particular arrangement of nervous or muscular fibres in the organs.
Therapeutics, that part of medicine which respects the application of remedies, &c.
Venous blood, the blood of the veins.
Vascular, consisting of vessels, as the arteries, veins, &c.
Vasculo-nervous, consisting of vessels and nerves.
Viscera, the internal organs, such as heart, stomach, intestines, lungs, liver, &c.

INTRODUCTION TO THE SECOND EDITION.

In presenting to the public a reprint of the following treatise on Epidemic diseases the editor is actuated by several considerations, to which he respectfully invokes the attention of the reader. In the first place, the former edition is entirely exhausted. Not a single copy is to be had, notwithstanding frequent inquiry is made for the work. In the second place, it is believed that the intrinsic value of the work, as a scientific and practical treatise, is such as not only to warrant, but actually to demand the republication of it. For it is valuable not merely as a treatise on epidemic diseases, but as a condensed system of physiological and pathological science ; abounding in the most important practical precepts and rules for the guidance of persons afflicted with every form of disease, as well as of those who are in the enjoyment of good health, and desire to preserve it. In the third place, the republication of this work, at this time, affords a very desirable opportunity to present the strongest evidence of that cautious scrutiny and scientific accuracy with which Mr. Graham has pursued all his investigations and arrived at all his conclusions. And this is believed to be important, not merely as being laudatory to the man, but as justifying that confidence which has been placed in his doctrines by those who have listened to his public instructions, and as warranting the fullest confidence of the public in him as a teacher of the Science of Human Life.

The first edition of this work was published some months before Dr. Beaumont's "Experiments and Observations on the Gastric Juice and the Physiology of Digestion," were given to the world, and contained many views which at that time were considered not only as contrary to the well established doctrines of the schools, but as wholly at variance with the universal experience and common sense of mankind ; yet the reader of the following pages, by comparing Mr. Graham's treatise with the review of Dr. Beaumont's work in the Appendix will be astonished to find that Dr. Beaumont has so fully demonstrated, by actual experiment on the human stomach, the truth of what Mr. Graham had before published as the result of his scientific investigations. Indeed, with the exception of the question of flesh eating, which Dr. Beaumont does not attempt to decide, there is scarcely a doctrine advanced by Mr. Graham in this treatise which is not confirmed by Dr. Beaumont.

The following treatise, as will be perceived by a reference to Mr. Graham's advertisement to the first edition, was prepared and first publicly delivered in New York, in March, 1832 ; full three months before the cholera appeared in this country; and again delivered in the same city, in June following, and published in the summer of 1833.

At the time it was prepared, therefore, Mr. Graham had seen nothing of the epidemic cholera, and had, as he informs us, no other knowledge of it than such as was derived from the accounts of its symptoms and ravages in Asia and Europe—published in the newspapers and explained by his own physiological and pathological views. He had never seen nor heard of a post mortem examination of a cholera subject, and the modes of practice adopted abroad were as various and contradictory as they well could be. He was, therefore, under the necessity of forming his own theory of the nature and cause of the disease, according to what he considered the true principles of physiological and pathological science.

The conclusions to which he arrived in regard to the nature—the remote and immediate causes, and the prevention and remedy of the disease, were almost totally different from the opinions held by foreign physicians and entertained by the faculty in this country. Yet it is now well known that the experiment in the city of New York in the summer of 1832, powerfully confirmed the truth of Mr. Graham's views, in regard to the best means of preventing and remedying the cholera, and so far as any just inference can be drawn from the history of the disease throughout our country, it is fully corroborative of the results of the experiment in New York.

Guided solely by the physiological and pathological views which governed his reasonings in relation to the epidemic cholera, Mr. Graham was led to give it as his opinion that the disease which followed the eating of the quails, by the Jews in the wilderness, was a form of cholera. [*See Lecture, page* 17, *fourth paragraph.*] Several months after the publication of the first edition of this work Dr. DeKay's "Sketches of Turkey" issued from the New York press and from that work the following extract is taken.

"Traces of the cholera may be found among the Jews, three thousand years ago. It is stated in the Old Testament that the Lord, after promising the Jews abundance, (Num. xi. 20,) declares that they shall be fed upon this food until it comes out at their nostrils; and until, as the Septuagint expresses it, they have the cholera (χολεινα) which in fact afterwards appeared. In our English version it is translated loathsomeness, but we are informed by an intelligent Hebrew that the original Hebrew word ('zorah') means nausea, which is one of the most constant symptoms of cholera."

Whether Dr. DeKay when he wrote this, had seen Mr. Graham's Lecture on the Cholera, which had been on sale in New York some months before his work was published, we do not know; but at any rate the coincidence is worthy of remark.

It has already been stated that Mr. Graham had never seen nor heard of a *post mortem* examination of a cholera subject when he wrote the following treatise, and therefore, what he said concerning the seat, pathological physiology, and the morbid anatomy of Cholera (see Lecture, pp. 23, 24, 25 and 35,) was wholly predicated on what, according to his views, was clearly indicated by the general symptoms of the disease.

The 32d number of the "American Journal of the Medical Sciences," published in Philadelphia, August, 1835, (more than three years after the following treatise was first delivered, and two years after it was published) contains an article "On the Anatomical Characters of Asiatic Cholera, with Remarks on the Structure of the Mucous Coat of the Alimentary Canal. By W. E. Horner, M. D., Professor of Anatomy in the University of Pennsylvania," from which the following extracts are taken.

"In admitting the central point of cholera to be the abdomen, there are three leading theories which profess to explain the character of the lesion. "One of them is the nervous theory: the second, that of passive vascular congestion, and the third, that of acute inflammation."

Having made these statements, Dr. Horner briefly presents his reasons for rejecting the first and second of these theories, and then proceeds to advance his facts and reasons in favor of the third, or that of acute inflammation.

In reply to the reasonings of Magendie, in support of the theory of

congestion, or "suspension of the circulation, arising principally from a debilitated contraction of the ventricles of the heart." Dr. Horner remarks, "The general capillaries unquestionably execute languidly in cholera, their office of forwarding the blood, and we may hence naturally infer that they are affected with atony; but does it not appear more probable that the latter is a sympathetic condition produced by the extreme pathological actions of the mucous membrane of the alimentary canal; the sympathies being conveyed, either by the great sympathetic nerve, or by that more refined innervation of parts, of which anatomy knows so little but which unquestionably exists."

"Dr. DeGravier, the chief French Physician at Pondicherry, saw the inflammation of the stomach and intestines so well marked that he considered it to give rise to all the other symptoms by means of irritation, and went so far as to call the disease gastro-enteritis. Mr. Corbyn details such appearances of inflammation in the stomach and bowels as should leave no doubt of the fact."

"For my own part, considering the rapid secretion from the alimentary canal of serum and of fibrin, and knowing that this act itself is calculated, as in pleuritis, to relieve the inflammatory congestion of the vessels, I have but little difficulty in viewing cholera as a decided inflammation from the beginning.

"The precise state of the *venous* system of the digestive canal is among all the traits of cholera, that which will most fully account for its destructiveness to human life. The minute anatomy of this system has already been explained, and we now resume the general fact that the mucous membrane is formed by an intertexture of these veins, resembling a net, or more exactly, a plate of metal pierced with holes; these holes being the follicles whose aggregate number is forty-six millions at least, and probably much more.

"It is to be borne in mind that it is the whole of this vascular and follicular structure, endowed with vital actions the most important to life, and presenting in the aggregate an area of about thirteen square feet—the size of a small breakfast table, whose morbid derangements constitute the essential features of cholera.

"The most undeniable fact of cholera, is a rapid fluxion of the blood to the whole digestive mucous membrane, with a diminishing of its own volume by large losses at the part, as the immense serous discharges prove; but here is an action extending over an area of at least two thousand square inches—I say the size of a small breakfast-table.

"Under such overwhelming circumstances of disease, can we wonder if the exterior symptoms of inflammation do not exist, that the inflammation instead of acting as a stimulus, as in common diseases, so as to diffuse the blood more rapidly towards the periphery of the body, increasing the heat of the skin and the volume of the arteries in the limbs, &c. should, on the contrary, prostrate every action of the system, except on the surface where itself prevails?

"The majority of the cases of cholera probably suffer extreme violence only upon particular sections of the digestive mucous membrane. Some have it in the stomach chiefly; others in the colon also,—others may have it chiefly in the small intestines. But in all cases, some degree of irritation extends along the whole canal; the resistance of an individual to the disease will therefore depend mainly upon the quantity of surface vehemently attacked."

Let any intelligent person compare these extracts from the American Journal, with pages 23, 24, 25, and 35, of the following Lecture,

and it will seem almost impossible to him that the writer of the one should not have been acquainted with the views of the author of the other. And yet Mr. Graham's Lecture was written and published years before Dr. Horner's article was, but, probably, never seen nor heard of by him. We see one man, therefore, reasoning purely from the symptoms of the living subject, according to his own physiological and pathological views, and another man reasoning from the demonstrations of morbid anatomy in the dead subject, and both arriving at the same conclusions, and without any knowledge of each other.

Compare also Note A, page 82, with the fourth paragraph of the 43d page of the Lecture.

Now then, the honest question is, did Mr. Graham arrive at his conclusions by mere conjecture, and *guessing*, and without any accurate knowledge of physiological and pathological science, or did he arrive at them by sound philosophical and scientific investigation and induction? The former cannot for a moment be supposed, and if the latter be admitted then is it most evident that he is no tyro in the science which he professes to teach.

The man who, breaking away from the trammels of education and the shackles of popular opinion, is able to stand alone in the strength of his own philosophy, and with the clear vision of scientific truth, perceive and announce those deep principles, which others cannot discern and will not believe till severe experience and sensible demonstration compel them to, may indeed—nay, will be certain to be reviled by multitudes whose confidence and respect he deserves. Yet they who are willing to open their eyes to the light of truth, and are capable of appreciating the merits of such a teacher, will feel their confidence in him increased rather than diminished by the reviling of a blinded and misguided world.

It is no small tribute of respect to the author of the following treatise, however, that one of the most eminent and distinguished professional gentlemen of this country, procured a copy of it as soon as it was published and sent it to his son, who was completing his professional studies in Paris; and another professional gentleman, no less eminent and distinguished, has declared that, "it ought to be printed in large type and fastened to the wall of every parlor, and posted over every kitchen fireplace, in every community."

It is believed, therefore, that in republishing this valuable treatise, a decided good is done to society, and it is hoped that every one into whose hands it may fall, will not only read it with attention but carefully study it.

Boston, May, 1838.

ADVERTISEMENT TO THE FIRST EDITION.

The following Lecture on the Cholera, was first delivere at the close of my course of Lectures on the Science of Human Life, in the Baptist Meeting-house, in Mulberry Street, New York, in March, 1832, in the presence of more than two thousand people. The effect produced was very considerable, and the Lecture became the topic of conversation and remark somewhat extensively in the city.

Soon after this, an editorial article appeared in the Courier and Enquirer under the head of "*Facts, not Theory, in regard to Asiatic Cholera.*" In this article it was attempted to be shown, that "the Cholera originated and raged most fatally among the Hindoos who subsisted on rice, and

were the most temperate people in the world ; " and therefore, it was better for the people of this country to eat at least their usual proportion of flesh and other things to which they were accustomed, than to abstain from flesh entirely, with a view to avoid or mitigate the Cholera. I immediately replied to this article, in the most respectful manner, but the Editor did not find it *convenient* to publish my reply.

Not long after this article appeared in the Courier and Enquirer, a letter of considerable length, from Dr. De Kay, appeared in the Evening Post, in which it was stated that the " occasional use of stimuli in the form of generous wine or brandy, or gin and water, was found decidedly beneficial during the prevalence of the Cholera at Constantinople—that this epidemic broke out and raged with great violence among the Jews at Smyrna, during one of their religious fasts, and had proved peculiarly fatal among that class of people generally, in Asia and Europe, whose diet was particularly meagre and abstemious."

Whatever might have been the design of the writers of these articles, the citizens of New York universally received them as specially intended to bear against the dietetic doctrines which I had taught in my Lecture on the Cholera, and immediately, throughout the city, the clamor was raised, " If the Cholera comes here, all the Grahamites will certainly die with it."—I am sorry to say, that too many physicians, who were ignorant of what I had really taught, gave countenance to this hue and cry.

When the news reached New York that the Cholera had appeared in Canada, the panic in the city exceeded all bounds. I had closed my Lectures for the season, and according to arrangements, made several months before, was about to proceed with my family to Rhode Island, where I had engaged to be as early as the fourth of July ; but such was now the panic in the city, and so much was I urged to repeat my Lecture on the Cholera, that I consented to defer my departure, and comply with the wishes of my friends. In announcing the Lecture through the newspapers, I particularly invited the Corporation, and the medical gentlemen of the city, to attend. I also sent a special invitation to the Board of Aldermen, by whom it was formally accepted, and put a quantity of tickets into the hands of Dr. Lee, who engaged to see that at least a considerable portion of the physicians were furnished.

In the mean time the clamor and excitement were increasing, and I was respectably informed that *some* physicians at least, were visiting families in which they practised, and advising them to subsist principally on animal food, and always to take a little brandy or wine with their water. On the evening of the 21st of June I repeated my Lecture in the Chatham Street Chapel, without any other alteration than the addition of such important facts and matter as circumstances presented. That is, the doctrine of the causes, nature, prevention, and remedy, of the Cholera, as it now stands in the text of the following Lecture, is precisely the same that I delivered in March preceding. The additional matter is principally in reference to the articles which appeared in the Courier and Enquirer and the Evening Post.

I again began to prepare to leave the city for Rhode Island, when I received a letter from Dr. Beck of Albany, as the Secretary of the City Temperance Society, requesting me to come to that city, and deliver a lecture, on the 4th of July. It was impossible for me to comply with this request without putting myself and family, and some of my friends in the city, to very great inconvenience, and disappointing my friends in Rhode Island ; nevertheless it seemed to be my *duty* to go to Albany, and I concluded to go.

On the 2d of July, 9 cases of the Cholera were reported in New York: on the 3d I went to Albany: on the evening of the 4th, delivered my Lecture on the Cholera there, and on the 5th returned to New York, and found that Mrs. G. had engaged our passage to Newport for the 6th. I found also that the cry was up, in which even some respectable physicians had a voice, that I had fled from the city in such a panic, on account of the cholera, that I had left my family behind. I endeavored to persuade my family to proceed to Rhode Island without me, but not being able to succeed, I left the city for Newport on the 6th of July; and then the cry became louder and more general, that Graham had fled from the city in a panic, and all his followers were dead or dying with the Cholera. This cry was kept up through the whole season of sickness, in order to destroy all the confidence of the people in my doctrines, and drive them to flesh-eating, and brandy and wine-drinking. But not every one was shaken. Some were steadfast, and they fully realized all the benefits I had promised. [See the Appendix.] Immediately after my arrival in Rhode Island, I sat down and prepared the following lecture for the press, just as the text is now published, with an intention of sending it back to the city for publication; but all communication being cut off, I was disappointed, and the manuscript remained on hand.

Some days after I had delivered my lecture the second time, the two Clinical Lectures on the nature, treatment, and symptoms of Spasmodic Cholera, by Broussais, appeared in an English dress in New York. I read these Lectures, and was not a little surprised to find a very striking resemblance, in many respects, between them and mine—especially as I had read no other medical treatise on the cholera whatever—my own lecture being written from the information I had gathered, as to facts, from the public papers, and from my own physiological and pathological views. And whatever may be thought of my opinion as to the *epidemic cause* of the cholera throughout the world,—let it be remembered that even if this opinion were shown to be incorrect, all my other reasoning would be none the less true.

On the evenings of June 7th and 13th, 1833, I repeated this Lecture again at Clinton Hall: and now I present it to the public in print for several reasons. In the first place, the doctrines of this Lecture have been so entirely confirmed by the whole history of the cholera in this country up to the present moment, that I feel it the more important that it should be published as extensively as possible. In the second place, as it is not exclusively applicable to the epidemic cholera, but summarily embraces all epidemic, chronic, and acute diseases, so it will at all times and in all places be useful instruction to the people. In the third place, those who have heard the Lecture have generally requested that it should be published. Finally, the mode of treatment pointed out in the Lecture for diarrhœa is equally applicable to all kinds of bowel-complaints, at all times, and therefore should the epidemic cholera never again appear in this country, this Lecture will be perhaps equally useful.

August 20, 1833. S. GRAHAM.

LECTURE.

Almost every writer on physiology, who has made any pretensions to originality, has attempted to define or explain what is signified by the word *life*: but if a want of correct knowledge, and of a sound judgment, has not led me to an erroneous opinion on the subject, all have failed, through an endeavor to find, in the principles and properties, common to *inorganic* matter, the elementary causes of organic life.

While, however, so much obscurity, if not impenetrable mystery, hangs over the *nature* of organic life, the vital conduct, or the means, and manner, by which life maintains itself in its organic domain, against the power of counteracting agents, and influences, is better understood: and the continued, antagonistic conflict between vitality, in accomplishing its functions, and the more primitive affinities of inorganic chemistry, was beautifully expressed by our late distinguished Doctor Rush, of Philadelphia, when he said that "Life is a temporary victory over the causes which induce death." In producing each and all of its peculiar and legitimate results, vitality necessarily overcomes the laws, and counteracts the affinities of inorganic matter; and exerts molecular affinities, of a totally distinct and opposite character,—which result in aggregations and structures, entirely different from those of inorganic matter:—and hence it is true, that all the inorganic affinities in Nature, are adverse to organic structure, and life: and hence also, it is true, that life maintains its power, and performs its functions, in opposition to the ordinary laws of inorganic matter, and, within its own appropriate domain, resists the operations of those laws, while its power is paramount.

Thus, the vegetable seed, which, being deprived of life, would soon yield to the action of the more primitive laws of matter, and by the process of what we call decay, pass into other forms:—yet while its vitality remains, it resists those

laws, and preserves its form and structure, and vital properties and powers so perfectly, that even after a lapse of centuries, if placed in genial circumstances, it will vegetate, like a last year's seed, and develope its appropriate form of plant or tree.

By the same power, the hybernating animals, lying in a torpid state, without nourishment, resist dissolution and decay for months; and in some instances, there is reason to believe, even for many years, and again awake to the active manifestations of life, and the powers of locomotion. And by the same controlling power, the living body preserves its own peculiar temperature, and with little variation, in arctic winters and tropic summers; and converts foreign matter to its own substance; disposing of the various materials of which itself consists, with the utmost integrity, regularity and precision, according to its wants.

All the interesting effects of organic life are embraced in the economy of the grand vital function of Nutrition.

The food of various kinds, which we receive into the stomach for the sustenance of the body, if the vitality of the stomach were destroyed, would naturally take on a chemical action, and soon run into fermentation and putrefaction, and pass entirely into other forms of inorganic matter: and this is ever the more natural and inherent tendency of the food received into the living stomach. Vitality alone, therefore, overcomes this tendency, and counteracts the inorganic affinities, and transforms the nutritious properties of the several kinds of food, into a nearly homogeneous substance, of a very different character from what it was when first swallowed.

Destroy vitality here, and the process of digestion would instantly cease, and the chyme would yield to inorganic affinities. But vitality, "maintaining its victory over the causes which induce death," carries on the living function, and still farther digests the contents of the alimentary canal, and elaborates the chyle, and carefully conveys it through living, and in some measure, vivifying tubes, to the blood vessels; and through the office of the heart, ushers it into the capillaries of the lungs, and by the vital functions of these organs, completes the transformation into living arterial blood: —and this, possessed of all the properties necessary for the nutrition of the body, is, by the vital power and functions of the appropriate organs, distributed into every part of the beautifully complicated system,—where, according to the wants of the several parts and substances of the body, por-

tions of the blood are detained, and, by a process of purely vital chemistry, transformed into bone, cartilage, muscle, nerve, &c., while at the same time, particles of each and all of these substances, after having fulfilled their time and purpose in the organic structure, are, by the same vital power, continually undergoing a change back into a limpid fluid, which is conveyed by appropriate vessels, and mingled with the returning blood, that, from every part of the system comes back to the centre, through the veins, dark, and full of impurities, and destitute of those properties which are necessary to nourish the body, and sustain the functions of life.

By the vital powers and functions of the several organs—especially the skin, lungs, and kidneys, the impurities of the venous blood are separated out, and cast off from the organic system, and the blood is completely purified and renovated, and fitted again for all the purposes of arterial circulation.

Thus, from the very commencement of digestion in the stomach, to the last office of the skin and other organs, in throwing off the worn-out and offensive matter of the system, vitality exerts its efficient and controlling power, and maintains its victory over the causes which induce death :—for if the vital power should be overcome in any stage of this general function, the process would be immediately arrested, and dissolution would ensue. Even the arterial blood, which is itself a highly vital fluid, depends on the vitality of the living vase in which it flows, for the continuance of its life, and for its vital results :—for if a portion of the blood be confined in a section of the living and healthy artery, the vitality of the blood is preserved, so long as the artery remains in a living and healthy state ; but if the vitality of the artery be destroyed, the life of the blood contained in it, is soon lost.

In the same manner, vitality exerts its conservative and controlling influence, over every substance within its dominion—even over the effete or worn-out matter of the body, restraining it from taking on the action of inorganic affinities, until it is conducted beyond the threshold of organic function and vital welfare.

In order to a better understanding of the economy of the vital power, it is necessary to ascertain the tissue in which vitality more particularly resides, or with which it is more immediately connected.

In the language of physiologists, man has an animal life, and a vegetative or organic life. His animal life comprises his organs and powers of sensation, voluntary motion and

volition:—and his vegetative or organic life comprises his organs and powers concerned in the grand function of nutrition: such as appertain to digestion, respiration, circulation, secretion, absorption, excretion, &c.

Corresponding with this division, man has two classes, or what, indeed, may almost be called two systems of nerves. The nerves which appertain to animal life, are connected with the brain and spinal marrow, and are distributed principally to the muscles of voluntary motion, and to the sensitive surface of the body, or external skin. The nerves which appertain to organic life, and which, in regard to the subject before us, are altogether the most important to us, are believed to originate with the organs themselves, in a kind of rudimentary brain, or bulbous enlargement of nervous substance, which is called a ganglion or knot, of which there is a large number in the different parts of the body.

As the several organs with which they are connected, advance in their formation, these ganglions increase in size, and throw out cords or branches, some of which go to connect them directly with each other, and form a general union, or system of the whole; while other branches, from different ganglions, interweave and inosculate, and form plexuses, from which, again, numerous branches are given off, to supply the stomach, and heart and lungs, and liver and kidneys, and all the other organs concerned in the general function of nutrition.

Besides the more deeply seated ganglions connected with the principal viscera, there are two series of them, which range along the anterior sides of the back bone, connected together, in a chain, on each side, by nervous cords which extend from the lower extremity of the spine to the base of the cranium, and enter by small branches through the carotid canal with the artery, and form connections with branches of the fifth and sixth pairs of nerves of the brain. These two series of what are called peripheral ganglions, with their connecting cords, are denominated the sympathetic nerves, because they are believed to form the most intimate union of sympathy between all the viscera concerned in organic life.

Besides the cords which connect these peripheral ganglions with each other, each ganglion gives off a short thick cord outwardly, to join a cord coming from the spine, and also receives a branch from each cord coming from the spine —and each ganglion gives off one or more branches, which run inwardly to interlace and inosculate with each other, and with branches from the more deeply seated ganglions, form-

ing the plexuses from which the several organs are supplied as just described. From three, four, five, and sometimes more, of the ganglions within the chest, belonging to the sympathetic nerve on each side of the spine, large cords are given off, and run inward and downward, and finally uniting into one cord on each side and passing through the diaphragm, form at its base, on the anterior sides of the spine, two large ganglions, called the semilunar ganglions. These ganglions give off numerous large branches, which, together with several from other parts, and some from within the cranium, form a very large central plexus, in front of the spine, which constitutes a kind of common centre of action and sympathy, to the whole system of organic nerves. This is called the solar plexus. From it branches are given off in every direction, to enter into other plexuses, and to supply organs. Some of its largest cords go to the stomach, which lies just in front of it, and are distributed over that organ, interweaving and uniting with numerous branches of the pneumo-gastric nerve, from the grand centre of perception and action within the cranium, with which, also, the stomach is largely supplied.

From the solar plexus, also, numerous branches issue, which invest the arterial trunks with a kind of nervous lace-work, and proceed with them through all their distributions and ramifications, even to their capillary terminations, in the glandulous structures, and the vasculo-nervous texture which forms the skin, and mucous membrane of the alimentary canal, and lungs, and the membranes of other surfaces.

Thus all the nerves of organic life are intimately woven together into a common web of sympathy, and harmony of action—pervading all the organs concerned in the general function of nutrition; bringing them into general and special relations, and supplying them with that peculiar vital power by which each is enabled to perform its particular office.

The stomach, the intestines, the lacteals, the lungs, the heart, the arteries, the capillaries, the veins, the lymphatics, the liver, the kidneys, the skin, &c. &c., depend upon the nerves of organic life for that vital power by which are performed the functions of chymification and chylification, and absorption, and respiration, and circulation, and organization, and calorification, and secretion, and excretion, &c. &c. It is by the power derived from or through these nerves that the food is transformed into chyme, and the chyme into chyle, and the chyle into blood,—and the blood preserved in its fluidity and vitality, and distributed throughout the whole system, and portions of it transformed into bone and cartil-

age, and muscle and nerve, and every other substance in the body; and all the various secretions are performed, and the skin, and lungs, and kidneys, and other depurating organs, separate out and throw off the impurities of the venous blood. Hence the vital power which resists, counteracts, and subdues, chemical affinities and noxious agents—the vital power which maintains its victory over the causes which induce death, resides in or acts through, the nerves of organic life, in the performance of its great conservative functions,—for organic life may continue when animal life is suspended, and even for a short time after animal life is extinct—but animal life cannot continue an instant after organic life is destroyed.

In the early stages of the organic developement, each of the more deeply seated ganglions, is supposed to constitute a kind of independent centre of action,—presiding in its own appropriate sphere: but as the system advances in growth, to that state in which it will be necessary for it to perform independently, its own general function of nutrition, the several ganglions become, as we have seen, intimately connected together, and by their peculiar arrangements, form a common centre of sympathy and action, for the nerves of organic life, in the semilunar ganglions and solar plexus.

Again:—by means of the connections formed between the ganglions of the spmpathetic, and the intercostal nerves of the spinal marrow, and more particularly by means of the connection formed between the top of the medulla oblongata, or head of the spinal marrow within the cranium, and the semilunar ganglions and solar plexus, by the pneumo-gastric nerve, some of whose branches run directly to this last centre, and more of them interweave and unite with branches from the solar plexus in the stomach,—a common point of union, and centre of perception and of action, is established in the top of the medulla oblongata, for all the *normal* operations of the united system of animal and organic life.

Here, then, we see this beautifully complicated system of organs, each constituted for its particular office, and all nicely adjusted for one grand, vital result;—so woven together in one general web of nervous texture, that a community of life and energy constitute their vitality and functional power—each, so immediately and powerfully sympathizing with all, and all with each, that no one organ can be diseased,—no one function can be disordered, without affecting in a greater or less degree, the condition and conduct of the whole. We see also, that the mucous membrane which lines the whole length of the alimentary canal, from the lips of the

mouth to the inferior extremity, is formed, principally, of the filamentary ends of nerves of organic life, with capillary terminations of blood-vessels, absorbents, &c., so that the whole extended surface is one sheet of sympathy, with which every part of the system reciprocates its influences, and directly sympathizes in all conditions.

But the inner surface of the stomach is more peculiarly the centre of sympathy to the whole organic system; supplied as it so largely is, with nerves from the solar plexus and from several other plexuses, and from the medulla oblongata, it is brought into direct and special relation with the brain, heart, lungs, liver, skin, and indeed with all the organs of the system: so that every affection and every disturbance of the stomach, influences, in a greater or less degree, every organ and every function in the body.

Although the stomach is, by no means, the source of nervous energy to the system, yet such is its nervous supply, and such are its constitutional relations, that it may with propriety be considered the common index of the whole system: for the vital power of the system to resist the influence of noxious agents, and to accomplish the functions of life, always corresponds with the condition of the stomach.

When this organ is in good health, and properly supplied with healthful food, and the function of digestion is vigorously and healthfully going on, then it is that all the vital functions of organic life, are most vigorously and perfectly performed,—then it is, that man has the greatest physical power for achievement and endurance; then has life the most complete victory over the causes which induce death; then has man the greatest power to resist the influence of cold and heat, wet and dry, malaria, or the subtile breath of pestilence, or whatever infectious or malignant causes may exist around him, and act upon him. And on the contrary, when the stomach is debilitated and disordered,—when its natural and healthy susceptibilities have given place to preternatural and diseased excitability, and irritability, and when its vital energies are scarcely sufficient to perform, even imperfectly, the function of digestion,—then every other organ in the system sympathizes, and every other function languishes:—respiration is less full and perfect, less oxygen of the air is inhaled and appropriated by the lungs, the blood is not so completely purified and renovated, circulation is less vigorous and copious, assimilation and organization are more feebly carried on, the secretions are either diminished or morbidly excessive:—the skin which should throw off, in

the form of insensible perspiration, more than half of the impurities of the blood, becomes enfeebled, and less perfectly performs its depurating functions;—and the vital power of the system, to regulate its own temperature, and resist the influence of noxious agents, is always diminished:—and in this condition of the system it is, that the vital functions are always most easily disturbed by foreign agents, and the body is most liable to injury from the action of morbific causes. In this condition, man is less able to endure fatigue, and to resist the influence of heat and cold, wet and dry, unhealthy atmospheres, and infectious and pestilential causes.

Thus we see that the healthful performance of the vital functions, and the power of the living body to resist the influence of noxious agents, depend on the health and integrity of the nerves of organic life.

These nerves, in a perfectly healthy state, are endowed with a nice and peculiar susceptibility, which renders them capable of being acted on by their own natural and appropriate stimuli; and the most perfect integrity of the nerves themselves, and of the functions resulting from their energy, depends on the unimpaired healthfulness of this susceptibility.

In their healthy state, the nerves of organic life have no sensibility; and hence they are also called the nerves of vegetative life; because the functions of the organs depending on them for nervous energy, are, in their healthy state, performed without the consciousness of the animal. But these nerves are capable of being irritated into a state of excessive irritability and diseased sensibility, which is utterly incompatible with their healthy and peculiar susceptibility; and consequently, incompatible with the healthy performance of the functions of those organs which depend on them for nervous energy.

Unhappily for man, almost every circumstance and influence in civic life, tend to the developement of preternatural irritability and diseased sensibility in these nerves. All undue excitements and exercises of the mind, and of the passions; all excessive indulgences of the appetites; improper qualities and quantities of food; the debilitating habits of indolence and effeminacy; the various customs and circumstances of artificial life, such as appertain to habitation, clothing, locomotion, the preparation of food, &c. &c.; and worst of all, the habitual use of artificial stimulants, such as the heating and irritating condiments of the table, and more particularly the various narcotic and alcoholic substances;—

all act upon the stomach to disturb its functions, and to impair the health of its nervous and muscular tissues, and, consequently, tend to debilitate that organ; and, by continued or repeated irritation, to develope and establish in it a diseased excitability and irritability, resulting often in chronic or acute inflammation, and painful sensibility and disorganization.

But this is not all; the stomach cannot suffer alone; being, as it were, a kind of retina or sensorium to the nerves of organic life, the whole system of those nerves, and consequently all the organs supplied by them, sympathize powerfully in all its conditions and affections, partake of all its irritations, and suffer a consequent debility. The brain, the heart, the lungs, the liver, the kidneys, the skin, and other organs, participate in all its irritations, and are affected by all its conditions. The necessary consequence is, that the natural and healthy susceptibility of the nerves is impaired, general debility of functional power ensues, tending always to diseased irritability, inflammation, painful sensibility, and, finally, disorganization and death.

The constitutional susceptibilities of our nature, when properly and healthfully acted on, always afford pleasure from the excitement or stimulation; and hence there is in human nature, a constitutional love of stimulation; and this love or desire always tends to excess of indulgence—and the more so, as indulgence becomes excessive, and is followed by exhaustion of the vital energy, and abatement of vital power; and this result always obtains to a greater degree, and more permanently, from the action of the artificial than of the natural stimuli.

From this constitutional principle springs the almost universal propensity, in the human race, to indulge in excessive stimulation:—and hence, the substances and means of artificial stimulation and intoxication, have been among the earliest discoveries and inventions of social life in almost all the different tribes and nations of men since the creation of the human species. And, unfortunately, as men have emerged from the savage or barbarous state, and advanced in those refinements and luxuries of civil life, which rendered them more susceptible of the pernicious effects of artificial stimulants, and left them less vital power to react against them, they have also greatly multiplied the forms of those stimulants, and increased the deleteriousness of their qualities.

The effects of this combination of causes, on the human race, have been just such as every sound and sagacious phys-

iologist might have distinctly and confidently predicted from *a priori* reasoning.

Continued irritation and disturbed functions have necessarily resulted in general debility of the nervous system, and reduction of vital power. The stomach, heart, lungs, liver, kidneys, skin, and other organs concerned in the grand function of nutrition, have all participated in the general withering, and each particular function has been enfeebled, and the vital power of the body to resist the noxious agents that surround and act upon it, has been proportionably diminished.

In this manner, chronic diseases, corresponding in character with the peculiarities of circumstances, of causes, and of individual idiosyncracies, or predispositions, have been, generally, by slow and imperceptible degrees, developed in the human system; and to a very great extent, rendered constitutional,—at least so far as to involve decided, and often very strong predispositions. In the same manner, by the more sudden and powerful action of causes, acute diseases are induced, which are much more rapid and violent in their progress, and sudden in their results.

Thus, by various causes, and particularly, by the habitual use of artificial stimuli, the vital energies of the human race, from generation to generation, have been exceedingly impaired, and the vital power of resistance to the causes which induce disease and death, reduced. I say, "particularly, the habitual use of artificial stimuli," because it is a notable fact, worthy of profound consideration, that all those tribes which have been found on islands and elsewhere, whose diet was plain, coarse and simple, and who were entirely free from the use of aritficial stimulants, have also been almost as entirely free from all kinds of disease; while, on the other hand, all those tribes whose circumstances were, in all other respects equal, but who habitually, and often freely used artificial stimulants, have been afflicted with various forms of chronic and acute disease; and frequently visited with extensive and terribly malignant epidemics.

Many of the practices which prevail in society, are such as would destroy life at once, if they were not entered into by very small degrees of increase. By these means we gradually destroy those peculiar susceptibilities of the healthful living tissues, which in an unimpaired state immediately detect the presence of deleterious substances, and summon all the instinctive energies of the system to throw them off, when the action of the poison is sufficiently powerful to endanger the vital welfare of the body.

In this manner the system is made to yield, and yield before the encroachments and depredations of those practices which are continually violating the laws of life, and diminishing the power of vital resistance.

This important doctrine cannot, perhaps, be better illustrated, than by adducing the effects of that most loathsome of all substances, tobacco, on the living body. This plant is one of the most powerful narcotic poisons in the vegetable kingdom. Should a man, entirely unaccustomed to the use of it, take into his mouth, at once, such a cud as is ordinarily used by the confirmed tobacco-eater, and in the same manner, chew it and retain it there, the natural susceptibilities of his nerves would give the alarm instantly. The distressing sympathy would soon extend to the stomach and brain, and thence throughout the whole system. All the energy of vital resistance would be summoned up, and the most loathsome sickness, and violent, continued and convulsive efforts, by vomiting and otherwise, would be instinctively made to reject the destructive poison. If the vital powers were sufficient to sustain the conflict till the offending cause was entirely removed, the individual would survive: if not, the most distressing exhaustion, and collapse, and death would ensue. In such a case, the manifestations of poison would be such as to render it impossible for any one to doubt the deleterious properties of tobacco. But why then does not tobacco, at all times and in all cases, produce such manifestations of its poisonous character? The reason is not because the tobacco in any degree changes its character or power, but because a change is effected in the condition of the nerves on which it acts.

However small the quantity of tobacco used at first, the unimpaired susceptibilities of the nerves detect its poisonous qualities, and give an alarm equal to the danger, producing vertigo, nausea, and perhaps vomiting. But if the quantity taken into the mouth at first is so small, as not seriously and immediately to endanger the vitality of the system, the instinctive alarm given is comparatively limited and feeble, and the efforts to throw it off correspond, in power and continuance, with the degree of excitement. Yet the evil ends not here. All the organs of the system have been more or less irritated, and their functions more or less disturbed,—and still worse, the peculiar susceptibilities of the nerves, which at first enabled them so promptly to detect the poisonous qualities of the tobacco, have been seriously impaired; so that ordinarily, if, after the irritation produced by the first

dose is entirely removed, another dose of equal quantity and power be taken, the nerves have less ability to detect its poisonous qualities, and consequently, less alarm will be given and less effort will be made to throw it off. By continuing the use of tobacco, and by slowly increasing its quantity, the peculiar susceptibilities of the nerves, which enabled them to detect its poisonous qualities, are more and more impaired,—till, finally, they not only cease entirely to give an alarm to the system, but on account of the injury thus done them, become so dependent on the stimulating properties of the tobacco, to raise them from the consequent prostration, that they even demand the continued use of the destructive poison, and with an imperativeness and pertinacity equal to the force of antipathies overcome in forming the demand. This constitutes the foundation and the power of the habit. But let it not be supposed that the tobacco is in itself less poisonous, nor that its effects on the system are really less pernicious! True it does not produce so great an excitement of the nerves on which it immediately acts, nor cause so great an irritation of the organs generally; but this is owing to that impaired condition of the living tissues, which causes them to suffer equal or even greater injury from the less irritation; and which renders them just so much the less able to resist the destructive action of other noxious agents, as they have been impaired by the tobacco. And this is true of the effects of all narcotic and alcoholic, and indeed, all other artificial stimulants, on the living tissues of the human body.

It is an indubitable truth, that the action of all artificial stimulants on the living tissues, is always, and necessarily, in the nature of things, at the expense of the vital energies of the tissues, and always impairs those natural and peculiar susceptibilities, which constitutionally adapt the tissues to their natural and appropriate stimuli.

The necessary consequence of all this is, that throughout the human race, the vital power of the body to perform its organic functions, and maintain its victory over the causes which induce death, is reduced very far below the capabilities of the original constitution of man; yes, very far below the present capabilities of the human constitution.

Indeed, almost the entire human family make it a matter of continual practical experiment, to ascertain how near they can run to the line of death, and still maintain life! Who but the suffering invalid—(and seldom even he) seriously inquires, "What, and how much shall I eat and drink, and in what manner shall I live in order to sustain my body in its

healthiest and best condition?" Does not almost every human being, rather, at least in practice, demand—How far can I indulge, and live? Is it surprising then, that we find the human race, from generation to generation, leaning so far towards death, that their vital centre of gravity almost falls without the base of vital control? And poising thus, is it a marvel that even the moth and the caterpillar should often throw them from their balance, and send them headlong to destruction?

It cannot, therefore, be any cause of wonder, that chronic and acute diseases, in all their dreadful forms and modes of destruction, should be multiplied throughout the human family, and sweep away the great majority of the species, even in the dawn of life! Nor is it wonderful that some local, or general cause, not powerful in itself, such as the exhalations of decaying vegetable or animal matter, the character and quality of food, a sudden change in the temperature, or humidity, or dryness of the atmosphere—or something else, equally simple and obvious in its nature and existence, should, in consequence of the peculiar condition of the human system, superinduce an endemic or epidemic disease, whose fatality corresponds with the reduced state of the vital power of resistance in man, the influence of moral causes co-operating, and the propriety or impropriety of medical theory and treatment.

In this manner, bilious intermittent, and remittent fevers, dysentery, typhus fever, yellow fever, scarlet fever, influenza, cholera morbus, &c. &c., obtain and become more or less general, according to circumstances and the nature of exciting causes.

Cholera morbus has afflicted the human race, ever since the abuses of the vital organs have been such as to induce that disease in the human body. The history of it comes to us from the days of Hippocrates, who flourished about four hundred years before Christ,—if indeed, we do not find a much earlier record of it in the writings of Moses. For there is reason to believe that the terrible disease which broke out so suddenly and raged so fatally among the Jews in the wilderness, at the time they ate so freely of the flesh of quails, was no other than cholera morbus.

This disease is not in its nature at all times, if indeed it is *ever* necessarily of an epidemic character. In the time of Hippocrates, it was more commonly peculiar to the young and robust, who, by their occasional excesses, or improper diet, caused such an irritation of the stomach and intestines,

and sympathetically of the liver, as to induce an increased, or, as it was called, a morbid or diseased flow of the bile into the alimentary canal, which produced violent vomiting and purging, in order to throw off the offending or irritating cause.

The natural organic susceptibilities of the young and healthy are comparatively little impaired, and consequently they are more readily and powerfully disturbed by the presence of offending causes. When, therefore, any substance, decidedly offensive to the system, either from its nature, quantity, condition, or untimeliness, is received into the alimentary canal, the natural susceptibilities of which are healthy and vigorous, an instinctive alarm is given, which soon calls up the appropriate efforts of the system to expel the offending substance. This must be done by vomiting and purging, and to produce these instinctively an increased quantity of bile is introduced into the stomach and intestines; and this is effected by peculiar irritations of the liver, and these irritations depend on certain conditions of the stomach and intestines.

In this view of the subject, which is purely physiological, cholera morbus seems to be the constitutional means, b which the system instinctively expels offensive and disturbing substances from the alimentary canal, and under such circumstances, the disorder, though violent, is far from being alarming, unless the disturbing cause is intrinsically and fatally poisonous;—for with proper treatment, such as the free administration of warm water, to cleanse and soothe the stomach and intestines,—and often without any thing more than the unassisted efforts of instinct itself, the disturbing cause is soon removed, and the disorder ceases.

But when a long train of abuses has greatly impaired, and perhaps almost or entirely destroyed the healthful susceptibilities of the nervous tissue of the alimentary canal, and exceedingly diminished the vital energies of the system, if an irritation is induced which brings on cholera morbus, almost every thing concurs to increase the danger of a fatal result. For a morbid irritation once fully induced, in such a system, will not subside even when the first exciting cause is removed; but feeds and increases itself by its own action. The same morbid irritability throughout the whole system causes the functions of all the organs to be more easily disturbed, and even arrested by the irritation of the stomach and intestines; while on the other hand, the system has less power to sustain

itself under these irritations, and to maintain its victory over the causes which induce death.

From such a condition of the human system it is, that the fatality of cholera morbus generally arises:—and such or nearly such, is the habitual condition of the bodies of a great portion of the human family, in consequence of the almost incessant irritations that are kept up in the alimentary canal, by various causes in civic life, but more especially, by the use of artificial stimulants, and particularly the narcotic and alcoholic of every form.

As I have already observed, cholera morbus is a disease which has been known for many centuries; and in certain portions of the earth, it has very extensively and almost uninterruptedly prevailed from the earliest periods of their history: and not unfrequently has it become epidemic and swept off immense numbers of the human family.

The epidemic disease which is at present the cause of so much alarm throughout the world, and which has extended over so great a portion of the earth, and committed such dreadful ravages in its course, cutting off many millions of the human race, in the short period of a few years, though popularly called Cholera Morbus, Cholera Asphyxia, Spasmodic Cholera, &c., yet in its present form and character, the term CHOLERA does not seem to be applied to it with strict propriety, as it is more remarkable for the entire absence, than for the presence of bile in the alimentary canal. I am inclined to believe, however, that this disease was originally, a proper cholera morbus; and that from various causes operating through a considerable period of time, it has degenerated into its present character. And, in fact, it seems now in no important point to differ from that disease, excepting that, instead of a morbid flow of bile into the alimentary canal, there is a morbid flow or secretion of serous fluid, which is even more acrid and irritating to the mucous membrane than the bile itself, and consequently causes more violent symptoms. Hence I suspect that the present popular name of the disease was originally correct.

The history of this terrible epidemic is too well known to render it necessary or expedient that I should now enter into its details. Its march of desolation is rapid and fearful!—We already contemplate its advances with dismay, and feel that its terrors are staring us in the face!

It concerns us now, to ascertain, if possible, its nature, its causes, its remedy and its prevention.

In regard to the nature of this disease there has been

much speculation, and a great diversity of opinion. It is truly astonishing and even humbling to see how much the human mind is prone to throw obscurity and fearful mystery over objects which excite the sympathies and passions, and which are in reality far from being mysterious. It is possible that I am in an error on this subject; but if I am not, there is much more plainness and simplicity about it, than is generally supposed.

We have already seen how the organic system, by its vital functions digests its food, and separates out, and more fully digests the chyle, and convey's it through the heart and pulmonary arteries into the lungs, where the process of digestion is completed, and the nutrimental fluid received from the alimentary canal, is converted into living arterial blood. This blood, prepared for all the wants of the body, is returned to the heart through the pulmonary veins, and thence through the arterial trunks and branches, and capillary extremities, is diffused over the whole system, and portions of it are detained and converted into bone, cartilage, muscle, nerve, and every other substance belonging to the body, while the remaining portion of it finds its way, through exceedingly minute vessels, into the veins, in which it returns to the heart; while at the same time, all the different structures of the body, which are constantly receiving nourishment from the arterial blood, are also as contiually giving off their worn-out particles, which, by a process of vital chemistry, are resolved into a limpid fluid, and this is taken up by a set of capillary vessels, called the lymphatics, and emptied into the veins and mingled with the returning blood. Thus, both by the absence of properties which are separated from the arterial blood, to supply the various wants of the system, and by the effete and refuse matter returned by the absorbents into the veins, the blood is deprived of its stimulating and nourishing qualities, and is brought back to the heart through the large venous trunks, dark, and full of impurities and wholly unfit for the uses of the system. If the blood, in this condition, should be thrown into the arterial circulation, it would immediately suspend sensation, voluntary motion and consciousness: and very soon, the nerves of organic life, wanting their natural and appropriate stimulus, would cease to afford their vital energy to the organs,—all the vital functions would be arrested, and life would be destroyed.

To prevent this state of things, and to restore the blood to a condition suited to the wants of the system, the skin, the lungs, the kidneys, and perhaps some other organs, are

continually, and should be vigorously employed in separating out and throwing off the impurities of the blood: and the lungs and skin also digest a portion of the atmosphere and incorporate it with the blood to increase its vital and healthfully stimulating properties. In this work of depuration, the skin ordinarily throws off, in the form of insensible perspiration, more of the impurities of the blood than any other organ of the system. Indeed it is estimated, that more than half of all that is appropriated as nourishment to the system, ultimately passes off through the skin: and some eminent physiologists have asserted that more than half of all that is received into the stomach, passes from the body in this way.

The power of these organs to perform their functions, as we have seen, is purely a vital power, depending on the state of the nerves of organic life; and always corresponding in energy and vigor with the general condition of the digestive apparatus, and especially the stomach. When, therefore, the stomach is disordered and debilitated, and its function is feebly performed, the functions of the skin and lungs are less vigorous and complete,—the blood is not so thoroughly purified, nor is so large a portion of the atmosphere digested and incorporated with it, to increase its living energy and stimulating power. The whole organic system suffers in consequence; the heart is less vigorous in its action, circulation is enfeebled, and the whole capillary system suffers a diminution of its vital power, on which all the processes of vital chemistry depend: and the body is consequently less able to endure cold and heat, and is more liable to be injured by all the sudden changes of temperature, diet, conduct, and condition; and by the action of noxious and pestilential causes.

Let me again remind you, however, that I do not intend to teach, that the stomach is the organ which generates and disseminates the vital energy of the nerves of organic life; nor that it is the centre of action to this system of nerves.

In a healthy and normal state of the human system, each organ has, probably, to a certain extent, its own more immediate and special centre of action; and these special centres are associated by a more common centre of perception and action of organic life in the semilunar ganglions and solar plexus: while the top of the medulla oblongata, or head of the spinal marrow, is believed to constitute the general centre of animal perception and of voluntary motion and action to the whole united system of animal and organic life.

The proper performance of the functions of life and the

welfare of each and every part of the system, depend upon the integrity of the nerves, in supplying the necessary vital energy ; and this again, depends on their healthy state, and the due subordination of every part, to its lawful centre of action.

By inducing a diseased condition and inflammation of any part, a new and abnormal centre of action may be established, equal in the power and extent of its influence, to the importance of the part, and the degree of its morbid irritation; which will not only derange the function of the part itself, but also to a greater or less extent, those of the other parts ; and sometimes, of the whole system;—causing an undue determination of the fluids to itself, and resulting in morbid secretion, imperfect assimilation, chronic inflammation and disorganization or change of structure, by softening or induration, producing schirrhus, ossification, calculi, ulcers, cancers and dissolution :—or, mounting into a high state of acute inflammation, and in a more violent and rapid career, bringing on gangrene, or general convulsions, collapse and death.

Some of the functions of the body are, however, to a certain extent reciprocal; so that the suppression of the one leads to an increase, and often to a morbid excess of the other. Such is the case with the functions of the skin and kidneys; and also of the skin and lungs; and perhaps some others in a small measure.

Every person of any observation, must have noticed that copious perspiration, is ordinarily followed by diminished function of the kidneys: and that a suppression of insensible perspiration by chilly, damp weather, is generally attended with an increased function of the kidneys: and these excesses always correspond with the debility of the organs. But the welfare of the particular parts, as well as of the whole system, requires that each organ should uniformly and vigorously perform the full measure of its own duty, because frequent excesses arising from an undue determination of fluids to any one part, lead to debility of the part, and often result in impaired function, imperfect assimilation, local disease, and general injury and death. In this manner, sudden suppressions of the functions of the skin, often lead to diabetes or pulmonary consumption, by causing undue determinations to the kidneys and lungs, and inducing inflammation in one or the other of those organs, according as hereditary or self-originated predisposition renders the one or the other more liable to become diseased by such irritations.

Besides these more natural reciprocities of function, it

sometimes happens that a very diseased and violent reciprocity is attempted by the system. As for instance ;—when the function of the liver becomes deranged, the system sometimes attempts to force out the excess of bilious matter through the excretory organs of the skin ; and hence we have the manifestations of the disease, called jaundice :—and sometimes the liver is irritated and inflamed, and the character of the bile greatly affected by the excessive presence of those qualities in the blood, which should have been carried off through other organs. And again ; the system is liable to such a determination of the fluids to the mucous surface of the alimentary canal as excessively to irritate and inflame that very important membrane, and thus disturb and derange all the functions of life, and lead to the most painful and often the most fatal consequences. But this last disorder seldom if ever, obtains unless irritation is first induced in the alimentary canal by the direct action of moral or physical causes on its nervous tissue.

Now, with these explanations before us, can the *nature* of the fearful epidemic which is committing such ravages in the world, be regarded as in any degree a mystery ?

Innumerable as are the irritating and debilitating causes which are continually disturbing and impairing the organic functions, and diminishing the vital power of resistance, can it be a matter either of mystery or surprise that a highly morbid irritability of the stomach and intestines, should obtain in a very large portion of the human race ?—All the organs must participate in the affections and conditions of the stomach.—The quality and quantity of the secretions are necessarily affected ; and every thing in the system is strongly predisposed to disease of any and every kind. An adscititious cause, which would scarcely affect, in any degree, a healthy system, may now be sufficient to induce the most violent and fatal disorder. In such a state of things, sudden atmospheric changes, or the presence of noxious gasses or effluvia—together with exposures,—fatigue,—exhaustion,—improper kinds, quantities or conditions of food,—free use of heating and irritating condiments—fear—anger—venereal excess—and above all, excesses in alcoholic and narcotic substances, acting directly upon a morbidly susceptible and irritable stomach, and through it on the whole system, the utmost disorder must necessarily ensue.

If the gastro-intestinal irritation be not of the highest order, the system endeavors to relieve itself from the irritating cause, by a mild form of diarrhœa, which, if properly treated,

answers the instinctive purposes, and soon gives place to healthy action, and no further inconvenience follows:—but if the diarrhœa be neglected, and permitted to run on—and if irritating articles of diet be received into the alimentary canal,—and more especially, if heating and irritating astringents, tonics, stimulants, &c. &c., such as port wine, brandy, or alcohol in any form, or opium in any form, camphor, peppermint, ginger, mustard, pepper, &c. &c. be taken for the purpose of checking the diarrhœa, it is within the range of possibility that the experiment may succeed, so far, at least, as to arrest, for a while, the discharges, and in some extremely rare instances the system may recover: but almost inevitably the disorder will be aggravated, and a highly morbid, gastric, or gastro-intestinal irritation will be induced, affecting the whole system of the organic nerves, and causing a powerful determination of the fluids to the centre, and a copious flow of crude and very exasperating serous fluid into the alimentary canal, for the morbidly instinctive purpose of flooding away, as it were, the irritating cause. Violent vomiting and purging, for the same instinctive purposes, ensue: attended generally, at first, with a high state of irritation and inflammatory action of the vascular system. The determination to the centre is still increased. Insensible perspiration is suppressed,—respiration is labored and difficult,—the external capillary organs are prostrated: and the skin becomes cold and death-like; while the mesenteric, and other central vessels become overcharged and generally highly inflamed. The liver, partaking of the distracting irritations, suffers spasmodic strictures of the gall-duct, and thus its important secretions are shut out from the alimentary canal.

If the vital energies of the nerves of organic life are much impaired, and the whole system of these nerves be in a state of excessive morbid irritability, the gastric or gastro-intestinal irritation will soon become overwhelming, and the alimentary canal, in some or all its parts, immediately becomes an abnormal centre of action to the whole domain of organic nerves! The nervous energies, which in a normal state radiate, as it were, from their natural centre or centres, to the heart, arteries, veins, capillaries, and all the other organs of the system, are almost or entirely distracted,—the organs are paralyzed—their functions are scarcely performed at all, or entirely cease. The functions of the skin in particular, are wholly arrested, and the impurities which it should throw off, remain in the blood, to diminish its vitality and oppress the system. The blood vessels approach the same condition;—

the heart beats feebly, and perhaps intermits;—circulation is extremely languid; and the pulse scarcely perceptible;—respiration is exceedingly labored and difficult: the calorific function necessarily ceases in the external parts, and the extremities and surface generally, become deadly cold; and the skin is often covered with a cold clammy moisture. The blood thickens, grows dark and sizy, and its vitality rapidly declines: while at the same time, all that can flow in the system, rushes, in horrid anarchy, to the centre, producing the most violent congestion in the vessels leading to, and in the vicinity of the alimentary canal, causing an intense heat and high excitability of the parts, and inundating the stomach and intestines with a most excruciating serous fluid, which tortures beyond measure, the highly irritated and now keenly sensitive mucous membrane which lines them; and thus exceedingly augments the suffering and increases the dreadful disorder.

In such a state of things, can we wonder at the violent vomiting and purging? Can we be surprised at the intermission, or entire cessation of the pulse;—at the complete suspension of the function of animal heat in the superficial organs, and the consequent coldness of the surface and extremities? Or can it be a matter of astonishment, that all the muscles of voluntary and involuntary motion, supplied with nerves from the ganglionic system, brought, as they are, under a distracting and paramount influence, from this new centre of action, should be thrown into the most violent and painful spasms and convulsions?—Indeed! can we wonder at any of the horrid manifestations of this terrible disease—this fearful anarchy of the organic powers—this tremendous vengeance of the injured, exasperated and frantic instinct? For it is worthy of remark, that this dreadful epidemic appears to be peculiarly a disease of the organic domain. Animal life is seldom much affected by it, except through the medium of the ganglionic nerves; and the brain, in particular, is seldom so much disturbed as to disorder the mental manifestations.

A still more extreme case takes place in those who by excessive sensuality, filthiness and pernicious diet, have reduced the vital powers of their organic nerves almost to the line of death; an overwhelming gastro-intestinal irritation arrests, at once, all their feeble functions of life; inducing in a moment, as it were, a universal prostration, and almost instantaneous death, as with apoplexy or a sun-stroke. Great numbers of the canal-diggers died in this terrible manner, at

Georgetown, D. C., and elsewhere, in the summer of 1831, and in this same awful manner, the present epidemic has cut off thousands of wretched beings!

In regard to the causes of this direful epidemic, I have already entered so fully into the consideration of them, that it is not necessary for me again to be very minute in their general detail.

It may be said, in general terms, that the primary and paramount cause, is always, the peculiar condition of the human system, resulting from the violation of the laws of organic life. Its more immediately exciting causes, however, are various; such as atmospheric changes and conditions—quality and quantity of food—excesses of every kind: but more than all, perhaps, the excesses of filthy sensuality, and the use of artificial stimulants, and especially of the narcotic and alcoholic kinds;—in short, anything and everything that reduces the vital powers of the nerves of organic life; and brings the alimentary canal and with it the whole system, into a state of extreme, morbid irritability; leaving little power in the system to sustain high irritation, and to resist and throw off noxious and disturbing causes.

It may, however, with confidence be asserted, that all the causes which obtain, beyond the control of man, would seldom or never develope this disease without the concurrence of those causes which operate through his voluntary conduct.

But is there not some subtle agent, some pestilential essence, or some living substance,—entirely distinct from, and independent of human agency, and above human control,—which passes from place to place, and by its own independent and absolute and malignant energy, induces this terrible disease wherever it exerts its influence?

I reply to this; in the first place, that the philosophy of the case requires no such cause; and in the second place, that an accurate investigation of all the phenomena and facts in the case would never lead inductively to such a conclusion; and therefore, in the third place, that I cannot possibly yield my conviction to such an opinion.

How then shall we account for the fact, that this disease is so extensively epidemic?

That disease has swept over a great portion of the earth's surface with terrible devastations, is too fatally true to be denied: but what evidence is there of the essential identity, in all cases, as to the cause, of the disease, which under the name of Epidemic Cholera, has committed such fearful ravages in Asia and Europe? Is it replied that all the manifest-

ations and effects have been the same? But is this conclusive? A fatal dose of arsenic introduced into the human stomach, will produce manifestations and effects, so entirely like those of malignant cholera morbus, that very few, if any, of the most skilful physicians, without some other information than that which they derive from the manifestations and effects, would, when cholera morbus was prevailing, hesitate a moment, to pronounce it that disease. A thousand other causes may, with the concurrence and co-operation of peculiar circumstances, develope the same symptoms, and cause the same results.

Every pathologist ought to understand the nature of man thoroughly, in all its powers and properties;—not only organic and animal, but also mental and moral. He ought to be intimately acquainted with the physical and intellectual reciprocities; the full range and power of sympathies, and all their physiological, and pathological, and psychological effects. In order to this, he ought to observe man in every attitude and condition, and under all circumstances and influences; and avail himself of every advantage and every species of information by which he can ascertain the truth.

Much light might be thrown on pathological subjects, by a correct observation and analysis of the phenomena attending, what may, without irreverence, be called the moral and religious epidemics, which often become very extensive in society. I do not name these things with disrespect, but merely for the purpose of exhibiting the effects of mental action on the bodily system.

Time will not, however, at present, allow me to enter so far as might be interesting, and even instructing, into a minute detail of these effects on the functions and conditions of the stomach, liver, heart, lungs, skin, brain, and other organs, and the pathological results which often obtain. I can only, at present, name some of the prominent results, which will serve to elucidate the subject before us; nor shall I pretend to chronological, nor geographical accuracy in the history of the facts which I mention; but I will endeavor to be correct in the facts themselves.

About thirty years since, a powerful religious excitement commenced somewhere, I believe, in the state of Vermont. A fearful solemnity pervaded almost every mind. Deep and continued anxiety, arising from the exhibition and contemplation of awful subjects, and the fearful expectation of the presence and action of a mysterious agent, so affected the bodily organs and functions, that, in a moment of overwhelm-

ing excitement, an individual fell prostrate, as though suddenly struck dead by apoplexy. There was an entire suspension of animal life for some minutes. This necessarily increased the awful excitement of those who saw or heard of it. It was fully believed to be the effect of the immediate action of the Spirit of God, in renewing the soul; and therefore, every one, with still more fearful anxiety, began to feel himself in the presence of the same mysterious agent, and that he was at every instant liable to become subject to the same action and the same effect. This again necessarily and very powerfully increased the predisposition of the body for such an effect. The result was, that another, and another, and another, fell in the same manner, and fully confirmed the belief, that it was a phenomenon connected with the mysterious operation of the Spirit of God in converting the soul. This led the subjects themselves to the full conviction that such a phenomenon was a demonstration of their genuine conversion; and they awoke from their swoon, believing, and often shouting aloud in the rapture of their belief, that they had become the inalienable heirs of eternal life and happiness. Of course, every tongue, with solemn tone, rehearsed the awful story. The excitement extended and increased,—and the phenomenon of falling down in a swoon, became truly epidemic. Preachers, and others, full of zeal, passed from place to place, and, with all the ardor of enthusiasm, and the untiring earnestness of those who desire to save the souls of their fellow creatures from eternal ruin, repeated and repeated the solemn story, with all the skill of circumstantial detail, and fervently, and often terrifically importuned their hearers to repent and believe, now, in the day of God's mighty power.

The consequence was, that sympathies were aroused,—excitements were produced—and individuals began to fall prostrate, and wake from their swoons rejoicing and shouting!—and in this manner this species of epidemic spread over a considerable portion of New England, and hundreds, if not thousands, were either "struck down" suddenly, or powerfully agitated, and nearly paralyzed in their bodily powers.

A similar excitement took place, several years since, I believe in Kentucky, in which the subjects were affected with powerful spasms in the muscles of the limbs—or sudden twitching and jerkings in the arms and legs. This was also fully believed to be the effect of the immediate action of the Spirit of God in the work of conversion; and consequently

was regarded with fearful awe. Large circles were formed for prayer, and the anxious were brought within the circles—and united, and sometimes vehement and even boisterous prayer was offered, that the Holy Spirit would come down and convert them; and these prayers were believed to be answered by the Spirit's operations, when the "jerking" commenced, which soon took place, and generally extended to most of those within the ring.

Some daring young men entered these circles with the spirit of derision,—intending to practise an imposition on the religious; but with horror, they soon found themselves, as they believed, under the irresistible influence of the Holy Spirit, and became powerfully affected with the involuntary spasms, and left the circle with the firm belief that they were converted. Such instances went still farther to confirm the popular belief that these "jerks," as they were called, were the effects of the direct and irresistible, though mysterious agency of the Holy Spirit. The consequence was, that they became extensively epidemic; and those who were the most powerfully affected in this way, were considered the most signally favored, by the abundance of the power of the Holy Spirit.

I might adduce several other instances of extensive religious excitements, which have been attended with different bodily phenomena, of as marked and peculiar character as any I have named. But I have already mentioned enough for my present purpose; which is solely to show that certain actions of the mind may produce certain conditions of the nervous system, causing corresponding effects on the organs and functions of the body; and that when peculiar causes have produced peculiar phenomena, and the causes are fully believed to be general, mysterious and irresistible, and the phenomena the necessary results of the action of those causes, the mind of all, coming under the same strong and continued excitement, may so act on the bodily sympathies, and through them, on the organs and tissues, as absolutely to induce the same involuntary phenomena in most or all; and thus render them extensively epidemic; while the very fact that they are extensively epidemic will serve to establish more firmly the popular belief in an identical, mysterious, and irresistible agent.

Now, if such is the philosophy, so far as bodily phenomena or symptoms are concerned, of moral and religious epidemics, why should we utterly disregard these things in pathological reasoning, and travel over the whole field of con-

jecture in order to find an adequate cause, when such a cause presents itself in the power of the sympathies directed by the actions of the mind? Indeed we have the record of facts directly in point to illustrate this doctrine in pathology. "It is well authenticated that females in the Royal Infirmary at Edinburgh, who were affected with hysteric fits, occasioned the same infirmity in others. It is well known, too, that in the poor house at Haerlem, in Holland, many years ago, a girl, under some impression of terror, fell into a convulsive disease, which extended on the mere principle of sympathy, to nearly all the boys and girls in the house. The celebrated Doctor Boerhaave put a stop to it, by preparing certain irons, and having them made red hot, in the presence of the children, and declaring, with great solemnity, that every child which manifested any symptoms of the disease, must be burnt to the bone with one of these hot irons. There was no occasion to use them, and the disease was no more known. In the year 1803, a species of St. Vitus's dance became epidemic in one of the United States, on the same principle. Many more well authenticated instances of this kind might be named, extending through parishes, villages, and districts of this country."

But do you ask if I believe that such a cause can absolutely produce the Asiatic, spasmodic cholera? I reply, that I fully believe that, when long continued abuses have reduced the vital energies of the nerves of organic life to a very low level, in a great portion of the human family, extending over the face of the earth; and the human system is thereby strongly predisposed to take on disease, while it is little able to sustain it,—if certain local causes shall develope a disease pretty extensively, of a fatal and terrific character, the cause which I have named, is alone sufficient to keep up an epidemic disease, which shall be attended with most or all the prominent symptoms of the first, and become as extensive as the quarry in which it originated. Moreover, such a cause, by long acting on those of better habits, may so irritate and debilitate the nerves of organic life, and so disturb the various functions of the system, as to bring on disorders, which will predispose the body to take on disease, and this, being improperly treated, may terminate either in the prevailing disease itself, or one which shall so assimilate itself, in all its symptoms, to the prevailing disease, that it will be unhesitatingly pronounced the same: and thus, epidemic disease may not only range over the level of its origin, but also frequently undermine, and sweep away many in the higher orders of habit and condition.

In the winter of 1809–10, a disease broke out in New England, (I believe in Hartford, Connecticut,) which was very sudden in its attack, brief and violent in its career, and fatal in its effects. Much alarm was of course produced: every body talked about the new and terrible disease; and every one was eager to hear the latest accounts of its progress and fatality. All the symptoms of the disease were carefully observed and published in the newspapers, and still more extensively by the ten thousand tongues of busy rumor, and listened to with deepest sensibility by the ten thousand ears of fearful anxiety. The skill of the physicians was baffled; profound and awful mystery enveloped the cause, and covered the mode and means of cure. The physicians, in the general panic and incertitude, abandoned the philosophy of physiological pathology, and gave themselves up to conjectural speculation and excited imaginations!—All was dreadful uncertainty, and fearful apprehension, and irresistible fatality. Death, shrouded in the impenetrable darkness of Egyptian midnight, walked forth with terrible omnipotence! The dying bowed their heads and expired in unutterable agony; and the living looked on with trembling consternation, and felt that they were contemplating the horrid imagery of their own unavoidable destiny! Universal panic reigned with fearful despotism over the morbid sensibilities of society; and every sympathetic pain and affection were apprehended with dismay, as an indubitable symptom of the fatal disease!—Remedial experiments, corresponding in violence with the supposed power and malignity of the cause of the disease, were numerously tried; and the work of death was more terrifically accelerated. Then, too, as in all other epidemics, ignorant quacks, with the well-meant concurrence of newspaper editors, spawned and promulgated their officious and mercenary prescriptions, to deceive the credulous, and bewilder the doubtful, and increase the excitement, and extend the devastation.—Medical men rashly published their violent specifics, which became, in the hands of the terrified, like the weapons of death in the hands of the insane! Hundreds, and probably thousands, felt the symptoms, and in the delirium of fear, poured down fatal quantities of brandy and laudanum, and plunged drunken and stupified into the forced embrace of death! And thus the tremendous havoc swept on, spreading consternation before it, and leaving desolation behind? Legislatures adjourned, and fled in dismay—the affairs of society stagnated—business was neglected, and men sat down in despondency and despair, to brood over

their sympathies; fearfully watching for symptoms, constantly taking preventives, and literally preparing their bodies for death!

In such a state of things,—and I have not given an exaggerated description—is it surprising that the epidemic Spotted Fever, or Cold Plague, should extend over a considerable portion of New England, and sweep off hundreds or thousands in its career?—And yet I have been assured by a highly respectable physician in Massachusetts, that after losing three patients with this disease, by the established mode of practice of the time, he abandonded that mode, and governed himself entirely by the indications of physiological pathology, and adapted his practice to the symptoms of the case, and never, after that, lost a single patient by that disease, although his practice in it was uncommonly extensive. Indeed, he assured me that the disease when properly treated, was more easily managed, than what is ordinarily called a bad cold.

An epidemic disease bearing the same name, but less extensive and less fatal, because attended with less panic, and less error of treatment, has, for a considerable time past, prevailed in and about New London, Connecticut. There have been, I believe, several hundred cases; the greater part of which have most unquestionably been purely sympathetic.

It is more than probable that an epidemic disease of any very great extent and mortality, never prevailed among mankind, in which morbid sympathy and mental action did not constitute a very considerable portion of the efficiency of the epidemic cause. The history of all past epidemics corroborates this opinion; and we find that whenever and wherever the plague has prevailed, not a few even of the medical profession have believed that fear was chiefly concerned in propagating that terrible disease. Undoubtedly there have been at some periods in the history of the world, causes, connected with the disturbances of the earth, such as earthquakes, volcanic eruptions, &c. &c., and perhaps also with the influence of some of the heavenly bodies, which have produced extensive epidemic diseases that have destroyed great numbers of the human species, and of the lower orders of animals. But these instances have, I am confident, been very few; while as a general rule, as I have already said, it may with confidence be asserted that all the causes which obtain beyond the control of man, would seldom or never develope epidemic disease, without the concurrence of those causes which operate through his voluntary conduct. And I am

entirely confident that every symptom and effect, by which what is called the Epidemic Cholera, is ordinarily attended, may be superinduced, *in certain conditions of the human system*, by mental action and remedial agents.

Let me not be misunderstood: I do not say that mental action will absolutely induce spasmodic cholera, in any state of the body; but, that *in certain conditions of the body*, mental action may so affect the nerves of organic life, as to cause that gastro-intestinal irritation, which is the basis of all the symptoms of spasmodic cholera; and that continued mental action of the same character, may reduce the body, from any state of health, to that condition in which the disease may be superinduced.

We know that overwhelming fear, by arresting at once all the functions of life, may cause instantaneous death; and we know that violent and continued fear may so affect the hair of the head, in a few hours, as to destroy its color: and that the same passion will suspend in an instant the functions of the skin and superficial capillaries, and impel the fluids from the surface to the centre, leaving the skin cold and corrugated, and cause a spasmodic, and irregular, and interrupted action of the heart and lungs, and induce pain and even severe cramp in the epigastric region; and great irritation of the liver and kidneys, and sudden and violent evacuations of the bowels and bladder, attended often, with severe and painful spasms of the body and limbs: and sometimes ending in sudden death.

Unfortunately, however, in all times of great epidemical excitements, fear is not left to work single-handed in the mighty mischief, but leads to the use of such medical preventives and remedies, as are even more pernicious in their effects on the vital powers, than the passion itself; and thus the ruinous operation is carried on, while intemperance, and irregularities of every kind, come in as immediately exciting causes of disease, to consummate the dreadful work of death.

To illustrate this doctrine still farther, let us take a single case in detail. Suppose an individual in good health, by continually hearing the accounts of the dreadful mortality, and terrible progress of the Cholera, to be filled with fearful anxiety in view of the probability that it will visit the place where he resides, and the possibility that he may fall a victim to it. He is constantly hearing fresh and shocking accounts of its ravages, and learns all its symptoms and horrors. The mystery of its cause, and the malignity of its career, increase his dread! His thoughts frequently revert

to the painful subject, and the suggestion arises in his mind, "I may fall by this awful disease!"—At length his mind comes to brood almost habitually on the alarming subject. His spirits necessarily become more or less depressed, digestion is disturbed, his appetite is impaired, the skin becomes relaxed and debilitated, its functions are less vigorous and complete, the circulation languishes: the lungs, the liver, the kidneys, and all the other organs, partake of the disturbance, and all their functions are correspondently impaired. Assimilation, secretion, and all the other vital processes, are deteriorated. All this reacts upon the stomach, and brain, and nervous system generally, to depress still farther the vital powers, and still more impair the functions: and these disorders of the body react upon the mind, to increase its despondency, and this again depresses still more, the functions of the body. And now the terrible accounts begin to produce great nervous agitation; and this increases nervous debility and morbid irritability, which still farther enfeeble the vital powers of reaction against disturbing and noxious causes, and predispose the body to disease, and subject the individual to those frequent nervous and sympathetic pains and affections which the fearful mind readily conceives to be the premonitory symptoms of the disease.

Now if the unfortunate individual had knowledge and wisdom enough to regulate his conduct according to his peculiar state, he might, with the utmost probability, still be saved from the evils which he so unhappily dreads. If he would carefully, in all respects, adopt a regimen suited to his peculiar condition and circumstances, he would be in little real danger of the disease. But alas! how seldom is this course pursued! With all their fears, and with all the disturbing and debilitating effects of their brooding anxieties and agitations, people generally pay little attention to their diet and habits of body,—as if their only danger were from some mysterious agent or principle in the atmosphere, or somewhere else, which absolutely and arbitrarily destroys life, without regard to habits or conditions of body. Or, if they do attempt to regulate their diet, the articles to which they will restrict themselves, and their modes of preparing them, are often even more pernicious than the things which they reject; and thus the debility and irritability of the digestive organs are still more increased. And to relieve themselves from this depression, and languor, and despondency, resulting from the actions of their mind, and the conditions of their body, they will almost universally have recourse to strong

tea and coffee, or to cordials or tonics, or fermented or distilled alcoholic liquors, or opiates, &c.—always, however, under the name of necessary preventives or medicines! All these things necessarily prepare for the consummation! Then comes the alarm-cry that the terrible epidemic has reached or broke out in the place, and begun its ruthless work of death! The panic rises like a whirlwind! The morbid sensibilities, excited by the actions of the mind, are full of premonitory symptoms and affections: this causes powerful agitation, which almost necessarily brings on a disordered state of the stomach and bowels—more especially, if there is the least impropriety in diet; and by this means the panic is tremendously increased. In this state of vital debility, agitation and terror, some of the vile prescriptions of the newspapers are adopted, and the most pernicious, and often the most fatal articles, in the form of medicine, are thrown into the disordered and extremely irritable stomach. Perhaps, also, articles of diet of the most improper character are received into the alimentary canal; or it may be, that in this state of the system, some impure air—some noxious exhalation–some infectious effluvium, of a local nature or generation, acts on the highly morbid mucous membrane of the alimentary canal, so that by some or all of these causes, a violent irrritation is produced in the alimentary canal, modified in its manifestations by the actions of the mind; and a powerful determination of the fluids to the centre, and excessive central congestion, are caused by the gastro-intestinal irritation; a crude and exacerbating serous fluid is poured into the alimentary canal, increasing exceedingly the irritation; and then follow violent vomiting and purging, spasms, asphyxia, and all the other symptoms by which the case is ascertained to be spasmodic cholera; and these symptoms are generally much aggravated by stimulating substances.

The case which I have adduced, supposes a tolerably sound state of health in the nerves of organic life previous to the commencement of the panic or fearful anxiety; but throughout the whole of the human family, and especially in large cities and towns, a very considerable proportion of society is habitually in that low state of the vital energies, which requires little or none of the preparation for disease, that I have just described: their diet is sometimes—though in this country, unnecessarily,—scanty, seldom of the best kind, often of a very pernicious quality; and their exposures are frequently great. Still, however, all these causes together contribute much less to the actual developement of epi-

demic disease, than the universal and generally excessive use of artificial stimulants; in which the poorest and most wretched portions of society indulge.

It is a well known fact, that immense numbers of the inhabitants of Europe and Asia, as well as of our own country, will voluntarily subsist on one or two scanty meals a day, of miserable food, for the sake of procuring their ordinary quantity of tea, coffee, tobacco, opium, whiskey, arrack, or some other kind of intoxicating substance. Reckless as these unfortunate beings generally appear to be, yet they nevertheless partake of the general panic; which, unhappily, instead of restraining them from their habitual errors, more frequently, on the other hand, drives them to greater excess, as a refuge from the very calamity into which they are blindly precipitating themselves!

In such a state of things, fatal disease must necessarily be soon induced; and in such bodies, it must be malignant, violent, and brief;—and under such circumstances and influences, what would, at another time, have appeared only "sudden death," from drunkenness or excess, would now, almost necessarily, take on the type, and exhibit the symptoms, of the prevailing epidemic. Every such death will increase the panic, and consequently multiply the deaths, till excesses, and filth, and disease will, if other circumstances be favorable, generate a malignantly infectious effluvium, which will come in with the other causes, to carry on with tremendous energy, the terrible work of destruction.

From this combination of causes, a pestilential efficiency is produced which those of healthier condition and better habits, and even the lower order of animals, will often fall before. Thus the moral fens and morasses of society become the sources of pestilence and death to those who have, perhaps culpably, neglected to improve their condition.

It is upon this principle of mental action, affecting physiological conduct, and determining pathological affections and manifestations, that the notorious fact is to be accounted for, that during the prevalence of such an epidemic as the present, almost all other diseases assume the symptoms of, and run into, the prevailing disease: for this is seldom, if ever, the fact to any considerable extent, only during the prevalence of such epidemics as are attended with great panic.

The epidemic Influenza is caused entirely by certain sudden changes in the atmosphere, acting on the human system in certain conditions, which result from the voluntary habits and customs of civic life: but this is attended with little or

no panic, however extensive and fatal the disease; nor during its prevalence, do any, except cognate diseases, take on its type. The same is true of all epidemic diseases of this predicament.

On the whole, therefore, though I do not pretend that panic, or mental action, can absolutely and immediately produce real spasmodic cholera, in any and every condition of the human system, yet I do confidently assert that, taking into view the various causes which are continually operating on mankind, to reduce the vital powers of the nerves of organic life, and considering the actual condition of a large portion of the human family, as to vital power of organic function, and resistance to noxious and pestilential agents, mental action alone, is, through the *modus operandi* which I have described, an adequate cause for the *epidemic* character of the present prevailing disease, called spasmodic cholera, throughout the human race!

Still, however, let it be remembered, that I do not say that this disease is in every individual case preceded by panic, or induced by mental action. I contend that highly malignant pestilential causes may be locally generated, and act on those who would not otherwise have had the disease, nor even *with* these causes, without a predisposition resulting generally, if not invariably, from their own voluntary conduct: and I contend also, that the pestilential cause or causes may be conveyed to, and fatally act, to some extent, in places where they would not have originated: and that they may be originated, in the manner I have described, in other places favorable for their generation, without the assistance of any imparted infection or medium of contagion.

Treatment.

The next question which comes to us, is—How shall we treat this dreadful disease?—Here I confess, with a deep sense of the responsibility resting upon my undertaking, and of my want of knowledge of *materia medica*, that I feel fully conscious that I am passing from physiological and pathological premises, into the somewhat uncertain field of therapeutics. Perhaps it will be thought that I should stop short, nor presume to venture a speculative opinion on so momentous a subject. But since I have taken it upon me to speak, I will proceed: yet I will endeavor to be exceedingly cautious.

What, then, shall we do with this disease, especially when it assumes its severest and most fearful character?—When

we find a prostration of all the functions of life; when the skin is totally paralyzed, the animal heat gone from the surface and extremities, the breath cold, the tongue dry, voice lost or very feeble, the heart scarcely heaving a sluggish, intermittent pulse, while violent vomiting and purging, and dreadful spasms, and burning pains in the epigastric region, and severe cramps in the limbs and extremities, seem terribly hastening the work of death, what shall be done? For surely, something must be done, and done quickly, or death will have achieved its victory!

I ask again, what is the immediate cause of all this derangement and prostration? Is it any external agent acting on the exterior surface, causing a paralysis and collapse of the superficial organs, and driving the fluids to the centre? Certainly not!—Is it any agent applying itself directly to the nervous system as a whole, and inducing general prostration, collapse, and the other symptoms in the case? By no means!—What then shall we call it? Most evidently and certainly, it is irritation in the alimentary canal, originated as I have described, and excited to madness by the acrid fluids which are pouring in from every quarter, and producing an excitement which distracts the normal distribution of nervous energy, from the natural centres to the several organs, and exerts a paramount influence over all the organs of the body, and blindly drags all the vital energies into the vortex of its own maniac fury!

But what shall we do? What does nature indicate by her conduct? Does she not open the orifices of her alimentary canal, and with the agony of a blind and desperate Samson, heave, with all her remaining energies, to throw off the irritating and deranging cause from her smarting sensibilities?

She asks for assistance! And does not the nature of the case, more than indicate the kind?

But it is said that we must rouse the prostrated functions! We must produce heat, and circulation, and excite the action of the skin, and overcome the spasms, and arrest the vomiting and purging: and how can all this be done, without the exhibition of narcotics and stimulants? I say again, that all the prostration and derangement is owing to gastric, or gastro-intestinal irritation, which has become an abnormal and maniac centre of action to the whole system of organic nerves, and all the organs depending on them for functional power? Remove this irritation, and suffer the normal centres of action to throw their energies upon the organs, and the prostration and derangement are overcome, and the func-

tions restored! In such a state of things, will you exhibit your exasperating stimulants and deadly narcotics?

And for what purpose? To shut up the flood-gates through which nature is trying to relieve herself; and by your narcotics, to *kill* the excess of vital activity in the irritated organs, and by your fiery stimulants, to roll back the tide of ruin to other outlets, and force the heart and other organs to rouse from their prostration and perform their functions, under all the embarrassments of distracting irritation in the gastro-intestinal centre?

But has not such practice been successful?—Doubtless there have been instances in which such practice has been apparently if not really successful:—or in other words, some patients have recovered either with, or in spite of, this treatment. During the prevalence of all epidemics, and especially those which are attended with great panic, there are always many spurious cases; and in these cases of purely panic, or sympathetic cholera, the exhibition of brandy and laudanum, (or some other powerful stimulants,) may sometimes seem to afford immediate relief; but even in such cases, always at the hazard of life. When these articles are administered, however, in cases of real spasmodic cholera, if any benefit results, it is only in cases where the patient has previously been addicted to the free use of alcoholic liquors, and in the nervous tissue of whose alimentary canal, there is still remaining vital susceptibility and energy enough to receive and diffuse over the whole nervous domain, a stimulation sufficiently powerful to counteract the ruling despotism of the gastro-intestinal irritation, and force the organs into a performance of their functions, in spite of its bewildering and distracting influence. But if this species of forced action is not kept up by the continual administration of the stimulants, the patient must relapse with fearful rapidity, to the inevitably fatal action of the disease: and if it is kept up for any considerable time, the idiopathic character of the disease may indeed be broken up, but it is always at the utmost risk of so wearing out the susceptibilities and energies of the system, that it will sink down into an equally fatal disease of a different type; or, if this should not be the case, and the patient should recover from the cholera by such treatment, he will continue, for a considerable time, to be subject to a serious derangement of the stomach and bowels, and will be exceedingly liable to another attack of the cholera, from the slightest exposure or error of conduct. The cases, however, must be very few, in which the least *apparent* benefit is

derived from this mode of treatment; while, on the other hand, the most tremendously ruinous effects are produced by such a practice.

How, then, you ask again, shall we raise the system from its dreadful prostration, and overcome the spasms, and arrest the violent vomiting and purging?

Again I say, remove the irritation of the alimentary canal and the spasms and vomiting and purging will cease; and the heart and the other organs will immediately recognize their allegiance to their normal centres of action, and perform their functions without unnatural force.

But how shall we remove the gastro-intestinal irritation? This depends much on the peculiar nature of the case. Sometimes, as we have seen, the irritation depends entirely on the presence of an irritating substance in the alimentary canal; such as improper articles of diet, &c.; and sometimes, from the peculiar condition of the system, and especially, of the nervous tissue of the alimentary canal, the irritation, by whatever immediate cause induced, will propagate itself, and become a pathological affection of the tissue.

When the irritation is not overwhelming at first, the system instinctively endeavors to relieve herself, by pouring an increased quantity of mucous secretion into the alimentary canal, and thus relaxing and evacuating the bowels in order to remove the irritating cause; and if the stomach and intestines are in a healthy and vigorous state, and the patient is careful to abstain from every thing that would increase or keep up the irritation, the system will entirely relieve herself by her own instinctive efforts, and as soon as the irritating cause has been evacuated, the bowels will resume their healthy action. But when, from the previously debilitated and morbidly irritable state of the alimentary canal, the superinduced irritation becomes a pathological affection of its nervous tissue, the mucous secretion will run into a serous or watery character, and the relax will be followed by a diarrhœa, of a more or less mild or severe character, corresponding with the previous state of the system and the degree of morbid irritation.

If the diarrhœa be of a mild character, and the previous habits of the patient have not been bad; and if he keep quiet within doors, and totally and scrupulously re frain from every kind of medicine and aliment, solid and fluid, except alittle simple Indian-meal gruel, or rice water, or coarse unbolted wheat meal gruel, or wheat bran tea, without any seasoning taking this at stated period and in

moderate quantities, so as not to interfere with the process of digestion; and if the patient use a good deal of friction over the whole surface, and especially over the stomach and bowels, with a flesh-brush, or coarse towel, or flannel; and be careful to keep clean in person, clothing, bed, house, &c., avoiding confined and impure, and damp, cold air, the morbid irritation will be entirely subdued in the course of twenty-four hours; and then, if the patient will subsist the next twenty-four hours on good, sweet, well-baked, coarse, stale bread, taking it at his regular meal times, and masticating it very fully, using no butter nor any thing else with it, and no other drink but his gruel or good soft water, at the end of the forty-eight hours he will find his bowels in a perfectly healthy state and action. But as surely as he takes any improper article of diet into his stomach, whether solid or fluid, while the diarrhœa is on him, he will increase the irritation, and aggravate the disease.

In some instances where the diarrhœa has assumed a chronic character, and does not readily yield to the regimen prescribed, the patient will do well to fast entirely for twenty-four hours, taking nothing into the stomach, except in case of thirst a little pure soft water; and after such a fast let him take at his regular meal times, a little gruel made of the coarse wheat meal, it he can get it; if not, of prepared barley or oats, or indian meal, and on the third day use the bread as above directed.

Let it always be remembered, that the *diarrhœa* is not the disease, but the *morbid irritation* is the disease; and the diarrhœa is the morbidly instinctive manner in which the system is endeavoring to remove the irritation; and therefore an attempt to suppress the diarrhœa upon any other principle than by subduing the irritation, will almost inevitably increase the disorder. It is true that the morbid character of the serous fluid which is poured into the intestines, is a powerful cause of the irritation, and therefore it is highly desirable that the diarrhœa should be suppressed as soon as may be; but still, I say, it must not be done by any means incompatible with the morbid irritation and irritability of the nervous tissue of the alimentary canal. Hence, brandy and laudanum, brandy and sugar, spirits of any kind,—wine, or fermented liquors of any sort,—camphor, peppermint, pepper, mustard, coffee, tea, and all other things of the kind, taken to stop the diarrhœa, are all, in their respective degrees, calculated to aggravate the real disease, and bring on vomiting and spasms, and increased determination to the centre, and

general prostration and collapse, or asphyxia and death! It is true that most of these things may sometimes arrest the diarrhœa; but it is necessarily upon a principle which renders it almost certain that the disorder will soon return again with increased violence; and more especially if any pestilential cause be acting upon the system. It is also true that in some very rare instances, patients may recover with the use of these articles; but the cases are only astonishing exceptions to correct rules; and the practice is none the less madly erroneous.

In regard to the use of opium, to arrest the diarrhœa, or in any stage of the disease, I am convinced that it is little, if any less pernicious than alcohol. As a stimulant, it always increases the irritation, and as a narcotic, in all cases, it reduces the morbid sensibility and irritation *only by diminishing vitality;* and consequently, without removing in any degree the cause of that morbid sensibility and irritation; and therefore, when its narcotic properties are expended, the system is liable to more morbid excesses of sensibility and irritation, with less vital power to sustain them, and to react against morbific causes, and throw off its own morbid affections; and if it be repeated so as to keep the system under its narcotic influence, it becomes itself a powerful cause of the rapid and total extinction of vitality; and is thus very frequently made to supersede all other causes as an agent of destruction to the sick. For be it remembered, that it cannot possibly, in the nature of things, do any thing directly, towards restoring healthy action; and healthy action alone can resist morbific causes, and give general health to the system.

When the diarrhœa is of a more severe and violent character, and especially if it be attended with pain, and with spasmodic affections in the hands and feet; and, indeed, it will perhaps be safest to say, in all cases of diarrhœa, during the prevalence of the cholera, the patient should keep quiet within doors—or even take to his bed, maintaining as much composure of mind as possible, carefully abstaining from every stimulating and heating substance, take a gentle dose of castor oil or of rhubarb and calcined magnesia; or, if his previous habits have been bad, and his stomach, liver, and bowels have been torpid, take a dose of rhubarb and calomel, or a free dose of calomel, and remain quiet upon his bed till the medicine operates, taking nothing into his stomach during the day, except the gruel, as I have before directed, and the next day the bread, or some other plainly and simply prepared farina-

ceous aliment, in solid form and freely masticated; and continuing, for a few days at least, to be guarded and plain and simple in his diet, rubbing the skin freely, morning and evening, with a flesh-brush, or coarse cloth, observing personal and domestic cleanliness, and avoiding confined and impure air, &c., and no further inconvenience will be experienced, and health will be restored, unless there is some great imprudence.

In cases where the diarrhœa has been neglected, or badly treated, till violent vomiting sets in with the purging, attended with spasms in the body and limbs, cold skin, difficulty of breathing, &c., both cathartics and emetics will be unavailing, and they may serve to increase the irritation. In this case, I should suppose that pure soft tepid water, introduced freely into the stomach and intestines by potations and injections, would be the best internal application that can be made. By this means the mucous membrane will be cleansed from its acrid and exacerbating humors,—its irritations greatly if not entirely soothed down, and its morbid secretion and action subdued, and the normal functions of all the parts restored. Indeed, there is reason to believe that if nothing but pure soft cold water were used in great freedom, both by potation and injection, the vomiting and purging and spasms, and other morbid symptoms would soon begin to subside, and in a short time be wholly arrested.

If, however, it should be found necessary in any case to use stimulants internally, I should suppose that red pepper would be the safest and best, because it is more permanent in its action than alcoholic stimulants, while perhaps there is no other stimulant which so little impairs the vital properties of the tissues on which it acts; and consequently, so little exposes the system to reaction and relapse.

But perhaps the safest and most successful practice in the advanced stage of the disease, would be a copious use of the tepid or cold water internally, both by potation and injection, for the reasons I have just given, while red pepper, mustard, and such like stimulants, were applied freely to the outer skin, in a dry form, with brisk, and continued friction; in order to produce a counter irritation and general stimulation. If this practice should prove successful, the patient will be in comparatively little danger of consecutive fever, functional derangement or relapse.—[*See Appendix, note A.*]

I repeat, however, that not being well acquainted with materia medica, I dare not speak with confidence as to the best articles to be exhibited in this stage of the disease. My re-

marks are founded entirely on what seems to me to be the philosophy of the case, and strictly consistent with the principles of physiological pathology manifested; and I feel exceedingly confident that if any pre-eminently successful mode of treating this disease shall be discovered, it will be very simple. But it must be confessed, that there is at present no little responsibility resting on this point; and every man who possesses any considerable degree of moral sensibility, will hesitate and consider carefully and deliberately, before he utters even a conjecture, as such, on so fearfully momentous a subject; knowing well, that if erroneous, it may cause the death of some—perhaps of hundreds—possibly of thousands of his fellow creatures, who unfortunately confide in his opinion. [*See Note B.*]

Is the Cholera Contagious?

The question whether this disease is contagious, has been warmly agitated ever since the disease has attracted public attention; and the feelings which have been excited by the controversy have, there is reason to believe, caused medical gentlemen to shape and color their statements and reports, according to their favorite theories of contagion or non-contagion; though I trust that this has always been done without the consciousness on their part, of any intentional misrepresentation.

In the technical language of controversy, there is a difference between a contagious and an infectious disease. A contagious disease is taken by coming in contact with, or into the presence of, the person diseased; or, at least, within the sphere of the action of the morbific effluvium from the body of the sick; but an infectious disease has a cause which exists independently of the bodies of the sick, and may be taken with equal certainty, without coming in contact with, or even into the presence of any person diseased.

The main practical difference, and which, if true, is of very great importance, is, that however infectious the disease may be, yet, if it be not contagious, there is no more danger in visiting and nursing the diseased, than there is in avoiding them; and quarantine regulations are entirely useless.

A majority of the physicians who have turned their attention to the subject, in Asia and Europe, and in our own country, are, I believe, decidedly of the opinion that the Spasmodic Cholera is not contagious; and in their sense of the language, their opinion seems to be confirmed by many strong

facts :—while on the other hand, there are many important facts which seem to prove that, if the disease is not absolutely and literally contagious, its infectious character is such as greatly to increase the danger by personal intercourse.

On the subject of contagion, however, I apprehend there is a universal error. We are told that there are certain diseases which are absolutely contagious; such as small-pox, hooping-cough, measels, &c.; but I am not prepared to admit the correctness of this opinion. I do not believe that any disease to which the human body has ever been subject is *absolutely* contagious. I believe that there was a time when the small-pox, for instance, was entirely unknown among mankind; and that it was originated in the human body by the violation of those laws of life which appertain to the highest state of human welfare; and being once originated it was contagious to all those who were in the same general predicament of vital condition and susceptibility,—which had then become the case with almost the entire species; and I am confident that this is all true of every disease which we call absolutely contagious; and consequently, that the human constitution is still capable of being elevated above the susceptibility to any contagious disease; and that thus, all contagious diseases may be extirpated from the human family. Why is the small-pox robbed of more than half of its virulence by passing through the vital economy of a cow, or any other strictly herbivorous animal? Is it believed that it would be equally subdued by passing through the vital economy of a strictly carnivorous animal? I do not know but the experiment has been made; but if it has not, it certainly is worthy of a trial.

Some diseases, however, become contagious at a much higher state of the constitution than others; but this does not prove that a disease which is contagious only at a very low state of the constitution, is not as truly contagious throughout its own level, and all below, as is the disease which becomes contagious at a much higher state of the constitution. The only difference is, that mankind are more likely to be universally, and at all times, in the predicament of the latter than of the former; and hence some contagious diseases may prevail at all seasons of the year alike; others may prevail more at particular seasons of the year, and others may prevail only at intervals of many years, and at irregular periods, when the protracted operations of numerous causes have brought a larger or smaller portion of the race generally, in-

to their peculiar predicament. Still, however, as every contagious disease may spread over its own level, and all below it, so the disease which may become contagious at a much higher state of the constitution, will, at all times, be more universally contagious throughout the whole human family, than the disease which becomes contagious at a much lower state of the constitution; because the former embraces within the range of its capabilities, a much larger portion of mankind, than the latter. Nevertheless, I say, the latter is as truly contagious within the range of its capabilities, as the former.

From the view which I have taken of the nature and of the epidemic cause of the disease under consideration, it appears that it does not *necessarily* depend on contagion, nor infection, to propagate it from place to place. Powerful panic, or mental action, with the co-operation of other causes which I have named, may actually originate the disease; and the disease, thus originated, may, in certain circumstances, which always exist, to a greater or less extent, in large cities and towns, generate an infection of a most malignant character and extensive influence; and this infection will lay hold of those who are somewhat above the level of its origin; and may be conveyed to places, and communicated to persons, who otherwise would have escaped. But the extension and prevalence of the disease, in any place, when communicated in this manner, by infection, depend entirely on the character of the place, as to airiness and cleanliness, and on the condition and habits of the inhabitants. On the whole, therefore, whatever view be taken of the question, the propagation of the disease depends less on the absolute power of any pestilential or exciting cause, than on the predisposition of the human system; and, consequently, whether it be regarded as contagious or infectious, or even both, yet it is by no means absolutely so. But the fact whether it will be taken by an individual, depends on the condition of his body; and that condition depends very much, if not entirely, on his own voluntary conduct.

Panic and agitation, it is true, are involuntary, and, in very nervous people, will considerably disturb the functions of the system, in spite of their best resolutions and efforts to the contrary. Nevertheless, a proper regimen and correct conduct, and an entire abstinence from those pernicious preventives and remedies, which invariably predispose the body to disease, and very frequently become the exciting causes of the

diseases which they were taken to prevent, will very certainly preserve the body from any serious disorder.

Means of Prevention.

The topic which comes next under our consideration, is of a less uncertain character. Regarding the cause of the epidemic cholera as altogether mysterious, and the nature of the disease as wholly inexplicable, the means of preventing it have been involved in equal uncertainty. Indeed, if I had not the utmost confidence in the honesty and even magnanimity of the Medical Faculty as a body, I should sometimes be compelled to suspect them of the most heartless and flagitious design and imposture, in order to produce a state of things greatly conducive to their pecuniary interest, if not their popularity.

The bewildering and terrifying theories which have been promulgated by many in the medical profession, have been highly calculated to produce a state of the most painful uncertainty and distraction of the public mind, in regard to the course proper to be pursued for the prevention of this dreadful disease. The consequence must necessarily be, that in the general incertitude and trepidation, some will pursue one course, and some another; some will go to one extreme, and some to another; while very few, in the Babel-confusion, will be fortunate enough to fall upon the truth. But the view which I have taken of this disease, distinctly indicates the mode of prevention;—a mode not only consistent in theory, but established by universal fact throughout the whole career of the disease.

The rules to be observed are plain, simple, and such as enlightened common sense, undisturbed by bewildering influences, would always dictate. In short, they are just such as would be proper to be observed at any other time, in order to preserve the body in the healthiest and best condition; with this exception, however, that our *judicious* caution to avoid disease, should always be equal to our liability to it. For instance—when we are in pleasant circumstances, and enjoying a cheerful state of mind, all the vital functions of the body are performed with increased vigor and elasticity; but when we are suffering grief, or painful anxiety, the functions are all depressed, and more easily disordered and deranged;—hence, substances, which the stomach may receive with impunity, if not benefit, in the former state, may cause

indigestion and disease in the latter:—and therefore, we ought always, when oppressed with grief, or any other painful affection of the mind, to be more careful to keep up the good condition of our digestive organs and skin, by stricter propriety of diet, and by washing, friction and exercise, than when we are in a healthy and cheerful state of mind. And this is entirely true in regard to all other causes, circumstances and influences, which depress the vital functions of the body;—and peculiarly so in relation to the Epidemic Cholera.

Cleanliness of person, at all times highly conducive to health and comfort, is of the utmost importance, as a preventive of Cholera. During the prevalence of this disease, every thing tends to depress the functions of the depurating organs, and to render the purification of the blood less complete, and consequently, to predispose the system to disease. And when it is considered that the skin, in a healthy state, throws off, in the form of insensible perspiration, a large proportion of the impurities and effete matter of the blood, the importance of keeping it clean and invigorating it by friction, cannot be doubted; and more especially when it is considered that the digestive organs partake of the general condition, and sympathize with the affections of the skin.

If as I have endeavored to show, and as I fully believe, the Epidemic Cholera may be originated in any place where circumstances are favorable for it; and if the action of the disease thus originated, may in consequence of filth, and confined and impure air, generate an infection which may become powerfully and extensively malignant and fatal,—then surely *a clean and airy habitation, and street, and city*, are also of exceedingly great importance, as preventives of this horrid disease. But this is a point of such obvious moment, that I need only to suggest it to reflecting minds.

Exercise, of a proper character, and as often as may be prudently, in the open air, is another preventive, which must not be neglected. By it, the circulation, and especially in the capillary vessels, is increased and invigorated; a greater determination to the surface is caused; respiration and insensible perspiration become more full and free; the blood is more thoroughly purified and a larger portion of the oxygen of the atmosphere is digested and incorporated with the blood, increasing its vital energy and stimulating power; the organs are strengthened, and all their functions are more vigorously performed, and the tone of health, throughout the whole system, is improved; and thus the vital power of the

body to maintain health and resist the action of noxious and pestilential agents, is greatly increased.

A free intercourse with PURE AIR, is of indispensable importance to health and comfort at all times, and more especially, during the prevalence of epidemic disease. Not only should every individual have access to pure air, if possible; but every house, and particularly the sleeping rooms, should be well ventilated daily; and the beds and bed-clothes should be thoroughly aired before the beds are made in the morning, that the impurities which they have imbibed from the body during the night, may pass off.

It is also of the utmost importance that the NATURAL APPETITES should be strictly regulated, and always kept in subordination to enlightened reason and moral propriety. These appetites are wisely and benevolently implanted in our natures, for the preservation of our lives, and for the continuation of our species; and when their exercise and indulgence are kept strictly within the range of their constitutional design, they contribute to our health, and are the rudimental sources of a very large amount of human enjoyment.

But when, disregarding the constitutional laws on which they were established, and the great ends for which they were instituted, we yield to an excess of their indulgence and make sensual gratifications a principal object of our pursuits, and source of our enjoyment, they inevitably become the agents of disease and suffering to us; and always in proportion to the importance of the end for which they were implanted, and the extent to which their indulgence has transgressed the constitutional laws of propriety. Accordingly, we find that, in the whole career of the Epidemic Cholera, dietetic intemperance and lewdness have been the grand purveyors to its devastating rage. In every country, the drunken and the lewd have fallen almost by hundreds and by thousands before this terrible destroyer!—We are informed, that out of fourteen hundred lewd women in one street in Paris, thirteen hundred died of cholera! In a single house, sixty of these wretched creatures perished by this disease.

There is one point, however, connected with this general fact, which deserves more particular attention, as it has, I conceive, led to an erroneous, and to some extent, dangerous inference and conclusion. It is well known to those who have attended to the subject, that excessive indulgence in lewdness exceedingly debilitates the organs and general powers of the body, but the principle upon which this debility is induced is not generally so well understood. Simple debility

has therefore been regarded as a predisposing cause of cholera, in these unhappy creatures; and hence the general doctrine has been set up, that *debility*, by whatever cause, or in whatever manner induced, always predisposes to the Cholera; and hence, again, the still more pernicious doctrine, that "a generous system of diet," (including a free use of animal food, and of wine, and even of brandy), is the best preventive of the cholera. Thus one error springs from another, until there is a result of the most disastrous consequences to society, and then we begin to open our eyes to investigate the cause; but unhappily, we are too generally satisfied with ridding ourselves of the immediate inconvenience, without ever pushing our inquiries to the generating principle; and consequently, we continue on with no other real relief from the evil, than that which is found in a change of its mode or type.

In regard to the case of lewd women, two important facts are to be noticed. In the first place, ninety-nine hundredths of those unfortunate creatures, are excessive in their use of intoxicating substances; and such is the inactivity and indolence and irregularity of their habits, that these substances are exceedingly efficacious in destroying their constitutions. In the second place, the debility induced by excessive lewdness, is always far more the result of excessive excitement and irritation than of any other cause; and the alimentary canal is almost invariably the very first to suffer from these irritations, and to be brought into a state of debility, morbid irritability, and even inflammation; and not unfrequently, the very worst forms of gastritis and enteritis are induced by excesses of this kind. This species of debility, though differently induced, constitutes the obnoxious predicament of that class of sufferers, concerning whom so much is said about their "*meagre diet.*" It ought to be known that muscular debility of the voluntary organs, and functional debility in the organs concerned in the general office of nutrition, are by no means identical. It is often the case, that the very means by which we diminish the muscular power of the voluntary organs, increases the vital powers in the nerves of organic life, on which the body depends for its ability to resist the action of noxious agents. It is therefore true that the vital power of the body to resist the action of noxious agents, may be much greater in a delicate female of little muscular power, than it is in a man of much greater muscular power.

It may therefore be laid down as a safe doctrine, that *that* debility which results from excitement and irritation, whether caused by lewdness, artificial stimuli, or any other means, ex-

poses the system to the attacks of cholera and other diseases; while, on the other hand, *simple debility*, not resulting from any of those causes which also induce a morbid excitability and irritability,—but constitutional, or caused by judicious bleeding, (if any thing might render it necessary), or by a regular course of abstemiousness, is almost infinitely more safe than that condition of the body which is produced by what is called "a generous system of diet."

But it is not only the openly intemperate and the illicit, that injure themselves by their improper indulgences. No forms of civil law, or institutions of society, can save us from the evils which result from transgressing the constitutional laws of our nature. All excesses, therefore, beyond the real wants of our system, and purposes of our organization,—and equally when committed within or without the pale of civil institutions—are dangerous to our bodily health and existence. Even things which in themselves are good and lawful when properly used, are, in their excesses, dangerous. The healthiest food which man can eat, may, by excess, become the cause of disease and death.

Every appetite and every passion should therefore be held in strict subjection to enlightened reason and moral propriety, if we would not increase our liability to be attacked by this terrible disease. A single paroxysm of anger has been known to cause the most violent and even fatal bilious colic, and to bring on suddenly a severe attack of spasmodic cholera; and however modified in its degree, this passion never fails to disturb the digestive organs, and always tends to produce a morbid irritability of the nerves of organic life, and derangement of the stomach and liver; and when frequent and violent, it often brings on inflammation of these organs.

Of the effects of fear in predisposing the body to attacks of cholera, I have already spoken at large. This is the more dangerous, from its being, more than any other, an involuntary passion. Still, however, though we may not be able to suppress it entirely, we can do much to modify its action and to counteract its effects. We cannot, therefore, be too deeply impressed with the importance of being on our guard in this respect; for there is not a single premonitory symptom, if indeed there is a single symptom or effect, in the whole range of this disease, from its commencement to its termination in death, which may not be produced by fear; and especially if, as is almost universally the case at such times, fear leads to the free use of the violent preventives and remedies ordinarily prescribed.

During the prevalence of the epidemic spotted fever in New England, as I have before remarked, hundreds perished in this way; and instances were known in which, not only delicate and excitable females, but the most robust men, and even physicians, fell prostrate and almost lifeless, with all the apparent symptoms of a violent attack of that disease; but which, according to their own subsequent confession, was entirely the effect of fear; and had brandy and laudanum, in the enormous quantities then usually administered in such cases, been poured down their throats, they would inevitably have perished, as hundreds of others did, not with the spotted fever, but from overwhelming fear, and destructive quantities of brandy and laudanum. In this manner, beyond a question, thousands, if not millions of human beings have perished, during the prevalence of the present epidemic.

Indeed, were I disposed to try the horrid experiment, I am confident that with the entire command of the press, and acquiescence of the physicians, druggists, &c.&c., I could produce five thousand cases of cholera, in the city of New York, in one week,—one half, at least, of which, would prove fatal; and as little do I doubt, that if the cholera appears and prevails in this city, these agencies will, in no small degree, contribute to the calamitous result, even with the best intentions.

It has been well said, that evils irremediable are best unknown; and were the doctrine of *fear* inevitable in its consequences, the public announcement of it would be worse than cruel; for it would be only aggravating, in the highest degree, the very evil which is deprecated. And from the manner in which some physicians have treated the subject, in regard to the epidemic cause, and the effects of fear, the most painful consequences have resulted. It is, indeed, like taking children into a dark room, where nothing can be seen, and where the excited imagination is left to shadow forth the most horrid images, and solemnly telling them, that a hideous monster is in the room which has destroyed thousands of children, and will very probably attack them; and few attacked by him ever escaped;—how this monster moves—in what direction and manner he will come, and at what moment he will attack them, no one can tell; nor can any one tell how they can avoid him:—but they must not be afraid of him in the least; for if they are afraid of him, he will surely destroy them; nor must they hope to run away from him, for by such an attempt they might run directly into his open throat! or when they least expected it, he might suddenly pounce down upon them from above. They must therefore

stand still in thick darkness, and listen to all the terrible accounts of his havoc, and with perfect calmness await his mysterious approach.

The view which I have taken of the general subject before us, presents this matter in a very different light, and renders it exceedingly important that it should be universally understood. For, while we are taught that fear increases our danger, we are also taught *how* it increases it, and therefore, how we can, to a great extent, if not entirely, counteract its effects. We see that fear seldom causes death directly, by its own overwhelming and exclusive power, excepting in those whose vital energies have previously been reduced very low by ruinous excesses or disease. We learn how it disturbs and depresses the functions of life, and are taught how to counteract these effects by diet, exercise, cleanliness, employment, &c. And we learn, also, that fear may excite in our morbid sensibilities, and sympathies, most, if not all of what are called the premonitory symptoms, and therefore, we are warned against flying to the use of medicine for every pain or spasm we may feel, and taught that we must *not prescribe for ourselves*, except the simple regimen which I have pointed out, unless there is the most decided evidence of disease: nor even then, if we can obtain the timely advice of a judicious and skilful physician, or some other intelligent person, whose judgment is undisturbed by our fears.

Writers in Paris inform us, that almost every body in that city, has more or less of the premonitory symptoms of cholera, and therefore it is inferred that the epidemic cause is atmospheric: but it ought to be known that such a state of things may be produced by panic alone, without the action of any other cause; and, therefore, men ought not rashly to increase the horrors of this disease, by throwing the awfulness of mystery over the public mind.

Finally, in regard to the mind and passions, we ought to endeavor to maintain the utmost composure and serenity; and happy is that man who has that peace with God, which will enable him at all times, even in the hour of imminent peril, to cast himself upon the protection of his heavenly Father, with sustaining confidence.

Diet.

On the subject of diet, in relation to cholera, I have already said much; but a correct system of diet is of so much import-

ance as a preventive, that I consider it necessary to enter still farther into its details.

One great truth in regard to this subject should be constantly held in view. If the alimentary canal, with its functions, be not, by natural and proper means, kept in a healthy and vigorous state, the health of the body cannot long be preserved.—As I have already remarked, almost all the habits and customs of civic life tend to debilitate the stomach and intestines, and to impair their functions. The artificial modes of preparing food, and especially the pernicious compounds and concentrations, are among the powerful means by which debility, indigestion, and habitual costiveness and diarrhœa are induced.

It ought ever to be remembered, that the human stomach and intestines are so constructed and adapted to their constitutional purposes, that there is between them and the food intended for them, fixed laws of relation, and these laws extend to the quality, quantity, and condition of the food; and all violations of them must inevitably result in injury to the organs, and through them to the whole system which depends upon them for nourishment. Accordingly it has been fully demonstrated by the practical experience of all the generations of mankind, and by the most extensive and accurate experiments of science, that, when by artificial means, the simple, nutritious properties are separated from any article of food, and habitually used for any considerable time in the concentrated form, the stomach and intestines are debilitated, and their functions are impaired, and finally destroyed, unless the full effect is in some degree prevented by the use of some counteracting article of food at the same time. The potato, for instance, contains a certain proportion of nutritious matter: If the potato be well-grown, and properly prepared, it is a very healthy article of diet, and constitutes the principal subsistence of thousands of healthy and robust human beings: but if the nutritious matter should be artificially separated out, and given, however abundantly, to these same people, instead of the whole substance of the potato, their digestive organs would soon become debilitated, and lose their functional power; and their bodies would become weak and emaciated, and die.

The same is true of wheat, and all other kinds of proper food. Put any number of the healthiest and most athletic men on a diet of the very best superfine flour bread and water, and they could not very long survive. Debility of the alimentary canal, indigestion, costiveness, or alternate costive-

ness and diarrhœa, would ensue; resulting in emanciation, general debility, and death. But if an equal number of men, of like character and circumstances, be at the same time put upon a diet of water and good bread, made of good unbolted wheat meal, coarsely ground, their digestive organs will continue in the most healthy and vigorous condition, and the functions of the stomach and intestines will be regularly and healthfully performed, unless some other distinct and independent cause induces disorder. For a short time at first, these men may feel a sense of debility and lassitude from the absence of a more stimulating diet, to which they have been accustomed; but this will soon pass away, and then they will begin to feel strong, and sprightly, and cheerful.

This has been repeatedly demonstrated on the most extensive scale of experiment. The British army of more than eighty thousand men, according to the united testimony of all its officers and physicians, was relieved from almost every species of disease, and brought into a state of unusual health, by using bread made of coarse, unbolted wheat meal, for two years, near the close of the last century.

A gentleman from St. Croix informs me that the soldiers upon that island are usually furnished with bread made of unbolted meal, and that they are ordinarily very healthy; but that, a few years since, their usual supplies failing, and superfine flour, from the United States, being very cheap, the soldiers were furnished with fine bread, instead of the coarse. They did very well on this for a short time, but soon began to be less healthy, and after a while many of them began to sicken and die. This excited much surprise on the part of the government, and led to the frequent inquiry,—How can this be?—The soldiers are now better fed—furnished with better bread than ever before, and yet they were never so sickly as now. This state of things continued until the soldiers were again regularly supplied with the coarse bread, when they soon began to improve in health, and in a few months became as healthy as they were before the fine bread was introduced; and this result dispelled the mystery of their sickness.

A very intelligent sea captain of thirty years' experience in marine life, assured me he had always found that his men were much healthier and more active and vigorous, when they were fed on sea bread made of coarse meal, than when they used that which was made of fine flour. Old whalemen declare that they always feel better and more vigorous and cheerful when they eat coarse bread than when they eat fine.

I might go on and adduce facts by the hour to corroborate this doctrine; but it is not necessary; it is so evidently and incontestably true, that none but the culpably ignorant and wickedly perverse will contradict it.

Bread is decidedly the most important article of artificially prepared food used by civilized man; and so intimately is it connected with the corporeal and moral and intellectual interest of the human species, that it is scarcely possible to give too much attention to its kind and quality. The pernicious effects of superfine flour bread, in society, are considerably modified, and in some degree counteracted by other articles of food used with it; but still the evils resulting from the use of such bread, and especially when eaten fresh and warm, are vastly greater and more numerous than is generally supposed.

If you would have bread which will in the highest degree contribute to your health and comfort, and prevent disease, you must take particular pains to procure the best of wheat, and have it thoroughly cleansed, and ground coarse, without bolting; and then have your meal, with sweet, lively yeast, made into light, sweet, well baked bread, which should be kept till it is at least twelve hours old, before it is eaten; and a greater age would be better.

If you will trust the public bakers to do all this for you, you may, and you may not be well served. I do not suppose they are worse than other men, but they make bread and sell it for the profits of the business, and not for the sake of promoting your health; and if they can increase their profits by using an inferior kind of meal, they will be very unlike most other men, if they do not do so. Your only security, therefore, is in making your own bread; for however honest and faithful the public bakers may be, their best bread is far inferior to the best domestic bread, and decidedly less wholesome. But whether you use the baker's bread or that which is made in your own house, you cannot be too careful to have it sweet, light, and well baked; and of sufficient age before it is eaten. Heavy, sour, or musty bread, should by no means be eaten.

There is no article of artificially prepared food known in civic life, the use of which more invigorates the alimentary canal, and restores and keeps up the regular and healthful functions of the stomach and intestines, than the bread which I now recommend. Unless counteracted by the concomitant use of the most pernicious articles, or by indulgence in the worst of habits, it will relieve in a natural, and

therefore, the only proper manner, the most inveterate costiveness, and habitual diarrhœa. In short, nothing is in itself more easy to digest, nor more healthfully and powerfully assists the stomach to digest other articles of food: while at the same time, it is one of the most nutritious and salutary articles received into the human stomach.

I have frequently heard individuals complain of this bread, but I have, in every instance, been able, on examination, to trace the evils complained of to other causes entirely distinct from the bread. We are told, however, that it is too relaxing to be safely used during the prevalence of the cholera. But the objection is founded in utter ignorance of the true principles concerned in the case. It will never relax the bowels, unless they are in a state in which such a relaxation is more healthful for them than otherwise, and then it never does it upon a principle which irritates or debilitates them, but the contrary; and the laxness which it produces, is, during the prevalence of the cholera, almost infinitely more safe than the constipation which would obtain without it. In such a time, costiveness must be guarded against with as much care as diarrhœa; but it cannot be habitually relieved by cathartic medicine without irritating and debilitating the alimentary canal, and thus increasing the liability to the disease. A single dose of salts, or any other improper or untimely cathartic medicine, may induce an attack.

From the nature of things, therefore, as well as from the most extensive experience and observation, I am fully convinced that no article of diet can be more safe and salutary, under all circumstances in which it is proper to use solid aliment of any kind, and that none is more conducive to the vigor, health, and good order of the alimentary canal; and therefore, that none is better calculated to prevent the cholera, than the bread which I now recommend, when of such a character and used in such a manner as I have described.

Objections which evince the most egregious ignorance, or stupid imbecility, or base dishonesty, have been raised against this bread by some who have happened to be permitted to be a discredit to the medical profession; but happily their influence has been too limited to effect any considerable injury.

Plain, boiled rice, coarse Indian meal hominy, &c., eaten cold, with a very little good molasses or sugar, or with a small quantity of good milk, are also excellent articles of diet. There are several other farinaceous substances, which, in proper conditions and quantities, and at proper times, are safe and salutary articles of food: remembering always to

avoid the concentrated forms, and unwholesome conditions of all articles. If butter is used at all, it should be only the very best, and then very sparingly, on cold bread, &c; but no other grease should by any means be eaten in any form, and it is decidedly better to abstain from even this. Pastry of every kind should be carefully avoided. The mild fruits of the season, such as strawberries, peaches, pears, &c. when perfectly ripe, fresh, and sweet, may be eaten as a portion of the breakfast and dinner, by those who in all other respects conform to the rules which I have laid down: but they must not be eaten if they have been prematurely gathered, or have become in any degree acid by fermentation. All crude and unripe fruits and vegetables, should be avoided during the prevalence of the cholera, particularly by citizens who depend on the markets and the confectionaries for their supplies, and whose digestive organs are accustomed to flesh, and stimulating condiments and drinks. No salt nor shell-fish, of any kind, should be eaten: and in this city even fresh scale-fish had better be avoided. Lobsters, in particular, are among the very worst and most dangerous articles of food; and clams are but little better.

They who have sanctified themselves from the use of animal food of every kind, had by all means better continue to do without it. But they who have always accustomed themselves to a free use of flesh, and shall continue to do so up to the time of the commencement of the cholera in this city—(if such a fearful time shall come!)—if they cannot leave it off entirely at once, without feeling the want of it exceedingly, may eat a little boiled or roasted beef or mutton once a day, without any made gravy, and without any seasoning but a little salt: and no second course or dessert of puddings, pies, fruits, &c. should be taken after it. Soups of every kind, and especially flesh soups, should be strictly avoided. Flesh soup, at all times bad, is peculiarly pernicious at such a time. It is only the concentrated form of some of the nutritious properties of the flesh, held in solution by the water; and when it is introduced into the stomach, the water is taken up by the absorbents, and the concentrated properties of the flesh, together with the viscious seasonings, are left to tantalize, and irritate and debilitate the alimentary canal, and thus always predispose to the epidemic cholera.

All stimulating, heating, and irritating condiments of the table, such as the various spices, pepper, mustard, &c. &c. &c., should be carefully avoided. Tea and coffee are decidedly pernicious to health, and predispose the body to dis-

ease: they debilitate the alimentary canal, and the nerves of organic life generally, and impair digestion and peristaltic action;—in short, they always diminish the healthy vital properties of the tissues on which they act, and become the auxiliary and sometimes the principal causes of some of the worst and most distressing forms of chronic and acute disease!—If indulged in excessively, they will become powerfully predisposing causes of the epidemic disease which is at present so much dreaded.* They who can cleanse themselves entirely from their use, and recover from the effects of the change before the cholera breaks out here, will be far better without them: and those who continue to drink them, should use them very sparingly. All other narcotic and all alcoholic substances, such as tobacco, opium, distilled spirits, wine, malt liquors, and every other kind and sort, in every form and of every quality, should be entirely avoided, with the most rigid and inflexible scrupulosity. In short, every thing should be carefully avoided which is calculated to irritate, and debilitate, and inflame the alimentary canal, and through it the whole system, and thus certainly predispose the body to the cholera, and every other disease; and sooner or later, if persevered in, will inevitably develope disease in the system.

A plain, simple, nourishing vegetable diet is decidedly most conducive to permanent health and longevity. It is less stimulating, and therefore, does not wear out the susceptibilities and energies of the living tissues so rapidly, nor does it tend so powerfully to produce chronic and acute disease of any kind, as a free use of animal food. Hence it is in all respects a safer diet, during the prevalence of malignant and epidemic diseases,—and especially such as have their seat in the alimentary canal.

Pure water is the only natural and fitting drink for man, and perfectly soft water is altogether the best. But in the city of New York, where the water is generally exceedingly bad, and where pure water cannot always be ob-

* "I am generally told, that although the first victims of the cholera are the dissipated, it is not, so much as last year, confined to this class; that the strictly temperate fall before it. I have remarked, however, that those considered such are very great consumers of coffee: and whether this, with the constant use of tobacco, may not equally dispose the system to its attacks, I am not prepared to say; but certain I am, that great caution is demanded in food and drink, and in every thing that affects the condition of the system."—[*Letter from Cincinnati, dated June* 12, 1833.]

Another writer at the same place, and about the same time, says,—"The only employment going on here at present, seems to be coffin-making, grave-digging, and opium-eating."

tained, more care should be exercised in regard to the quantity used; and during hot weather, and more especially during the prevalence of epidemic disease, like the dysentery, cholera, &c. the utmost caution should be exercised on this point. At such times, with a very little trouble and expense, an apparatus might be fixed in every kitchen, by which a sufficient quantity of water can be distilled for the drink of the family in a few hours, and this would be the best drink they can possibly have; but if this be deemed impracticable, well filtered rain water from the cistern, if it has not stood too long, should be used. At any rate, if it be found cessary to use the impure hard water of the city let it be first boiled and then suffered to cool.

But you reply, that here you are bewildered by contradictory counsels:—that it has been asserted, that "it is notorious that the cholera originated, and raged with a mortality far exceeding any example in its subsequent progress through other climes and nations, in the centre of India among the Hindoos, who live in a great measure upon rice, eat no flesh, and are the most temperate people in the world. That the moderate enjoyment of all the comforts of life, such as the constitution has become accustomed to, so far from predisposing people to the disease, is one of the best preservatives; that the ordinary use of animal food is far better than confining ourselves entirely to vegetables, with a view of escaping the disease, or rendering it less malignant."—*New York Courier & Enquirer.*

"That the greatest mortality occurred among those whose mode of living was particularly meagre and abstemious; that cholera made its first appearance at Smyrna among the Jews, during one of their fasts, and committed great ravages; and that the occasional use of stimuli, in the shape of generous wine, brandy, or gin and water, was found highly serviceable during the prevalence of the cholera at Constantinople."—*Dr. De'Kay's letter to the Evening Post.*

It is a matter of painful regret, that those whose total ignorance of the subject utterly disqualifies them to give an opinion where such momentous interests are concerned, should have either the officiousness or the means to publish, with an imposing air of authority, their gratuitous and erroneous assertions. And it is still more to be regretted that those whose professional calling and character ought to entitle their statements and opinions to respect, should be so incautious and inaccurate in their publications; and most especially, on occasions like the present, when such publica-

tions may jeopard, if not destroy, the lives of thousands of human beings.

By carefully examining these assertions which have been made concerning the diet of the Hindoos, and others in Asia and Europe amongst whom the cholera has committed its ravages, we shall find that many of the statements are false —that many of the conclusions are erroneous,—and that the whole has a very limited bearing on the condition of things in the United States.

That the Hindoos subsist on vegetable food, and eat little or no flesh,—and that the cholera commenced, and committed great ravages among them, is freely acknowledged. But are they "*the most temperate people in the world?*" The best and most unquestionable authorities on the subject give us very different accounts from this. The testimony of medical and military gentlemen and others, who have travelled extensively in India, and resided for years among the people, and become well acquainted with their character, habits and condition, inform us, that the people of India generally are exceedingly indolent, sensual, and licentious. "They eat rice and millet, mixed with sweet-meats, curdled milk, beans, and young leaves." But this food they almost universally, from the oldest to the youngest, and in all conditions of life, season very highly with their favorite curry powder; a composition made of cayenne pepper, black pepper, ginger, mustard, and several other ingredients of a very heating and irritating character, calculated to produce the worst disorders of the alimentary canal, and consequently, to reduce the vital energies of the nerves of organic life, and impair all the functions of the system. Beside these stimulants with their food, almost every man, woman and child, habitually, and often to very great excess, chew a cud composed of opium cheenam, or lime and beetle-nut, wrapped up in a sera-leaf of very acrid and pungent qualities. Tobacco, one of the worst of narcotics, whose effects are exceedingly pernicious on the powers and functions of organic life, is in almost universal, and generally, excessive use among them; and a great portion of the natives make a free use of arrack; a very intoxicating, fiery and destructive alcoholic liquor. And yet we are told by officious ignorance, that "these are the most temperate people in the world."

Lieut. Colonel James Todd,—than whom no better authority can be given, in his Annals and Antiquities of Rajast'han, or the central and western Rajpoot States of India, says, that "to Baber, the founder of the Mogul Empire, India is in-

debted for the introduction of its melons and grapes; and to his grandson, for tobacco; but for the introduction of opium, we have no date, and it is not even mentioned in the poems of Chund. This pernicious drug has robbed the Rajpoot of half his virtues, and while it obscures these, it heightens his vices, giving to his natural bravery a character of insane ferocity, and to the countenance, which otherwise beamed with intelligence, an air of imbecility. Like all other stimulants, its effects are magical for a time, but the re-action is not less certain; and the faded form or amorphous bulk too often attest the debilitating influence of a drug which alike debases mind and body. In the more ancient Epics we find no mention of the poppy juice, as now used, though the Rajpoot has at all times been accustomed to this intoxicating cup. The essence called arrack, whether of grain, of roots, or of flowers, still welcomes the guest, but is secondary to the opiate. To eat opium together, is the most inviolable pledge; and an agreement ratified by this ceremony is stronger than any adjuration. If a Rajpoot pays a visit, the first question is, —have you had your opiate?"

The Calcutta (India) Gazette, describing the recent celebration of one of the Hindoo religious festivals, says,—the conception of the horrors with which these ceremonies strike every refined heart, is strong in our mind. We see the effeminate lust that inspires the Baboo to bring the first beauties into his house; we see spirits and liquors of all sorts freely indulged in, and terrible tumults excited by their heat; we see excesses of every kind committed without hesitation, and boys of very tender age freely allowed to ramble over nights and nights, and spend hours and hours in immoral pursuits:—we witness youth of fourteen or fifteen years old, indulging to excess in the stupifying and mischievous fumes of tobacco and other drugs; we see goats, rams and buffaloes, savagely butchered, and men rolling on the ground, besmeared with blood and dirt; and at the time when the idols are thrown into the water, young men go upon the river with their lewd companions, and revel in all sorts of licentiousness. In short, if there be any action which is, to the utmost degree, degrading to the dignity of man, and demoralizing to his mind, it is perpetrated at these holidays.

Mr. Jameson's Bengal Report of the Cholera, states that "two millions of persons had assembled to celebrate one of these religious festivals on the shores of the Ganges; and the cholera broke out suddenly amongst them, while at their devotions, and in eight days destroyed twenty thousand persons.

But the pestilence was staid as soon as the multitude was dispersed."

Besides all these life-destroying causes, "the poor people of India, which constitute a large proportion of the population, sleep in herds upon the ground—on damp mats, and under old sheds, exposed to every wind." With such insatiable desires for stimulation, and such habitual excesses of sensuality, indolence, exposure and filthiness, is it surprising, that the people of India pay little attention to the quality of their food; that they discover great lassitude and imbecility; that they become prematurely old—or that they generate the most malignant and fatal diseases? And yet, it is a most interesting and incontrovertible fact, that those natives of this same country, who subsist entirely on a vegetable diet of rice and other nutricious and healthy articles, with water only for their drink, and avoid all artificial stimulants, and all sensual excesses, are remarkable for their bodily strength and agility, and for their intellectual vigor and vivacity, and for the placidness of their tempers, and purity of their morals. They live exempt from disease, and attain to very great age.

The assertion that the "greatest mortality occurred in Europe and Asia among those whose mode of living was particularly meagre and abstemious: and that cholera made its first appearance among the Jews at Smyrna, during one of their fasts, and committed great ravages," will, however true in fact, prove, on examination, to be wholly destitute of truth in its bearing on things in this country.

In the first place, there is no evidence whatever, that a meagre and abstemious diet, separate from filthiness and sensuality, and the use of artificial stimuli, which is habitual, and almost universally excessive among the class of people alluded to, is in any peculiar degree favorable to the ravages of cholera. It is very certain that a good diet is more salutary at all times and in all circumstances, than a poor one. Nevertheless, the evils to be apprehended from an abstemious, and even a meagre diet, with total abstinence from artificial stimuli, and with good habits in other respects, are almost infinitely less than would be supposed from the vague speculations of superficial observers. A system which has not been debilitated in its functional powers, nor had its healthful susceptibilities impaired, by the continued irritations of artificial stimuli, and sensual excesses, is in vastly less danger from the presence of crude and offensive articles of food, in the alimentary canal, than is a system of contrary

habits and condition. It is therefore yet to be ascertained whether the paramount cause of the greater ravages of the cholera, "among those whose mode of living was particularly meagre and abstemious," was not their free, if not excessive use of artificial stimuli, and their degrading sensuality.

The interesting and important communication of Doctor J. P. Kay, concerning the operatives of Manchester, exhibits in a striking manner how all-pervading and all-prevailing this diseased love of stimulation is, among the lowest classes of human beings, as well as among the higher orders of their fellow creatures. And it is admitted that this excessive stimulation takes hold of these unfortunate creatures with more destructive power than it does those whose habits and circumstances are, in other respects, much more favorable to health.

In the second place, admitting all these assertions and conclusions to be correct, I ask what bearing the reasoning has on things in this country? Is there any portion of our whole population in a parallel condition; except, indeed, that miserable class of beings in our large cities and towns whose worse than brutal sensuality and vice have sunk them to the lowest degree of human degradation; and whose food is meagre and abstemious only (if so in fact) because their excessive use of artificial and intoxicating stimuli has destroyed both their ability and their desire to procure any thing better?

If the statements which I am combating, had been published expressly to bear upon the condition of this wretched portion of our population, and to call the attention of the public to the importance of endeavoring to remove this state of things, the publication would have merited the approbation of every philanthropist. But when it is considered (as beyond a question it is true) that they were published for the special purpose of destroying the confidence of the public in that system of diet which I have recommended and of encouraging what is called "*generous living*," which practically means, excess of food and stimulation,—the publication cannot be too heartily deprecated, nor too severely reprehended by every one who has a regard for the cause of humanity and the welfare of society.

In regard to the Jews of Smyrna, the truth should be fully ascertained on several points, before any inference from their case is erected into a doctrine. It should be known whether they did not habitually and freely use tea, coffee,

wine, spirits, tobacco, opium, &c. &c. besides the ordinary stimulating condiments of the table; and whether they did not, as is known to be the case with others in those parts, on such occasions, continue the use, and even in increased quantities, of some or all of these stimulants during their fast: and whether they did not, at the same time, crowd together in large assemblies; and expose themselves to impure air; and neglect personal cleanliness, and propriety of habits?*

But supposing the contrary of all this; and admitting the fact in its full force as stated, what conclusion can be legitimately drawn from it, except the single one, that abstinence from food, for too great a length of time, renders the human body more liable to the attack, and less able to endure the violence, of the cholera. Now I ask in the name of common sense, what analogy of condition there is, between the degraded, filthy, grossly sensual and miserably fed population of Asia and Europe, and the inhabitants of this city and this country, who are surrounded by abundance—who use animal food to excess—and more than nine-tenths of whom suffer from over-eating? Or what in the nature of things is there to justify the promulgation of the doctrine, that the people of the United States—the inhabitants of the city of New York—will find greater security from the attacks and ravages of the cholera by increasing the proportion of animal food in their system of diet, and by "the occasional use of stimuli in the shape of generous wine, brandy, or gin and water," than they can by a well-chosen vegetable diet, and a total abstinence from all narcotic, alcoholic, and other artificial stimulants, and every other pernicious thing which is calculated to irritate and inflame the alimentary canal?

But it is said that the medical gentleman who advances this doctrine has had experience, which is better than theory, in these matters. And pray what has been his experience?—Why, forsooth, he was at Constantinople during the prevalence of the cholera in that city, where he followed his own system of diet, and took the disease,—and did not die! *ergo*; "wine, brandy, and gin, were highly serviceable" to him!

But it happens that other medical gentlemen have had some experience in this matter also. Doctor George Betnor of our city, was several months in Batavia, in the Island of

* All that is here suggested as matter of inquiry is now known to be actually true.

Java, when the cholera was committing its terrible ravages in that place. He was continually exposed to all the atmospheric, or whatever external, pestilential causes existed,—was out at all hours of day and night—drenched with rain and dews, and endured much fatigue and anxiety, yet he took neither brandy nor wine, nor animal food to secure him from an attack of that fearful disease which he could not help but dread. He subsisted entirely on a plain, simple, vegetable diet of rice, bananas, and other fruits of the climate, which were soft and pulpy, and carefully abstained from all artificial stimulants, and he not only had not the slightest symptom of cholera, but as he assures me, never enjoyed better health than he did during his stay on that island.

The truth is, that mankind generally entertain the most egregiously erroneous notions in regard to the comparative excellence of animal and vegetable food in sustaining the human body in the various circumstances and conditions of life. Animal food, I repeat, is more stimulating, and consequently imparts, for a time, a sense of greater strength, accelerates the functional action, more rapidly exhausts and wears out the energies and susceptibilities of the system, tends more strongly to chronic and acute disease,—as a general rule, abbreviates life—and its absence, in those accustomed to the use of it, causes a greater sense of lassitude and debility. A well-regulated vegetable diet is less stimulating, better adapted to the constitution and powers of the human organs, and is in every respect more conducive to the health, permanent strength, comfort and longevity of the body.

The celebrated Dr. Jackson, of the British army, declared that he had been exposed to all climates, and all vicissitudes of weather, and endured all hardships of fatigue and exposure ; and, that, without the use of any animal food or intoxicating drink, he had worn out two armies in two wars, and believed he had stamina of constitution and vigor of body enough left, to wear out another army before he was old. With the same system of diet, he was enabled, without the least injury to his health, to endure fatigue and exposure in the West Indies, which he had before, in common with others, believed would prove fatal to any European; and he finally came to the confident conclusion, that an army of British soldiers, by adopting a similar diet, would be capable of going through the severest military duties in the hottest islands in the West Indies, with entire safety.

Howard, the celebrated philanthropist, "in the period of sixteen or seventeen years, travelled between fifty and sixty

thousand miles, for the sole purpose of relieving the distresses of the most wretched of the human race. The fatigues, the dangers, the privations, he underwent or encountered for the good of others, were such as no one else was ever exposed to, in such a cause, and such as few could have endured. He often travelled several nights and days in succession, without stopping, over roads almost impassable, in weather the most inclement, with accommodations the meanest and most wretched. Summer and winter, heat and cold, rain and snow, in all their extremes, failed alike, to stay him for a moment in his course; whilst plague, and pestilence, and famine, instead of being evils that he shunned, were those with which he was most familiar; and to many of whose horrors he voluntarily exposed himself: visiting the foulest dungeons, filled with malignant infection,—spending forty days in a filthy and infected lazaretto,—plunging into military encampments where the plague was committing its most horrid ravages, and visiting where none of his conductors dared to accompany him;" and through all this, he subsisted entirely on a most rigidly abstemious, vegetable diet; carefully avoiding the use of wine, and all other alcoholic drinks, and advising others who were exposed to the plague, to abstain entirely from the use of animal food. "The abstemious diet, which, at an early period of his life, he adopted from a regard to his health, he afterwards continued and increased in its rigor, from principle, and from choice, as well as from a conviction of the great advantages which he derived from it:" and, after all his experience, near the close of his life, he made the following record in his diary: "I am firmly persuaded, as to the health of our bodies, that herbs and fruits will sustain nature in every respect, far beyond the best flesh." Yet after all, there is every reason to believe that this good man fell a victim to his free use of tea. Substituting its deleterious stimulation for the sustaining nourishment of food, he rushed, with the utmost temerity, into the presence of the greatest danger, when his body, by fatigue, cold, wet and exhaustion, was wholly unprepared to resist the virulent action of malignantly noxious agents, and then neglected the early symptoms of disease in his system, and perseveringly refrained from any efficient means of restoration.

To one who has any just knowledge of the nature of things in regard to himself, it would hardly seem necessary to offer a single argument to prove that a well-chosen vegetable diet is, at all times, and under all circumstances, best adapted to the nature and wants of the human body, and that in times

of prevailing and malignant epidemics especially, no other diet can be so well calculated to preserve the health of the body, and enable it to resist the causes of disease.

But why, then, I am frequently asked, did Paris suffer so much more by the cholera than London?—Permit me to remark, that although the evidences in relation to a doctrine of truth may not always be obvious, yet it is not prudent to come to the hasty conclusion, that, therefore, the doctrine is not true. On subjects which are connected with so much excitement and dubiousness as that which is now under consideration, a thousand circumstances and apparent facts concur to mislead the reasoner, who considers himself purely inductive.—At such a distance as we are from London and Paris, and depending as we do for information on such vague conjectures, such exaggerations of excitement, such distortions of prejudice, and such *ex parte* views and testimonies, it is impossible for us to investigate the subject with that satisfaction to ourselves, and with that accuracy of conclusion, which we should be capable of, were we fully and intimately acquainted with the real nature, condition, and circumstances, of things in the two cities. Nevertheless, there are some well-known facts in the case, which will greatly assist us in the solution of the interesting question.

Whatever may be the difference between the English and French in the kinds of their diet, it is pretty certain that the English people generally, have greatly the advantage of the French, in regard to the condition of their food. That is, the English, I believe, are far more simple and natural in the culinary preparations of their food. Their beef, and other flesh—their potatoes and other vegetables, with whatever else constitutes their fare, are cooked and served up in a more simple and natural state, as separate dishes:—while the French delight in mixtures, and compounds, and concentrations, with abundance of condiments. To roast a piece of beef, and boil a potato, turnip, &c. whole, and sit down and masticate them well before they are swallowed into the stomach, is incomparably more healthy and invigorating to the alimentary canal, than to take all of these articles and mix them together, and stew them down into a thick soup, and eat them with little, or no mastication:—In fact it may be laid down as an axiom in the science of human life, that all proper solid food which is received into the mouth in a condition that requires and receives the most perfect mastication, is most conducive to the health and vigor of the alimentary canal, and the integrity of its functions. All soups,

as I have before remarked, and more especially those which contain only the concentrated properties of nourishment, are calculated to debilitate and disorder the digestive organs.

The comparative degree of excess, in the use of artificial stimuli, by the citizens of London and of Paris, it would be very difficult for us to ascertain. It has been a favorite doctrine with some of our wine-loving countrymen, and one which they have zealously endeavored to promulgate, that in wine countries there is little, or no intemperance, in the use of intoxicating liquors. But this is altogether erroneous. The excesses in Paris, according to the number of the population, are at least equal and probably much greater than in London. An American gentleman in Paris, writing to this country on the subject of the cholera, says, "Narrow damp streets, houses that are dripping half the time in wet weather, cold floors, excessive dirt, and drunkenness, of which you have no conception in America, are the causes why the disease has been so bad here. There are perhaps one hundred thousand souls in Paris that are intoxicated more or less, once or twice a week, and in this class the mortality has been fearful."*

For excessive lewdness, which is another most powerful, predisposing cause of cholera, Paris has long been exceedingly notorious; and we learn that it is among the unfortunate citizens of that character, that the disease has committed its most terrible ravages. The French ministerial papers inform us that, "in the year 1831, no less than 10,000 children were born out of wedlock, in the city of Paris; and that 7,749 of these were abandoned by their wicked and unnatural parents, to the horrors of destitution, or the chance of compassion by the passers by." It is also a matter of

*"The Police reports reveal the fact that 25,702 *drunkards were committed to prison* in Paris, in the course of the year. Heaven only knows how many walk free. Of this number, 10,290 *were women!* Now all this has nothing to do with the soldiers or the invalids who are under military law. It is probable that ten thousand drunkards died here with the cholera last year. I rarely go into the streets without seeing more or less drunkards. I have no doubt there are quite as many genteel young men addicted to drunkenness in Paris, as in New York, though they are less seen in public. The police here is far from being rigid with drunkards, for I see them staggering about the streets every day unmolested. The drunkards committed at Paris, (for their drunkenness), are at the rate of seventy a day. Add to this, the soldiers of the garrison, the invalids, &c. and you will probably get double the number. J. FENIMORE COOPER."

Paris, April 20, 1833.

common observation, that the lower and middling classes in Paris are by no means remarkable for their personal and domestic cleanliness; and we are told that no small portion of the lower class are exceedingly filthy.

But there are other facts of equal, if not more importance in their bearing on this subject. For a considerable time before the cholera appeared in London, great and somewhat extensive efforts had been made, in the Temperance cause, against the use of all intoxicating liquors: and when the terrible disease was believed to be approaching that city, every laudable measure was taken to spread over the whole population a solemn impression that every drinker of strong drink and every one given to excess must expect to fall a sure victim to the cholera. Handbills advertising this were posted up in every part of the city, and newspapers reiterated the warning in every quarter; and no *medical gentleman* came out with his professional advice, against the warning; no physician renowned for his experience and knowledge of the disease, publicly recommended the use of "generous wine, and brandy, and gin." The happy consequence was, that there was, as with one consent, a simultaneous pause of indulgence in all classes of society. The rich and the noble cut short their excesses of the table; the wine and strong-drink bibber listened to the solemn remonstrance, and set down his intoxicating cup untasted, or, at least, undrained, and folded his arms in the coolness of rational reflection. Finding the city in this condition and attitude of resistance, the Destroyer sprinkled his wrath on a few unguarded wretches, and turned away to gather his energies into a fiercer shower of death over a more devoted metropolis.

But Paris had known no efforts in the Temperance cause! No warning voice of humanity had advertised the heedless multitude that there was death in their indulgence. And, worse than all, the Prefect of the Police caused to be posted up and widely circulated, instructions to the people, among which were, "*Let your food be principally flesh and flesh soups. Instead of drinking pure water, it will be better to mix in it two tea-spoonfuls of brandy to a pint. Water lightly mixed with wine is equally good.*" This was truly unfortunate advice; to say nothing of the *flesh*, which was decidedly and extremely bad, the *flesh soup* was one of the worst articles of diet that could have been prescribed. The reasons I have already stated.*

*Dr. D. F. Condie, who was principal physician to one of the Cholera Hospitals in Philadelphia, informed me in May last, that "It was

But what shall we say of the brandy and wine prescriptions? I know that the same set of instructions told the people that "*the excessive use of strong liquors was very pernicious;*" and that "*taking unmixed brandy when fasting, was equally so; and therefore, if persons were in the habit of taking unmixed brandy, they must at least eat a piece of bread.*" But there is a fatal recognition of the doctrine, that a *little alcohol is better than none, as a preventive!* And who, under the bewildering hallucinations of panic, and especially if incited by the power of appetite, will be careful to take his tea-spoon, and measure with precision his prescribed allowance of brandy? Will it not rather be said, "if two tea-spoonfuls will be good surely four will be better?" Will not the people go on in this way, from four tea-spoonfuls to a wine-glass; and from that to a gill; and from that to a half pint; according as their systems shall suffer from the reaction of their stimulation, and feel the want of the stimulus to bring up the tone?

This was, in fact, precisely the case in Paris. "A generous diet of flesh, and wine, and brandy," became the popular doctrine of conservation, and for awhile was believed to constitute an insuperable barrier, over which the "*vulgar disease*" could not lift its destroying energies; and behind which, he that was able to erect it, might stand in safety, and laugh at the storm that was raging below him; or, for his

now satisfactorily ascertained, that one of the principal predisposing and exciting causes of cholera in the Arch street prison of Philadelphia, last season, where, for a short time, it committed such shocking ravages, was the precautionary measure of the Inspectors, in raising the diet of the prisoners, by an increase of flesh, flesh soup, and porter."

Dr. D. M. Rees, of New York, whose practice and success in the Cholera last summer, were at least equal to any other physician's in that city, informed me last November, that when the Cholera broke out there, and he was called to practise among it, he found that the disease was making its greatest ravages among the excessive flesh-eaters, and that he consequently went home and requested his family to abstain entirely from the use of flesh during the continuance of the epidemic in the city; and that he and his family subsisted wholly on a milk and vegetable diet, while the cholera prevailed, without having any thing of the disease,—excepting in one instance, near the close of the sickness, when Mrs. R. without his knowledge partook of flesh, and in a few hours after was taken with diarrhœa, and other "premonitory symptoms." He also stated to me, that so far as he had an opportunity among the families in which he usually practised, he advised them to be very sparing in the use of flesh, or abstain entirely from it, while the cholera prevailed; and that so far as they conformed to his advice, they wholly escaped the disease.

August, 1833.

amusement, ludicrously masquerade the dismay, and agonies, and convulsive sufferings of the "vulgar herd."

But the *respectable* citizens of Paris little thought that their "*generous diet*," which they deemed their bulwark of security, would prove the very means by which the "*ignoble disease*" would be enabled to elevate his enginery of death to a level with their own breasts!—Nevertheless, the consequences were inevitable! Excessess in eating and drinking, were as universal in Paris, as the means of indulgence; and thus, the higher classes of society brought themselves, in liability to the disease, on to the level with "*the herd*," whose sufferings they had treated with sneering commisseration, and compassionate ridicule. And the gay and reckless Parisians were the first to learn, and to demonstrate to the terrified world, that the cholera was not confined, in its work of death, to the destitute, the miserable, and the abandoned:—but it had the audacity to fold, in its unclean embrace, even persons of titled rank and distinction, and to breathe its pestilential breath into the very atmosphere that surrounded the throne!

While the higher classes of society were thus working out their destruction with eagerness and sensuality, the lower orders were crowding together in immense mobs, and giving themselves up to passion, and riot, and outrage, and every species of excess; and, at the same time, propriety of food, and cleanliness, and purity of air, and timely rest, and all salutary rules of prudence, were utterly neglected. Is it surprising, that in such a state of things, the cholera should slay its thousands in Paris?—But if the view which I have taken of this question is correct, then London owes her immunity to causes depending on the voluntary conduct of her citizens; and therefore should be exceedingly cautious how she trusts to any local or external causes for exemption,—lest, in the moment of supposed security, she yields to excesses of indulgence, and brings back the destroyer upon her, in a hurricane of wrath and vengeance.

The absurdities into which mankind are ever precipitating themselves, would justify the conclusion, that there is not, in human nature, any inherent appetite nor aptitude for truth. Let sufficient obscurity shroud the objects of our contemplation, to render it possible for the imagination to predominate over perception, and be assured, our mystery and marvel loving propensity will lead us to body forth the most absurd, if not the most ridiculous forms of conjecture. We find this principle strikingly illustrated in the vague and whimsical

speculations of the Spanish physicians, on the question under consideration. They are asked why the cholera prevails so much more extensively and fatally in Paris than in London. They gravely set themselves about the solution of the question, and finally come to the *sapient* conclusion, that "the general and constant use of TEA, by the English, saved them from the severity with which the disease attacked the French; and therefore they recommend the use of tea as a specific against the violence of the cholera."

So far as tea prevents the use of alcohol, whether in the form of brandy, or the wines of France and Spain, it unquestionably prevents the violence of the cholera: or, at least, by so much as it is less pernicious than brandy, wine, &c. But to suppose that the constant use of a stimulating narcotic like tea, which invariably diminishes the vital properties of the living tissues on which it acts, always debilitating the stomach, impairing its digestive powers, and causing an increased irritability in the nerves of organic life, throughout the whole system,—to suppose that this is absolutely, in any degree a specific against the violence of the cholera, is an absurdity which would be disreputable to the empirics of the nursery.

It is very certain that the sour wines which are so habitually—so universally, and so abundantly used in Paris as a common beverage, predispose the body to the cholera far more than the weak tea generally used in England. But pure water, in reasonable quantities, is an infinitely better substitute for such wines than tea, or any other alcoholic or narcotic drink.

From the view which I have taken of the whole subject before us, we see that the hue and cry which has been raised about a "meagre diet," has no bearing whatever, on that system of diet which I have recommended in my public lectures.

The inhabitants of this land of abundance—excepting the miserable and degraded votaries of base sensuality and vice, which constitute the dregs of our cities—are at all times in incomparably greater danger, from an excessive, than from a meagre diet. And I repeat the assertion with confidence,—that, however meagre the diet, so that the articles of food are not intrinsically deleterious, and actual inanition and starvation are not caused,—if the habits and circumstances, in all other respects, correspond strictly with the laws of organic life,—comparatively little is to be feared from disease, and especially from the cholera. The advice to the people of this country, and particularly to the citizens of New York,

to increase the proportion of flesh and flesh-soup in their diet, as a means of preventing the attacks of the cholera, is therefore decidedly uncalled for,—unjustifiable and improper.

But the most rash and fatally erroneous advice which has been published in this city, is that which prescribes "generous wine, brandy and gin,' as preventives of the cholera. Depend upon it, the worst of consequences will ensue !—It is in vain that the author has subjoined his caution against intemperance. Every man will judge for himself, of the signification of the term, in relation to his own quantity and circumstances and wants! And who does not know, that even he who drinks his quart of brandy a day, never believes himself to be intemperate? The most shocking excesses will result from this advice ! Thousands who, for a few years past at least, have mostly, or entirely abstained from the use of these poisonous drinks, will now with avidity have recourse to the prescribed preventives. The already intemperate, in the higher classes of society, will add a glass or two more to their usual quantity, to keep off the cholera; and that miserable portion of society, who feel themselves allotted by the universal voice of mankind, and the necessity of their condition, as the certain victims of the disease, will plunge with the reckless desperation of insanity, into the maddest exccesses of indulgence, to find, in the oblivion of drunkenness, if not security from the ravages of the cholera, at least an unconsciousness of its horrors ! So far will such a state of things be from preventing the cholera, that it will tremendously tend to bring it on.

All quantities of alcohol in every form of distilled and fermented liquors—whether used as articles of diet or preventives, necessarily tend to produce that very state of the body which is so much dreaded, and to bring on disease of a more or less malignant character.

Our distinguished countryman, the late Dr. Benjamin Rush, of Philadelphia, long since declared, in his lectures to his students, that he had for many years observed, that there was regularly a very great increase of cases of acute disease on the fifth and sixth days of July, which he said were undoubtedly induced by the excesses of the fourth. A very intelligent medical gentleman, who was several years a surgeon in our Navy, informed me that at a time when the yellow fever was raging in the West Indies, one of our national vessels lying there on duty, was almost entirely unmanned by that malignant disease; and the frigate in which he was acting as surgeon, was ordered out to take her place. Before

they arrived at their station, the surgeon assured the officers and men, that if they indulged in the use of spirits, while in the West Indies, they would most certainly be cut off by the yellow fever. His warning was listened to, and the crew was saved. "But," said he, "in every instance, when any of the officers went on shore to dine, and drank wine, they were, the next day, on the sick list with a bilious attack."

"It is worthy of remark," says one of our city papers which is the most zealous advocate for "*a generous diet*,"—"it is worthy of remark that the *Carricks*, the vessel which it was supposed brought the cholera to Quebec, although she had thirty-nine deaths in the first part of her voyage, had none for a month previous to her arrival, and then the health officer at Quebec reported there was no disease on board." Yet the belief in Quebec is, and undoubtedly the truth is, that the disease broke out among the Irish emigrant passengers of this same vessel again, soon after they landed. What other reasonable explanation is there for these facts, than the plain, common-sense one, that the passengers indulged in the use of spirits before they left their native homes,—that they brought a quantity of whiskey with them on board the Carricks, and while this lasted, their indulgence, and irregularities, and confinement, in spite of the purity of the sea air, developed the cholera:—that when their whiskey was all gone, and their habits became regular, the cholera disappeared, and health reigned for a month,—and that when they landed in Quebec and began (as they unquestionably did) to drink whiskey again, the cholera returned among them. And yet our citizens are advised to drink "generous wine, brandy, and gin," to keep off the cholera!—I would not be the author of this advice for the wealth of New York!

Scarcely less erroneous in its nature, and pernicious in its tendency, than the alcoholic prescription, is the public recommendation to the citizens, to provide themselves with medicine for the cholera, that they may be prepared to administer according to prescription, at the very first indication of an attack.

For six months past, our newspapers have teemed with accounts of the cholera, with all the horrific details that can possibly be given. Every symptom of the disease has been described and republished, times without number; and those symptoms have been made to cover almost the whole field of our sympathies; so that it is hardly possible to feel a pain or an affection, which does not come within some of the classifications of premonitory symptoms.

The people of this country, have been contemplating the ravages and advancements of this disease, and expecting its appearance among themselves, with a fearful anxiety, whose influence on their bodies has been like that which impels the charmed victim of the serpent, to fly with horror into the open jaws of destruction !—Thousands have deeply shuddered at the suggestion of their own fears, "I shall surely die with this awful disease!"

It is impossible that such a state of things should long continue, without producing in every individual, a greater or less degree of morbid sensibility, and sympathy. And the mind, with unusual vigilance, will instinctively notice every pain and affection of the body. Nothing more is wanting than the panic which will be produced by the announcement of the fatal presence of the terrible destroyer, to induce in thousands, and hundreds of thousands, sympathetically, most or all of the premonitory symptoms!

Are such people in a proper state of mind or body, to prescribe or administer to themselves? But suppose a real attack, what shall the sufferer take. Have the medical fraternity prescribed to us a specific for this disease, in all its forms and stages; and in all persons, habits, and conditions? Through the whole fifteen years' career of this devastating disease, in Asia and Europe, and now in Canada, the most extreme differences of opinions, and modes of practice, and kinds of remedies, have been adopted by medical gentlemen of equal professional experience and reputation. Hundreds of experiments have been made, and scores of remedies have been publicly recommended by physicians. All this has found its way, of course, into the columns of our newspapers: and the number of preventives and remedies, has been greatly augmented by the gratuitous prescriptions of every meddling empiric and every officious editor in the community:—and to fill up, even to overflowing, another Pandora's box, without hope at the bottom,—that execrable portion of society—those wholesale venders of death—those tolerated butchers of thousands, the SPECIFIC MONGERS, are advertising in our *respectable* papers, and in glaring handbills, posted up in every part of the city, their panaceas, and catholicons, and hygean pills, &c., as sure preventives and certain cures for the cholera!

In such a time of excitement and awful uncertainty, how shall the people ascertain which prescription is the best? Alas! they have erroneously concluded that the safest way is to procure *all* the different preventives and remedies and spe-

cifics, recommended by any and every body! More than a million of dollars have been worse than thrown away by the citizens of New York, within a few days past, for medicines which are more to be dreaded than any pestilential cause of cholera. Thus supplied, as almost every citizen is, with an arsenal of self-destruction,—while drug and grog shops are yawning at ever corner of our streets like so many craters of hell, to vomit out the lava of death on all who come within their range,—what more, I ask, is wanting than a powerful panic, to set this vast and complicated machinery of destruction into violent motion, to produce the most horribly calamitous results in this city?

I tell you, my hearers, if there is not an interference of proper medical and civil authority, to arrest the course which these things are now taking and will take in this city, the mischief which will ensue, should the cholera appear amongst us, cannot be calculated nor imagined!

But you ask again,—What shall we do? we cannot avoid excitement, and we may not be able to keep free from panic in such a time of terror! Follow the advice I have already given you. Carefully adapt your food, in quality and quantity, to the condition of your body and digestive organs and powers, partaking only of that which is plain, simple, nutritious and easily digested;—avoiding all concentrated forms and artificial mixtures—all crude, heating, and irritating articles; in short, carefully avoid in food and drink, every thing that is calculated, by any means, to produce an unhealthy irritation or irritability in the alimentary canal; remembering always that the greater your panic, the more peculiarly liable are you to such an irritation, and therefore, that many things which you have at other times indulged in with apparent impunity, may now prove fatal to you—and make it a regular duty to take your proper exercise, and to sponge or bathe your body, and rub your skin freely all over with a coarse towel, or good flesh brush, and endeavor to apply your mind to proper subjects, and avoid all improper exposures, and you will with great certainty be able to counteract all the causes of disease, both internal and external.

"But shall we not be prepared for sudden attacks?" Yes, so far as a proper government and conduct of body and mind can prepare you; and then you have nothing to fear from an attack which will not allow you ample time either to take such restorative measures as I have suggested, or to call in some experienced, temperate physician in whom you have confidence.

But suppose you should be suddenly attacked, what would you take, among the numerous prescriptions that are given to the public? Not knowing the peculiar state of your system, nor the precise nature of your disorder, the medicine which you would take might be more dangerous than the disease! An ordinary diarrhœa or cholera morbus, which, by proper treatment, would be easily managed, might, by a powerful dose of brandy and laudanum, be exasperated into the most malignant form of spasmodic cholera. Again I say, therefore, live properly—let preventives and remedies alone, and mind your own business; and when the disease comes, it is time enough for you to call in a temperate and judicious physician. This advice, however, applies to citizens whose physicians are at hand, and who have apothecary shops within a few rods of them. People living in the country, and at a distance from a physician, may with propriety keep a few drugs on hand, but the emergency should be great, to justify their administering medicine without the special advice of a physician, unless it be something comparatively harmless, such as a dose of rhubarb and magnesia, or of castor oil, in case of diarrhœa.

The Gentlemen of the Corporation of this City, will pardon me if I now take the liberty of pointing out to them, some of the important bearings of the general argument before us, on their public functions for the preservation of the health of the citizens.

If I am correct in the view which I have taken of the subject, the cholera may, in certain circumstances and conditions, be communicated either by contagion, or infection, or both. The distinction, however, between contagion and infection, is of little importance in relation to the public duties of the Guardians of the City, in establishing precautionary regulations and restrictions. Notwithstanding, therefore, all that has been said by medical gentlemen against quarantine regulations, there are many weighty reasons in favor of their proper enforcement. It is true that this disease may break out and prevail in a place which is guarded by the most vigilant and rigorous quarantine and sanatary regulations; but this is far from proving that such regulations are useless. It only proves that while so much care has been given to the protecting of the place from imported disease, there has been too little care to prevent the causes which may originate the disease within the place. For, as I believe I have clearly shown, the disease may be both imported and originated in certain conditions and circumstances. A place, therefore, in

which it would not be originated, may be saved from the disease by proper sanatary regulations ; and a place in which it would be originated might be saved by a timely prevention and removal of the originating causes, and by proper quarantine and other sanatary regulations.

But as the cholera can neither be originated nor communicated absolutely, by any causes independent of the voluntary conduct of man, the more important duties of public functionaries appertain to the internal condition and conduct of society.

Unfortunately, however, in this land of glorious democracy and individual sovereignty, the civil power is much more competent to enlarge the privileges than to restrain the pernicious indulgences of the governed. It may, therefore, be useless for me to designate those duties of the corporation which are of paramount importance, if they would effectually preserve the city from the ravages of the cholera. Nevertheless, I am inclined "to speak boldly as I ought to speak."

In the work of purification, it is well enough to strew lime abundantly along the gutters, and in every unclean place throughout the city, in order to neutralize those principles which cause offensive odors ; but if the filth be suffered to remain, or if it is only gathered into heaps in the middle of the streets, for the carts to run over and disperse again, in clouds of dust, which settle upon the side walks, roll into every open door and window, and almost suffocate the citizens even at their tables, very little good will be effected by the use of disinfecting powders. But this, though of much importance in itself, is of very small consideration when compared with other evils existing in this city. It is in vain that you ransack every street, and lane, and alley, and yard, and private place, and cellar, and house, and strew your disinfecting powders like a snow-storm ; and scrape and sweep and wash, till every thing is clean enough to eat from, if still, those abominable seminaries of disease and death—the grog-shops, whether under the name of Groceries, or Taverns, or Coffee-houses, or Hotels, are permitted to deal out doses of destruction to the deceived and infatuated people. Unless the civil authorities of this city can shut up these places, or at least, stop the sale of intoxicating liquors, whatever else they may do to prevent the ravages of the cholera here, will be in effect, but little more than a public farce. But this is not all! Our Augean stable is by no means cleansed, even when intoxicating liquors are removed. The drug-shops, if not entirely closed, should be open only to those who come with a

recipe from a regular physician, and a rigorous injunction snould be laid upon all apothecaries, druggists, and empirics, forbidding them to advertise or sell, any specifics, preventives, remedies, or medicines for the cholera, without permission from the Board of Health or from a properly constituted medical authority.

The Press also should be silent on the subject of the cholera, excepting in the publication of those statements, accounts or reports, which are made out by the Board of Health or by responsible physicians. All private communications, recommendations and prescriptions in the newspapers; and all editorial articles or comments, excepting such as seek to allay the excitement, and encourage the people in a strictly temperate and virtuous course, should be entirely withheld. I am fully aware of the sensibility of the editorial corps, in regard to their rights and liberties in "*this land of freedom*," but I have also too good an opinion of most of them, not to believe that if they had a just apprehension of the mischief which flows from improper publications, and well-meant editorial officiousness, on such occasions, they would acknowledge the propriety of my remarks, and receive them, as they are expressed, in the spirit of benevolence and philanthropy.

But furthermore; the Corporation should strictly forbid the sale and exposure for sale within the limits of the city, of all unripe, crude, and improper fruits and vegetables. In short, if the Corporation would be effectual in their efforts to preserve the city from the cholera, they should, if possible, prevent the use of every improper article of diet, both solid and liquid:—keep the city clean—introduce good water—facilitate the means of bathing—promote personal and domestic cleanliness and comfort—get the poor out of damp cellars, and other unhealthy places—not suffering them to crowd too many into a house, nor be exposed to confined and impure air,—see that they have enough of plain simple food—keep every thing calm—and rigidly enforce proper quarantine and other sanatary regulations.

Before I close my lecture, I must caution my audience not to misunderstand me in regard to my dietetic recommendations. Let it be remembered that my advice is adapted to the present state of things. As yet the cholera is at a distance from us; whether it will appear in this city, or how soon, it is impossible for us to tell. I have supposed that you might have time enough to adopt my advice, and recover from whatever temporary depression might result from any change in so doing, before the disease appeared among you.

Were the cholera already here, and even now committing its ravages in the city, my advice would be, in some respects, different. I should say to you, beware of great and sudden changes under the influence of panic; beware of extremes! If you have eaten flesh freely up to this hour, I would not say, abandon it totally at once! but diminish its quantity; let its quality be good, and let it be plainly and simply prepared, and eaten without made gravies, or much seasoning, and not more than once a day. If you have used tobacco freely up to this hour, and cannot forsake it at once, without suffering greatly from its absence, diminish your quantity as fast as you can, prudently, and get clear of it entirely. Tobacco has been said to be a good preventive, but such a notion is destitute of all truth. Cleanse yourselves, therefore, from this abominable and deleterious narcotic!—In like manner, also, get rid of your tea and coffee; in moderate quantities they are decidedly pernicious—in excesses they will powerfully predispose to cholera, and every other disease. If you have drank distilled or fermented liquors freely up to this hour, and cannot abandon them totally at once, without prostrating the organic functions of your system, your condition is an unhappy one. If you go on and do not perish, your escape will be almost a miracle. It cannot be more dangerous to stop short, than it is to go on in such a habit, especially if your regimen in other respects be wise and well ordered, being regular in your meals—temperate in your quantities, and gradually diminishing your proportion of animal food and other objectionable articles; and getting down to a vegetable and water level as soon as you prudently can, and then pursuing the system I have recommended in my present lecture.

Finally, those who can adopt the system I have recommended, without a change which would seriously let down, for a time, the functional action of their body, should enter into it at once; but those who cannot, should get into it as soon as they *prudently* can.—Such, I say, would be my advice if the cholera were now raging around you and among you; but as it is not, my earnest entreaty now is,—remain not an hour in the Sodom of your pernicious habits and indulgences! "Escape for your lives!—Look not behind you; neither stay ye in all the plain!—escape to the mountain, lest ye be consumed!"

NOTE A.—PAGE 43.

Several months after the first edition of the foregoing lecture was published, the following interesting corroboration of the views presented in the text, appeared in the London Medical Gazette.

"While on the subject of Cholera, we should state that the speedy use of tepid water, in cases of sudden bowel attacks, is strongly recommended,—half a pint to be taken every two minutes during pain, and to be still continued even should vomiting eusue. A physician at Gloucester last year, cured eighteen or twenty cholera cases in this manner."

NOTE B.—PAGE 44.

In regard to remedial agents to be employed in extreme cases of cholera, I spoke with great diffidence when I first delivered my lecture in New York, in March, 1832, and when I repeated it in June following, about two weeks before the epidemic made its appearance in that city. Having had no *experience* in this disease, I was then, of course, obliged to found all my opinions, as to the treatment of it, on what I conceived to be its evident principles of physiological pathology. Since then, as you all well know, the most terrible experiment has been made in our midst, and by it the general doctrines, which I taught some months before the disease appeared in this country, have been fully and most signally demonstrated to be correct.

The most simple mode of treating the disease has, beyond all question, been far the most successful; and probably throughout the whole range of this terrible epidemic thus far, no mode of treatment has been attended with so great and invariable success as that which is presented in the following communication from Mr. George Bond of Orchard street, New York, and which, it will readily be perceived, differs but very little from the one suggested in the text.

Letter from Mr. George Bond.

Mr. Graham. *Sir*,—About eighteen years ago, I had a very severe turn of bloody flux, which proved exceedingly obstinate and unmanageable. The skill of my physician was completely baffled, and his medicine seemed wholly ineffectual. Clear blood ran from my bowels in alarming profusion, and nothing seemed to have any effect to stop it. My physician finally declared that he could do nothing more for me; and to all human appearance I must die with the com-

plaint. At this crisis some one recommended the internal use of salt and vinegar and hot water. I know not why it was, but I was very favorably impressed by the suggestion, and had a great desire to try the prescription. My physician said it could do me no hurt, if it did me no good. I therefore had some immediately prepared, in the proportion of a tea-spoonful of salt, a table-spoonful of good cider vinegar, and a tea-cupful of boiling water, and I took about a half a table-spoonful of this mixture every five minutes. I was immediately benefited by it,—the flux ceased, and I was soon restored to health.

As soon as I heard the cholera was in this country, I began to read the accounts of it, and it struck me that the salt and vinegar and hot water would be the best possible remedy for it. With this impression, I called on Dr. L——, (at the corner of Sheriff and Delancy streets) and asked him if there was no cure for this disease. He said there were various modes of treating it, but no specific remedy had yet been found out. I told him, I believed I could cure it. He asked me how. With salt and vinegar and hot water, said I. Dr. B——, who had come in while we were talking, replied that vinegar would not answer at all in the cholera. I told him that I wished to Heaven that some of my own family might have the cholera that night, so that I could try my remedy; for I was very confident it would cure the disease. This was sometime in the latter part of June, near the last of the month. My wife had been about nine years afflicted with poor health and a partial alienation of mind; and had been subject to frequent turns of diarrhœa. About the fourth of July, a diarrhœa came upon her, which we thought one of her ordinary turns, and paid no particular attention to it. On the night of the seventh, at about one o'clock, she woke me, and with a perfectly rational mind, said to me, "I am dying." I laid my hand on her, and found she was cold as death, and covered with a cold clammy sweat, and soon ascertained she was violently vomiting and purging, and dreadfully cramped and convulsed. I sprang from my bed and as quick as possible, kindled a fire and put over a kettle of water; and then called up my little son and sent him for doctor L——. In the mean time my wife was so terribly handled with the disease, that I could not mistake its character. I was sure it was the cholera, and I was exceedingly alarmed at its awful violence; for I feared that nothing on earth could control it. As soon as the water boiled, however, I prepared a dose of salt and vinegar and hot water, and gave it to her; and with equal astonishment and delight found that it arrested at once the vomiting

and purging; I then dipped some flannel in a mixture of the same kind and put it hot over her stomach and bowels, and in less than fifteen minutes her cramps and spasms were all removed, and she was in a very profuse perspiration, and quite at ease. I repeated the dose of salt and vinegar and hot water once or twice afterwards to keep up the perspiration. My son returned and said that the doctor told him that he knew nothing what to do if he came, and therefore it would be of no use for him to come.

By morning, my wife was able to sit up, and after the operation of a dose of castor oil, was soon restored to her ordinary health; with much less alienation of mind, however, than before. I was now fully confirmed in my confidence in the efficacy of the salt and vinegar remedy for the cholera; and called again on Dr. L——, to state to him the results of my experiment. He was much surprised to hear that my wife was still living and doing well, and that I had treated her only as I had. The cholera now began to prevail pretty extensively in the city, and I devoted the greater part of my time through the whole season of sickness, in visiting the sick, and administering my simple remedy to them: and invariably with entire success, in every stage of the disease; and many who were cured in this manner went out also, and administered the same remedy to the sick with the same success; so that I may safely say that hundreds were the subjects of this treatment. No less than fourteen, of my own and my brother's families, were severely attacked with the cholera, and all were cured by this simple remedy. My son, 12 years old, and the son of our neighbor, Mrs. D——, a widow lady, about 14 years old, were together, and ate green apples one afternoon, and at about four o'clock, the next morning, both of them were violently attacked with cholera. I gave my son the hot salt water and vinegar, which soon relieved him, and in two days he was able to be about his business again. Mrs. D—— sent for a physician for her son, and he was put under medical treatment, and very soon went into a collapsed state. I called the next morning to see him, and found him in a most awful condition. His symptoms were extremely violent; death-like coldness, violent vomiting and purging—powerful spasms all over; and the doctor told me that the pulse had been entirely gone for five hours. I ordered some boiling water, and put in my salt and vinegar in due proportions, and administered it in the form of a potation and injection, and dipped flannels in it, and applied them to his body, and rubbed his limbs with hot flannels;

and the violent vomiting and purging and cramps were soon arrested, and the patient began to perspire very profusely, and in forty-five minutes, his pulse beat sixty times in a minute with a full, fair stroke; and the patient was doing as well as could be wished. Some slight spasms remained in the extremities, but they were fast yielding to the influence of my treatment. At this juncture Dr. C—— came in, and ordered the boy, profusely sweating as he was, to be stripped and rubbed all over with mercurial ointment. He also ordered large doses of mercury. I told him the boy was doing well, and as sure as his directions were followed the boy would not live an hour. But he disregarded my remonstrance and persisted in his course. The unhappy boy entreated his mother not to follow the doctor's prescription, and said it would kill him; but she, full of anxiety and alarm, yielded to the doctor's authority. The poor boy begged me to come to him, which I did, and he threw his arms around my neck and kissed me, and said—"you have done all you could for me and I thank you for it." In a short time after he took the powder which Dr. C—— ordered, his vomiting, purging, and cramps, returned upon him and soon became as violent as ever, and his pulse again ceased. Dr. W—— now came in, and seeing the state of things and learning what had been done, he turned to Dr. C—— and said to him, "you have killed that child!" Then turning to me he asked if I could not raise him again.—I told him it was too late. In forty-five minutes after the patient was put under the treatment of Dr C——, he died.

Soon after this Dr. R. came for me about midnight and wished me to go with him and see a patient (in Suffolk St.) which he said was very bad, and he could do nothing with her. He said he had had a number of patients in the same neighborhood, and they had all died in spite of every thing he could do. I went with him and found a woman in the most terrible agonies I ever witnessed. She was vomiting and purging with shocking violence, and her body and limbs were horridly drawn up and distorted with cramps. Several persons were trying to relieve her by rubbing her, but she seemed as though she was possessed by an infuriated fiend which was endeavoring to torment her to the utmost. I treated her in the same manner I had Mrs. D——'s son, and in less than twenty minutes she was quietly perspiring in her bed, and the next day she was able to be about house; and in two or three days more, was well. On the same night, a woman died in the room above her, of whose case I did not know till after her death.

A. P., in Grand Street, had the cholera with great virulence ; several physicians visited him, but Dr. R. had the principal care of him : but none of them were able to arrest the disease in the least degree, and the patient sunk into an extreme state of collapse ; and Dr. R. said he must die in spite of all earthly means to save him. In this state of things I was sent for, and administered my simple remedy, and the patient was almost instantly relieved ; and in a few days was about his business. His wife also had the cholera, and was cured in the same way. Soon after this I was in at Dr. L.'s office, and a Mrs. D. of Willet street, came in for some medicine, and said that her husband had the cholera very bad indeed. She said he had been out on watch the night before, and as he did not come home at his usual time in the morning, she felt uneasy about him, and went down town after him, and found him in a back yard in a dreadful state of the cholera : he was unable to stand, and she got a hack and brought him home, and called in a physician as soon as possible ; but the doctor had not yet been able to check the disease, and she feared he would die. Dr. L. told her she had better ask me to go and see him. She was afraid of offending her physician—Dr. D., and did not then request me to go, but soon sent after me. I found Mr. D. in a truly shocking state : his skin was a dark violet-blue,—his vomiting, purging, spasms, and other symptoms, were awful beyond description. Dr. D. was giving him powerful doses of medicine, but without the least favorable effect. Soon after I came in, he gave orders how to give the medicine, and said he must go and see some other patients, and would be back as soon as he could. The Dr. had scarce left the door before I ordered some boiling water, and without loss of time administered my simple remedy to the sufferer. When the doctor returned he found his patient lying quietly in his bed, perspiring profusely,—no vomiting, no purging—no spasms, skin natural, and scarce a symptom of cholera about him.

The doctor was surprised and delighted at the happy effect of his medicine, and said it had done wonders, and the patient was doing finely, and would get well. He then told us how to proceed, and again went to visit other patients. But his second orders shared the fate of his first—not a particle of his medicine was given during his absence, nor any thing else but the salt, and vinegar, and hot water. Mrs. D., however, thought it not best to let him know any thing about it ; and when he came again, he pronounced the patient safe, and congratulated himself very much on his success in such a very violent case. I now left the house in company with the

doctor, and began to talk to him concerning the treatment of the cholera, and told him I believed I could cure every case, if I could have a fair and timely opportunity. The doctor turned and looked at me with an air of great contempt, and exclaimed, in a sneering and emphatic manner, "How, in the name of God, can it be that you, an unlearned man, should know how to cure the cholera, when our most learned and eminent physicians cannot do it?" Having said this he left me abruptly, and there our acquaintance ended. William A. D. however, soon recovered his health, and is now living and well.

J. V., who had always habitually made a free use of ardent spirits, had the cholera very severely. The cramp in his limbs was so excessively violent that it drew his flesh all up into knots, some of which remained for six weeks. He took various medicines without the least effect, and when it was supposed that he was past all possibility of relief, he took the hot salt water and vinegar, and was almost instantly relieved, and soon got well.

I could detail a great number of similar cases, but suffice it to say that in more than a hundred instances where I administered this remedy, I never knew it to fail of complete success in one case. I went one day with Dr. R. into Slam's buildings in Delancy and Suffolk streets, and there I saw the most horrid secnes I ever witnessed on earth. All kinds and colors were crowded together,—the sick, the dying, and the dead. In one vacated room, the dead body of a negro lay rotting on the floor;—Mr. S. of Second Avenue, went and covered it over.—Another man came and looked in at the door, and the next day he died. Mr. S. was continually in the midst of the cholera, and in the filthiest places where sickness and suffering were to be found. He used the precautionary measure of washing his body frequently in vinegar, and, I believe, wholly escaped an attack. But I have dwelt long enough on these scenes of suffering and horror.

Yours respectfully, GEORGE BOND.

New York, April 7, 1833.

P. S. I ought to have stated, that after having extensively proved the success of the salt and vinegar remedy for the cholera, I went to a number of our city editors, and tried to get them to publish it, but they all refused to do so, except Mr. Webb, of the Courier and Enquirer. He published it, and not long afterwards received a letter from Norfolk, Va., stating that the salt and vinegar remedy had proved the most successful in that place, of any thing which had been tried.

G. B.

On my return to New York I took much pains to ransack the city and investigate the cases presented by Mr Bond, and I was not able to hear of a single case of death from cholera where this mode of treatment was fairly tried. Dr. L——, of Delancy street, assured me, that after having failed entirely in every other mode of treatment, and lost every patient he was called to, he adopted the mode of treatment, recommend by Mr. Bond, and did not lose another patient, during the season. I have called on a number of persons in the upper part of the city, who informed me that they had the "collapsed stage" of the cholera to such a degree that all medicine was ineffectual, and the attending physicians pronounced them past remedy: and then, as a last experiment, they took the hot salt water and vinegar, and were almost immediately relieved; and soon recovered health.

According to Mr. Bond then, when any one suffers a violent attack, and is taken with the worst form of the disease at first, or has neglected or maltreated the diarrhœa till violent vomiting, and convulsive spasms and cramps in the body and limbs, and burning sensations in the epigastric regions, &c. &c. supervene, let the patient take to his bed, and let a kettle of water be boiled as quickly as possible, and then put into an ordinary sized tea-cup, or some other vessel of the same capacity, one tea-spoonful of good, common table salt, and one table-spoonful of good cider vinegar, (remember it must be good *cider* vinegar,) and fill the cup with boiling water, and let the patient swallow this dose as hot as he can wihout scalding himself, and without sipping. If he sips it down, it will be more likely to come up again: but if he swallows the whole dose, as it were, at a single draught, it will almost certainly remain on the stomach, and at once arrest the vomiting and purging, and violent spasms, and in a few minutes bring on a profuse perspiration.

If, however, the first dose should be thrown up, give the second dose of the same kind, and even the third, and more if necessary;—but when it is properly prepared and taken, the first dose is very rarely thrown up, and the second never. Albeit if the spasms in some measure continue, it is well, at intervals, to repeat small doses, though the first dose should entirely arrest the vomiting and purging.

If the case should be still worse, and the patient should be in what is called the collapsed state, in which, besides the symptoms already mentioned, there is no perceptible pulse, the voice very feeble or entirely lost, and the skin cold and clammy, and of a dark purple color, &c., let the hot water, salt

and vinegar, be given in the same manner as above directed, and let a like preparation be injected freely into the intestines, as hot as the patient can safely endure it ; and let flannels be dipped into some of the same, and laid hot upon the stomach and bowels, and let the limbs be briskly chafed with hot flannels, till the patient becomes quiet, which will soon be the case, and then let him be well covered, so as to promote the perspiration, which in a few minutes will be seen gushing copiously from all the pores of the skin. If any spasmodic affections or pains remain, let the patient, at intervals of from fifteen to thirty minutes, as the symptoms may be, swallow small doses of the hot salt water and vinegar; which, in such cases, should be prepared in considerable quantities, in the proportions of one measure of salt to four of vinegar, and sixteen of boiling water.

By this mode of treatment, the vomiting and purging will be arrested almost instantaneously; the spasms will be subdued; a profuse perspiration will follow in a very few minutes; the pulse will soon be perceptible, and in a short time be restored to a regular action; the skin will gradually resume its natural color and warmth; and in a few hours the patient will feel entirely free from the disease. Now the judicious physician, or nurse, may find it proper to administer a gentle cathartic, adapted in its kind, to the peculiar habits and condition of the patient: either a dose of rhubarb and calcined magnesia, or castor oil, and then always strictly observing the same regimen that I have already prescribed for the diarrhœa, and follow on with a judicious diet, and all will go well.

Since the first edition of this work was published I have found that in cases of great morbid irritability of the stomach, attended with constant vomiting, and throwing up of every thing swallowed, if the hot salt water and vinegar be administered in small quantities—say a tea-spoonful at a time, at short intervals, it will almost invariably allay the irritation in a very short time and enable the patient to retain medicinal or alimentary substances on the stomach. Indeed there are many cases in which it may be used with great advantage as a medicine, in allaying the morbid irritations and actions of the stomach and bowels, and it is, perhaps, one of the most powerful agents which can be employed in bringing on a sudden and profuse perspiration.

APPENDIX.

THE common opinion which prevailed in New York, for a considerable time preceding and succeeding the appearance of the Cholera in that city, was, that a generous diet of flesh and flesh soups, with brandy, port wine, and porter, was the best preventive measure that the citizens could adopt to save themselves from the awful ravages of the disease; and while some of the physicians took a manly and noble stand against this ruinous error, too many of them on the other hand, gave decided countenance to it. Dr. Rheinlander, one of the physicians sent by the city to Canada to ascertain how to treat the disease, published his advice, cautioning the people against the use of distilled spirits but recommending the use of port wine, and thus caused thousand of gallons, of a vile mixture of whiskey, logwood, and other abominable things, to be sold and drank under the name of port wine; which was incomparably worse than the clear whiskey itself. This was soon followed by the appearance of an article in the Courier and Enquirer from Dr. Felix Pascalis, in which he says that "the ravages of the Cholera will probably increase in the city, until it has decimated, or even extirpated the whole class that subsist with little or no animal food." And again;—"as for preventive remedies, the reader will remember that the *Delta* of the *Ganges* is called the *cradle* of the *Cholera*, and that there the inhabitants do not live upon animal food; that in China, where animal food is scarce, the pestilence was most unsparing, and that at Hurdwar in 1783, 20,000 of the fasting pilgrims were cut off in less than a week, &c." The reasoning and deductions of the whole article were extremely loose and inconclusive and erroneous,—but they were *ad captandum vulgus*, and together with Dr. De Kay's and Dr. Rheinlander's prescriptions of brandy and wine soon became the *vox populi of the city;* while the columns of the newspapers daily contained advertisements recommending Swaime's Panacea, Hygean pills, and other wholesale instruments of death, as sure preventives and remedies for the cholera.

In such a state of delusion, and depravity, and panic, it was very natural that the most clamorous out-cry should be raised against the dietetic doctrines which I had taught in my lectures. Every dealer in intoxicating liquors, including Hotels and Coffee Houses,—every druggist, and almost every

butcher, and baker, and tobacconist, and grocer, and flour dealer, and "free liver" in the city, felt deeply interested to save the people from the ravages of cholera by virtue of a "*generous diet*" of flesh, flesh soups, brandy, wine, porter, tobacco, coffee, tea, fine bread, &c. therefore all were generously willing to lend their voices in the cry, that all the "Grahamites" were dead and dying with the cholera. The most egregious misrepresentations and unblushing falsehoods, were daily fabricated and busily circulated throughout the city, and even physicians who hold a respectable standing in society, boldly asserted, as a matter of their knowledge, that the "Grahamites" were dying by hundreds with cholera. At the same time the bakers who had undertaken to furnish the citizens with the kind of bread which I had recommended, —in some instances, there is reason to believe, from the basest of purposes, and in others, from culpable negligence, suffered their bread to degenerate into the vilest stuff imaginable, and thus brought it into very great disrepute, and undoubtedly, in many instances, caused it to become seriously injurious to them that ate it.

Such a mighty conspiracy against the cause of truth was surely enough to try the courage and firmness of its friends in such a time of terror and death. Nevertheless there were some hundreds in the city whose steadfastness neither public clamour, and misrepresentation, and falsehood, nor professional assertions, nor any other cause could shake. They strictly pursued the course which I had pointed out, and calmly kept about their business, or humanely devoted themselves to the alleviation of the sufferings of the sick. Nor did they idly listen to the misrepresentations and falsehoods which were daily kept on the wing. Whenever these things received a definite form and locality, they were promptly investigated, and ascertained to be destitute of truth, and generally destitute of honesty. Mr. Goodell, the editor of the Genius of Temperance, ferreted them out, and exposed them, with a diligence and boldness which were worthy of the cause of truth and humanity.

On my return to the city, I made it my first business to ascertain, as far as possible, what had been the real effect of my dietetic system, in relation to the cholera. I immediately called at all those places where it had been said that "Grahamites" had died of that disease; and also called upon all those physicians who, I was informed, had asserted that the "Grahamites," were all dying with cholera. The result of my inquiries was as follows:—

The family of Mr. B—, in Madison street, had attended my lectures during the preceding winter, and partially adopted the dietetic system which I taught; but they continued in it only a short time; and, some months before the cholera appeared in the city, the whole family, except the oldest daughter, returned entirely to their former habits of living, and were most or all of them, cut off by cholera, except the oldest daughter, who continued pretty strictly on my system, and wholly escaped.

The family of Mr. A———, in James Street, had attended my lectures during the preceding winter, and left off coffee and tea, and did not use so much flesh as before; yet notwithstanding, he was, and long had been, habitually costive, he and his family continued to eat the fine, bakers' bread. After the cholera commenced, he continued to eat his beef steak, roast beef, puddings, &c. and to eat only the fine flour bread, though very costive. He was a dyer, and dyed some clothes of those who had perished of cholera. He took a dose of medicine as a preventive—became worse—sent for a physician—took his medicine, and was soon in a collapsed state, and died. Two of his children and an intemperate apprentice died also; but whether of the cholera or the medicine, or both, is uncertain.

The family of A. C———, in Pearl Street, had attended my lectures during the preceding winter and spring;—they adopted my system, to a considerable extent, and Mr. C. and his wife found their health much improved by it. When the cholera broke out, however, they all, but one son, so far yielded to what seemed to be medical authority, as to return to what was called a more "generous diet," and took their flesh dinners, with desserts, &c. The whole family, except the son, who strictly followed my rules, were taken with diarrhœa, which, however, by being attended to, was soon checked, in all but the worthy old gentleman, who neglected his disorder, and suffered it to run on, occasionally taking some astringent or cathartic medicine, and continuing about his business, and eating as usual, and regularly taking two or three cups of strong coffee every morning before he rose. About the ninth day he took his regular dinner of flesh, &c. and after it ate freely of a flour pudding, with wine sauce, and to prevent any bad effects, took three glasses of port wine, according to the public advice of Dr. Rheinlander. The next morning he was very sick, and took his coffee as usual—grew worse through the day—fell under medical treatment, and died in a few hours. The death of this ex-

cellent man, caused more consternation than any other death which took place in the city during the sickness; because he was supposed to be a "strict Grahamite." There were a few other cases which were about as near to my regimen as those I have detailed: and these were the "hundreds of Grahamites who had died of cholera."

I then called on the physician who had asserted that hundreds of Grahamites had died of the cholera, and asked him if he knew of a single case of a person's dying of cholera, who had strictly followed my system. He replied that he did not, and then gratuitously added, "and I never said that I did." Every other physician on whom I called, gave me the same negative answer, excepting one, who very confidently assured me that he had lost one such patient. I asked the name and number, and, on investigating the matter, found that the said patient had never attended my lectures, and in no respect any farther adopted my system, than to abstain from the use of ardent spirits: but the brother of the deceased, who took care of him through his sickness, without any touch of the disease himself, had heard some of my lectures, and to a considerable extent adopted my system of diet.

The result of my inquiries was, that I could not ascertain that a single individual had died of cholera during the sickness in the city, who had, with any tolerable degree of strictness and propriety, followed the regimen which I had prescribed in my lecture on the cholera. Nor was I able to ascertain that more than two or three such persons had even had the slightest symptoms, while, on the other hand, there were hundreds who strictly followed my rules, many of whom were exposed in the utmost degree, and yet not one of them had a symptom of the disease.

I then advertised in most of the papers of the city, that a public meeting would be held at the Chatham Street Chapel, on which occasion I would expose and repel the various misrepresentations and calumnies which had been raised against my system, in relation to the cholera. The meeting was very large, and I met the objections which had been raised; and challenged any one to prove a single instance of an individual's having died of the cholera, during the prevalence of that disease, who had strictly and properly followed the regimen prescribed in my lecture on the cholera. This silenced the *public* clamor: but ever and anon the smothered mutterings of *particular ones* were indistinctly heard. I then addressed two letters to Philip Hone, Esq. through the Com-

mercial Advertiser, in one of which I held the following language: "I have called, and still call, for the statement and substantiation of facts against my system; but I shall not be satisfied with popular and vulgar clamor, nor with indefinite and anonymous publications. I ask credible persons, under their own true signatures, to come out and specify cases, if they know of any; and give names, streets and numbers:—and I will honestly examine them, and if I find them true, I will publicly acknowledge them."

Yet no one met this call, and with all this public and private inquiry, I have not been able to ascertain a single instance in which any individual has suffered either from cholera or any other disease, who has strictly and properly pursued the regimen prescribed in my lectures. The following testimonies, on the other hand, are mostly extracts from much longer statements which I have received from the individuals whose names are given.

Mr. Graham. *Sir*,—In stating my views of simple diet, as a means of preserving health and preventing disease, I must necessarily be brief for want of time. I think I have the most ample evidence of its salutary and conservative effects in my own person, of which, for the sake of the testimony—though I would not appear obtrusive—I will give some account. I had been afflicted, both before and during my medical studies, with that worst of diseases, chronic dyspepsia, from which I never obtained any permanent relief, until about eighteen months since, when I put myself on the simple mode of living recommended in your Lectures. For nearly a year, I subsisted principally upon coarse wheat-meal bread and milk, with great advantage to my health; when happening to get some milk which tasted and smelled of garlick, I became so disgusted with it, that, in May last, I exchanged my milk for spring water, which, with the coarse bread, has constituted my diet since. During the past summer, and especially the cholera season, my professional duties were exceedingly arduous, and I often felt myself nearly worn out for want of rest and sleep. Yet through the whole sickness, I subsisted on one pound per day of coarse unleavened crackers, with some fruit and spring water, and experienced no disorder of the stomach or bowels, but enjoyed, and still continue to enjoy, better health than I have experienced before for the last fifteen years.

On looking over my Notes of cholera cases, taken at the bedside of the patients, I find that the occasion of the disease could be traced, in a very large majority of cases, either

to confirmed habits of intemperance, or to some prominent act of imprudence. I speak here of patients in both Hospitals and private practice. And furthermore,—in treating the disease, my experience is in favor of the most simple practice, and altogether unfavorable to the opium treatment. Many people—and among them, some of my own profession, have asserted that simple vegetable diet was conducive to, and in many cases, had actually produced cholera. I have taken considerable pains to investigate these matters, and in not a single instance have I been able to verify their assertions:—but on the contrary, I have uniformly found that every person who has strictly and judiciously followed the system of diet and regimen recommended by yourself, has not only escaped the cholera, but enjoyed very general good health. Yours truly, AMOS POLLARD, M. D.

New York, Nov. 30, 1832.

Sir,—Having attended your lectures in New York, last winter, and to a considerable extent adopted your system of living, I went to Montreal, and was there from the time the cholera broke out, until it had nearly ceased; and although I did not in all respects live so simple as I ought to have done, and as I wished to do, yet such was my confidence in the regimen I observed, that notwithstanding the very great numbers of dead and dying which I daily saw around me, I felt not the slightest alarm, till the destroyer entered our boarding house, suddenly snatched away two of its inmates, and so terrified the rest, that they all left, except myself and my cousin, who was also partially a disciple of yours. Even then my confidence was not diminished. Two letters which I wrote on the prevention and treatment of cholera were published in the Montreal Gazette; for their contents I was chiefly indebted to you. Your Ob't Serv't,

52 *Monroe St. N Y Jan.*, 1833. JAMES DRYDEN.

Mr. Graham. *Sir*,—After having been grievously afflicted several years with dyspepsy, I attended your Lectures, adopted your system, and entirely recovered my health. Through the cholera season, I subsisted almost entirely on Graham bread and water, and enjoyed the most perfect and uninterrupted health, and gained several pounds of flesh. Our family, consisting of ten members, who lived on what the doctors call a more "generous diet" of flesh, coffee, tea, fine bread, &c. all had pretty severe attacks of cholera, and some of them two and three attacks. My brother David, who lived as the rest of the family did, but used no spirits, went

with me three several times through the cholera hospitals, to see the sick, and during the night following each time, he had a severe attack of cholera, while I had not even a premonitory symptom of the disease through the season.

Yours truly, ALBERT WOODMAN.

New York, May 16, 1833.

Sir,—Myself, wife and sister, had all been afflicted with poor health, and particularly my wife and sister, for many years before we heard your Lectures, and adopted your system of living. Neither of us has eaten any flesh-meat since; which is now more than a year. We spent the past summer in the city, and never enjoyed better health than we did through the whole cholera season. That dreadful disease raged all around us, and cut off many of our neighbors, and even came into our own house and attacked our mother, who did not live on your system, but ate flesh, &c. and I was much amongst the dying and the dead, and assisted in laying out and putting into their coffins at least a dozen bodies of those who had died of cholera, yet neither myself, wife, nor sister, had the least premonitory symptom of cholera, nor any other illness during the whole season.

Respectfully yours, EVANDER D. FISHER.

No. 19, *Essex Street, New York, Jan.* 7, 1833.

Dear Sir,—Beside the many other and great advantages which myself and family have derived from your valuable lectures, I will add, that we remained in the city during the cholera season last summer, and living near one of the cholera hospitals, we daily saw the dying and the dead carried by our door; yet having attended your lecture on cholera, and living strictly on your plan, we felt so much confidence in your views that we had no dread of the disease: and we did not spend one cent at the drug-shops for preventives: and what is still more remarkable,—*the report* was that the Grahamites were dying like rotten sheep, and that in *our family* there was only *one Grahamite*, and she had the cholera very bad; and the rest of the family, who *were not* Grahamites, escaped: whereas, the truth is, that we were all living on your plan most strictly, except *my mother*, who thought she required the "*more generous diet*" to which she had always been accustomed, and she had a very severe attack of the cholera, while the rest of us had not a symptom, but enjoyed the best of health. Your sincere friend,

WILLIAM MITCHELL.

No. 437, *Broadway, New York, March* 20, 1833.

Sir,—Four members of our large family lived strictly on your system during the cholera season, last summer, eating no flesh, and subsisting principally on Graham bread; they enjoyed excellent health, and none of them had the slightest symptom of cholera during the season; while every other member of the family had more or less of that disease.

Yours, &c. P———.

No. 13, *Northmore St. New York*, *March* 22, 1833.

Sir,—During the prevalence of the cholera last summer, all our family had more or less of that dreadful disease, except myself: they ate flesh, &c. and I ate none; but lived strictly on your system. And what, in all probability, would have been my case, if that awful epidemic had found me in that condition of body in which I was, before I adopted your system of living?—I verily believe, that, but for you, I should not now be among the living on earth. But, blessed be God! I am not only living, but well. I have scarcely known an hour's indisposition during the past twelve months. And what a change is this, after having been afflicted as I have been for more than twenty years.

Yours respectfully, H. WHEELER.

Bowery, near North St. N. Y. Feb. 19, 1833.

Sir,—Since about the year 1818, I have been afflicted with very feeble health. In the autumn of 1831, I commenced attending your lectures, and soon began to adopt your system of diet, and lived very strictly on it during the cholera season; eating no flesh, and using the Graham bread. My health improved very much, and continued good through the summer. I saw many cases of cholera, and stood over several patients, and administered to them, and rubbed them, but had not a symptom of the disease myself.

Yours, with sincere respect,

F. L. WILSEY.

New York, *Jan.* 17, 1833.

Sir,—Myself and wife had long been in very feeble health, and laboring under many serious symptoms of pulmonary consumption, when we adopted the system of living recommended in your Lectures; since which time, our health has improved exceedingly. We, and our children, and other members of our family, spent the cholera season in the city; all living strictly on your system. Our immediate neighborhood was very sickly. The cholera was all around us, and

the people died on every side of us. One man died next door, so near to us, that I could reach my hand out of my window into his room; and the offensive smell of his body, after death, came in and scented our house; and yet none of us had any thing of the disease. I have two apprentices both of which lived strictly on the Graham system through the worst of the cholera season, without the least indisposition. The older one then went into the country, where he spent two weeks, and lived quite generously on animal food, &c. and then returned to the city, and took the cholera immediately; and had three doctors to keep him alive. The younger one continued in the city, living strictly on the Graham system. His heath improved very much indeed during the summer, and he had not the least symptom of cholera, nor any other disease. Very respectfully yours,

EDMUND VAN YORX.

98, *Clinton St., New York, Jan.* 26, 1833.

Sir,—Having been relieved, by your system of diet, from a miserable state of health with which I had been afflicted for years, I continued to live strictly on your system through the cholera season, making Graham bread the principal article of my food: and through the whole sickness eating fruit freely; taking care, however, to get good fruit. I enjoyed excellent health through the season, without having a single premonitory symptom of cholera, or an unwell hour: nor have I had an hour's indisposition since: and at present, I enjoy the most perfect health.

Yours with respect,

S. VAN YORX.

No 268, *William St. New York, June* 17, 1833.

Sir,—After having been afflicted with miserable health for many years, I was induced to adopt your system of diet; and by degrees became more and more strict in my regimen, till I got on to a diet of Graham bread and rain water, exclusively. This regimen I observed rigorously through the whole cholera season, and not only became wholly relieved from all my pains and ailments, but recovered, and enjoyed the most entire and perfect health; feeling strong, and active, and cheerful. My sleep was as sweet as a babe's; and when I rose in the morning, I always felt fresh, and clear, and vigorous, and sprightly, as ever I did in my boyhood. During the cholera season, I was very much among the sick of that terrible disease. Several times a day, I visited a family who oc-

cupied a house belonging to me, (No. 62, James St.,) and of which five members died. I stood over the beds of the sick. handled their bodies, assisted in taking care of them, &c. and after the house was deserted, and others were afraid to enter it, I went into the house, took up the beds, clothes, and other things appertaining to the rooms, from which the dead bodies had been removed, and carried them out of the house; and was there three or four times a day, handling the things, &c. After this I visited several other families who were sick of the same disease,—sat beside the sick by the hour, watched with them, rubbed them, lifted them, &c.; yet through the whole cholera season, I had not the least touch of the complaint, nor the slightest indisposition of any kind. Yours, &c. DAVID I. BURGER,

New York, Jan. 2, 1833. Corner of Mott and Pell St.

Sir,—Having been relieved from chronic disease of long standing, and restored to good health by adopting, pretty rigidly, your system of plain and simple diet; myself and wife continued on the same regimen through the cholera season, and enjoyed the best of health, without a symptom of that or any other disease, until the cholera season was nearly over, when we were induced to dine on fresh lamb. This brought upon me a diarrhœa and severe pain in the breast; my wife was more severely handled than I was; but by timely attention to our disorder, we were soon restored to health. A single dose of castor oil was all we required; and that is all the disease I have had, and all the medicine I have taken since I adopted your system, which is now two years; during which time I have enjoyed most excellent health.

Respectfully yours,

HENRY R. PIERCY,

Office of the Genius of Temperance.

New York, June 15, 1833.

Sir,—Benjamin Tytler, who is, and has been for a considerable time, in my employ, has lived many years according to your strictest principles, and enjoyed remarkably fine health and spirits. He is now in his sixtieth year, and is still quite active and elastic About five years ago he went to England, where he staid five or six weeks. While there, he used animal food, which, he says, brought on a severe disorder of the bowels, and caused him considerable sickness. He has used no animal food since, but lived entirely on vegetable food in its simplest forms. During the cholera last summer, he en-

joyed perfect health: and hearing it often asserted that the "Graham system" would not answer in cholera times, he used almost daily to walk through and about the Five Points, where the disease was raging in its most malignant and destructive character. He was often asked why he thus unnecessarily exposed himself. His reply was, "I wish to try the Graham system fairly: they say it will not answer in cholera times, and I wish to see whether it will or not." The old gentleman, however, had not the least symptom of the disease during the season. Yours, &c.

DANIEL FANSHAW.

New York, Jan. 19, 1833.

Sir—In the autumn of 1818 I spent three months at Batavia, in the island of Java in the East Indies, where, by the use of bad water or some other means, my bowels became much disordered, and soon after I left there, a very troublesome diarrhœa set in, and, in spite of every thing I could do, it became an established chronic disorder, which has afflicted me with more or less severity and constancy ever since, till I strictly adopted the system of diet which you teach in your lectures; since which time—now about one year—I have not been troubled with that unpleasant complaint. Conscious, however, of this predisposition of my body to bowel complaints, I was fully apprehensive of my liability to suffer an attack of cholera, while that disease was prevailing among us, and therefore, while I carefully aimed to take all proper measures to preserve my life and health, I at the same time endeavored to hold myself in readiness for any event. I lived strictly on what is called the "Graham System," and, through the goodness of Divine Providence, I went through the sickly season, amidst uncommon cares and anxieties of business, without being at all disturbed in my own body by the cholera. Yours truly,

WILLIAM GOODELL,
Office of the Genius of Temperance.

New York, June 17, 1833.

Esteemed Friend,—After having been sorely afflicted, for nearly thirty years, with a chronic diarrhœa, which was at times so severe, that it often confined me to my bed, and sometimes brought me extremely low, I have been so much benefited by thy system of diet and regimen, that I was enabled to remain in the city through the cholera season, and not only to enjoy an entire immunity from that disease, but

also, by virtue of my simple and salutary diet, to enjoy better health through the summer and autumn, than I had done before for more than twenty years. P. CORLIES,

New York, June 17, 1833. No. 86, Madison Street.

Sir,—I arrived in this country from Scotland, in November, 1831, in a very impaired state of health. I was tormented with continual head-ache, and was extremely weak; and was so costive that I was obliged to take cathartic medicine every day. As often as once a month, or six weeks, I was severely afflicted with diarrhœa, which hung on a week or ten days, and was exceedingly debilitating. My spirits were dreadfully depressed, and my miseries were very great. These difficulties, which had troubled me for some time in my own country, increased upon me here, and my wretchedness was intolerable, when I commenced attending your lectures, in April, 1832, and soon after began to live according to your dietetic rules for invalids. In a very short time after the adoption of this regimen, my complaints were all removed, and my health restored. During the cholera season I boarded in a section of the city where the cholera prevailed to a considerable extent; and there was much of that terrible disease, also, where I was employed as an engineer; and most of the company employed with me were more or less troubled with it. The people in the house where I boarded were constantly complaining and sick, but through the whole season I remained perfectly well, and had not the least indisposition, nor need of a particle of medicine. During the sickness I lived entirely on Graham bread and water, and occasionally fruit. I increased much in strength, and became quite vigorous, and able to perform much labor without fatigue.

Yours, with sincere respect,

N. York, Feb. 16, 1833. JAMES WHITELAW.

I could multiply these testimonials to a hundred, from the statements which I have now on hand, received from persons of the most unquestionable veracity; but I have already given enough to satisfy every candid reader that the hue and cry about the "Grahamites' all dying with the cholera," was not only without any foundation in truth, but was directly contrary to the truth.

In selecting the testimonials that I have given, from the large number of statements which I have on hand, it will be observed that I have in many instances presented the cases of those whose previous health and state of body rendered them peculiarly liable to the action of any morbific causes which might induce cholera.

REVIEW OF BEAUMONT'S EXPERIMENTS.

[Originally published in the Graham Journal.]

Experiments and Observations on the Gastric Juice and the Physiology of Digestion. By William Beaumont, M. D. Surgeon of the United States Army.

[If the reader will study Dr. Beaumont's book carefully, he will find that every important physiological principle *established* by "Beaumont's Experiments and Observations," was taught by Mr. Graham in his public lectures for more than three years before this book appeared, and was published in his lecture on "Epidemic Diseases" several months before the work of Dr. Beaumont was issued from the press. Before this latter work made its appearance, Mr. Graham was ridiculed for teaching these very principles, and advancing things contrary to the established doctrines of the schools. —*Editor.*]

Of all the complicated and wonderful operations of the human system, there is, probably, no one function which has been the subject of so many speculations, theories, and experiments, and of so great diversity of opinions, as that of Gastric Digestion. Hippocrates and others of the ancients supposed that the digestion of food in the stomach is a kind of putrefaction.—Galen, and others of his school, regarded the process as a species of concoction, like the ripening and softening of fruit under the summer's sun ; and far more recently, Pringle and others have supposed it is a process of fermentation, uniting heat and putrefaction ;—while Borelli and others have asserted that digestion is effected solely by the mechanical action or triturating power of the stomach ; and for this purpose they estimated the muscular power of the human stomach as equal at least to 117,080 pounds. Boerhaave combined the theory of mechanical pressure with the chemical one of concoction. Cheselden was one of the first who started the idea of a solvent fluid or Gastric Juice, and after him, Haller, Reaumur, and Spallanzani followed out and finally established the doctrine, at least so far as to render it the generally received opinion of the schools.

Spallanzani, in order to guard against the supposed triturat-

ing effects of the stomach, filled small perforated tubes with meat previously boiled and masticated, and forced animals to swallow these tubes; and on examining them after they had remained for some time in the stomach, he found the meat considerably softened,—always more or less, according to the length of time and the size of the holes in the tubes. He also tried various experiments, by introducing into the stomach cloth bags containing food, which was also softened and sometimes pressed through the cloth and the bags left empty. He then tried a series of experiments with the gastric juice out of the stomach, and asserted that, by mixing food with a quantity of this fluid in a phial, and keeping it for several hours at a temperature of 100 deg. Fahrenheit, the food was digested.

By these various experiments, the doctrine of digestion by a solvent fluid of the stomach was considered fully established. Other experiments, however, were thought to afford sufficient grounds for skepticism in regard to the truth of the Spallanzanian theory.

Carminati asserted that he digested veal with a little salt and pure water at a temperature of 100 deg. Fahrenheit:—That the veal was partly dissolved, and he employed the decanted liquor in similar experiments, until, at length, he procured a fluid possessing solvent qualities, as active as those of the gastric juice. Sturve and Maquart declared that they made an artificial solvent of a weak solution of ammonia, which had the properties attributed to the gastric juice. Montegre said that saliva with a drop of vinegar dissolved the food immersed in it. John Hunter declared that he produced the same effect by immersing meat in the pus of an abscess. Calves-foot jelly, at the temperature of the living stomach, was also affirmed to have the same effect on animal matter. Tiedeman and Gmelin said that they found dilute acetic acid—dilute hydro-chloric acid—a weak solution of acetate of ammonia severally dissolved more or less of most animal substances used as food.

Sir George Fordyce, after a careful review of the experiments of Spallanzani, Reaumur and others, confidently asserted that chyme could not be produced out of the living stomach. In this opinion Chaussier and Magendie agreed with him. Montegre, after extensive and varied experiments, asserted that the only fluid of the stomach concerned in digestion, was saliva swallowed from the mouth, and slightly acidulated in the stomach. Wilson Philip, after a great variety of experiments, declared that the contents of the stomach are never permeated throughout by the gastric juice, and

that the surface of the mass only, which comes in contact with the inner surface of the stomach, is digested; while the more central portion remains entirely unchanged; and that, if the chymified portion of the food which lies next to the inner surface of the stomach, is not removed, so as to let another portion come in contact with the coat of the stomach, digestion cannot go on; and also, that if new portions of food are received into the stomach, before that organ has wholly disposed of its previously received contents, the new portion becomes enveloped in the centre of the old, and remains unchanged till the old is digested and removed.

Philip, Brodie, Broughton, Breschet, Edwards and several others, asserted that digestion is completely suspended in the living stomach in perfect health, by a division of the pneumo-gastric nerves, while others contended that the division of these nerves only suspends for a time but does not destroy the digestive powers of the stomach.

Some of the ablest physiologists of our own country embraced the views of Montegre in regard to the fluid of the stomach, and denied the gastric secretion of a solvent fluid such as was asserted by Spallanzani and his followers, and to establish themselves in their position, they arrayed a host of facts admitted by their antagonists.

Whole grains of barley in perforated tubes, remained two days in the stomach of a turkey, unaffected, except that they were slightly swollen; whole grains of corn, in linen bags, remained three days in the stomach of a frog unchanged, but when beans, peas, and bread, well mashed or masticated, were introduced, in two days the bags were found empty;—the cohesion between the particles of the enclosed food being destroyed, they passed through the linen. When a piece of flesh or more coherent articles were employed, the tubes or bags did not become empty; their contents being merely reduced to a pulp; and in all cases where tubes were used, the softening was in proportion to the size of the holes which suffered the energies of the stomach to act on the contents of the tubes. It was observed also, that, in Spallanzani's experiments with gastric juice out of the stomach; First—In most, if not all cases, in which a decided change took place, it was either bread or a portion of flesh which was subjected to the action of the gastric juice. Secondly—The flesh was, in general, previously boiled and afterwards well mashed or chewed. Thirdly—No change was produced unless the gastric fluid was heated to one hundred or one hundred and two degrees Fahrenheit;—the softening which the bread or flesh underwent being always in proportion to the degree of heat

beyond this point. Cold gastric juice being perfectly inert. Fourthly—In general, it required from ten to fifteen, and in some cases forty-three hours, before any considerable change in the food was produced by the gasrtic juice out of the stomach. Fifthly—There is no evidence that the softened food approached in its chemical character to chyme.

It was admitted that when bread and boiled flesh and a few other substances were chewed or triturated or mashed, and immersed in the fluids taken from the stomach of living animals, and raised to a temperature of one hundred degrees and over of Fahrenheit, and soaked in that fluid at that temperature for hours, they did undergo a softening or disintegration, but not from any peculiar solvent properties in the fluids employed. A variety of artificial solvent fluids, it was contended, would produce the same effect, as had been abundantly proved by experiments.

It was asserted that many physiologists had been led into a great mistake by not discriminating between the reduction of the food to a pulpy state, and that entire and perfect change which takes place in natural digestion;—that they seemed to treat the matter as if they supposed no other change takes place than a change of consistency, from solid to fluid; whereas, there is an entire change in its chemical qualities. All alimentary substances, except liquid albumen, it was affirmed, undergo, in the stomach, a complete transformation, approaching the nature of albumen. Whatever the kind of food, albumen predominates in the chyme.

In order to produce the change of the food into chyme, it must come in contact with the mucous membrane of the stomach.

The change is always from the circumference to the centre of the mass. A thin layer is first digested and carried forward by the muscular action, along the greater curvature from the cordiac portion of the stomach towards the pylorus, and when this is not removed digestion ceases. Therefore, whatever suspends or disturbs the muscular action by which the already digested food is carried forward into the intestines, or prevents the successive contact of the aliment with the inner coat of the stomach, stops digestion.

In confirmation of this, Broussais states the case of a man who could no longer digest his food, yet rejected nothing by the mouth, although his stomach was always full. Dissection after death showed that his stomach had no longer a muscular coat. Its muscular tissue had undergone completely the fatty degeneration.

Chymification is so intimately dependent on the health and

integrity of the stomach, that the most trifling circumstances capable of impairing the energies of that organ, either directly or indirectly, disturb the process, or totally suspend it, even after it has fully commenced.

The division of the pneumo-gastric nerves will completely suspend digestion. Care, anxiety, grief, joy, anger, close mental application, violent exercise of the body after a meal, eating too fast or too much—concentrated food—nausea, even when excited by imagination—and merely leaning the epigastrium against the edge of a table or any other hard surface, will impair and even suspend digestion .And yet it is asserted that a vital process so easily disturbed, can be accomplished under the most disadvantageous circumstances, out of the living stomach, in inorganic vases. The truth is, that food placed in all the chemical circumstances which can be conceived similar to those in which it is placed in the living stomach, will never be converted into chyme. This has been long maintained, and never disproved.*

With this array of facts before them many eminent physiologists, with confidence advanced the opinion that the Spallanzanian notion of a solvent gastric juice had no foundation in truth ; but that gastric digestion or chymification is a vital process, depending on the peculiar properties and powers of the tissues of the stomach, rendering it indispensably necessary that the food should come in contact with the inner surface of that organ, to produce that genuine vital change or transformation which alone can properly be called chymification. They did not deny the presence of a fluid in the stomach, nor the maceration of the food, preparatory to the genuine vital digestion or assimilation which follows. But they considered it questionable, whether that fluid is a secretion of the stomach, or merely the swallowed saliva ; and wholly denied that it possesses any of that peculiar and powerful solvent property attributed to it by the Spallanzanian school.

On the other hand again, it was asserted that if animals are killed when the stomach is full and the process of digestion going on, the gastric juice will perforate the coats of the stomach.

Dr. Carswell declared that he had killed rabbits by a blow on the head, after a full meal, when digestion might be expected to be at its full activity ; and suspended them by the hind-legs for nine or ten hours ;—that afterwards, on opening them, he invariably found the great curvature of the stomach more or less altered, according to the interval which

*See Appendix to Broussais' Physiology second or third edition. Philadelphia, Carey & Lea.

had elapsed after death;—the coats of the stomach being either softened or completely perforated; and in the latter case, the softening often extended to the liver, the spleen, and the diaphragm, yet the food in the stomach was sometimes not at all digested, and sometimes a very little. The blood remaining in the vessels of the destroyed parts was black, and the liquid remaining in the stomach very acrid.

Dr. Carswell concluded that these effects were produced by the gastric juice, in its natural condition and character. While in opposition to these views it was contended by others, that all these softenings and perforations of the stomach were the result of disease during life. The latter opinion is probably incorrect, and the former one is unquestionably so. It is now fully proved that cold gastric juice has about as little solvent effect on flesh and other articles of food, as cold water has; and even when at the natural temperature of the healthy living stomach, it acts on masses of flesh out of the stomach very slowly indeed. In all Dr. Carswell's experiments no change took place in the coats of the stomach, until the animal had been dead some hours, and the contents of the stomach had become reduced to nearly or quite the temperature of the atmosphere, and therefore, too low for the activity of any energetic solvent power in the fluids of the stomach. Two principles were probably concerned in the production of the phenomena observed by Dr. Carswell. It has been said that there is but one step from the sublime to the ridiculous; so also it may with truth be said that there is a high state of vital activity which borders on disorganization, at which, if vitality be suddenly destroyed, disorganization is astonishingly rapid. The state of the stomach in the early stages of digestion, is very peculiar,—its blood-vessels are full, approaching to congestion, and in all respects there is an accumulation of vital energy and activity in that important organ. A sudden destruction of life at this moment, must therefore necessarily put the stomach (and especially that portion of it generally found softened or perforated, in the experiments) in a condition prepared for rapid disorganization and decay. In the second place, the fluid, or rather the contents of the stomach, had probably degenerated into a more intense degree of acidity than is natural to the healthy gastric juice of the living stomach; and it is well known that the acid principle is very powerful in softening and dissolving the animal solids. There is therefore no reason to believe that the softenings and perforations of the stomach observed by Dr. Carswell, were affected by the gastric juice, as such, in its true and natural character.

In this state of the controversy as to the existence or non-

existence of a fluid secreted by the stomach, possessing the solvent powers attributed to it by Spallanzani and his followers, Dr. Beaumont, of the United States' Army, published in the close of the year 1833, his "Experiments and Observations on the Gastric Juice and the Physiology of Digestion." These experiments "were commenced in 1825 and continued with various interruptions till 1833." The subject of them was Alexis St. Martin, a Canadian, of French descent, who, in 1822, when about eighteen years of age, with a good constitution and robust health, was accidentally wounded by the discharge of a musket, the contents of which were received in his left side, and carried away the parts so as to wound the lungs and stomach very seriously. The very remarkable result was that the man recovered his health; but in the healing of the parts the lacerated coats of the stomach attached themselves to the lips of the external wound, and formed an artificial aperture to the stomach, so that this organ could be examined at any time by pushing in a valve which the stomach had formed to close the aperture so as to prevent its contents from escaping thereat.

With advantages for gastric experiments never before enjoyed, Dr. Beaumont applied himself to this interesting inquiry with a degree of assiduity and patience highly commendable. The work which he has published as the result of his experiments and observations, is interesting, and, in many respects, valuable. But to a truly scientific physiologist, it is very evident that Dr. Beaumont was not qualified to make the best of his peculiar advantages. He seems neither to have commenced nor pursued his experiments with very enlarged views on the subject; and he was evidently more intent on demonstrating the existence and the solvent power of the "gastric juice" than in ascertaining the true physiology of the stomach. The opportunities which he enjoyed, and the time he devoted to these experiments were such as would have enabled a profound physiologist of enlarged views and of acute powers of observation, to produce a work far more valuable to physiology, pathology and dietetics, than th one now before us. Nevertheless the work is of very considerable value to those who can accurately understand it, for it contains a great many interesting and valuable facts, and fully establishes many exceedingly important points, in opposition to generally received opinions. Still, however, as a popular work, to be placed in the hands of the general reader, and especially in the hands of the dyspeptic, it is very questionable whether it will not do more harm than good.

Dr. Beaumont's book has, we trust, forever put to rest all controversy concerning the existence of the "*gastric juice.*"

He has fully ascertained that, on the ingestion of food, the stomach rapidly secretes a fluid which, by the "churning motion" of the organ, is freely mixed with the ingesta; and it is very evident also, that this fluid possesses so much of a solvent power, as to reduce the various kinds of food, received into the stomach, into a fluid or nearly fluid mass, apparently of a homogeneous character. But whether this solution is real chymification, or only a proximate state to chymification is a question yet to be decided. Excepting, therefore, the proof that the stomach does actually and copiously secrete a fluid which is mixed with the food in the process of digestion, and which, with a quality peculiar to itself, reduces the ood to a common state of fluidity, Dr. Beaumont's work has thrown little light on the nature of chymification. Physiologists will continue to differ as widely as they have done, in their opinions on this point; and all will quote Dr. Beaumont's Experiments to prove their doctrines. The Chemical School will continue to assert with Spallanzani, that gastric digestion is purely a chemical process effected wholly by the solvent fluid of the stomach: while the Vitalists, on the other hand, will still insist, that the gastric juice is a vital secretion,—that, as such, it is endowed with its peculiar properties,—that its peculiar nature, properties and efficiency are immediately and necessarily dependent on the vital powers of the living body, and particularly on the vital powers of the stomach; and therefore that it does not possess the intrinsic independent power of changing food into real and true chyme out of the living stomach, and that even in the living stomach it probably does nothing more than to disintegrate or dissolve the mass of food, in a manner peculiar to itself, preparatory to genuine chymification, which is purely a vital process, effected only by the living stomach itself. And certainly there is not a single experiment nor fact presented in Dr. Beaumont's book which militates against the latter opinion: while there are, at least, many inferences to be legitimately drawn from it, which are very adverse to the chemical theory. Granting all that Dr. B. asserts of the peculiar solvent and antiseptic power of the gastric juice, and what is proved? Why, that the living stomach secretes from the living blood, a fluid which cannot be perfectly imitated by any artificial composition; and which, therefore, possesses properties and powers, both as a solvent and antiseptic, peculiar to itself, and consequently produces effects, both in and out of the stomach, peculiar to itself;—and perhaps essentially different, even out of the living stomach, from the effects of any artificial composition, made in imitation of gastric juice.

But does this prove the solution of food, either without or within the stomach, by the genuine gastric juice, to be real and true chymification? Most evidently not!

According to Wilson Philip, the true chyme is only to be found in a very thin layer in contact with the inner surface of the stomach, and is gradually carried forward to the pyloric orifice,—becoming more and more perfectly changed as it advances, till it passes into the small intestines; and if it be not thus removed, so as to permit another portion of food to come in contact with the surface of the stomach, digestion or chymification ceases. Now all this may be strictly true, consistently with the experiments and observations of Dr. Beaumont. There is therefore nothing in all his experiments which proves that genuine chymification can be effected out of the living stomach; and nothing which *proves* that the chymifying change is not effected wholly by the *vital powers* of that organ.

Dr. Beaumont is too fond of his chemical speculations. He would lead one to suppose that, with a little skill and management, an artificial process might be arranged, by which chyme, chyle, blood, bone, muscle, nerve, &c. might all be produced in the chemist's laboratory, entirely independent of nature's established economy. Heat and electricity or the magnetic fluid would set this organized machine into operation, and thus we should have a living man, produced wholly by the action of chemical agents and the play of chemical affinities.

In some respects, Dr. Beaumont's book is a very dangerous one, and is fitted widely to mislead the *Faculty*, as well as the invalids who may read it or refer to it for dietetic instruction. If chymification is effected wholly by the gastric juice,—if it is purely a chemical instead of a vital process,—if the vital powers of the stomach are no farther concerned in it than merely to secrete the solvent fluid, then the physician, or his patient who is just recovering from a fit of sickness, or is grievously afflicted with dyspepsia, has only to turn to Dr. Beaumont's scale of the digestibility of different kinds of food, and ascertain what articles passed through the stomach in the shortest time, or yielded most readily to the action of the gastric juice out of the stomach, and whether it be soused tripe, pig's feet, or whatever else it may be, it is to be selected as the most proper food for the feeble invalid and those of weak stomachs because it is most easily digested.

But this notion, which already too extensively prevails, is in the very face of physiological truth. Nothing is more

certain than that many articles of food which pass most rapidly through the stomach cause a much greater expenditure of the functional powers of that organ, than other articles which pass more slowly through it. Indeed, it may be regarded as a general law, that those kinds of food, appropriate for man, which *naturally* pass slowly through the stomach, are digested with the least vital expense and exhaustion of the organ, and most slowly wear out its functional powers; and therefore, are not only best calculated to promote the most vigorous condition of the alimentary organs, but also, are most conducive to the general welfare of the system. Thus, fresh beef, because it is generally supposed to be easily digested, has long been prescribed as the most suitable food for dyspeptics; whereas, the truth is that the free use of beef or flesh meat always—in civic life—tends to induce dyspepsy; and no man ever was, nor ever can be cured of that complaint by virtue of flesh-eating. While, on the other hand, vegetables and fruits are generally prohibited in such cases, because they are supposed to be hard of digestion, but it is scarcely possible for those who subsist on a well-regulated vegetable diet, and are reasonably temperate in quantity, to be dyspeptic; and no food whatever, will so soon restore a broken-down dyspeptic stomach to a healthy and vigorous state. In relation to this point, Dr. Beaumont has made some very just remarks,—"The quality of nutriment is of considerable importance in dietetic regulations. BULK is perhaps nearly as necessary to the articles of diet as the nutrient principle. They should be so managed that one should be in proportion to the other. Too highly nutritive diet is probably as fatal to the prolongation of life and health, as that which contains an insufficient quantity of nourishment." P. 39. But the Doctor is greatly mistaken if he supposes that carnivorous animals only, are injured by concentrated food. Extensive experiment has fully demonstrated that herbivorous animals suffer equally from the same cause.

In attempting to explain the Physiology of Hunger, Dr. Beaumont has come at least as near to the truth, as any one whose opinions on the subject had previously been presented to the public through the medium of the press; yet there are some very important facts which powerfully militate against his theory. "My impression," says he, (p. 57, &c.) "is that hunger is produced by a *distension* of the gastric vessels, or that apparatus, whether vascular or glandular, which secretes the gastric juice; and is believed to be the effect of repletion by this fluid." "A distension by the gas-

tric juice of a particular set of vessels or glands, constituting, in part, the erectile tissue of the villous coat of the stomach. The sensation varies according to the different degrees or states of distension; from the simplest desire to the most painful sense of hunger; and is allayed or increased in proportion to the application or refusal of alimentary stimulus to the excretory vessels. The greater the distension of the vessels the more acute will be the pain; hence the difference between a short and a protracted fast." The doctor considers it almost a matter "of demonstration that a large quantity of gastric juice must be contained in appropriate vessels, during a fast; ready to obey the call of aliment."

"The quiescence and relief from the unpleasant sensations, which are experienced as soon as the vessels are emptied, are, I think," continues he, "additional proofs of my opinion."

This theory is one step removed from that of gastric juice in the stomach corroding its inner surface, when the digested food has all passed from it; and thus causing hunger. The doctor's theory is, of course, the more plausible now, since it is demonstrated that, at such times, there is no gastric juice in the stomach. Nevertheless, most of the objections which lie against the one, bear with equal force against the other. If hunger be a sensation produced by the distension of the vessels containing the gastric juice; and if the longer the fast, the greater will be the distension and the more pressing and painful the hunger; how is it that hunger, which occurs from physiological habitude, at regular periods, according to the individual's customary hour for eating, will subside and totally disappear, if the usual hour of eating be permitted to pass by, without taking food? unless, indeed, the wants of the system for nourishment are real and pressing; and even then the same thing will take place to some degree! Will it be said that there is a re-absorption of the gastric juice, and a consequent abatement of hunger? This is wholly an assumption; of the truth of which there is no proof—no evidence. But again, if "hunger is caused purely by the distension of the vessels containing the gastric juice;" and if "the sensation varies according to the different degrees or states of distension; from the simplest desire to the most painful sense," why is it that the *sense* of hunger is always more or less painful and imperious, according as the customary food is more or less stimulating in proportion to the nourishment which it affords. Thus for illustration; if we select three men of regular habits, each taking his three regular meals a day—one subsisting on pure

vegetable food, simply and plainly prepared, the second partaking freely of flesh meat, without condiment, the third partaing freely of flesh meat highly seasoned with salt, pepper, mustard, &c.—now, other things being equal in the circumstances and conditions of these men, if food be withheld from them at their usual time of eating, the *sense* of hunger will always be much more painful and imperious in the second than in the first, and still more so in the third. Are these different degrees of the intensity of the sense of hunger in the three individuals owing to the different degrees of distension in the vessels containing the gastric juice? Most certainly not! Furthermore, it is well known to physiologists, that, in the artificial states of civic life at least, the *sense* of hunger often occurs with much intensity when the vital economy is so far from actually standing in need of a new ingestion of alimentary matter, that nothing would be more beneficial to every organ and part of the system than a temporary abstinence from food.

There are, also, other facts in point, which are not easily got over. Here are several individuals assembled around a table loaded with sumptuous fare,—their hunger is powerful —they contemplate the repast with eager desire—their appetite is sharply whetted—the savory viands are smoking on their plates; and now they are just about to commence their meal;—at this moment several letters are thrown upon the table. One reads that a steamboat has burst her boilers, and that his beloved wife or child whom he was hourly expecting home, is scalded to death!—his hunger is entirely gone in an instant. Another reads an insulting communication which throws him into a violent fit of anger, and his hunger is all gone. Another reads that a dreadful pestilence has broken out, and is committing awful ravages in the neighborhood; a paroxysm of fear at once destroys his hunger. Another reads that his ship, which he believed to have been captured by the pirates, has just entered the harbor with a rich freight;—overwhelming joy annihilates his hunger. Another takes a pinch of snuff and his hunger is gone. Another puts a piece of tobacco in his mouth, and his hunger is destroyed. Another dissolves some emetic tartar, stirs it up, and contemplates swallowing it, and his hunger disappears.

These are not merely fanciful suppositions;—they are real cases which have happened thousands of times. But how are these cases met by Dr. Beaumont's theory?—Is his gastric juice re-absorbed in an instant?—or does it instantaneously gush from its distended vessels into the stomach?

Neither! What then becomes of the sense of distension in the vessels containing the gastric juice, which constitutes the feeling of hunger?—Dr. Beaumont's theory is at fault here!—nor here only!—many other facts might easily be adduced to prove its falsity. The Doctor has not yet got hold of the true physiology of hunger. His chemical and mechanical principles will not answer for the solution of vital phenomena. The true theory of hunger has not yet found its way to the press.

In relation to the gastric juice, there is one other point in Dr. Beaumont's theory, which is not only incorrect, but which does not even harmonize with his own facts.

"The quantity of gastric juice," he says, "either contained in its proper vessels, or in a state of preparation in the circulating fluids, is believed to be in exact proportion to the quantity of aliment required for the due supply of the system. If more than an ordinary quantity of food be taken, a part of it will be left undissolved in the stomach, and produce the usual unpleasant symptoms of indigestion." P. 65.

Again;—"the stomach is not designed to receive more food than can be duly mixed with the gastric solvent already in its proper vessels, or in a state of preparation in the blood vessels." P. 71.

Again;—"the gastric juice does not accumulate in the cavity of the stomach, until alimentary matter is required, and excites its vessels to discharge their contents, for the immediate purposes of digestion. It then begins to exude from its proper vessels; and increases in proportion to the quantity of aliment *naturally* required and received." Pp. 85, 86.

Again; "there is always disturbance of the stomach when more food has been received than there is gastric juice to act on it." P. 140.

Now if the doctor's notion be true, that there is a fixed law of relation between the quantity of gastric juice in its proper vessels and in a state of preparation, and the quantity of food *naturally* required, how is it that he could so frequently draw off from the stomach, two ounces of gastric juice, and yet, so soon afterwards, his subject take into his stomach as much food as the real wants of his system required, and digest it in due time, without manifesting any inconvenience from the loss of the two ounces of gastric juice?—And how is it, that, on some occasions, two hours before the time of the meal, and before hunger had begun to be felt, the Doctor found such a copious flow of the gastric juice? when on other occasions, immediately preceding

the time of the meal, he could with difficulty procure even a small quantity; and still the stomach would receive its full supply of food, and readily digest it, without evincing any lack of gastric juice?

It is not very easy to perceive how these and many other questions which might be asked, can be answered consistently with Dr. Beaumont's theory of hunger, gastric digestion, &c. The truth is, there is no more a fixed relation between the quantity of gastric juice which the stomach is *capable* of secreting, and the quantity of food naturally required by the system, than there is between the quantity of fluid which the salivary glands are capable of secreting, and the quantity of food naturally required. In both cases, the secreting function is variously affected by exciting and depressing causes. In both cases the function may be pushed to such an extent as to cause a temporary exhaustion of the functional power of the secreting organs; and in both cases the organs secrete immediately from the arterial blood their appropriate fluids as they are demanded, and can continue to secrete those fluids as long as a due supply of arterial blood is received, and the secreting power of the organs is sustained. There is not the slightest anatomical nor physiological evidence that the stomach has any vessels which receive and retain the gastric juice preparatory for digestion, and the distension of which, by the gastric juice, causes the sense of hunger.

As an argument against the notion which had been entertained by many physiologists, that when the chyme has passed from the stomach, and previous to the reception of another meal, a quantity of gastric juice is secreted, and remains in a free state in the stomach, preparatory for the digestion of the new aliment, Dr. Beaumont says, (p. 138), that in such a case, there would be danger that the gastric juice would be weakened, by the introduction of large quantities of water or other fluids, in the intervals of eating, and thus lose its energy and concentrated solvent properties. This idea is several times expressed and implied in the Doctor's book, and seems to be a very valid one in his own mind; and yet he ought to be well aware that it is a common practice, with people of good digestive powers, to drink two and even three tumblers of water during the ingestion of a single meal; and not unfrequently do people, at the close of a meal, or some few minutes after it, take large draughts of water, cider, beer, or some other liquid. In such cases the water or the liquid must mix with the gastric juice, in some measure at least; and, according to Dr. Beaumont,

reduce its energy and concentrated solvent properties. And then the stomach must perform an elective function, and absorb the water and leave the gastric juice, or it must absorb them both, or they must pass together into the small intestines; or the gastric juice must remain with the water in the stomach, to perform the digestive function in its diluted state. But if the stomach can perform the elective function of absorption, then the Doctor's objection to free gastric juice in the stomach before the reception of food, is of no force. If the diluted gastric juice is absorbed, or passed into the small intestines, and more is secreted for the digestion of the food, then his idea that the quantity of gastric juice, in its appropriate vessels, and in a state of preparation in the blood vessels, bears a fixed relation to the quantity of food demanded by the real wants of the economy, is evidently refuted by fact; and if digestion is performed by diluted gastric juice, his position is equally disturbed.

It is undoubtedly true, as the Doctor states, that free gastric juice does not accumulate in the cavity of the stomach previous to the reception of food; nor, as a general physiological fact, is there any gastric juice secreted before the ingestion of food commences. But as soon as a portion of food is received into the stomach, and excites its secreting organs, the process of secretion commences, and the gastric juice appears on the inner surface of the stomach like prespiration on the forehead of a laboring man, and becomes mixed with the food as it is carried around the gastric cavity by the muscular action or "churning motion" of the stomach. When considerable fluid is taken with the food during the meal, as when tea, coffee, and other liquids, are constantly sipped to wash down the food, the gastric juice is less freely secreted during the ingestion, and the aqueous fluid is mostly absorbed before the process of digestion commences. But when the meal has been completed, and the process of digestion has fully commenced, if a large quantity of water or other liquid is received into the stomach, either this organ suddenly contracts upon its contents, and presses them forward towards the pyloric orifice, and then by the powerful contraction of some of the circular fibres of its muscular coat, brings itself into the form of an hour-glass, confining the food in the pyloric end, and retaining the newly received fluid in the cardiac or larger end, till the absorbing vessels of that region shall take it up and carry it away, or else, the newly received fluid mixes with the previously received contents of the stomach, reducing them to a very diluted state and wholly arresting the process of digestion, till the fluid

thus received has been absorbed or otherwise removed.—In both cases, therefore, the process of digestion is more or less disturbed, and in the latter case particularly, it is greatly retarded; and in weak, dyspeptic stomachs much oppression and distress and derangement of function is often occasioned by this cause.—Yet we know that people with healthy and vigorous stomachs will indulge in free imbibitions of water, during, and immediately following the ingestion of food, with apparently little or no inconvenience.

In regard to the temperature of the stomach, there is reason to believe that the artificial aperture in Dr. Beaumont's subject, had a considerable effect. The temperature of a perfectly natural and healthy stomach, in a vigorous, laboring man, probably ranges from one hundred to one hundred and four degrees Fahrenheit. And beyond all question, much allowance must be made, in relation to many other phenomena observed by Dr. Beaumont, on the score of the artificial condition and treatment of the stomach on which he experimented.

On the subject of saliva, Dr. Beaumont talks very loosely and evinces his want of physiological science. "Dry food," says he, "cannot be swallowed until it receives an admixture of a fluid; whether it be saliva or some other liquor, is not, I conceive, a matter of much importance." "Water will answer the purpose nearly as well as saliva." * * * * "I have known many persons to spit freely and constantly, whose appetites and digestion were perfect. Those who smoke tobacco are constantly discharging large quantities of saliva, and yet I am not aware that dyspepsy is more common with them than with others." "The legitimate and only use of saliva," the Dr. concludes, "is to lubricate the food, and to facilitate the passage of the bolus through the organs of deglutition." Pp. 68, 69. But Dr. Beaumont ought to know that the important salivary apparatus was not inserted in the organic machinery of the human system for so unimportant a purpose as he attributes to it. In all his experiments and observations on this point he evidently confounds the salivary secretion with the mucous secretions of the mouth and oesophagus. The truth is that, in a perfectly healthy body, the salivary secretion very nearly resembles, in properties and powers, the gastric juice and pancreatic fluid, and it is not in any degree intended to "lubricate the food," (for this is done by the mucous secretions of the mouth, fauces and oesophagus,) but, like the gastric juice, to act on it as a solvent; and when the food is thoroughly masticated, and by this process, retained for a considerable time in the

mouth, an incipient state of solution takes place, similar to that of the stomach and small intestines. And if Dr. Beaumont's notion in regard to the relation between the quantity of gastric juice and the quantity of food, were true, he would find that all waste of the salivary fluid would be attended with immediate inconvenience; but the stomach being compelled to make up for the delinquencies of the mouth, the evil effect of those delinquencies is seldom if ever perceived, and never duly appreciated.

But enough has been said concerning the objectionable parts of Dr. Beaumont's book. It is a far more pleasing task to point out its excellences, of which it contains many.

On the importance of mastication he insists with much truth and propriety.

"Mastication is absolutely necessary to healthy digestion. If aliment in large masses be introduced into the stomach, though the gastric juice may act upon its surface, chymification will proceed so slowly, that other changes will be likely to commence in its substance before it will become completely dissolved. Besides, the stomach will not retain undigested masses for a long time, without suffering great disturbance. It is governed by certain laws with respect to aliment. After food has been retained for a certain length of time, undigested, say from five to ten hours, according to the healthy or diseased state of the organ, or the quantity received into it, it is either rejected by vomiting, or is permitted to pass into the duodenum and lower bowels, where its presence almost invariably produces colic, flatulence, &c. When the stomach is unusually debilitated, food, however, is frequently retained for twenty-four hours or more; and is sometimes the cause of most distressing symptoms, producing, particularly in children, convulsions and death. I therefore consider mastication as one of the most important preliminary steps in the process of digestion." P. 70.

In his numerous experiments Dr. Beaumont has fully demonstrated that the more perfectly the functions of the teeth are performed, the more easily and healthfully the function of the stomach is accomplished.

"With respect to deglutition," says he, (p. 71,) "I shall make but few remarks. It is important for the preservation of health, that this process should be effected slowly. If food be swallowed rapidly, more will generally be taken into the stomach, before the sensation of hunger is allayed, than can be digested with ease. If due attention be paid to the primary step of mastication, we shall not be so likely to err in this latter one; and swallowing very rapidly produces ir-

regular contractions of the muscular fibres of the oesophagus and stomach; disturbs the vermicular motions of the rugæ, and interrupts the uniform actions of the gastric apparatus."

On introducing food into the stomach of his subject, through the artificial aperture, the Doctor found that the organ would not receive it rapidly even in a liquid state.

"If a few spoonfuls of soup or other liquid diet be put in, with a spoon or funnel, the rugæ quickly close upon it, and gradually diffuse it through the gastric cavity, entirely excluding more, during this action. When a relaxation takes place, another quantity will be received in the same manner."

The Doctor shows that digestion commences much sooner, and proceeds far more rapidly than has hitherto been generally supposed by physiologists. Indolent inactivity is not so favorable to digestion as gentle exercise after a meal. Sleep after a meal decidedly retards digestion. Anger, fear, grief, &c. also retard and interrupt it. The presence of bile in the stomach retards the digestion of all other than oily or fatty substances, but is necessary for the digestion of these substances.

"Oily substances are digested with great difficulty; and the fat of all meats is converted into oil in the stomach, before it is digested."

"Bile is not essential to chymification. It is seldom found in the stomach except under peculiar circumstances. I have observed that, when the use of fat or oily food has been persevered in for some time, there is generally the presence of bile in the gastric fluids." "Irritation of the pyloric extremity of the stomach, and external agitation by kneading with the hand, on the right side, over the region of the liver and pylorus, occasion a flow of bile into the stomach."

"Magendie says, 'I believe that, in certain morbid conditions, the bile is not introduced into the stomach,' implying that, in a healthy state, it is always to be found there. There can hardly be a greater mistake. With the exceptions that I have mentioned, it is never found in the gastric cavity, in a state of health, and it is only in certain morbid conditions that it is found there." P. 95.

"When much fat meat, or oily food has been used, the oil always maintains an ascendency in the gastric cavity." P. 142.

"Bile is required, and necessarily called into the stomach, *only* for the purpose of facilitating the chymification of all

fatty and oily aliments." P. 264. (See also pages 127, 147, 154, 171, 173, 178, 209, 213, from all which it is fully evident, that fat meats and oily substances of every kind, are with great difficulty digested, and tend to irritate the stomach, derange its function and disease its tissues.)

"Undigested portions of food in the stomach, produce all the phenomena of fever; which should warn us of the dangers of all excesses, where that organ is concerned; and also admonish us of the necessity of a perfect comminution of the articles of diet." P. 127.

"Solid food is sooner disposed of by the stomach, than fluid; and its nutritive principles are sooner carried into the circulation." P. 48. "Soup cannot be digested in the stomach, until it is formed into a harder mass, by the absorption of the watery part." P. 157. "Fluids pass from the stomach very soon after they are received; either by absorption, or through the pylorus." P. 97. "Drinks, though not subject to digestion, enter into the circulation, and become important agents in the ultimate changes that are going on in the tissues of the organism. *Simple water is perhaps the only fluid that is called for by the wants of the economy.* The artificial drinks are probably *all more or less injurious*, some more so than others, but *none can claim exemption from the general charge.* Even *coffee* and *tea*, the common beverages of all classes of people, *have a tendency to debilitate the digestive organs.* Let any one who is in the habit of drinking either of those articles in a weak decoction, take two or three cups, made very strong, and he will soon be aware of their injurious tendency: And this is only an *addition* to the *strength* of the narcotic which he is in the constant habit of using. The whole class of alcoholic liquors, whether simply fermented or distilled, may be considered as *narcotics*, producing very little difference in their ultimate effects on the system." P. 49. See also pages 189, 191, 236, 237, 239.

"That the introduction of narcotics into the stomach should destroy the appetite, proves only, that they have the same effect on that organ as they have on other parts of the body; that they paralyze the nerves and render them incapable of being the media of communication to their common centre." P. 55.

"Wine and beer are both pernicious in their effects on the stomach." P. 50.

"The gastric juice has no effect upon wine and spirits." P. 136.

"Wine, spirits, water and other fluids, which conduce

nothing towards alimentation, are neither coagulated nor otherwise affected by the gastric juice. These fluids are not digested, and probably enter the circulatory system, without much change." P. 146.

"CONDIMENTS, particularly those of the spicy kind, are non-essential to the process of digestion, in a healthy state of the system. They afford no nutrition. Though they may assist the action of a debilitated stomach for a time, their continual use never fails to produce an indirect debility of that organ. They affect it *as alcohol* or other stimulants do —the *present* relief afforded, is at the expense of *future suffering*." P. 49. "It would seem then (from Experiments, pp. 241, 242,) that stimulating condiments, instead of being used with impunity, are actually prejudicial to the healthy stomach." P. 243.

And if prejudicial to the healthy stomach, much more are they to the *debilitated* and the *diseased* stomach. As Dr. Beaumont justly observes, they may *seem* to afford a *present relief*, but it is always at the expense of *increased debility and future suffering*.

"The diseased appearances of the stomach, which have frequently presented themselves, in the course of my experiments and examinations, have generally, but not always, succeeded to some appreciable cause. Improper indulgence in eating and drinking, has been the most common precursor of these diseased conditions of the coats of the stomach. The free use of ardent spirit, wine, beer, or any other intoxicating liquors, when continued for some days, has invariably produced these morbid changes. Eating voraciously, or to excess,—swallowing food coarsely masticated, or too fast, &c. &c. almost invariably produced similar effects, if repeated a number of times in close succession."—P. 239.

"When these diseased appearances are considerable, and particularly, when there are corresponding symptoms of disease, as dryness of the mouth, thirst, accelerated pulse, &c. no gastric juice can be extracted, not even on the application of alimentary stimulus. Drinks received are immediately absorbed, or otherwise disposed of: none remaining in the stomach ten minutes after being swallowed. Food taken in this condition of the stomach, remains undigested for twenty-four, or forty-eight hours, or more; increasing the derangement of the whole alimentary canal, and aggravating the general symptoms of disease." P. 108.

"These morbid changes and conditions, however, are seldom indicated by any ordinary symptoms, or particular sensations described or complained of; unless when in consider-

able excess, or when there have been corresponding symptoms of a general affection of the system. They could not, in fact, in most cases, have been anticipated from any external symptoms; and their existence was only ascertained by actual ocular demonstration."

"It is interesting to observe to what extent the stomach, perhaps the most important organ of the *animal* system, may become diseased, without manifesting any external symptoms of such disease, or any evident signs of functional aberration. Vitiated secretions may also take place, and continue for sometime without affecting the health, in any *sensible* degree. Extensive active or chronic disease may exist in the membranous tissues of the stomach and bowels, more frequently than has been generally believed :—and it is possible that there are good grounds for the opinion advanced by a celebrated teacher of medicine, that most febrile complaints are the effect of gastric and enteric inflammation. In the case of the subject of these experiments, inflammation certainly does exist, to a considerable extent, even in an *apparent* state of health,—greater than could have been believed to comport with the due operations of the gastric functions." Pp. 239,240.

These pathological facts are of fearful importance, and should serve to break up the deep and universal delusion cherished by mankind, that so long as they are not *sensible* of any evil effects from their indulgences, they have the strongest evidence that those indulgences are not pernicious. Post mortem examinations have exhibited astonishingly extensive disease pervading the stomach and bowels, and of the abdominal viscera generally, of a character which indicated a progress of many years; and yet the subject was not, during life, in the least *sensible* of its existence. But the cause of all this is found in the effects which the artificial habits of life have on the natural susceptibilities and sympathies of the system; destroying its original power to manifest the most delicate symptoms of the slightest functional aberrations or derangements. In a purely natural and healthy state of the vital susceptibilities of the nervous tissue, the slightest disturbing cause or morbid affection in the alimentary canal, reveals itself in appreciable and definite symptoms; and yet, wonderful to be told! that very state of health is, by most people, regarded as a state of disease? The man whose natural susceptibilities are so impaired that he can drink rum and consume tobacco enough, in a few minutes, to destroy the lives of three men whose healthy susceptibilities retain the purity and delicacy of undebauched nature,

is considered to be in a strong and healthy condition of body; while he who would be powerfully affected by small quantities of these substances, would be considered as too delicate for active usefulness in life. The man who has so depraved the sensibilities of his stomach, and destroyed the healthy sympathies of his body that he can eat any thing and every thing without *feeling any immediate inconvenience*, is regarded as having a healthy and vigorous stomach; while he whose stomach is so pure and truly healthy as to be able to detect and appreciate and manifest, the slightest disturbing cause, is considered as having a very weak, unhealthy and irritable stomach! So do men in their delusion, mistake truth for error and error for truth!

"In the present civilized state of society," says Dr. Beaumont, "with the provocations of the culinary art and the incentives of high seasoned food, brandy and wines, the temptations to excess in the indulgences of the table, are rather too strong to be resisted by poor human nature. It is not less the duty, however, of the watchmen on the walls to warn the city of its danger, however it may regard the premonition. Let them, at least, clear their own skirts from the stain of unfaithfulness, whatever may be the result." P. 63.

"There is no subject of dietetic economy, about which people err so much, as that which relates to QUANTITY. P. 63. The QUANTITY of aliment is probably of more importance than the *quality*, to insure health. The system requires much less than is generally supplied to it. The stomach disposes of a definite quantity. If more be taken than the actual wants of the economy require, the residue remains in the stomach, and becomes a source of irritation, and produces a consequent aberration of function, or passes into the lower bowels in an undigested state, and extends to them its deleterious influence. *Dyspepsy is oftener the effect of over eating and over drinking than any cause.*" P. 51.

Dr. Beaumont is very correct in the opinion that *quantity* is of the utmost importance to ensure health: and it is strictly true that *quality* is of equal importance to permanent health and longevity. A moderate *quantity* of even pernicious food, to which the system has become accustomed, may be endured for many years, gradually sapping the constitution, and bringing on the final catastrophe, without ever manifesting any direct symptoms of its deleterious effects; while an excessive *quantity* of the most salutary food will soon either induce an unhealthy accumulation of adipose matter in the cellular tissue, and thus lead to obesity, and bring on disease and premature, and generally very sudden

death; or cause a re-action upon the digestive organs, inducing very distressing, but generally less rapidly fatal diseases in those important viscera: or lead to congestion, debility and chronic or acute disease of particular parts, attended in some cases, with general febrile symptoms, and the co-operation of other causes may superinduce or establish a fatal disease. Nevertheless, an excessive *quantity* of the best *quality* is incomparably better than an excessive *quantity* of *pernicious food.* But a moderate *quantity* of a good *quality* is the true rule of diet.

On the whole, then, the valuable rules to be drawn from Dr. Beaumont's book are,

1. Bulk—or food possessing a due proportion of nutritious and innutritious matter, is best calculated to preserve the permanent welfare of the digestive organs, and the general interests of the system.

2. The food should be plainly and simply prepared, with no other seasoning than a little salt, or perhaps occasionally, a very little vinegar.

3. Full and deliberate mastication or chewing, is of great importance.

4. Swallowing the food slowly, or in small quantities and at short intervals, is very necessary.

5. A quantity not exceeding the wants of the economy, is of prime importance to health.

6. Solid aliment, thoroughly masticated, is far more easily digested and more salutary than soups, broths, &c.

7. Fat meats, butter, and oily substances of every kind, are with difficulty digested, offensive to the stomach, and tend to derange the nutrient functions and induce disease.

8. Pepper, spices and stimulating and heating condiments of every kind, retard digestion, and injure the stomach and through it the whole system.

9. Coffee and tea debilitate the stomach and impair digestion.

10. Alcohol, whether in the form of distilled spirit, or of wine, beer, cider, or any other intoxicating liquors, retards and impairs digestion, debilitates the stomach, and, if persevered in for a short time, always induces a morbid state of that organ.

11. Narcotics of every kind impair digestion, debilitate the stomach, and tend to disease.

12. Simple *water* is the only fluid called for by the wants of the economy; the artificial drinks are all, more or less injurious; some more so than others; but none can claim exemption from the general charge.

13. Gentle exercise after eating promotes digestion more than indolent inactivity or rest. Violent exercise with a full stomach, is injurious.

14. Sleep, soon after eating heartily, retards digestion and leads to debility and derangement of the stomach.

15. Anger, fear, grief and other strong emotions disturb digestion, and impair the functional powers of the stomach, and deteriorate the secretions generally.

These rules are all of the most salutary character; they are founded on the permanent constitutional principles of human organic life; and are equally valuable to every portion of the human race, in every part of the globe.

Dr. Beaumont's idea that the power of long established habit, constitutes a necessity for the continuance of that habit, is a very common one, but nevertheless, it is a very erroneous one, entirely without any foundation in physiological truth.

But with all the errors into which Dr. Beaumont has fallen from a want of physiological science, that science, is greatly indebted to him for the many valuable facts which his patient and persevering "Observations and Experiments" present to the truly scientific and discriminating mind: and we heartily thank him for the corroboration which he has afforded to our principles.

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